A conceptual framework for understanding and measuring B2B online service quality

Lois Ann Burgess
University of Wollongong
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A CONCEPTUAL FRAMEWORK FOR UNDERSTANDING AND MEASURING B2B ONLINE SERVICE QUALITY

A thesis submitted in fulfilment of the requirements for the award of the degree

DOCTOR OF PHILOSOPHY

From

UNIVERSITY OF WOLLONGONG

By

LOIS ANN BURGESS BInfotech, Hons (UOW)

School of Information Technology and Computer Science

2006
Declaration

The work presented in this thesis is the original work of the author except as acknowledged in the text. I hereby declare that I have not submitted any of the material presented in this thesis for a degree at this or any other institution.

Lois Ann Burgess

27 November 2006
Dedication

This thesis is dedicated to my children James and Madison for their love, unfailing support and understanding. To my mother, for her constant encouragement even though her own adversity. To the memory of my late father, Herbert Burgess (1916-1989) and sister, Donna Phillips (1956-1994) who continue to guide me towards my life goals. Finally, to my mother’s cousin, Professor Allan Wilson, whose unfailing dedication to scientific research inspired me to undertake this journey.
## Table of Contents

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Declaration</td>
</tr>
<tr>
<td>Dedication</td>
</tr>
<tr>
<td>List of Figures</td>
</tr>
<tr>
<td>List of Tables</td>
</tr>
<tr>
<td>Abstract</td>
</tr>
<tr>
<td>Acknowledgements</td>
</tr>
<tr>
<td>Publications</td>
</tr>
</tbody>
</table>

**Chapter 1 – Introduction**

1.1 Background to the Research | 1
1.2 Motivation for the Study | 2
  1.2.1 Justification for B2B Research | 4
1.3 Aim of the Research | 6
1.4 Definition of Key Terminology | 8
1.5 Structure of the Thesis | 9

**Chapter 2 – Customer Service Evolution**

2.1 Introduction | 12
2.2 A Changing Service Landscape | 12
2.3 Customer Service on the Web | 16
  2.3.1 Advantages | 18
  2.3.2 Shortfalls | 19
2.4 Customer Value Considerations | 19
  2.4.1 Customer Acquisition | 20
  2.4.2 Customer Purchase Support | 21
  2.4.3 Customer Fulfillment | 22
  2.4.4 Customer Continuance and Support | 22
2.5 B2B Service on the Web | 23
<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.6 Online Service Design and Delivery</td>
<td>30</td>
</tr>
<tr>
<td>2.6.1 Elements of Design</td>
<td>28</td>
</tr>
<tr>
<td>2.6.2 Elements of Delivery</td>
<td>29</td>
</tr>
<tr>
<td>2.6.3 Additional Design Considerations</td>
<td>30</td>
</tr>
<tr>
<td>2.7 Summary</td>
<td>36</td>
</tr>
<tr>
<td>Chapter 3 - Determinants and Measurement of Online Service Quality</td>
<td>37</td>
</tr>
<tr>
<td>3.1 Introduction</td>
<td>37</td>
</tr>
<tr>
<td>3.2 Traditional Service Quality</td>
<td>37</td>
</tr>
<tr>
<td>3.3 Service Quality Research in Business Markets</td>
<td>40</td>
</tr>
<tr>
<td>3.4. Online Service Quality Measurement</td>
<td>42</td>
</tr>
<tr>
<td>3.5 Summary</td>
<td>70</td>
</tr>
<tr>
<td>Chapter 4 - Research Design and Methodology</td>
<td>71</td>
</tr>
<tr>
<td>4.1 Introduction</td>
<td>71</td>
</tr>
<tr>
<td>4.2 Research Approach</td>
<td>71</td>
</tr>
<tr>
<td>4.2.1 Knowledge Claim Position of the Research</td>
<td>72</td>
</tr>
<tr>
<td>4.2.2 Strategy of Inquiry</td>
<td>73</td>
</tr>
<tr>
<td>4.3 Research Design</td>
<td>75</td>
</tr>
<tr>
<td>4.3.1 Time Dimension</td>
<td>76</td>
</tr>
<tr>
<td>4.3.2 Unit of Analysis</td>
<td>77</td>
</tr>
<tr>
<td>4.3.3 Sampling Strategy</td>
<td>78</td>
</tr>
<tr>
<td>4.3.3.1 Phase I</td>
<td>78</td>
</tr>
<tr>
<td>4.3.3.2 Phase II</td>
<td>79</td>
</tr>
<tr>
<td>4.3.4 Data Analysis Strategy</td>
<td>79</td>
</tr>
<tr>
<td>4.4 Phase I Procedure</td>
<td>81</td>
</tr>
<tr>
<td>4.4.1 Exploratory Research</td>
<td>81</td>
</tr>
<tr>
<td>4.4.2 Literature Survey</td>
<td>81</td>
</tr>
<tr>
<td>4.4.3 Data Collection Procedure</td>
<td>82</td>
</tr>
<tr>
<td>4.4.4 Interview Format</td>
<td>83</td>
</tr>
<tr>
<td>4.4.5 Data Analysis Technique</td>
<td>84</td>
</tr>
</tbody>
</table>
## 4.5 Phase II Procedure

4.5.1 Confirmatory Research

4.5.2 Measurement Instrument

4.5.2.1 Step One - Specify Domain of the Construct

4.5.2.2 Step Two - Generate a Sample of Candidate Items

4.5.2.3 Step Three – Collect Data and Purify Measure

4.5.2.4 Step Four - Assess Reliability

4.5.2.5 Step Five – Assess Validity

4.5.2.6 Step Six – Develop Norms

4.5.2.6.1 Scale Format

4.6 Data Analysis Technique

4.6.1 Scale Reliability and Validity

4.6.1.1 Reliability

4.6.1.2 Validity

4.7 Summary

---

## Chapter 5 - Phase I: Exploratory Research

5.1 Introduction

5.2 Interview Procedure

5.2.1 Data Collection Instrument

5.2.2 Format of the Interviews

5.3 Data Processing Procedure

5.3.1 Step One: Edit Data

5.3.2 Step Two: Analyse and Code Data

5.4 Results from the Interviews

5.4.1 Participant Profiles

5.4.2 Meaning of Online Customer Service

5.4.3 Meaning of Online Service Quality

5.4.4 Customer Evaluations of Online Service Quality

5.5 Theoretical Foundation
Chapter 7 - Discussion and Conclusions

7.1 Introduction

7.2 Phase I Results

7.3 Phase II Results

7.4 Main Findings from the Research

7.4.1 Determinants, Dimensionality and Measurement of B2B Online Service Quality

7.4.2 Implications for Providers

7.5 Limitations of the Research

7.6 Contributions of the Research

7.6.1 Theoretical Contributions

7.6.2 Contribution to Practice

7.6 Suggestions for Future Research

Bibliography

Appendices
# List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Scope of Online Customer Service</td>
<td>4</td>
</tr>
<tr>
<td>1.2</td>
<td>Literature Synthesis Diagram</td>
<td>7</td>
</tr>
<tr>
<td>1.3</td>
<td>Structure of the Thesis</td>
<td>9</td>
</tr>
<tr>
<td>2.1</td>
<td>Customer Service Evolution</td>
<td>15</td>
</tr>
<tr>
<td>2.2</td>
<td>Online Service Value Chain</td>
<td>20</td>
</tr>
<tr>
<td>2.3</td>
<td>Design and Delivery Elements of Online Service</td>
<td>29</td>
</tr>
<tr>
<td>4.1</td>
<td>Research Design</td>
<td>76</td>
</tr>
<tr>
<td>4.2</td>
<td>Scale Development Procedure</td>
<td>87</td>
</tr>
<tr>
<td>5.1</td>
<td>Data Processing Procedure</td>
<td>102</td>
</tr>
<tr>
<td>5.2</td>
<td>Data Analysis and Coding Process</td>
<td>104</td>
</tr>
<tr>
<td>5.3</td>
<td>Higher-level Construct and Dimensions Perceived B2B OLSQ</td>
<td>110</td>
</tr>
<tr>
<td>5.4</td>
<td>Conceptual Model of B2B Online Service Quality</td>
<td>122</td>
</tr>
<tr>
<td>6.1</td>
<td>Scale Development Process</td>
<td>126</td>
</tr>
<tr>
<td>6.2</td>
<td>Domain and Consequences of B2B OLSQ</td>
<td>130</td>
</tr>
<tr>
<td>6.3</td>
<td>One and Two Factor Model Structures</td>
<td>141</td>
</tr>
<tr>
<td>7.1</td>
<td>Conceptual Model of B2B OLSQ</td>
<td>155</td>
</tr>
</tbody>
</table>
List of Tables

Table 3.1 Illustrative OLSQ Studies.................................................................44
Table 4.1 Quantitative, Qualitative and Mixed Methods Procedures..............74
Table 4.2 Classification of Alternative Mixed Methods Data
Analysis Strategies..................................................................................80
Table 5.1 Industry Sectors Represented.......................................................100
Table 5.2 OCSS Experience.......................................................................100
Table 5.3 Participant Profiles.....................................................................106
Table 5.4 Attributes of B2B OLSQ..............................................................114
Table 5.5 B2B OLSQ Perceptual Attributes, Elements and Selective
Illustrative Quotes...................................................................................120
Table 6.1 Total Variance Explained.............................................................137
Table 6.2 Item Factor Loadings.................................................................138
Table 6.3 Fit Assessment Results...............................................................148
Table 7.1 OLSQ Scale Items......................................................................160
Abstract

As more and more businesses move online, research into the determinants and measurement of online service quality has become a research imperative (Zeithaml et al., 2000; Bitner, Parasuraman et al., 2005). Notwithstanding, research in this area is still in its infancy and much of the existing research is largely anecdotal, centering on consumer perceptions and ignoring the business customer perspective. As a result, to date, limited insights have been gained. This study represents a first attempt at addressing this gap in the scholarly literature.

A two-phase study design was used to 1) explore the meaning of B2B online service quality, 2) identify its key determinants and 3) develop a valid and reliable measure for the construct.

In Phase I of the study, 16 in-depth interviews with business customers from a range of industry sectors were conducted. Results revealed that business customers expect online service levels at least equal to that provided in offline service environments. The results also revealed that business customer’s assessment of online service quality is formed across ten key determinants: Website Design, Ease of Use, Technical Reliability, Usefulness, Intuitiveness, Presentation, Accuracy, Availability, Service Reliability and Flexibility.

In Phase II of the study, a measure of online service quality (OLSQ scale) was developed and empirically tested and validated from data collected from 699 customers of a large Australian corporate supplier. Items included in the measure were derived from the Phase I interviews and refined through an expert review
process. Two plausible measurement models were then specified and data-model fit of each of the models examined. A second-order factor structure, comprising three dimensions, Service Quality, Web Quality and Technical Quality, consisting of 20 items was derived from the evaluation. Validity and reliability of the measure were then assessed and confirmed. Collectively, the results provide support for the soundness of the measure’s factor structure and its psychometric properties.

The attributes of OLSQ identified in this study provide a starting point on which providers can base the development of their online service strategy and modifications to strategy as customer needs and expectations change over time. In order to do this, providers need a valid and reliable instrument to gather information about customer service requirements and indicators of the quality of their online service offering as perceived by customers. It is envisaged that the OLSQ measure will also act as a diagnostic tool, assisting providers in pinpointing weaknesses in their online service strategy, enabling them to take corrective action where necessary. The results of this study also provide a starting point from which providers can base future research into the determinants and measurement of B2B online service quality.
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Publications


1. Background to the Research

Improving customer service is fast becoming the bottom line for many online business projects (Kalakota and Whinston, 1997). At the same time, an emphasis on customer service and support needs is driving business IS priorities more than ever before (Treacy and Wiersema, 1995). Whether a company is in manufacturing or in services, what is increasingly making a competitive difference is the customer service and support that is built into and around the product, rather than just the quality of the product (Henkoff, 1994). Moreover, the quality of a business’s service offering has become a key differentiator in the increasingly competitive marketplace that businesses now face (Zeithaml, et al., 2000). As a result, businesses are moving closer to the customer, expending more effort in finding new ways to create value for their customers and transforming the customer relationship into one of solution finding and partnering, rather than one of simply selling and order taking (Treacy and Wiersema, 1995).

The increasing amount of information available to marketers and advertisers, the streamlined supply chain and new retail channels made possible by the Internet and other Web-based technologies significantly affect the satisfaction of a businesses’ customers (El Sawy and Bowles, 1997). The principal business processes affected by these applications, is the restructuring of customer support technologies such as the help desk.
and technical support systems that utilise Internet and Web technologies (Sterne, 2000). The interactive, multimedia nature of Web makes it an attractive channel for facilitating customer support systems. Information queries usually handled by customer service representatives are well accommodated by Web technologies. Companies such as FedEx and United Parcel Service, Cisco Online and Amazon are well reputed for incorporating automated query capabilities into their online presence. The package tracking and order tracking systems used by these companies substantially reduces the need for handling telephone inquiries and produces savings amounting to (per annum) millions of dollars (Cisco Systems, www.cisco.com; Amazon, www.amazon.com). Such systems have revolutionised the service delivery concept (Sterne, 2000).

1.2 Motivation for the Study

Although a number of very pertinent research issues related to the understanding and measurement of service quality in online service environments were raised some years ago (see for example, Kalakota and Whinston, 1997), research has only recently begun to emerge. It was not until 2000, as researchers from IS (Barnes and Vidgen, 2000; Liu and Arnett, 2000) and services marketing (Zeithaml et al., 2000; Bitner et al., 2003; Dabholkar, 2000; Meuter et al., 2000) realised the potential that self-service technologies (SST’s) can play in the service delivery process, that the need for research in this area was formally acknowledged (American Marketing Association (AMA); Marketing Science Institute (MSI)).
As more and more businesses move online, research into the determinants and measurement of online service quality has become a research imperative (Zeithaml et al., 2000; Bitner et al., 2003; Parasuraman et al., 2005). Notwithstanding, research into the determinants and measurement of the construct in online service environments is still in its infancy and much of the existing research is largely anecdotal, centering on consumer perceptions and ignoring the business customer perspective. Despite the call for research into the determinants and measurement of B2B online service quality, little has emerged in the scholarly literature and therefore, limited insight gained. This thesis represents a first attempt at addressing this gap in the online service quality literature.

The scope of online customer service is described in the context of Figure 1.1 (derived from Kannan and Rust (2002)), below. An organisation (whether private or government) interacts with its customers/citizens in the downstream channel and its suppliers in the upstream channel. Interactions include aspects such as information exchange, negotiations and product/service flows (Kannan, 2001 in Rust and Kannan, 2002). The online service component includes all interactions with the exception of product flows. In the downstream channel concepts such as eCRM, relationship marketing, one-to-one marketing and customer care are all components of online customer service. Upstream online service components include e-procurement, supply chain management, just-in-time inventory management and the like (Rust and Kannan, 2002). The focus of this study is on the upstream channel service interactions and is therefore, confined to the Business-to-Business (B2B) online service domain.
1.2.1 Justification for B2B Research

The economics that are driving business in the B2B online space are considerably more compelling than those in the B2C space (Roberts, 2003). This is evidenced in a statement by the Business Network Institute of Australia which suggest that “today, the value in business is in relationships”. Although much of the early research interest has focused on B2C markets, in fact B2B represents a much larger market (Roberts, 2003). For example, B2C accounted for 7% of ecommerce in the US in 2002, compared to 93% for B2B (US Department of Commerce, 2004)
Developing profitable and long-term relationships is a major objective in the B2B sector (Webster, 1992; Achrol, 1997). Empirical support for the relationship between perceived service quality and business performance is evident (Athanassopoulos et al., 2001; Carmen 1990). Further, there is evidence which supports the notion that the customer’s evaluation of service quality is connected to repurchase, loyalty and willingness to maintain a long-term relationship with the provider (Iacobucci et al., 1994; Symanski and Hise, 2000).

The difference between consumer and industrial goods is well documented (Gounaris, 2005). A number of studies have shown differences in the nature and influence of the market orientation in consumer firms compared to business firms (Parasuraman et al., 1983; Avlontis and Gounaris, 1997). Major differences in buying behaviour, the evaluation criteria for appraising alternative suppliers and the existence of buying centres have been noted (Jackson and Cooper, 1988). In addition, business services are more complex, specialised and technology driven (Jackson and Cooper, 1988). As a result, the marketing effort and priorities of suppliers vary accordingly. Gronroos (1991) argues that in consumer markets goods exchanges are generally characterised by transactional marketing, whereas B2B goods and services are more likely to use relationship marketing approaches. This notion is supported by Coviello and Brodie (2001) who found that B2C firms are characterised by transaction marketing, focussing on economic transactions (ie. firm to mass market) and database marketing (ie. information and economic transaction by the firm targeted segment or individuals). In contrast B2B firms are more likely to engage in network marketing (ie. connected relationships between firms and firms with
firms involving individuals) and interaction marketing (ie. interactive relationships between a buyer and seller and individuals with individuals across firms). When it comes to B2B services, the distinction is even greater because of the fundamental characteristics of services (intangibility and inseparability). For instance, services purchased from industrial providers are delivered by qualified professionals whose expertise and skills are key elements of the quality of the service provided (Yorke, 1990). According to Gounaris (2005), service quality is a critical concern for B2B services because of its impact on the business customers’ own service to their customers. In addition, B2B services are much more complex, requiring management of a large number of service parameters to ensure their flawless provision and outcome (Lovelock et al., 1996). According to Jackson and Cooper (1988), the increased demand for specialisation is in a sense, a consequence of the increased customisation that is required when serving business buyers. As a result, selecting, evaluating and deciding on the continuation of the relationship with the service provider is not a routine task (Jackson et al., 1995). What businesses actually purchase is often a customer-specific and unique solution to a specific problem (Patterson, 1995). Webster (1992) stresses that business priorities and perceptions are also bound to be different. Hence, the determinants and measurement of perceived service quality in consumer services may not be relevant to business service contexts (Gounaris, 2005).

1.3 Aim of the Research

The primary aim of this research is to contribute to the emerging body of literature on online service quality by proposing a conceptual model of B2B online service quality and a scale for measuring the construct. This study brings together, synthesises and builds on
existing bodies of literature from Services Marketing (service quality, e-service quality and self-service technologies (SST's)) and Information Systems (information quality and web quality) in order to:

1. Identify the determinants of B2B online service quality
2. Propose a Conceptual Model of B2B online service quality
3. Propose a valid and reliable measure of B2B online service quality

The research questions addressed by the thesis are:

1. What is the meaning of B2B online service quality?
2. What are the determinants of B2B online service quality?
3. What is a valid and reliable measure of B2B online service quality?
To answer these questions, the study adopted a two-phased approach: exploratory research addressing the first two questions (reported in Chapter 5) sought to define the meaning of B2B online service quality and specify its domain. A conceptual model of B2B online service quality was also developed. This was followed by confirmatory research (aimed at addressing question 3) through which an instrument (OLSQ scale) was developed, and data collected to empirically test and validate the conceptual model and its associated measure using a structural equation modelling technique (Chapter 6). Justification for the approach used in this study is presented in Chapter 4 of this thesis.

1.4 Definition of Key Terminology

*Online B2B Relationship:* is defined as a relationship where the interaction between two businesses partners takes place via a physical network (ie. Internet or Extranet) without major physical impediments and in real time (Geiger and Martin, 1999).

*Online Customer Service:* is defined as traditional customer service delivered via a web-based customer service system (ie. corporate extranet or website residing on the Internet).

*Online Customer Service System:* is defined as an interactive, web-based information system that delivers service to a customer.

*B2B Online Service Quality:* is defined as the business customers’ overall evaluation and judgment of the excellence and quality of service delivered by partner organizations via an online customer service system (OCSS).
1.5 Structure of the Thesis

This thesis is organised into seven chapters as detailed in Figure 1.3 below.

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**Figure 1.3 Structure of the Thesis**
Chapter 1 introduces the study and motivation for the research. The aim and questions addressed is then introduced and provides an overview of the academic and managerial contributions of the thesis.

Chapter 2 presents a review of existing literature on the evolving customer service delivery concept, the role of technology in service delivery and customer relationships in online business markets.

Chapter 3 presents and discusses traditional service quality, its conceptualization and measurement. Extant literature on online service quality (OLSQ) and existing approaches to measurement of the construct is then presented and discussed.

Chapter 4 describes the approach taken and methods employed in this research program including: the knowledge claim position of the research, strategy of enquiry and research design. Justification of the methods of data collection and analysis is also presented.

Chapter 5 presents and discusses the results of the exploratory phase of the research. Determinants of B2B OLSQ derived from interviews is discussed and from this, an a priori conceptual model of OLSQ is developed.

Chapter 6 applies Churchill’s (1979) scale development paradigm to the development of the measurement instrument (OLSQ scale). Firstly, the OLSQ construct is defined and its
domain specified. This is followed by a discussion on the procedure used to develop, refine, empirically test and validate the measurement model and its associated instrument.

Finally, Chapter 7 concludes the thesis by summarising the key findings from the research, and discusses the implications for academia and practice. The limitations of the study are described along with suggestions for future research.
CHAPTER TWO

Customer Service Evolution

“A customer is the most important visitor to our premises. He is not dependent on us: we are dependent on him. He is not an interruption to our work; he is part of it. He is not an outsider in our business; he is part of it. We are not doing him a favor by serving him; he is doing us a favor by giving us an opportunity to do so”.

Mahatma Gandhi

2.1 Introduction

This chapter begins with a discussion on the evolution of the service delivery concept. It then discusses the infusion of technology in services and the role of the Web in online service delivery. This is followed by a discussion on B2B customer service on the Web and the customer service value proposition. The chapter concludes with a discussion on the key considerations in the design and delivery of online customer service.

2.2 A Changing Service Landscape

The focus of business today is on providing premium customer service and support to those customers who contribute most to the bottom line (Roberts, 2003). Businesses are realising that in today’s increasingly competitive marketplace, providing a product alone is not enough. However, enhancing productivity, resolving customer service enquiries on first contact and reducing costs by lowering contact times are not achievable in most customer service environments (Plant, 2000). Albeit, a business that achieves these goals is able to realise a rapid and significant return on investment, as well as establishing customer service and support as a true competitive differentiator (Chen, 2005). Notwithstanding, anecdotal evidence suggests that customer service provision is a complex issue.
Further, in order to develop and maintain excellence in service delivery, businesses need to engage in a process of continuous improvement (Zeithaml, *et al.*, 1990; Rust and Kannan, 2002).

According to Roberts (2003), customer service is a multifaceted construct which now includes service recovery as well as the timely delivery and provision of information. Roberts (2003) asserts that delivering quality customer service is in fact, an information-driven activity and involves the development of differentiated service strategies for a wide range of customers and providing them with a service experience appropriate to their value. It also involves leveraging information in order to identify, target, segment and profile high value customers. Chen (2005) supports this view, suggesting that service delivery through information provision is now widely acknowledged as a “value-added” proposition and driver of customer acquisition and retention (see for example, Plant, 2000; Sterne, 2000; Rust and Kannan, 2002; Roberts, 2003; Chen, 2005).

Innovations in service delivery are numerous and the technological solutions for deploying services electronically are advancing rapidly (de Ruyter *et al.*, 2001), while a self service marketplace, in which customers can help themselves in finding information and purchasing products is fast developing (Earle, 1999). Technologies such as the Internet and WWW provide companies with a great opportunity to offer high quality services (e-services) at a fraction of the cost of other service delivery mechanisms such as call centres. Provision of e-service (online service) provides a unique platform for service providers to offer new models for service design strategies and new service development (Boyer *et al.*, 2002). According to de Ruyter *et al.*,
“an e-service is an interactive, content-centered and Internet-based customer service, driven by the customer and integrated with related organizational customer support processes and technologies with the goal of strengthening the customer-service provider relationship”.

The use of an enhanced service portfolio that includes online service provision may improve the value of a relationship between a provider and its customers (Alsop, 1999). de Ruyter et al. (2001:185) assert that delivering value-added services to customers online “seems increasingly important for gaining a competitive edge by strengthening relationships with key (e)-constituencies”. Value added service is seen as both “a source of additional customer satisfaction and retention as well incremental revenues” (Voss, 2003:99). According to Voss (2002; 2003) a value-added service focuses on development and deployment of strategies to assist customers with various types of exchange and experience as well as the exploitation of information.

The increasing capabilities of computer and telecommunications technology equip firms with an opportunity to differentiate themselves from the competition by deploying technologies that efficiently and effectively resolve a customer enquiry either through a human medium (eg. Voice-to-voice and agent-facilitated email, fax, or postal contact) or directly from a computer (WWW contact). These technologies also enable firms to gather market intelligence (Roberts, 2003). Empowering the customer by providing fast and seamless access to information is a critical driver of this approach to customer service delivery. (Roberts, 2003; Sterne, 2000). Sterne (2000) suggests that firms which base their success on providing outstanding customer service need to demonstrate a commitment to developing resources that give
the customer the response they need via service delivery channel considered by the
customer to be most appropriate (Sterne, 2000). Thus, customer service provision for
many firms has now become a high-technology focal point (Cusack, 1998).

Increasingly, firms are confronted with the difficulty of meeting rising service
expectations of both consumers and business customers in a cost effective manner.
Figure 2.1 below, suggests an evolution in the way customer service is delivered that
has the potential to improve service while at the same time, reducing the cost of
delivering it. This involves moving away from complete reliance on live customer
service provision through telephone call centres to Web-enabled customer self service
provision (Roberts, 2003). The ultimate step is to anticipate customer service needs
before they are even recognised by the customer, through proactive and intuitive
customer-centered service provision. (Roberts, 2003).

In order to make customer service more cost-effective and gain the benefits of this
new concept in service delivery, technology must be part of the equation (Woodruff,
1997). According to Woodruff (1997) customer service is increasingly being shaped
by the capabilities and limitations of technology. As a result, the contemporary
customer care environment today focuses on two key elements 1) the use of
technologies that have the potential to minimise contact time with the customer, and
2) the use of voice-to-voice contact techniques which enable service agents to
efficiently and effectively handle customer enquiries and service problems with a minimum of difficulty (Woodruff, 1997; Roberts, 2003).

While both elements of customer service are demonstrated contributors to cost reduction and potentially increased customer satisfaction, they often fall short of fulfilling the proposition that every customer contact is an opportunity not only to gather market intelligence, but to actually resolve the customer’s service problem on the first point of contact (Sterne, 2000; Roberts, 2003). In order to realise the benefits that this new approach provides, it is crucial that processes be in place to facilitate timely and satisfactory resolution of every customer service problem, irrespective of the service delivery medium used (Zeithaml et al., 2002; Sterne, 2000; Rust and Kannan, 2002). In respect to service provided through online service channels, Plant (2000) suggests that customers will build a relationship with a firm only if their service level expectations are met. Plant (2000) further suggests that if a firm stops adding or providing value to its customers through the online channel, it risks losing them to other suppliers or to traditional service channels with potentially higher cost structures.

2.3 Customer Service on the Web

Supporters of online customer service are attempting to convince companies that the best adjunct (or replacement) to contemporary forms of customer service and support is to allow customers direct access to information via the Web. According to Plant (2000) the Internet and WWW are principal drivers of the new customer service phenomenon. Additionally, Web-based technologies have brought about a range of new customer service opportunities previously only dreamt about. As a consequence,
firms are spending large amounts of time and effort determining how these new components of service can be leveraged to advantage (Sterne, 2000). The Internet and WWW provide the platform to offer new and innovative forms of customer service to a wider range of customers that is potentially faster, more reliable, efficient and seamless in delivery (Plant, 2000).

As the Web becomes more sophisticated, it is likely that firms will put more emphasis on online customer service and support, diverting as many customer service requests as possible away from costly call centres and ultimately looking to downsize or eliminate them (Sterne, 2000). For many firms, the Web may become the focal point of all customer service, with a supplementary force of telecommuting service agents dealing with emails, faxes, and exceptional service requests (Roberts, 2003). In the future, customers may even be charged a premium for not using the Web or other similar mediums. In the meantime, progressive companies will put as much information as possible online, enabling the customer to search knowledge bases, update their account information, review invoices and other charges and place and track orders (Cusack, 1998).

The two primary drivers of success of the Web and other online networks (such as Extranets) as mediums for the delivery of customer service and support are cost and convenience (Plant, 2000; Roberts, 2003). As a viable alternative to the high cost of voice-to-voice customer service, the Web is the ideal medium to give the customer direct access to problem-solving information (Roberts, 2003). The frustration of sifting through the often “interminable menus and monotone inflexibility” of voice response is diminished as the customer embraces the intuitive graphical interface and
information availability which is potentially much greater than even the most “sophisticated” interactive voice response (Roberts, 2003).

2.3.1 Advantages

The Web promises the customer access to large amounts of information 24 hours a day, 7 days a week. Additionally, the graphical presentation of information has the potential to make it more interesting. The provision of direct telephone links to service agents from websites gives customers an immediate “out” when they have exhausted their search options. A key driver of the success of the Web as a customer service and support medium will be a firm’s ability to convince repeat users that whatever is represented online is also advocated consistently by every customer service agent (Roberts, 2003). For many firms, the Web is now the acknowledged medium for delivery of company policies and procedures, with a database reflecting more than 80 percent of contacts normally received by traditional customer service environment (Roberts, 2003).

Customers on the Web can also interact directly with a firm’s voice response system in order to conduct transactions and/or place an order for an item from a fax-on-demand facility (Plant, 2000). If voice-to-voice interaction with a service agent becomes necessary, the customer can link to the call centre via Internet telephony, or at least receive a message advising when a service agent will contact them (Sterne, 2000).
2.3.2 Shortfalls
At best, the “Web-centric” customer should be given the same access to personally relevant information as the average call centre service agent (Sterne, 2000). However, difficulties with natural language reasoning (the ability of software applications to interpret freeform textual input) may not suffice in providing relevant responses to complex searches (Cusack, 1998). Additionally, customer recognition and acknowledgement of privilege and contact history remain elusive for most websites. Major drawbacks of Web usage include impersonality, technological limitations and speed of response (Cusack, 1998).

2.4 Customer Value Considerations
Increasingly, business needs to acknowledge that the provision of customer service is an important dimension of the business cycle and development of a service strategy that adds value to the customer experience is crucial to business success (Harris, 1996). Plant (2000) stresses that for customers of Internet-based firms, added value means low cost transactions, with easy-to-use, ergonomic interfaces backed up by information-rich excellent global service, made available when and where needed. Plant (2000) further stresses that development and execution of a viable service strategy across all segments of a firm’s online service value chain is vital to achieving this goal.
The online customer value chain (adapted from Plant, 2000) is depicted in Figure 2.2, below.

The online service value chain comprises four components: customer acquisition, purchase support, fulfillment support and customer retention. Examination of each facet and its linkages enables the firm to determine its service strengths and weaknesses, thereby assisting in the development of a successful online service strategy (Plant, 2000).

2.4.1 Customer Acquisition

According to Plant (2000), in the acquisition stage, the organisation aims to provide information to potential customers, reinforce its brand and move the customer into the second (purchase support) stage. However, providing the *stickiness* required to achieve this is not easy (Plant, 2000). In the initial interaction with a Web-based customer service system, the customer will want fast access to easily absorbed information and data, as well as being able to navigate easily through the service channel to gain a clear understanding of how to progress to more detailed information. A key focus of this stage in the customer interaction with the service channel is
matching the customer’s psychological, technological and demographic profile with that of the channels initial and ongoing impact (Plant, 2000).

The goal of the initial interaction between the customer and the service channel is to use content to move the customer toward the “sell” phase, which is executed in the second stage of the interaction. The focus of the service strategy at the acquisition stage is value-add provision (Plant, 2000; Chen, 2005). For example, OfficeDepot offers a Small Business Handbook and gives free consulting advice to small business customers in the hope that it will encourage the customer to return to the site and continue to do business with them (Plant, 2000:142). Creating a balance between information provision and delivery speed is an essential consideration (Plant, 2000).

2.4.2 Customer Purchase Support

Having moved the customer to the point of making a purchase, the acquisition stage philosophy is then adapted to steer the customer toward a completed transaction (Plant, 2000). The drivers in purchase support phase are focused on two issues:

- Facilitating the customer in making a trade, and
- Providing an environment that the customer will relate to in an efficient, informative and productive way (Plant, 2000).

To achieve this, firms should use a low-key approach, in order to speed up access and maximise their customer base. The focus is on giving customers the ability to order supplies quickly and efficiently, while at the same time, providing the service to support it (Plant, 2000). For example, at OfficeDepot.com a service focal point is their “Account Centre” which allows customers to create customised orders, order by item
number, or search the database for an item, all of which reduces re-order time (Plant, 2000:146). From purchase support the focus moves to fulfillment.

2.4.3 Customer Fulfillment

Once a trade has been made, the service dynamic has to be carried through customer fulfillment, when the purchased item is dispatched and delivered. This component of the purchase cycle has separate dimensions depending on the nature of the market space in which the online firm operates (Plant, 2000). Item return is a strong component of customer fulfillment. If the customer relationship is to be maintained at a satisfactory level, a significant amount of focused effort on the part of the firm is required (Plant, 2000). The return of an item often requires greater amounts of participation by the firm and seamless facilitation of this phase can act to enhance the service dynamic in the eyes of the customer (Plant, 2000).

2.4.4 Customer Continuance and Support

The final stage in the online service value chain is the ongoing development of the customer-provider relationship. The goal of this stage is facilitating further online purchases and enhancing the lifetime value of the customer (Plant, 2000). This stage of the interaction largely builds on the service provided through the previous three stages. Service quality will often determine the winner in situations where price is consistent across providers (Plant, 2000). B2B in particular, dictates service that facilitates a quick turnaround from order to delivery, coupled with the ability to customise orders and the provision of information that helps the office manager run that function more efficiently (Plant, 2000). It is this last dimension that is the hidden service dimension that the Web provides and ultimately binds the customer to the
provider, while at the same time, leading to mutually beneficial relationships (Plant, 2000).

2.5 B2B Service on the Web

As indicated earlier, the Internet is altering the nature of relationships with customers and other stakeholders and extending the base of those who interact meaningfully with online businesses (Roberts, 2003). Further, the Internet enhances speed and affects timing of business activities. Corporate boundaries blur as information moves freely between them and the most effective organisation in this situation is often a virtual one (Plant, 2000; Chen, 2005; Sterne, 2000). A firm’s website acts as a bi-directional information exchange system providing a platform for transacting and delivering customer service (Quelch and Klein, 1996). This environment takes on new and challenging roles and marketplaces are increasingly dealing in services, not just in tangible products (Plant, 2000). In the online environment, businesses may be committed to serving more than one customer segment, although it will also market to relational buyers in a way that is noticeably different from the marketing approach to transactional buyers (Roberts, 2003). Transactional customers focus on a single transaction and tend to be more price conscious, while relational customers focus on a series of transactions over time and tend to be more concerned about value and service (Roberts, 2003). Above all, relational customers seek high quality service and are concerned about website functionality, and as intensive users of Web-based customer service systems are less sensitive to price (Cusack, 1998). These customers focus on building trusting relationships and value-add service provision.
Practitioners are still somewhat confused about the role of a website plays in a portfolio of customer service initiatives, especially in designing and evaluating the effectiveness of Web-based customer service systems (Plant, 2000).

It is imperative for firms to maximise the payoff from their online investment by ensuring that customers receive high value when they interact with them through their website (Plant, 2000; Chen, 2005). The rising importance of services delivered through an online channel as a source of customer value has long been acknowledged (Bharadwaj et al., 1993; Lovelock and Yip, 1996). Online channels “serve” the service parameter by enabling firms to grow their customer base through the provision of innovative services, while at the same time, assisting them in retaining more customers in long-term relationships (Plant, 2000). The Business Network of Australia stresses: the power of the customer relationship as a source of business value cannot be underestimated. This is evidenced in a statement released by the network in 2005: “today the value in business is in relationships”.

This position is supported by OfficeDepot.com, a highly successful online seller of office products in their acknowledgement that its success is “driven by an uncompromising commitment to superior customer service, building mutually beneficial customer relationships and a company-wide attitude that customer satisfaction is everything” (www.officedepot.com/corpinfo/mission/asp).

A recent study of CRM on the profitability of high-tech firms provides further insight into the importance of customer service relationships in the B2B space. Accounting firm Accenture found that excellent CRM performance could improve a company’s
return on sales by as much as 64% over merely average performance. For each billion dollars in sales Accenture estimated impact on increased profitability as follows:

- Customer Service $42 million
- Sales and Account Management $35 million
- Marketing $34 million

Singh (2002) stresses that B2B relationships are heavily based on value add information exchange which has a fundamental effect on market growth and structure. In business markets, the provision of effective customer service is becoming increasingly important as more and more firms look to information technology in an attempt to reduce transaction costs, gain advantage in the marketplace and increase profitability (Garau, 2003; Suradjaja et al., 2003). Information technology provides a base on which service providers can design, develop and potentially deliver superior service to the customer. According to Suradjaja et al., (2003), customer service includes all aspects focusing on customers’ requirements (including pre and post-transaction activities concerned with the delivery of products and/or services) within a service-level agreement. The Internet has also played a role in increasing customer expectations about service quality. Throughout the global economy, the enduring list of complaints about customer service suggests that most companies are either not hearing the message or have not mastered the technique (Sterne, 2000). In the B2C space, Datamonitor estimated that poor service cost Internet retailers $6.1 billion in 1999 and that lost sales could skyrocket to $173 billion in a few years. Corresponding figures for B2B firms is more difficult to find, however, anecdotal evidence suggests that B2B customers have equally poor customer service experiences. A December 2001 study by the Yankee Group found that only 63% of B2B sites offered search
facilities for products and information, and even fewer, 55% offered online customer service and support.

Although most of what is known about customer expectations of online service systems comes from research centering on consumer websites, there is no reason to suggest that the expectations of business customers are not equally demanding (Roberts, 2003). Roberts (2003:334) goes on to suggest “It might be even reasonable to suggest that these same consumers in their business customer role, may be even more demanding”

2.6 Online Service Design and Delivery

Service design and delivery in general invokes a series of steps that impact every aspect of customer service and for firm’s focusing on delivering exceptional service two objectives must be accomplished simultaneously (Ramaswamy, 1996). The firm must 1) be able to meet their service commitments reliably and consistently, and 2) be able to create an individual approach, essentially integrating a good service design with effective service delivery. Ramaswamy (1996) cites design and delivery as the foundations on which the edifice of online service is constructed. de Brentani (1993) provides support for this assertion, arguing that firms tend to use “a hit and miss approach when planning new services where: ideas are generated and defined in a haphazard fashion, limited customer research is carried out prior to planning the design, service designs often lack creativity and precision, and do not incorporate the appropriate technology, testing for possible fails is rarely done, and market launch is often characterized by trial and error” (de Brentani, 1993:18).
According to Ramaswamy (1996), *service design* refers to the components that are planned into the service and considers the nature of facilities where the service is provided, the service delivery process and the features of the service offered. Further, the ability to effectively and efficiently supply the performance level expected by the customer is dependent on the quality of service design. Ramaswamy (1996) further suggests that service design is an indicator of the stability and reproducibility of the service performance.

*Service delivery* refers to the manner in which the service is offered to the customer during a service encounter. The *perceived quality* of the delivered service depends on the customer’s prior experience with the service, their mood and stress level, the specific nature of the interaction between the service provider and the customer and the mutual roles played by each (Ramaswamy, 1996). Therefore, the delivery of the service acts as an indicator of the heterogeneity and individuality of the service encounter.
The design and delivery components of online service are depicted in Figure 2.3, below.

**Figure 2.3 Design and Delivery Elements of Online Service (Adapted from Ramaswany, 1996)**

### 2.6.1 Elements of Design

Online service design considers aspects of 1) customer requirements for what is needed from the online service and 2) the performance standards that the service needs to satisfy for the specifications of the service design (Ramaswamy, 1996). Online service design consists of four related components:

- *Service product design* refers to the design of the physical attributes of the service (for example, a service and support system provided via a website).

- *Service facility design* is concerned with the design of the facility where the service is delivered (the design of the website). In the case of service provided
through a Web-based service channel, customer perceptions of the quality of the service are influenced by attributes such as site aesthetics, structure and layout of Web pages, components and hyperlinks, navigation and search facility that comprise the service delivery environment. In addition to these customer-facing facilities, back-end facilities such as hardware, software, databases and information retrieval systems also need to be designed. The efficiency of service operations depends on the configuration of these facilities.

- *Service operations process design* refers to the activities required to deliver or maintain the service, those activities that are needed for the service to deliver its output.

- *Customer service process design* relates to the activities comprising the online interactions between the service provider and the customer (Ramaswamy, 1996:14-15).

### 2.6.2 Elements of Delivery

An overlap exists between with service design and delivery in the execution of the service and in the environment in which the service exchange takes place (Ramaswamy, 1996). New customers, each with their own experience and/or expectations come with each online service encounter. The perceived attributes of the environment in which the service is delivered, or the performance of the service, can therefore be influenced by a particular experience of the online service encounter (Cusack, 1998; Rust and Kannan, 2002). In order to maintain the flexibility to deal with special cases and individual situations, the service provider is charged with constraining the level of variation in delivery of the service to ensure that
performance levels are consistent across all service delivery processes (Cusack, 1998; Rust and Kanna, 2002). This can be achieved by designing transactions to take place effortlessly, routinely and predictably. This in turn, frees the service provider to fulfill unique customer requests, and deliver the extra level of personalised service that may be needed to satisfy even the most particular customer (Ramaswamy, 1996). According to Cusack (1998), neither good design nor good delivery alone is adequate, suggesting that in some service situations, however, that one or the other element may take precedence.

2.6.3 Additional Design Considerations

In addition to the service design components detailed above, the following elements of design also need to be considered.

*Interface Design*

*Ease of use* is of major importance in any user interface design. It allows users to perform tasks more easily and reduces complaints and customer support problems as well as representing a more intuitive, direct means of human interaction with system software (Cusack, 1998). Although an interesting graphical interface may promote ease of use, it is not sufficient on its own, and users may not understand menu labels, be able to easily identify icons, or remember mouse functions (Cusack, 1998; Simms, 2002). Another factor that may need to be considered in order to ensure user satisfaction, involves the addition of “intelligence” to the user interface (Cusack, 1998; Nielsen, 2000).

The push to exploit online customer service and support, along with the evolution of the Web is expected to also change the focus of online customer service toward
applications such as online documentation and troubleshooting (Cusack, 1998; Ramaswamy, 1996). As more customers are given the opportunity to resolve their own service problems and inquiries online, it is crucial that online customer service and support systems be as intuitive and useful as possible (Cusack, 1998).

**Technology**

Despite the potential of contemporary technological solutions, the ability to provide excellence in customer service “clearly requires ongoing senior management recognition of its role as an integral part of the provider’s value chain, not just an investment in a conglomeration of binary configurations” (Roberts, 2003:4). Driven by constantly changing processes and rigorous content engineering, technology provides an opportunity to “delight the customer by providing timely, accurate, clear and complete solutions to inquiries and problems” (Roberts, 2003:4).

Despite the potential of technologies such as the Internet and WWW to assist service providers in achieving this goal, it is a sad reality that many firms today see technology as a solution in itself (Ramaswamy, 1996). While technology use in service delivery environments may be viewed as a value added strategy with the potential to assist firms in gaining advantage in the marketplace, poorly designed and maintained systems can actually have an undesirable impact on customer satisfaction (Ramaswamy, 1996; Hong et al., 2002; Ostrom et al., 2002).
According to Roberts (2003), regardless of the system used, a number of shared traits of successful customer service applications exist.

- **The system should facilitate interaction with the customer**

One difficult challenge facing online customer service is designing systems that facilitate human interaction (Roberts, 2003; Simms, 2002). However, the concept of human-computer interaction is not always well understood by designers and developers of online customer service systems (Roberts, 2003; Hong et al., 2002). A skilled designer will take into account aspects of successful implementation as well as the aesthetics of the site from the user’s perspective. This is achieved through continual testing and user feedback loops to ensure that the system works intuitively in the real world (Roberts, 2003). A system should not be implemented until it is clear that it meets customer needs and is situated in the business context.

- **The right information should be easy to find**

Well designed systems often do nothing more than create elaborate space for content (Roberts, 2003; Simms, 2002). Finding specific information with minimal effort is often a concern for the user. Presentation, speed of access, and ease of use are all important components of technology-mediated service delivery systems. Users who cannot find the information they are looking for quickly will dismiss even the most highly developed systems as worthless (Roberts, 2003; Simms, 2002; Hong et al., 2002). There is no point in spending millions of dollars to implement online service systems if users have to perform unnecessary or complex tasks in order to resolve their online service needs.

While developers and users often have differing views on how they should interact with technology, no one doubts that the best way to unleash the power of a specific
application is to make the process of human-computer interaction as natural as possible (Cusack, 1998; Nielsen, 2000). Therefore, those responsible for acquiring information, composing it and ultimately presenting it online should ensure that they are positioned as close to the user as possible (Roberts, 2003; Hong et al., 2002).

- **The information on the site must be understandable**
  Although a provider may have implemented a well designed online customer service system that makes the right information easy to find, a key question is “Can the user understand the information as it is presented?” which highlights the critical content issues of style, vocabulary, legibility, presentation and interpretation (Roberts, 2003; Simms, 2002).

- **The information must be accurate**
  The necessity for continual feedback loops within a firm as well as the importance of regular content maintenance is critical (Roberts, 2003). If a customer accesses a website to read about a promotion that ended days before, it can be detrimental to the business. The processes for gathering information and developing robust and timely information update mechanisms across the firm are also key considerations.

**Content**

The focus from a content perspective is on acquiring, building and maintaining knowledge and using technology to distribute this knowledge through various customer service channels. This task is often challenging and time intensive (Cusack, 1998; Sterne, 2000; Roberts, 2003; Simms, 2002). As a result, customer service managers are often willing to allow support teams working remotely (knowledge and documentation engineers and systems development groups) to collaborate on the development of content mechanisms such as scripts, troubleshooting systems, online
documentation and help systems (Cusack, 1998; Sterne, 2000). Cusack (1998) cautions that in doing this; managers often remove themselves from the processes and technologies that need their support and involvement in order to succeed. According to Cusack (1998), well designed and properly deployed online information retrieval systems can result in reduced costs, enhanced market intelligence through automated data gathering functions and higher levels of customer satisfaction.

Content is defined as information required to enable a user to resolve a particular inquiry or problem (Cusack, 1998; Simms, 2002) and includes user instructions, policies and procedures, troubleshooting information and any other information that might be useful in the context of a customer contact (Cusack, 1998; Hong et al., 2002). The goal of content provisioning is to provide knowledge to users in a timely, clear, accurate, relevant, usable and integrated manner (Cusack, 1998; Simms, 2002).

The success of an information retrieval system is dependent on meeting the overall goals of the customer service environment and should:

- Respond to user search requests within x seconds
- Present a structure and interface that is intuitive to any user
- Automatically capture specific user interactions for root cause analysis purposes
- Automatically capture data for contact tracking purposes
- Retrieve information that is relevant to the customer inquiry or problem
- Retrieve information that is easily understood
- Retrieve information that is complete
- Retrieve information that is accurate (Cusack, 1998)

Rapid and reliable responses to customers’ inquiries and complaints can potentially improve customer service and build customer loyalty while facilitating the gathering
market intelligence and establishing intra-organisational feedback loops (Cusack, 1998; Hong et al., 2002). Cusack (1998) suggests that customer service information retrieval systems should meet the following criteria:

- **Accessibility**
  Accessibility relates to the measurement of the *speed of response* and *ease of use*. *Speed of response* may include the time taken to respond to user input, such as a database search (Cusack, 1998; Simms, 2002). *Ease of use* generally relates to the “human factor” issue of developing intuitive user interfaces and involves components such as information structure and presentation and automated data capture and search. A poorly designed user interface is especially troublesome at the direct customer interaction level (e.g. WWW), where it can result in calls to customer service that should have been resolved by the customer themselves (Cusack, 1998; Sterne, 2000).

- **Integration**
  The most effective information retrieval systems are capable also of automatically gathering data that can later be used by management, therefore assisting in root cause analysis, updating of customer records automatically and generating information electronically to be emailed to the customer (Cusack, 1998; Simms, 2002).

- **Relevance**
  Cusack (1998) suggests that if a customer has to spend huge amounts of time sifting through the results of a search to determine what information retrieved is relevant to a particular inquiry, it may be an indicative of a poorly designed database or inadequate user interface (Hong et al., 2002).

- **Clarity**
  Once the correct information has been retrieved, it is crucial that the customer is able to quickly assimilate the content. This requires a large amount of planning and
maintenance as well as high-level communication skills on the part of the documentation and knowledge creators (Cusack, 1998).

- **Integrity**

Integrity consists of two key components, *completeness* and *accuracy*. Cusack (1998) stresses that it is conceivable that when an information retrieval system is initially implemented, it may not contain the answer to every customer inquiry or problem. Further, those addressed may not always be accurate. Rapidly fixing incomplete, erroneous, or previously nonexistent information is therefore a goal of the documentation or knowledge engineer assigned to maintain the integrity of these systems (Cusack, 1998; Simms, 2002).

### 2.7 Summary

This chapter presented and discussed the evolution of the service delivery concept. First, it discussed the infusion of technology in services and the role of the Web in online service delivery. Next, the online customer service value chain and B2B online service relationships were presented. The chapter concluded with a discussion on the key considerations in the design and delivery of online customer service. The following chapter discusses service quality measurement and presents a review of extant literature on the measurement of traditional service quality and emergent approaches to online service quality measurement.
3.1 Introduction

Chapter 2 presented a review of existing literature on the evolving customer service delivery concept, the role of technology in service delivery and customer relationships in online business markets. This chapter presents and discusses traditional service quality, its conceptualisation and measurement. Extant literature on online service quality (OLSQ) and existing approaches to measurement of the construct is then presented and discussed.

3.2 Traditional Service Quality

Research into the determinants and measurement of service quality spans more than three decades. In the marketing literature, conceptualisation of the service quality construct centres on perceived quality, which is defined as a consumer’s judgment about an entity’s overall excellence or superiority (Parasuraman et al., 1988). In the extant marketing literature, two perspectives on service quality measurement have been adopted: the American perspective (Parasuraman et al., 1988; Rust and Oliver, 1994) and the Nordic perspective (Gronroos, 1982). Three broad conceptualisations of service quality have been proposed. The first, proposed by Gronroos (1982; 1984) defined the dimensions of service quality in global terms as being both functional and technical in nature (Zeithaml, 2002). The second approach, proposed by Parasuraman et al. (1988), describes service quality dimensions in terms of service-encounter
characteristics (reliability, responsiveness, empathy, assurance and tangibles). The third approach, (Rust and Oliver, 1994), considers overall perceptions of service quality to be based on the consumer’s evaluation of three service encounter dimensions: the customer-employee interaction, the service environment and the service outcome (Chumpitaz and Paparoidamis, 2004). However, it is not clear which of these conceptualisations and pattern of dimensions is the most relevant (Rust and Oliver, 1994; Brady and Cronin, 2001).

Early research on service quality (Sasser et al., 1978; Gronroos, 1982; Lehtinen and Lehtinen, 1982; Lewis and Booms, 1983), suggests that service quality stems from a comparison of what customers feel a business should offer (ie., their expectations) with the service provided (Zeithaml et al., 2000). This perspective (service quality as a function of the expectations-performance gap) was strengthened by a broad-based exploratory study conducted by Parasuraman et al. (1988). Parasuraman et al.’s (1988) study also revealed a set of 10 dimensions of quality that customers use as key criteria in evaluating service quality. Using these dimensions as a starting point, Parasuraman et al. (1988) conducted empirical research in a number of industry sectors to develop and refine SERVQUAL, a multi-item measure to quantify customers’ global assessment of a company’s service quality. The scale involved expectations-perceptions gap scores along 5 refined dimensions: reliability, responsiveness, assurance, empathy and tangibles.

Since its introduction over two decades ago, a number of academic researchers (Eg, Carmen, 1990; Cronin and Taylor, 1992; Teas, 1993) have tried to replicate SERVQUAL’s structure and conceptualisation (Kang and James, 2004). As a result,
research on the instrument is widely cited in the marketing literature and its use in industry has become widespread (Brown et al., 1993). Notwithstanding, SERVQUAL has prompted considerable debate in the service quality literature. Key questions raised centre on 1) the need for measuring expectations (Babakus and Mangold, 1992; Cronin and Taylor, 1992, 1994), 2) the interpretations and operationalisation of expectations (Teas 1993, 1994), the reliability and validity of SERVQUAL’s gap-score formulation (Babakus and Boller, 1992; Brown et al., 1993) and 3) SERVQUAL’s dimensionality (Carmen, 1990; Finn and Lamb, 1991).

Cronin and Taylor (1992) suggest that the SERVQUAL approach (Parasuraman et al., 1988) to conceptualisation and operationalisation of service quality is inadequate. The authors provide support for Carmen (1990), who suggests that there is little theoretical or empirical evidence to support the relevance of the expectations-performance gap as the basis for measuring service quality. Cronin and Taylor (1992) go on to suggest that there is considerable support in the marketing literature for the superiority of performance-based measures of service quality (see for instance, Bolton and Drew, 1991; Churchill and Surprenant, 1982; Woodruff et al., 1983). In 1992, Bolton and Drew conducted a study based on a comparison of alternative measures of service quality, comparing SERVQUAL (Parasuraman et al., 1985) with an alternative scale, SERVPERF (Cronin and Taylor, 1994). SERVPERF is a performance-based approach to the measurement of service quality, based on customer perceptions of the delivered service. The results of this study support the use of performance-based measures (SERVPERF) of service quality over gap measures (SERVQUAL). Further evidence to support this notion is provided by Peter et al., (1993), Babakus and Boller (1992) and Babakus and Mangold (1992).
Notwithstanding, research to date has focused on using the SERVQUAL instrument or modified versions of the scale. However, there has been no general agreement in the marketing literature as to the nature or content of the service quality dimensions (Brady and Cronin, 2001). Nevertheless, researchers are generally in agreement about the multidimensional nature of the service quality construct (Parasuraman et al., 1988; Gronroos, 1990; Cronin and Taylor, 1992).

3.3 Service Quality Research in Business Markets

In business markets, service quality is defined as “conformance to requirements between buyers and sellers” (Eriksson, 1999:361), and includes process aspects related to responsiveness (including delivery) and outcome aspects such as availability and punctuality (Parasuraman et al., 1985; Gronroos, 1990; Gemmerus et al., 2004). Eriksson et al. (1999) posit that suppliers and customers are dependent on business relationships to get information about each other’s requirements and perception of service quality which change over time. Conformance to business partner service needs requires resources which involve technical and/or functional aspects of the delivered service (Eriksson et al., 1999), which relate to the actual delivered service (technical aspects) and how the service is provided (functional aspects). According to Eriksson et al. (1999), much of the research into the determinants of service quality in traditional service delivery environments is grounded in consumer exchanges, ignoring the fact that business markets are different. Research on B2B marketing has demonstrated that the business relationship is characterised by closer and deeper interactions than consumer relationships (Lovelock, 1983; Gronroos, 1990; Gummeson, 1987; Berry, 1999; Bitner, 1992).
According to Kong and Mayo (1993), successful business relationships are based on regular and innovative interactions. In these relationships, businesses exchange a range of resources such as information, knowledge, products and services (Lovelock, 1983). A basic requirement for developing service quality in business markets is access to such resources (Eriksson et al., 1999). In these markets, the supplier has an opportunity to conform to customer requirements as the buyer transfers information about his/her business service needs to the supplier over the term of the relationship. According to Parasuraman et al. (1985), supplier-perceived service quality is an outcome of the supplier’s competence base. The authors argue that competence is an antecedent to service quality and the capacity of the supplier to combine resources and expertise to meet the requirements of the customer.

Much of the dominant research into the determinants and measurement of service quality in traditional business markets uses the SERVQUAL approach developed by Parasuraman et al. (1988). SERVQUAL has been used to measure service quality in a range of offline business contexts (including banking, training and recruitment, software development and maintenance, ocean freight, shipping and information systems). The results of these studies suggest that SERVQUAL exhibits acceptable levels of reliability and validity as a measure of B2B service quality. However, Kong and Mayo (1993:10) suggest that the five categories of SERVQUAL “do not have uniform frames of reference for each situation in the B2B context” and due to the functional differences in relationships and processes which constitute service quality in B2B service contexts, a modification to the SERVQUAL approach is necessary.
3.4. Online Service Quality Measurement

Much of the extant service quality literature is dominated by human-delivered service, however, the rapid proliferation of new technologies and growth in customers’ use of self-service technologies (SSTs) has been accompanied by recent research which proposes frameworks and guidelines for designing effective self service delivery systems (Bitner et al., 2000; Dabholkar, 2000; Meuter et al., 2000). Early conceptualisations of services were created to capture the interpersonal nature of service encounters (Meuter et al., 2000), and may not be adequate to capture specific characteristics of customer interactions with self-service technologies (SSTs) (Dabholkar et al., 1996). Recent studies focusing on specific self-service technologies have highlighted differences in customer beliefs about and reactions to these technologies (Cowles, 1989; Cowles and Crosby, 1990; Eastlick, 1996). However, these studies don’t specifically deal with customer assessment of online service quality (Zeithaml et al., 2002). The importance of service quality and the challenges facing online service provision requires insight on the part of managers concerning what attributes customers use in their evaluation of online service quality (Yang et al., 2004). In highlighting the distinction between human-centred and technology mediated service interactions, Zeithaml et al. (2002:6) stress that “emergent research on the role of SSTs in service delivery reinforces the need for a fresh examination of the nature and drivers of perceived online service quality”.

Despite the fact that service quality research has been a major field of interest in services marketing for more than three decades (Zeithaml et al., 2002), research into the determinants of online service quality has been largely anecdotal (eg. Kaynama and Black, 2000; Jun and Cai, 2001; Aladwani and Palvia, 2001). This is particularly
the case in online business markets, where research into the determinants and measurement of service quality has not explicitly addressed the B2B online service domain. Several approaches to studying online service quality in consumer markets have been proposed. The first, uses existing services theory (Gronroos, 2001; Kaynama and Black, 2000; Zeithaml, et al., 2000; O’Neill, et al., 2001). The second category utilises generated new categories for self-service technologies (SSTs) (eg. Dabholkar et al., 1996; Meuter, et al., 2000) or e-services (eg. Szymanski and Hise, 2000; Van Riel, et al., 2001; Van Riel et al., 2003; Wang and Tang, 2001; de Ruyter et al., 2001). The third category uses information systems and emergent web quality theory (eg. Barnes and Vidgen, 2000; 2001(a); 2001(b); 2002; Aladwani and Palvia, 2001).

Studies undertaken by IS researchers over the past few years (see for example, Szymanski and Hise, 2000; Van Riel, et al., 2001; Wang and Tang, 2001; Barnes and Vidgen, 2000; 2001(a); 2001(b); 2002; Aladwani and Palvia, 2001) have developed conceptual models of web quality, or instruments to measure the quality construct. These studies were developed from the longstanding body of IS literature that examines numerous aspects of data quality, information quality, software/system quality, documentation quality, information systems service quality, global information systems quality function and emerging literature on web quality (Aladwani and Palvia, 2001). Existing web quality research is limited in that it discusses the meaning of some aspects of web quality in a descriptive manner without delineating its major dimensions or providing scales to measure it (Aladwani and Palvia, 2001). In addition, much of the early academic research has focused on a limited set of variables rather than a comprehensive view of online service quality.
(Parasuraman *et al.*, 2005), focusing mainly on the perspectives of web designers and developers. More recent research has taken a broader approach to identifying determinants of service quality in a range of online contexts (Yang *et al.*, 2004; Liljander *et al.*, 2002; Parasuraman *et al.*, 2005). These and other published studies relevant to the current research are summarised in Table 3.1, and discussed in more detail below.

<table>
<thead>
<tr>
<th>Study</th>
<th>Method</th>
<th>Dimensions</th>
<th>Focus</th>
<th>Measure</th>
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<tbody>
<tr>
<td>Rice (1997)</td>
<td>Surveyed visitors to 87 websites</td>
<td>Good content/information and enjoyment experience</td>
<td>Drivers of revisit to EC websites</td>
<td>E-QUAL</td>
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<tr>
<td>Liu &amp; Arnett (2000)</td>
<td>Literature Review Survey 689 Webmasters</td>
<td>Quality of information and service, system use, playfulness and system design quality</td>
<td>EC website service quality</td>
<td>Survey</td>
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<tr>
<td>Kaynama &amp; Black (2000)</td>
<td>Literature review &amp; Website evaluation</td>
<td>Content/purpose, accessibility, navigation, design and presentation, background, responsiveness, personalization and customisation</td>
<td>Online travel agency service quality</td>
<td></td>
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<tr>
<td>Szymanzki &amp; Hise (2000)</td>
<td>Literature review Survey 1007 Internet shoppers</td>
<td>Convenience, product offerings, product information, site design and financial security</td>
<td>e-satisfaction with online shopping</td>
<td>Online survey</td>
</tr>
<tr>
<td>O’Neill <em>et al.</em>, (2001)</td>
<td>Focus groups Survey 269 students</td>
<td>Contact, responsiveness, reliability, tangibles</td>
<td>Service quality University online library service</td>
<td>Adapted SERVQUAL</td>
</tr>
<tr>
<td>Aladwani &amp; Palvia (2001)</td>
<td>Literature Review</td>
<td>Specific content, content quality, appearance and technical adequacy</td>
<td>Website Quality</td>
<td></td>
</tr>
<tr>
<td>Yoo &amp; Donthu (2001)</td>
<td>Survey 141 students to evaluate 4 online retailer websites</td>
<td>Ease of Use, aesthetic design, processing speed, security</td>
<td>Website usability</td>
<td>SITEQUAL</td>
</tr>
<tr>
<td>Cox &amp; Dale (2001)</td>
<td>Literature review</td>
<td>Accessibility, communication, credibility, understanding, appearance, availability</td>
<td>Online retail service quality</td>
<td></td>
</tr>
<tr>
<td>Yang, Peterson and Huang (2001)</td>
<td>Consumer reviews of online pharmacy websites</td>
<td>Product cost/availability, customer service and online information systems</td>
<td>Online Pharmacy Service Quality</td>
<td></td>
</tr>
<tr>
<td>Loiacono <em>et al.</em>, (2002)</td>
<td>Survey 847 undergrad students</td>
<td>Information fit to task, interaction, trust, response time, design, intuitiveness, visual appeal, innovativeness, flow, integrated communication, business process, substitutability</td>
<td>Website Quality</td>
<td>WEBQUAL</td>
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<td>Study</td>
<td>Method</td>
<td>Dimensions</td>
<td>Focus</td>
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<tr>
<td>Yang and Jun (2002)</td>
<td>Survey 271 ISP subscribers</td>
<td>Reliability, access, ease of use, personalization, security, credibility</td>
<td>Online retail service quality</td>
<td>Survey</td>
</tr>
<tr>
<td>Madu &amp; Madu (2002)</td>
<td>Literature Review</td>
<td>Performance, features, structure, aesthetics, reliability, storage capacity, serviceability, security and system integrity, trust, responsiveness, product/service differentiation and customization, Web store policies, reputation assurance and empathy</td>
<td>Online retail service quality</td>
<td></td>
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<tr>
<td>Barnes &amp; Vidgen</td>
<td>Literature review Online survey 376 students</td>
<td>Usability, information quality, service interaction quality</td>
<td>Internet bookshop service quality WEBQUAL 4.0 adapted from versions 1.0, 2.0 and 3.0</td>
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<tr>
<td>Janda et al., (2002)</td>
<td>58 interviews Survey 446 largely non-student sample</td>
<td>Performance, access, security, sensation and information</td>
<td>Internet retail service quality IRSQ scale</td>
<td></td>
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<tr>
<td>Francis &amp; White</td>
<td>Interviews &amp; survey 302 Internet shoppers</td>
<td>Web store functionality, product attribute description, ownership conditions, delivered products, customer service and security</td>
<td>Internet retailing service quality PIRQUAL</td>
<td></td>
</tr>
<tr>
<td>Van Riel et al.,</td>
<td>Interviews &amp; survey 52 portal site users</td>
<td>Core service, supporting service, user interface</td>
<td>Portal site service quality Survey</td>
<td></td>
</tr>
<tr>
<td>Liljander et al.,</td>
<td>8 Interviews Survey 246 users</td>
<td>Responsiveness, reliability, customization, assurance/trust and user interface</td>
<td>Online recruitment portal quality Adapted SERVQUAL</td>
<td></td>
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<tr>
<td>Wolfinburger &amp; Gilly</td>
<td>Focus Groups &amp; survey 1013 panel members</td>
<td>Website design, reliability, privacy/security, customer service</td>
<td>Online retailing service quality Survey</td>
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<tr>
<td>Keating et al.,</td>
<td>Online Focus Groups &amp; Survey 259 students</td>
<td>Service quality, physical aspects, reliability, personal interaction, problem solving and policy</td>
<td>Online retailing service quality Online survey</td>
<td></td>
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<tr>
<td>Santos (2003)</td>
<td>Literature review &amp; 30 Focus Groups</td>
<td>Incubative dimension and active dimensions</td>
<td>e-service quality</td>
<td></td>
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<tr>
<td>Surjadjaja et al.,</td>
<td>Literature Review</td>
<td>Service marketing, service design and service delivery</td>
<td>e-service quality provider perspective</td>
<td></td>
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<tr>
<td>Gounaris &amp; Dimitriadis (2003)</td>
<td>Literature review</td>
<td>Customer care and risk reduction benefit, information benefit and interaction facilitation benefit</td>
<td>B2C portal service quality Adapted SERVQUAL</td>
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</table>
Some measures of OLSQ in the consumer domain are ad hoc and consider only a few factors (Zeithaml, 2002). For example, Rice (1997) surveyed visitors to 87 websites to determine which factors lead to revisit. His measures include 1) Good content/information, a primary driver of revisit, and 2) enjoyment experience on the first visit, the second most important driver.
In a more comprehensive framework, Liu and Arnett (2000) surveyed Webmasters for Fortune 1000 companies to ascertain the factors critical to website success. Five factors or dimensions were measured and found to be key determinants: first, *quality of information* consisting of relevant, accurate, timely, customised, complete information presentation. *Service*, the second factor, involves quick response, assurance, empathy and follow-up. Third, *system use* includes security, correct transaction, user’s control on transaction, order-tracking facility and privacy. Fourth, *playfulness* perceived by consumers is determined by customers’ sense of enjoyment, interactivity, attractive features and enabling customer concentration. Finally, *design of the website system/interface* involves organized hyperlinks, customised search functions, speed of access and ease of correcting errors.

Using online travel agencies as a case study, Kaynama and Black (2000) applied SERVQUAL (Parasuraman *et al.*, 1988) to electronic commerce (EC) settings. The authors developed an adapted version of the measure (E-QUAL) from a review of traditional service quality literature to evaluate consumer-perceived EC service quality and identified 7 dimensions: content, access, navigation, design, response, background and personalization and customization.

Using an online survey, Szymanski and Hise (2000) studied the role that consumer perceptions of *online convenience, merchandising* (product offerings and product information), *site design*, and *financial security* play in satisfaction assessments. Aspects of customer service and fulfillment were not included in the measure. The study focused on satisfaction rather than service quality.
In an exploratory investigation of consumer perceptions of quality in online service environments, O’Neill et al. (2001) used an adapted SERVQUAL instrument to assess student perceptions of the quality of online library services at two campuses of a prominent public Australian University. However, the five factor structure suggested by Parasuraman et al. (1988), was not confirmed and proposed a more complex structure with four factors extracted: 1) Contact comprises reliability, assurance and empathy; 2) Response consists of ease of flow and waiting time; 3) Reliability comprises ability to locate specific items or information; and 4) Tangibles consists of aesthetic appeal of the website and the library environment within which it is located. Major limitations of the research include the isolated evaluation of students on two city campuses and the lack of evaluation of regional and distance students inhibiting generalisability of the results to other student contexts (eg. Regional and distance students).

In a study of Internet banking, Jun and Cai (2001) used a critical incident technique (CIT) to explore key dimensions of user-perceived Internet banking service quality and to identify satisfying and dissatisfying factors. The study considered earlier research into the determinants of service quality in general and in the offline banking environment as well as emerging research on electronic commerce websites and Internet banking. The authors identified 17 dimensions across 3 quality categories: 1) Customer Service Quality consists of Reliability, Responsiveness, competence, Courtesy, Credibility, Access, Communication, Understanding the Customer Collaboration and Continuous Improvement; 2) Online Systems Quality consists of Content, Accuracy; Ease of Use, Timeliness, Aesthetics and Security and; 3) Banking
Service Product Quality consists of Product Variety/Diverse Features. Limitations of this study include the use of customer comments regarding satisfying and dissatisfying experiences as data for the determination of key quality attributes instead of data gathered from a representative sample of banking customers. Another limitation is the lack of empirical research to validate the findings from the study.

Aladwani and Palvia (2001) investigated user-perceived web quality in a study involving student evaluations of websites. Attributes of web quality were derived from a review of academic literature and trade press articles. The review was narrowly confined to quality concepts identified in information systems research, ignoring the large body of extant and emerging marketing literature on service quality and electronic service quality. The researchers developed an empirically validated instrument to capture key characteristics of website quality from a user perspective. Four dimensions of web quality were identified: 1) Specific Content specific details about products/services, customer support, privacy policies; 2) Content Quality consists of attributes such as information usefulness, completeness, accuracy, clarity, conciseness and currency; 3) Technical Adequacy consists of security, ease of navigation, search facilities, valid links, reliability, personalization, page load speed, interactivity and ease of access and; 4) Appearance consists of attractiveness, organization, use of fonts, colours and multimedia, style consistency and good labeling. Although this study represents one of the first attempts at defining and measuring web quality, the use of a convenience sample of students in the assessment of website quality limits the generalisability of the research findings to the general population of web users. The research also fails to adequately capture the service
interaction dimension of service quality, instead focuses on technical, design and content attributes of websites.

In a study of perceived service quality of Internet shopping sites, Yoo and Donthu (2001) develop and validate a 9 item scale (SITEQUAL) to measure online service quality. The authors identified four dimensions of online service quality: 1) Ease of Use; 2) Aesthetic Design; 3) Processing Speed; and 4) Security. The initial pool of candidate scale items were generated from interviews with a convenience sample of marketing students which comprised 2 open-ended questions related to purchase and non-purchase experiences. SITEQUAL was developed and tested using data collected from a similar sample of students from three marketing classes. The use of convenience samples in the two phases of the study impacts on the validity and reliability of the study and generalisability of the results to the broader population of Internet shoppers.

Cox and Dale (2001) in an exploratory study of service quality of electronic commerce website, identified from a review of extant literature, 6 determinants of electronic commerce service quality: 1) Accessibility; 2) Communication; 3) Credibility; 4) Understanding; 5) Appearance; and 6) Availability derived from studies conducted by Parasuraman et al.(1985); Johnston et al. (1990); Johnston and Silvestro (1990); Johnston, (1995) and Gronroos (1990). The authors conclude that these determinants are equally applicable to e-commerce service environments as they are to physical services. The study was limited in that it was exploratory in nature and did not involve empirical research to develop and validate a measure of online service quality.
In their examination of Internet pharmacies, Yang, Peterson and Huang (2001) identified and measured 6 dimensions of consumer perceptions of service quality: 1) ease of use, which includes user friendliness, loading/transaction speed, search capability and easy navigation; 2) content contained on the website, particularly information that matches the needs of the consumer; 3) accuracy of content; 4) timeliness of response; 5) aesthetics, involving attractiveness of the site and catalog pictures; and 6) privacy.

Loiacono et al. (2000) developed a scale also called WEBQUAL with 12 dimensions: informational fit to task, interaction, trust, response time, design, intuitiveness, visual appeal, innovativeness, flow (emotional appeal), integrated communication, business processes, and substitutability. *Informational fit to task* includes appropriateness of information, quality of information and presentation of information; *Interactivity* is the extent to which website users can 1) communicate with the people behind the website, 2) interactively search for information and 3) conduct transactions through the website. Maintaining the privacy of information provided by the website users is an important determinant of the *trust* dimension. *Response time* is the time it takes for the webpage to load in a user’s browser and also the time required to complete subsequent transactions. *Design appeal* involves the aesthetics of the website, including information organization and navigability. *Intuitiveness* refers to the ability to of the site users to grasp easily how to move around the website. *Visual appeal* refers to the presentation of graphics and text on the site. *Innovativeness* is the “aha” (surprise element) associated with the website, including its creativity and uniqueness. If the use of the site results in enjoyable and engrossing experience for the users, it
addresses the flow dimension of WEBQUAL. Integrated communication involves the seamlessness of communicating with retailers through multiple channels. Selling or communicating through the website demands that the designers think how the website fits with the overall business process (consistent with Ramaswamy). The business process dimension measures the complementarity of the Web strategy with the general business strategy). Finally, substitutability is the measure of the effectiveness of website interaction compared to other means such as physical stores.

Overall, the WEBQUAL scale is geared toward helping website designers to better design websites to enhance the interaction perceptions of the users. Therefore, the scale is more pertinent to interface design rather than service quality measurement. In fact, a dimension related to customer service was eliminated from the scale for methodological reasons. Specifically, customer service could not be measured because the survey was conducted with students visiting eCommerce websites to evaluate them rather than with actual purchasers. For this reason, WEBQUAL does not address fulfillment. WEBQUAL, therefore, is not a scale that captures service quality fully. Another issue related to the limitations of WEBQUAL is the issue of having a sample of students use researcher-specified categories in the development phase, rather than allowing the categories to emerge through a qualitative study.

In 2002, Yang and Jun studied e-service quality from the perspective of Internet purchasers and non-purchasers in the context of Internet commerce. Based on a literature review and personal interviews, six primary service quality dimensions perceived by Internet purchasers were discovered: reliability, access, ease of use, personalization, security and credibility. From the non-purchaser perspective, seven
dimensions including: security, responsiveness, ease of use, reliability, availability, personalization and access were identified. Parasuraman et al’s (1988) SERVQUAL instrument was adapted and modified by the authors to fit the Internet commerce setting. Data was collected from subscribers to a regional ISP and used to determine the factor structure of the dimensions, and assess reliability and relative importance of each of the dimensions. For Internet purchasers, reliability was found to be most important, while security was cited as most critical to non-purchasers. Although found to exhibit reasonable reliability, the instrument was not formally validated.

Madu and Madu (2002) used a literature review to identify quality dimensions of eCommerce websites. The research utilizes Garvin (1991) and Berry and Parasuraman’s (1991) quality dimensions. The dimensions were modified for e-service and combined with elements of web usability considered by the authors to affect virtual service operations. Fifteen dimensions of e-quality were proposed: 1) **Performance**, comprising use and content; 2) **Features**, consists of intuitiveness, links, search capability, user control; 3) **Structure** comprises presentation and organization of information, structure of hyperlinks; 4) **Aesthetics** consists of appearance and visual attractiveness, use of colours, fonts, animation, sound effects and clarity and readability of text; 5) **Reliability** comprises constancy of performance, availability of the site, accessibility, speed; 6) **Storage Capacity** comprises ease of information retrieval, storage and availability of information for customer use; 7) **Serviceability** consists of ease of complaint and conflict resolution; 8) **Security and System Integrity** consists of security of personal information, ability of the site to safeguard and protect information; 9) **Trust** is associated with security and system integrity and consists of willingness of users to disclose personal information, reliability and dependability of
the service provider; 10) **Responsiveness** comprises courtesy of customer service staff, flexibility in response to customer problem resolution; 11) **Product/service Differentiation and Customisation** consists of uniqueness of services, convenience, degree of customization of services; 12) **Web Store Policies**, consists of degree of customer-orientation of store policies, including warranties and returns; 13) **Reputation** consists of customer perceptions of past experiences with the website and site performance record; 14) **Assurance** comprises service employee knowledge of service operations and their ability to convey trust and confidence; 15) **Empathy** consists of individualised attention to customer concerns and requests, ability of service employees to show concern and understanding. As this study was exploratory, there was no empirical study to confirm the factor structure of the dimensions. As a result, there appears to be a degree of overlap between some of the dimensions. For example, serviceability and empathy.

Barnes and Vidgen (2000) developed a measure of website quality, which they called WebQual. The instrument was developed from a quality workshop with master’s students and employed a quality function deployment (QFD) methodology. Four categories of website quality emerged: 1) **Ease of Use** consists of navigation and general ease of use; 2) **Experience** consists of visual impact and individual impact; 3) **Information** comprises finding information and content; and 4) **Communication and Integration** consists of external integration and communication. WebQual was tested with a survey of students at four UK business schools and found to be a valid and reliable. The authors conducted further research to refine the measure. In subsequent research an interaction perspective of quality was included (WebQual 2.0) and the measure validated with data collected from consumers of online bookstores (2001a).
WebQual was later further extended to include service interaction (WebQual 3.0) and tested in the domain of online auctions (2001b). In 2002, in a study of UK Internet bookshops, the scale was further refined. WebQual 4.0 was tested and validated. These studies led to the identification of 3 dimensions of eCommerce website quality: 1) **Usability** consists of ease of learning to operate the site, user-site interaction, attractive appearance, appropriate site design; 2) **Information Quality** consists of accuracy, believability, timeliness, level of detail and format of information; and 3) **Service Interaction Quality** consists of safe transactions, security of personal information, personalization, sense of community, ease of communication with the organisation, dependability of the organization to deliver goods/services as promised. Although WebQual 4.0 was extended to include service interaction attributes not considered in earlier versions of the instrument, it fails to adequately capture service attributes found to be important indicators of consumer-perceived service quality in other empirically validated studies of website service quality (eg. ability and willingness of service personnel to assist in the resolution of customer problems).

Janda et al. (2002) investigated consumer perceptions of Internet retail service quality. Semi-structured interviews were used to identify 5 dimensions of Internet retail service quality (IRSQ): 1) **Performance** consists of order fulfillment; 2) **Access** consists of product range; 3) **Security** comprises trust and privacy; 4) **Sensation** consists of interactivity; and 5) **Information** consists of quantity and credibility of information. The authors developed an instrument to measure IRSQ and used a survey method to collect empirical data from consumers to establish reliability and validity of the instrument.
Francis and White (2002) developed PIRQUAL, a scale for measuring customer expectations and perceptions of quality in Internet Retailing. In order to identify the determinants of Internet Retailing Quality, the authors conducted 14 interviews with Internet shoppers. From this, 6 preliminary determinants of quality were identified: Web store functionality, Product Attribute Description, Ownership Conditions, Delivered Products, Customer Service and Security. The results of this study should be applied with caution due to the fact that a convenience sample of Australian Internet shoppers was used for data collection, limiting the extent to which the results can be generalized; control over recruitment of the sample was compromised due to a technical problem with administration of the online survey.

In a qualitative study Liljander et al. (2002) explored customer satisfaction with a Finnish recruitment portal. The authors conducted 8 interviews with job applicants to modify SERVQUAL (Parasuraman et al., 1988) for portal quality and collected data from 246 customers via an online survey. Five E-service quality dimensions related to Site Design and Content, Reliability/Trust, Empathy and Security/Privacy were derived. Factor analysis was conducted to assess the factor structure of the items in the scale. Reliability co-efficient of two dimensions, Security/Privacy and Empathy respectively, is below the recommended value 0.7 (Cronbach, 1951).

Wolfinbarger and Gilly (2003) used online and offline focus groups, a sorting task, and an online survey of a customer panel to develop an online shopping scale called.comQ. Using concepts derived from service quality and retailing literature, .comQ contains 14 attributes across the following 4 factors: Website Design involving the expected attributes associated with design as well as an item dealing with
personalisation; *Fulfillment/Reliability* involving accurate representation of the product, on-time delivery, and accurate orders; *Privacy/Security* involving feeling safe and trusting of the site; and *Customer Service* combining interest in solving problems, willingness of personnel to help and prompt answers to inquiries.

Van Riel *et al.* (2003) replicated a study of service quality in traditional retail banking contexts by Gwynne *et al.* (2000) to investigate service quality expectations of consumers of websites offering online flight reservations. A convenience sample of college students was used for data collection, limiting the generalisability of the results to the wider community of website users. Based on earlier research by Kaynama and Black (2000), Liljander *et al.* (2002) and Van Riel *et al.* (2001), the authors adapted the 5 SERVQUAL dimensions to the context of their study. The five dimensions identified include: 1) User Interface; 2) Reliability; 3) Security; 4) Customisation and 5) Responsiveness. Reliability of the measure was confirmed, however, validity was not assessed.

Wang and Tang (2003) assessed customer perceptions of electronic commerce website quality in digital marketing environments. Based on SERVQUAL and IS-SERVQUAL, the authors develop and empirically validate a measure of electronic commerce service quality (EC-SERVQUAL). The authors conclude that electronic service quality consists of 4 dimensions: 1) Reliability comprises delivery on promises, sincere interest in solving customer problems, service delivered at the time it promises, reliability of equipment and software; 2) Responsiveness consists of advice on service delivery, provides prompt service, willingness to help and never too busy to respond to requests; 3) Assurance consists of safety of transactions,
consistently delivers courteous service, knowledge to answer questions and; 4) \textit{Empathy} consists of provides individual attention, provides personal attention, has customer’s best interests at heart, understands customer’s specific needs. The study focuses almost entirely on service interactions, ignoring attributes related to user-interface interaction and the transactional element of electronic commerce identified in other published studies of electronic commerce website service quality.

In a study of service quality in online shopping, Keating \textit{et al.} (2003) used online focus groups with a convenience sample of second year marketing students from an Australian University and subscribers to a large regional ISP to identify elements of online service quality and their relevance to Dabholkar \textit{et al.’s} (1996) retail service quality scale. Each of the determinants of retail service quality was reconceptualised to the context of the study. Dimensions explored include: 1) \textit{Physical aspects} were conceptualized to consist of appearance of the site, ability to find required information and speed 2) \textit{Reliability} consists of prompt response to requests, speedy delivery, quick turnaround time and accuracy of orders 3) \textit{Personal Interaction} comprises anonymity, prompt and personal response to service requests; 4) \textit{Problem Solving} consists of ease of return of items purchased; and 5) \textit{Policy} comprises competitive pricing policy and detailed information on buying process. Items generated from the focus groups were used to develop an online customer survey. A sample of undergraduate students was used to represent the population of interest in the empirical phase of the study. The authors justify their position arguing the strength of this approach to sampling restricts the generalisability of the findings to a specific sample.
In an exploratory study of service quality in virtual service environments, Santos (2003) used focus group interviews with consumers to identify determinants of virtual service quality. Participants were asked to visit websites of their choice and rate features of the sites as good and bad, state the rationale for their ratings and rank features according to importance. Santos then used a qualitative coding technique to identify common themes emerging from information gathered from the focus groups. The study identified two key dimensions: 1) *Incubative Dimension* consisting of ease of use; appearance; linkage; structure and layout and content, and 2) *Active Dimension* consisting of reliability, efficiency, support, communication security and incentives. The research was exploratory in nature and did not include empirical research to confirm the factor structure of the dimensions identified, nor did it propose a measure of the construct.

Surjadjaja *et al.* (2003) in a study of e-service provided through eCommerce websites, conducted a review of literature on ICT (information and communication technology) design and functions, ICT personal activities, and e-service to identify essential determinants of e-service operations from a provider perspective. The review of literature was narrow in the sense that it did not consider e-service dimensions identified in earlier studies. Twenty determinants considered necessary for successful e-service operations were categorized into three groups: 1) *Services Marketing*; 2) *Service Design*; and 3) *Service Delivery*. However, the determinants were not empirically validated.

In an exploratory study of service quality of web-based information systems (WIS), Tan *et al.* (2003) sought to identify (from a review of literature on information
systems quality and earlier research on traditional and e-service quality by Parasuraman et al. 1985; 2005), the key determinants of WIS service quality. The authors developed the e-SERVQUAL model and associated measure. Dimensions of WIS service quality were derived from the SERVQUAL and E-S-QUAL scales (Parasuraman et al., 1985; 2005). Eleven dimensions considered to be relevant to WIS service quality were derived: 1) Reliability, comprising availability and technical functioning of the website and service level provided; 2) Responsiveness, consisting of prompt service provision; speed of response; availability of help and eFAQ’s; 3) Access, comprising ease and speed of access to website, provision of telephone contact details for customer service representatives; 4) Flexibility, consisting of choices of ways to search information, pay, ship and return items; 4) Ease of Navigation, consisting of availability of search engine/sitemap, ease of finding information/products, ability to maneuver through site and speed of maneuverability; 5) Efficiency, comprising layout of information, structure and amount of effort to input information; 6) Assurance/Trust consisting of privacy and email notifications, accuracy and relevance of response, appropriateness of content; 7) Security, consisting of notice of security arrangements and privacy statement, firewall used to guarantee safety and login method to validate users; 8) Site Aesthetics, consisting of appearance of the site and structure; 9) Customisation/Personalisation, comprising personalized responses and storing of information to facilitate future transactions; 10) Quality of Information, comprising accuracy, adequacy, usefulness and timeliness of information. The authors are yet to undertake empirical research to validate their framework and measure.
Gounaris and Dimitriadis (2003) explored the determinants of service quality of Greek B2C portals. The SERVQUAL scale items were adapted to the context of the study (ie. online portals) and additional items derived from a review of web quality literature were included. The adapted scale was pre-tested with a convenience sample of students to assess its relevance to the current study and focused on the benefits of using Web portals. Three dimensions of portal service quality were identified: 1) *Customer Care and Risk Reduction benefit* consisting of concern for the user, ease of communication with service personnel, security of transactions, security provided for personal information and promptness of response; 2) *Information benefit*, comprises reliable, complete and up to date information, security of personal information, types of information provided; and 3) *Interaction facilitation benefit*, consists of portal’s design, speed and functionality. Although validity was assessed with confirmatory factor analysis, the authors report only two of the recommended (see for example, Hoyle, 1995) fit indices, GFI and RMSEA. This questions the validity of the measure. Other limitations include the use of a convenience sample of students in the exploratory phase of the study and context of the study (ie. limited to a single culture and early adoption of the technology).

van Iwaarden *et al.* (2003) studied quality aspects perceived to be the most important in the design and use of University websites. The authors used Cox and Dale’s (2001) preliminary research on the quality of websites as a framework for the development of a measure of online service quality. Cox and Dale’s (2001) 50 aspects of website quality were subjected to exploratory factor analysis to assess the factor structure of the items. Confirmatory factor analysis showed a good fit with the 5 reconceptualised
dimensions of SERVQUAL. The authors concluded that the quality dimensions found applicable in the service sector were also applicable to websites.

Jun et al. (2003) modified the SERVQUAL (Parasuraman et al., 1988) instrument to reflect determinants of online service quality, which were derived from a review of traditional service quality and emergent electronic service quality literature. The study identified 6 dimensions of online retail service quality: 1) reliable/prompt responses; 2) access; 3) ease of use; 4) attentiveness; 5) security; and 6) credibility. Data was collected from a convenience sample of 58 students and 79 professionals and exploratory factor analysis conducted to assess the factor structure of the measurement model. Reliability analysis resulted in a low alpha value for the credibility dimension and high values for the remaining 5 factors. Validity of the measure was not assessed.

Yang et al. (2003) also studied service quality of web portals. In their study of information presenting (IP) portals, the authors develop and validate an instrument to measure user perceived service quality. They take a more an integrative approach basing their study on technology acceptance, information quality (IQ) and system quality (SQ) literature. Focus groups were used to identify 5 determinants of IP service quality: 1) Usability; 2) Usefulness of Content; 3) Adequacy of Information; 4) Accessibility; and 5) Interaction. An instrument to measure the construct of interest was developed using a rigorous scale development procedure. Data was collected from subscribers of an information portal operated by a Hong Kong property developer to test and validate the instrument. The authors used a confirmatory factor analysis technique to confirm the factor structure of the dimensions and validate the
measurement model and instrument. Reliability of all factors, with the exception of interaction (with an alpha value of .66, which is just below .70 recommended by Nunnally (1967)) was confirmed.

In an exploratory study of online service quality dimensions and their relationship with satisfaction, Yang and Fang (2004) uncovered 52 items of online service quality across 16 dimensions, derived from content analysis of 740 customer reviews of online brokers. The 16 dimensions identified include: Responsiveness, Reliability, Ease of Use, Competence, Access, System Reliability, Timeliness, Security, Content, Courtesy, Service Portfolio, Continuous Improvement, Communication, Aesthetic, Credibility and System Flexibility. The results were not empirically validated.

Choi et al. (2004) studied the effects of web retail service quality on consumer behaviour towards online shopping. The study used a convenience sample of undergraduate MIS students to collect data on online shopping experiences. The study integrates SERVQUAL (Parasuraman et al., 1988) dimensions with Gronroos (1990) conceptualization of technical and functional quality. Functional Web Service Quality consists of appearance, ease of contact with the company, tailored content, fast navigation and information provided at right level of detail. Technical Web Service Quality consists of right answers or information to customer questions and gives a profession and competent image. However, many of the attributes identified in earlier research on customer-perceived web service quality were not considered in the study (eg. privacy, security, reliability, search facilities, attributes of information such as currency, timeliness and clarity of content). The researchers developed a
questionnaire (based on previous literature and existing scales) to collect empirical data to empirically test the dimensionality of web-based retail service quality.

Gummerus et al. (2004) studied customer loyalty to content-based websites. The study was limited to an online healthcare service. Dimensions of online service quality measured in the study were derived from a review of the emerging literature on electronic service quality. Four dimensions were identified and confirmed: 1) User Interface consists of items related to information presentation and technical reliability; 2) Responsiveness comprises items related to the providers interest in and response to customer feedback; 3) Need Fulfillment consists of items related to personal needs met and trustworthiness of the provider; and 4) Security consists of items related to collection of personal information. The study also investigated the relationship between the dimensions of service quality and trust, satisfaction and loyalty. The major weakness of the study is that it is context-based and limited to one website in the online healthcare industry.

Kang and James (2004) empirically examined service quality dimensions derived from Gronroos (1982) service quality model: Technical Quality, Functional Quality and Image in a study of a 464 customers of a Korean cell phone service. Students were trained to collect data to validate a modified scale incorporating SERVQUAL (Parasuraman et al., 1988) items (functional quality) and items representing technical quality and image developed by the authors from data gathered from customer interviews and focus groups. The authors concluded from the results of the study that Gronroos’s model of service quality is a more appropriate representation of service
quality than SERVQUAL (Parasuraman et al., 1988), with its limited focus on the dimensions of functional quality, ignoring technical quality aspects of the construct.

In an examination of online banking, Yang, Jun and Peterson (2004) used a two-phase study to identify and measure 6 dimensions of customer-perceived online service quality: 1) Reliability which includes correct performance, accurate transactions, accurate records, fulfillment of promises; 2) Responsiveness consists of prompt response to customer requests, speed in resolving customer problems, prompt services; 3) Competence includes knowledge of company employees, ability to resolve problems that arise and compliance with customer requests; 4) Ease of Use includes effort required to use website, organization and structure of content and ease of completing a transaction; 5) Security involves use of personal information, safety of online transactions; security of sensitive customer information, risk involved and 6) Product Portfolio consists of online service functions, useful free services wide range of products and services and diverse features. Although empirically validated the study was confined to online banking in the United States and may not be applicable to other online service contexts or cultures.

In a study of online music stores, Webb and Webb (2004) identified 43 determinants of online service quality from a review of extant literature on traditional service quality (Parasuraman et al., 1994) and data quality (Wang and Strong, 1996). From this, they developed a measure which they also called SiteQual, for measuring user perceptions of the overall quality of B2C electronic commerce websites. The study identified four minimum and seven desired website factors (consistent with service quality and data quality literature) that are important to consumers in the retail music
industry. Factors related to minimum-level quality include: 1) reliability; 2) assured empathy (service quality); 3) perceived usability and 4) trustworthiness (data quality). Desired quality factors include: 1) reliability; 2) assured empathy; 3) tangibility (service quality); 4) navigability; 5) relevant representation; 6) accuracy and 7) security (data quality). Testing of the measure was limited to exploration of the factor structure and reliability. Validity of the instrument was not confirmed, due perhaps to the low response to the survey (178) which is substantially below that recommended by Nunnally (1967) for confirmatory analysis.

Long and McMellon (2004) extended research conducted by Parasuraman et al. (1988) to retail service quality on the Internet. Consumer reviews of retail websites were used to adapt the SERVQUAL scale to the context of the current study. Aspects of Internet retail service quality derived from the reviews were organized according to the 5 SERVQUAL dimensions. Two additional categories, communication and ordering/shipping/packaging emerged. Factor analysis resulted in the identification of 5 dimensions of Internet retail service quality: 1) Tangibility consists of physical evidence of the service; 2) Reliability comprises performance and dependability; 3) Responsiveness consists of individual attention; 4) Assurance consists of trust and confidence 5) Purchasing Process consists of return policy, ease of order cancellation and variety of shipping options. Empirical data was collected to validate the adapted SERVQUAL instrument. Limitations of the study include the use of a convenience sample of students, the use of students in the administration of data collection in a largely uncontrolled environment and analysis and low reliability of the two additional dimensions, responsiveness (alpha value .51) and purchasing process (alpha value .58).
In a study of customer perceptions of e-service quality in online shopping, Lee and Lin (2005), using theory from service quality and emerging electronic service quality modified SERVQUAL (Parasuraman et al., 1988) to measure consumer perceptions of online bookstores. Undergraduate students, argued to be representative of the population of customers of online bookstores, were directed to a website and asked to select a book to purchase. They were then instructed to follow through with a transaction from purchase to fulfillment. The five original SERVQUAL dimensions were re-conceptualised to reflect: 1) Website Design consists of visual appeal, interface organization, speed and ease of completing a transaction; 2) Reliability comprises delivering on undertakings, interest in solving customer problems, accuracy of transactions and security; 3) Responsiveness consists of prompt service delivery, willingness to help customers and responsiveness to customer requests; 4) Trust relates to the provider’s ability to instill consumer confidence; and 5) Personalisation consists of targeted emails to customer, provides recommendations, free personal homepage on site. Due to its narrow context, the study is limited in its inability to generalize results to other online marketplaces and the convenience sample of undergraduate students used in the empirical phase of the study.

In a study of e-tail websites, Parasuraman et al. (2005) developed E-S-QUAL, an instrument for measuring e-service quality through a three stage process, using exploratory focus groups and two phases of empirical data collection and analysis. The process produced seven dimensions: efficiency, reliability, fulfillment, privacy, responsiveness, compensation, and contact, that form a core service scale and a recovery scale. Four dimensions, efficiency, reliability, fulfillment and privacy form
the core E-S-QUAL scale that is used to measure the customer perceptions of service quality delivered by online retailers. Efficiency refers to the ability of the customers to get to the website, find their desired product and information associated with it, and check out with minimal effort. Fulfillment incorporates accuracy of service promises, having products in stock, and delivering the products in the promised time. Reliability is associated with the technical functioning of the site, particularly the extent to which it is available and functioning properly. The privacy dimension includes assurance that shopping behaviour data are not shared and that credit card information is secure.

Zeithaml et al., (2002) also found that three dimensions became relevant only when the customer has questions or experience problems, responsiveness, compensation and contact. These dimensions have been conceptualized as constituting a recovery E-S-QUAL scale. Responsiveness measures the ability of e-tailers to provide appropriate information to customers when a problem occurs, have mechanisms for handling returns and provide online guarantees. Compensation is the dimension that involves receiving money back and returning shipping and handling costs. The contact dimension of the recovery scale points to the need of customers to be able to speak to a live customer service agent online or through the phone, requiring seamless multiple channel capabilities on the part of e-tailers.

Cao, et al. (2005) studied website quality using Delone and McLean’s (2003) IS success model, SERVQUAL (Parasuraman et al., 1998) and Davis’s (1989) Technology Acceptance Model (TAM). Four sets of factors that were considered to capture eCommerce website quality were proposed: 1) System Quality consists of multimedia capability, search facility and responsiveness; 2) Information Quality
measures information accuracy and information relevance 3) Service Quality comprises measures of empathy and trust and 4) Attractiveness consists of playfulness. A measure comprised of the four dimensions was developed. Data was collected to assess the factor structure of the measurement model using a convenience sample of students. Each of the students was instructed to search the website of an online bookstore for a product of their choice, make a purchase and then rate their perceptions of the interaction with the website on each of the dimensions detailed above. Although the instrument demonstrates reasonable reliability, validity was not established. The use of a convenience sample of students in the study limits generalisability of the study results to the general population of web customers.

The measurement of service quality in a number of these studies is rather arbitrary, to the extent that the instruments and dimensions used to measure OLSQ have not been empirically tested or validated. Zeithaml (2002) points out that in some studies, what constitutes the domain of the measured construct is not clear, nor is what refinement and/or validation procedures were used. Many of the dimensions and measures used have been chosen from studies on service quality in the offline service environment or have been derived from narrowly-defined bodies of literature Wolfinbarger and Gilly, 2003). Others have used convenience samples of students in the data collection and/or analysis phase, therefore, limiting the generalisability of results to the general population of online consumers. Wolfinbarger and Gilly (2003) argue that little commonality exists among the scales developed for measuring website characteristics important to consumers, suggesting that some scales focus exclusively on the website interface, while others attempt to measure the entire purchase experience. In addition, many of the currently published studies fail to adequately define constructs. In these
cases, there has been a tendency to develop a list of attributes and then show that the attributes are related to an outcome measure such as intention to use a website (Parasuraman et al., 2005). Occasionally, attributes were factor analysed to determine the factor structure, however, the attributes and concepts suggested by factor analysis vary. Zeithaml (2002) stresses that as a result these studies may not elicit the comprehensive dimensionality of OLSQ (Zeithaml, 2002).

The results of the studies presented and discussed in this chapter indicate that the dimensionality of web-based online service quality derives from three key aspects of the service encounter: 1) quality of the service delivery environment (ie. Design and functionality of the website (Web Quality); 2) quality of content/information provided (Information Quality); and 3) quality of the customer-provider interaction (Service Quality). This provides the foundation for the development of the OLSQ conceptual framework proposed in Chapter 5 of this thesis.

3.5 Summary

This chapter presented and discussed traditional service quality, its conceptualization and measurement. Extant literature on online service quality (OLSQ) was reviewed and existing approaches to measurement of the OLSQ construct was presented and discussed. Chapter 4 presents, discusses and justifies the research framework and approach as well as methods of data collection and analysis adopted in this study. The following chapters develop and empirically validate the proposed OLSQ conceptual model and measure.
CHAPTER FOUR

Research Design and Methodology

Scientific knowledge is an enabling power to do either good or bad..... but it does not carry instructions on how to use it. Such power has evident value..... even though the power may be negated by what one does with it. Richard Feynman (1988, p.248)

4.1 Introduction

This chapter describes the approach taken and methods employed in this research program including: the knowledge claim position of the research, strategy of enquiry and research design. Justification of the methods of data collection and analysis is also presented. As outlined in chapter one, conceptualisation and measurement of the service quality construct in B2B online service interactions is an area where research is lacking, raising a number of questions that needed to be addressed. The purpose of this chapter is to select the methodologies that will produce the most reliable answers to these questions: 1) What is the meaning of service quality in B2B online service environments? 2) What are the determinants of B2B online service quality? 3) What is a valid and reliable measure of B2B online service quality?

4.2 Research Approach

The approach employed in the current study is consistent with that adopted in earlier studies of online service quality (OLSQ) (in B2C service contexts which form the foundation for this study) and relies on a field research approach in order to increase the external validity and generalisability of the research results (see for example, Zeithaml et al., 2005; Parasuraman et al., 2005; Barnes and Vidgen, 2000, 2001(a), 2002; Szymanski and Hise, 2000; van Riel et al., 2001; Wang and Tang, 2003; Aladwani and Palvia, 2001). Field research involves the direct observation of events in progress and is typically used to develop theories through observation using an inductive method to discover patterns that point to relatively universal principles.
A two phase mixed-method study was designed to develop an understanding of B2B online service quality and explore its determinants in the first phase of the study and in the second phase, develop, empirically test and validate an instrument to measure the construct. The research therefore, is interdisciplinary, inductive in nature, is both exploratory and descriptive and utilises a mixed-methods approach to data collection and analysis.

4.2.1 Knowledge Claim Position of the Research
The superiority of one or the other of the two major social science paradigms (defined as world views or belief systems that guide researchers), positivist versus constructivist (QUAN vs QUAL) approaches has been the subject of much debate for over three decades (Datta, 1994; Gage, 1989; Guba and Lincoln, 1994; Howe, 1988; Rossi, 1994; Tashakkori and Teddlie, 1994). Notwithstanding, progress towards making “peace” between the two paradigms and supporting compatibility between the two methods is evidenced in Tashakkori and Teddlie (1994:5) who report that instead of relying on one method exclusively “many active theorists and researchers have adopted the tenets of paradigm relativism or the use of whatever philosophical and/or methodological approach works for the particular research position under study”.

Galliers (1992) supports this approach suggesting that IS researchers combine the individual strengths of each approach in a study, attacking the research problem from a number of angles to ensure the best “outcome”. Guba and Lincoln (1994) stress that both qualitative and quantitative methods may be used appropriately with any research paradigm. Howe (1988) adds support to this notion stressing “why should paradigm determine the kind of work one may do with enquiry? ... this kind of tyranny of method….of the epistemological over the practical, of the conceptual over
the empirical is the hallmark of pragmatic philosophy”. Tashekkori and Teddlie (2003:21) suggest that most good researchers should address the research question with any methodological tools available and consider “the research question to be more important than either the method or the worldview that is supposed to underlie the method”.

The nature of the approach taken in this study implies the use of elements of both positivist and constructivist approaches consistent with what Tashakkori and Teddlie (1994) refer to as the pragmatist paradigm. In this approach, qualitative and quantitative approaches are combined within different phases of the research process either in a single, or within multiple phases of a study. In the case of the current study, this involved quantitative data analysis (including factor analysis) of Likert scaled items in phase two of the study (survey) in addition to use of a qualitative method in Phase I to analyse responses to interview questions theoretically linked to the Likert scale (Tashakkori and Teddlie, 2003).

4.2.2 Strategy of Inquiry
A two-phase sequential mixed-methods approach (detailed in Table 3.1 below) combining both qualitative and quantitative methods was used in the study. The first (qualitative) phase of the study involved conceptualization of the B2B online service quality construct and exploration of its determinants (attributes), generation of a pool of items for the development of a measurement instrument in the second phase of the study. The second phase of the study involved the generation of a pool of items for the development of the measurement instrument (OLSQ scale), collection of data to purify the scale and empirically test the instrument for validity and reliability using a quantitative method (Churchill, 1979).
While both qualitative and quantitative approaches are widely accepted within the social sciences, mixed methods research is occurring increasingly across a range of disciplines (see for example, Mingers, 2000; Creswell, 2003; Tashakkori and Teddlie, 1994, 2003; Brewer and Hunter, 1989). A major strength of mixed method studies is that they combine the best of both qualitative and quantitative approaches into the research methodology of a single study or multi-phased study, enabling triangulation of data across multiple data sources, providing richer and more reliable results (Tashakkori and Teddlie, 1994). Mixed methods make use of both pre-determined and emerging methods, open and closed-ended questions, multiple forms of data drawing on all possibilities (for example, performance data, attitude data, observational data, interview data, document data) and a combination of text and statistical analysis (Creswell, 2003).

Greene et al. (1989) propose the following five purposes of mixed method studies: 1) triangulation or convergence of results; 2) complementarity or examination of different or overlapping facets of a phenomenon; 3) initiation or discovery of fresh perspectives; 4) development of a study through the sequential use of methods where the results of the first method inform the use of the second method and 5) expansion or adding breadth and scope to a study. Ulin et al. (1996) propose the following four

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<th>Quantitative Research Methods</th>
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<td>Predetermined instrument-based questions</td>
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<td>Performance data, attitude data, observational data, and census data</td>
<td>Open-ended questions</td>
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<td>Statistical analysis</td>
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Table 4.1 Quantitative, Qualitative and Mixed Methods Procedures

While both qualitative and quantitative approaches are widely accepted within the social sciences, mixed methods research is occurring increasingly across a range of disciplines (see for example, Mingers, 2000; Creswell, 2003; Tashakkori and Teddlie, 1994, 2003; Brewer and Hunter, 1989). A major strength of mixed method studies is that they combine the best of both qualitative and quantitative approaches into the research methodology of a single study or multi-phased study, enabling triangulation of data across multiple data sources, providing richer and more reliable results (Tashakkori and Teddlie, 1994). Mixed methods make use of both pre-determined and emerging methods, open and closed-ended questions, multiple forms of data drawing on all possibilities (for example, performance data, attitude data, observational data, interview data, document data) and a combination of text and statistical analysis (Creswell, 2003).

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scenarios for combining qualitative and quantitative methods in a mixed methods approach: 1) use of qualitative measures to develop quantitative tools; 2) using qualitative methods to explain quantitative methods; 3) use of quantitative methods to expand on a qualitative study and 4) using quantitative or qualitative methods equally and in parallel.

The use of a mixed methods approach [consistent with Greene (point 4) and Ulin (point 1) above] was deemed to be the most appropriate to firstly, explore the topic generally and learn more about what variables to study (i.e. indicators of B2B online service quality) and then to study these variables with a large sample to generalise the findings to a population (i.e. business customers). The mixed methods approach is justified on a number of grounds. Firstly, the research results are expected to be richer and more reliable (Mingers, 2000). Secondly, the study undertaken was not a single, discrete event but proceeds through a number of phases (Creswell, 2003). Thirdly, the use of multi-method research enabled triangulation of data across multiple data sources from the two phases of the study, adding to the validity and generalisability of the results (Brewer and Hunter, 1989; Punch, 1998; Crano and Brewer, 2002; Tashakkori and Teddlie, 2003).

4.3 Research Design
According to Babbie (2004) a research design is a plan or structure of investigation used to obtain answers to research questions. A two-phase research design, following Churchill’s (1979) suggested scale development paradigm was considered the most appropriate to answer the research questions validly, objectively, accurately and economically (Creswell, 2003). Figure 4.1, below, depicts the research design used in the study.
4.3.1 Time Dimension

Time plays an important role in the design and execution of research as well as affecting the generalisability of findings (Babbie, 2004). A key question in terms of generalisability is whether the findings of a particular study accurately represent a future situation or only the present circumstances. Two primary options are available to researchers to deal with these issues: cross sectional studies and longitudinal
studies. A cross-sectional study involves “observations of a sample, or cross section of a population or phenomenon that are made at one point in time” (Babbie, 2004:101) and are often associated with exploratory and descriptive studies. A longitudinal study on the other hand, is designed to permit “observations of the same phenomenon over an extended period” (Babbie, 2004:102) and are generally used in studies that seek to observe changes over time. Many field studies involving direct observation are naturally longitudinal. Longitudinal studies are often costly in terms of time and use of resources. Unanticipated changes in the unit of analysis and research environment can impact on the generalisability of the findings from the study (Babbie, 2004). This study seeks to explore the determinants of online service quality and describe business customer perceptions of the quality of the online service offering of their business partners, not to observe or predict their orientation towards the use of such systems. It is therefore considered that a cross-sectional study is the most appropriate and feasible approach in this case.

4.3.2 Unit of Analysis

In social research the what or whom being studied is referred to as the unit of analysis the “things we examine in order to create summary descriptions of such units and to explain differences among them” (Babbie, 2004:19). Babbie (2004) cautions that it is important to distinguish between the units of analysis and the aggregates that we make generalisations about. Units of analysis most commonly investigated in the social sciences are individuals, groups, organisations and social artefacts (Babbie, 2004). The unit of interest to the current study is the individual. The unit of analysis is the individual when the researcher is interested in exploring, describing or explaining how different groups of individuals behave as individuals (Babbie, 2004). The
individual of interest to the current study is the business customer (service consumer), that is, individuals in organisations employed as procurement and purchasing officers, network administrators and managers, help desk staff, technical support staff and internal customer support staff who interact with partner organisation (service providers) online customer service and systems (through a corporate website or extranet).

4.3.3 Sampling Strategy

4.3.3.1 Phase I
A purposive sampling technique was used in the exploratory phase of the research to recruit participants. A **purposive sampling technique** is a type of non-probability sampling in which the units to be observed are selected on the basis of researcher judgement about which will be the most useful or representative of the identified population (Babbie, 2004; O’Connor, 2005). This type of sampling technique was particularly useful given that the aim of the study was to develop theory on B2B online service quality about which little was previously known (Kumar, 1996). Individuals considered to be able to provide the best information to achieve the objectives of the study, who were readily available, who were considered representative of the target population (ie. business customers from a range of industry sectors) and expressed a willingness to participate were selected to take part in the research.

The purposive sampling technique was combined with a snowballing sampling method to recruit the interview participants. A **snowballing** method involves asking each person interviewed to suggest additional people for interviewing (Babbie, 2004). Initially, a small number of businesses considered to be representative of the desired
population (and therefore) useful in meeting the aims of Phase I of the study were contacted and invited to participate in the research by agreeing to an interview. At the conclusion of each interview, participants were asked to provide contact details of other members of the same population. This process continued until no new information or insights emerged from the interviews (ie. no new attributes were uncovered) (Creswell, 2003). A total of sixteen interviews were completed.

4.3.3.2 Phase II
Given that the aim of Phase II of the study was to ask a representative sample of business customers from the population of interest to complete the OLSQ scale, a purposive sampling technique (see 4.3.3.1) was used. A number of businesses listed on the Dunn and Bradstreet Business Directory were contacted and details about their customer base obtained. The researcher was particularly interested in gaining the cooperation of an Australian business operating in the B2B market, with a large and diverse customer base (ie. covering a range of industry sectors, selling both goods and services and comprising both small and large sized businesses). A large Australian supplier (XYZ organisation) which fit the sampling criteria and agreed to participate in the research was recruited for Phase II of the study.

4.3.4 Data Analysis Strategy
Tashakkori and Teddlie (2003) suggest three approaches to mixed method data analysis. A summary of these strategies is presented in Table 4.2. The main objective of this approach is to enable the researcher to use make use of both of the traditional types of analysis either simultaneously of sequentially in the same study.
(1) Concurrent mixed analysis: simultaneous analysis of QUAL and QUAN data
   (a) Concurrent analysis of different data: parallel mixed analysis (also known as triangulation of data sources)
   (b) Concurrent analysis of the same data: quantitising
   (c) Concurrent analysis of the same data: qualitising

(2) Sequential QUAL-QUAN analysis: Qualitative data analysis followed by confirmatory quantitative data
Collection and analysis
   (a) Forming groups of people/settings on the basis of qualitative data/observations, comparing the groups on
      QUAN data (eg. MANOVA, cluster analysis, discriminant function analysis
   (b) Forming groups of attributes/themes through QUAL (eg. content) analysis, followed by confirmatory
      QUAN analysis (factor analysis, structural equation modelling)
   (c) Establishing a theoretical order of relationships/causality through exploratory QUAL analysis, confirming
      the obtained sequence through QUAN data and analysis (eg. path analysis, structural equation modelling)

(3) Sequential QUAN-QUAL analysis: Quantitative data analysis followed by qualitative data collection and
Analysis
   (a) Forming groups of people/settings on the basis of QUAN data (eg. cluster analysis), comparing the groups
      on QUAL data
   (b) Forming groups of attributes/themes through exploratory QUAN analysis (eg. factor analysis, multi-
      Dimensional scaling), confirming with available/new QUAL data and analysis (eg. constant comparative
      method)
   (c) Establishing a theoretical order of relationship/causality through exploratory QUAN analysis (path
      analysis, structural equation modelling and so on), confirming with obtained sequence through QUAL
      data and analysis (eg. observations and interviews with individuals)

Table 4.2 Classification of Alternative Mixed Methods Data Analysis Strategies
(source: Tashakkori and Teddlie, 1994)

The approach taken to data analysis in this study is consistent with a sequential
QUAL-QUAN analysis in which groups of attributes/themes are formed through
QUAL analysis of data, followed by confirmatory QUAN analysis. A constant
comparative method was used to analyse the data collected in the qualitative phase of
the research to identify the determinants of the OLSQ construct. Quantitative data was
subsequently collected and analysed (using confirmatory factor analysis (CFA) and
structural equation modelling (SEM) techniques to assess reliability and validity of
the OLSQ measurement model and instrument.
4.4 Phase I Procedure

4.4.1 Exploratory Research

As there was no published academic research that could be located that specifically developed a conceptual framework for understanding and/or measuring service quality in B2B online service contexts and little was known about the construct, it was considered essential to undertake exploratory research as an initial phase of the study. (Kumar, 1996; Tashakkori and Teddlie, 2003; Babbie, 2004). Babbie (2004) suggests that exploratory research is typically undertaken when the phenomenon under study is a new area of interest, is ground breaking or when a researcher seeks new insights into an existing problem. Exploratory research was appropriate because research into the determinants and measurement of B2B online service quality had not previously been explored and it was necessary to become familiar with, and understand the topic before embarking on a more extensive empirical study. This phase of the study also enabled exploration and development of the methods employed in the subsequent phase of the study (Babbie, 2004). Descriptive research was used to detail what was known about the online service quality construct, its indicators and determinants, and participant experiences (both positive and negative) with online customer service and support systems (Punch, 1998). The exploratory phase of the study consisted of a theoretical analysis in the form of a literature survey, and in-depth interviews to explore and identify the determinants of online service quality and develop the OLSQ conceptual model.

4.4.2 Literature Survey

Four approaches to theoretical analysis have been proposed in the academic literature (Babbie, 2004). These include experience surveys; case analysis; focus groups and literature surveys. Theoretical analysis is generally concerned with theory building
and provides a theoretical foundation for a research project (Sekaran, 1992). A literature survey approach was considered to be the most appropriate for this study and was used to 1) establish familiarity with the topic 2) specify the domain of the online service quality construct 3) distinguish between what had previously been addressed in relevant research fields and what still needed to be done 4) discover important variables and findings from earlier research, providing a foundation on which to frame and build current research 5) provide a clear picture of existing online service quality concepts, theories and data relevant to the construct (Hart, 1998), and 6) synthesise existing ideas from IS and Marketing disciplines to gain a new perspective on the construct in the context of the current study (Babbie, 2004).

4.4.3 Data Collection Procedure
Given the exploratory nature of Phase I of the study, a number of methods of data collection were available. Although focus groups are typically used in this type of research, *interviews* were considered more appropriate for the following reasons. Firstly, focus groups can be problematic in terms of group culture and dynamics and in achieving a balance in the interaction. Secondly, geographic location of participants, time constraints and business imperatives made it impractical to arrange for all participants to be available at the same time and place. Thirdly, conducting focus groups would have required the involvement of a number of researchers (for example, facilitators, moderators, interviewers) increasing costs and co-ordination effort. Finally, some participants expressed concern over the lack of confidentiality and anonymity associated with focus group interviews.
Although interviews were considered more viable than other methods of data collection in exploratory research, there were a number of disadvantages to consider (Babbie, 2004). Firstly, the quality of the data generated can be affected by the skills, experience and commitment of the interviewer. Secondly, the quality of the data may vary with the use of multiple interviewers, and finally, the researcher may introduce his/her own bias in the framing of questions and interpretation of responses. These issues were addressed in the following way 1) One formally trained, highly experienced interviewer conducted all of the interviews 2) To limit the possibility of researcher bias in the framing of the interview questions a panel of experts was consulted 3) In order to limit bias in interpretation of responses interview transcripts were sent to respondents for review and corroboration as to the correct recording of responses to the interview questions. To further limit bias, the interview transcripts and the attributes that emerged were reviewed by two academic experts with experience in psychometrics and instrument development.

4.4.4 Interview Format

A semi-structured question format, using a set of pre-determined questions (utilising the same wording and order), specified in an interview schedule was used (Brewer and Hunter, 1989; Crano and Brewer, 2002). Unlike structured interviews, pre-specified responses are not provided in semi-structured formats. The format of questions in exploratory research is generally open-ended (Babbie, 2004). The use of closed-ended questions or pre-specified responses would have limited the ability to explore and respond to vital information provided by respondents and impacted on the level of detail and depth of responses.
A strength in using the semi-structured interview technique as the data collection method was that it allows for collection and comparability of more uniform data, while at the same time, provides the scope to “probe” respondents on the meaning of criteria expressed in their responses (Babbie, 2004). Questions included in the schedule were derived from the literature survey and were designed to yield information regarding 1) demographics, for example, the industry sector to which the business belonged and the position held by the participant in their organisation 2) how many business partners and/or suppliers provided online customer service 3) the frequency of interaction with online service and support systems 4) understanding of what constituted online customer service 5) the meaning of online service quality and its determinants and 6) factors associated with exceptional and poor online service experiences.

4.4.5 Data Analysis Technique

Given that the purpose of Phase I of the research was to develop theory that seeks to provide a conceptual framework for understanding B2B online service quality, a grounded theory approach (GTA) to data analysis was considered to be the most appropriate. The GTA approach is consistent with Glaser and Strauss (1967) and allowed for conceptualisation of the OLSQ construct and its determinants to be generated systematically through a process of rigorous and structured analysis of data collected from in-depth interviews during the exploratory phase of the study. A grounded theory consists of plausible relationships among sets of concepts (in the case of this research, determinants of OLSQ), which are directly developed from data analysis (Glaser and Strauss, 1967). The strength of this approach to data analysis is that both qualitative and quantitative methods can be used within the same study at different stages. At the heart of the grounded theory method is the idea of the constant
comparative approach to data analysis. The constant comparative method was proposed by Glaser and Strauss (1967) and redefined by Guba and Lincoln (1985). In this method, concepts or categories emerging from one stage of the data analysis (data obtained from the first interview) are compared with categories emerging from the next. The researcher continues the process of constant comparison until no new significant concepts or categories emerge. During this process, the researcher typically goes through several procedures, a process that is cumulative, rather than linear and involves “frequently revisiting the data in the light of the new analytical ideas that emerge as data collection and analysis progresses” (Guba and Lincoln, 1994). The constant comparative approach to analysis of the interview data typically involves four stages (Glaser and Strauss, 1967:105):

1. *Comparing incidents applicable to each category or concept.* Once a category or concept emerges in the analysis of one case, the researcher looks for evidence of the same phenomenon in other cases and involves specifying the nature and dimensions of concepts arising from the data.

2. *Integrating categories or concepts and their properties.* Here the researcher begins to note relationships among concepts that fit together.

3. *Delimiting the theory.* Eventually as the patterns of relationships among concepts become clearer, the researcher can ignore some of the concepts initially noted but evidently irrelevant to the inquiry.

4. *Writing theory.* Finally, the researcher puts his or her findings into words.

A detailed discussion on the application of the constant comparative method to the analysis of the data collected from the interviews in Phase I of the research is presented in the following chapter.
4.5 Phase II Procedure

4.5.1 Confirmatory Research
Phase II of the research firstly involved collection of data using an online (Web-based) data collection method to collect data to empirically test and validate the OLSQ measurement model and scale. An overview of the approach taken to develop the measure is presented. A more detailed discussion of the application of Churchill’s (1979) scale development paradigm to the development, refinement, testing and validation of the OLSQ scale is provided in Chapter six of this thesis.

4.5.2 Measurement Instrument
Measurement is a fundamental activity of science and each area within the sciences develops its own set of measurement procedures (De Vellis, 2003). Within the behavioural and social sciences, psychometrics has emerged as “the sub-speciality for measuring psychological and social phenomenon” (De Vellis, 2003:3). Typically, the measurement procedure used is the questionnaire.

Measurement instruments that are “collections of items combined into a composite score, intended to reveal levels of theoretical variables, not readily observable by direct means are referred to as scales” (De Vellis, 2003:8-9). Scales are used to measure phenomenon believed to exist because of one’s theoretical understanding of the world and which cannot, however, be assessed directly. The process employed in the development of the OLSQ scale is consistent with established scaling conventions (see for example, Nunnally and Bernstein, 1994; Blalock, 1982; Churchill, 1979; De Vellis, 2003) and closely follows Churchill’s (1979) scale development paradigm. Churchill’s procedure for development of marketing constructs (adapted to the current study) is depicted below, in Figure 4.3.
1. Specify Domain of the Construct

2. Generate Sample of Items

3. Collect Data Purify Measure

4. Assess Reliability

5. Assess Validity

6. Develop Norms

Figure 4.2 Scale Development Procedure (Adapted from Churchill, 1979)

According to Churchill, measures of marketing constructs are always inferences, the quality of which depends directly on the procedures used to develop the measures and the evidence supporting their “goodness”. Goodness of a measure is assessed on the basis of some form of reliability and validity index. A dilemma faced by researchers when developing measures of a variable of interest is the decision concerning “how to proceed and what reliability and validity indices to calculate” (Churchill, 1979:66).

4.5.2.1 Step One - Specify Domain of the Construct

The first step involved in the development of the OLSQ scale is to specify the domain of the construct. This is accomplished by delineating exactly what to include in the domain, what to exclude and how the construct (OLSQ) would be operationalised. Churchill (1979) cautions on the pitfalls of the use of different definitions of
marketing constructs that make it difficult to compare and accumulate findings, strongly recommending consulting the literature before specifying a domain. Churchill (1979) further suggests that a researcher should have good reasons for proposing new measures of constructs, especially those constructs for which valid measures already exist. De Vellis (2003) supports this view, suggesting that the decision to specify a new construct should only be reached after reviewing appropriate theory related to the measurement problem at hand. He goes on to further suggest that even if there is no available theory “an investigator must lay out their own conceptual formulations prior to trying to operationalise them” (2003:61). This stage of the scale development procedure (often cited as the most important step in the process (De Vellis, 2003, Churchill, 1979)) includes specifying at least a tentative theoretical model that serves as a guide to the development of the scale. As previously stated, there are no existing theoretical frameworks proposed for understanding or measuring the B2B online service quality construct. This dissertation represents the first step towards addressing this gap in the scholarly literature.

4.5.2.2 Step Two - Generate a Sample of Candidate Items

Next, a list of candidate items that captures the domain of the construct specified in step one is generated. Churchill (1979) suggests that this step be guided by what the scale is intended to measure and the items making up the scale should reflect the underlying latent variable of interest. The items are a “test” of the strength of the latent variable (OLSQ). According to Churchill (1979), the emphasis at this stage of the scale development process is to develop a set of items which “tap” each of the dimensions of the construct. A good set of items is chosen randomly from the universe of items relating to the construct of interest (De Vellis, 2003). In determining
the number of items to be included in an initial item pool, the researcher should consider internal consistency reliability. Internal consistency reliability is a function of how strongly the items correlate with one another and its strength is measured by coefficient alpha (De Vellis, 2003:66). According to De Vellis (2003) an initial item pool four times as large as the final number of scale items is not unusual. A general rule is “the larger the item pool, the better” (De Vellis, 2003:66). With this in mind, a large pool of OLSQ items (considerably larger than anticipated for inclusion in the final scale) was generated. The item pool was subsequently reviewed by a panel of expert judges and after a series of edits; forty six (46) items were included in the final scale.

4.5.2.3 Step Three – Collect Data and Purify Measure

This step involves collecting data from a representative sample of business customers by asking them to complete the OLSQ scale. A purposive sampling technique was to recruit participants. A number of organisations based in Australia considered to be representative of the desired population were contacted and asked to participate in the confirmatory phase of the research. The researcher sought to recruit an organisation with a broad customer base which had been providing online customer service for at least twelve months. The organisation selected for the study is one of Australia’s largest corporate suppliers 1) with a very large and diverse business customer base that has a broad range of experience with online customer service systems, 2) a customer base that is representative of a range of industry sectors, 3) was accessible to the researcher and 4) was willing to invest the time and resources required to participate in the study. For confidentiality purposes, the participating organisation is hereinafter referred to as XYZ organisation.
A self-administered electronic (Web-based) data collection method was considered to be the most consistent with the context of the study and therefore, the most appropriate method of data collection for the following reasons. Firstly, the ease with which participants could be recruited (i.e. as they logged onto the website). Secondly, the costs and time involved in setting up and administering the online instrument were considerably less than a mail out method (Dillman, 2000). Thirdly, the researcher had access to the skill and expertise required to set up the scale and data collection facility. Fourthly, the co-operation of the participating business in terms of providing access to, and recruitment of study participants. Fifthly, the cost saving achieved in the administration of the scale. After the initial cost of developing the electronic scale, the cost of data collection from each additional person was dramatically reduced (Dillman, 2000) and finally, the ability to access a large sample of the target population. This was considered crucial to the successful outcome of the research as a large number of responses were required to validate the measurement instrument (Churchill, 1979; Nunnally and Bernstein, 1994; De Vellis, 2003).

This step involves collection of data for further refinement of scale items and estimating the score that would be obtained if all the items in the domain were used (Nunnally, 1967:175-81). A score obtained over a whole sample domain represents a person’s true score. To the extent that a sample of items correlates with true scores, it is said to be “good” and no single item is likely to provide a perfect representation of the “concept”. Each item is expected to be distinctive even though it relates to the concept and it is assumed that all items (if they belong in the domain of the construct) have an equal amount of common core (Nunnally, 1967:175-6). This implies that if
all items in a measure are drawn from the domain of a single construct, responses to those items should be highly inter-correlated or internally consistent (Churchill, 1979). Low inter-item correlations are an indication of unreliability. Coefficient alpha is the most commonly recommended measure of internal consistent (Churchill, 1979). A low coefficient alpha indicates that the sample of items performs poorly in capturing the construct that is the subject of the measure. Items with low coefficient alpha are deleted from the item pool following an iterative process. Exploratory factor analysis (EFA) is used to determine the number of dimensions underlying the construct. (Churchill, 1979; De Vellis, 2003). The process of purification of the measure continues until the measure produces satisfactory coefficient alpha and the dimensions agree with those conceptualised (Churchill, 1979).

4.5.2.4 Step Four - Assess Reliability
At this stage new data is collected to reassess reliability of the measure (based on internal consistency) and to rule out the possibility that the previous findings are due to chance. It is expected that the results of the previous stage should be reproduced when the purified sample of items is submitted to a new sample of subjects. Steps one to four should produce a set of internally consistent items, a measure that has face (or content) validity and is reliable.

4.5.2.5 Step Five – Assess Validity
Step five in the scale development process involves assessing the measure for construct validity, what the instrument is in fact, measuring. This relates to what “construct, trait or concept underlies a person’s performance or score on a measure” (Churchill, 1979:70). Establishing construct validity means determining, a) the extent
to which the measure correlates with other measures designed to measure the same thing and b) whether the measure behaves as expected.

4.5.2.6 Step Six – Develop Norms

The process of assessing the position of an individual on a given characteristic involves comparing the person’s score with the score achieved by other subjects. This involves developing “norms” such that meaning is imputed to a specific score in unfamiliar units by comparing it with the total distribution of the scores. This is summarised by calculating a mean and standard deviation or other statistics such as centile rank (Churchill, 1979). It may be necessary to develop specific norms for certain groups (e.g., by occupation, age etc.). This process is not required when the objective is to determine how satisfaction has changed over time or to compare for example, salesperson’s performance. In these cases, all that is required is a comparison of “raw” scores. A detailed discussion of the application of Churchill’s paradigm to the development of the OLSQ scale is provided in Chapter seven.

4.5.2.6.1 Scale Format

Decisions regarding the format to adopt when developing a measurement scale should be made when the items to be included in the measure are determined. It is important to ensure that the format of the items is compatible with the response format used. For example, using declarative statements would be problematic if the response format chosen was a checklist of single-worded items (De Vellis, 2003). Scale items can be represented in a variety of forms. The scale most widely used to measure opinions, beliefs and attitudes is the Likert scale. Likert scales are generally comprised of items presented as declarative statements (usually strongly worded), followed by response options that include varying degrees of agreement with the statements. The OLSQ
was designed to measure the attitudes of business customers towards the online service systems provided by their trading partners (providers) and therefore constitutes an *attitudinal scale*. A five-point Likert format with responses ranging from “strongly disagree” to “strongly agree” with a neutral midpoint “neither agree nor disagree” was used in the OLSQ scale.

4.6 Data Analysis Technique

4.6.1 Scale Reliability and Validity

A quantitative data analysis technique was utilised to determine the reliability and validity of the OLSQ scale as a measure of B2B online service quality and is inextricably linked to the scale development procedure detailed in section 3.4.3 of this chapter. Reliability and validity are essential characteristics of measurement that must be considered in establishing the appropriateness and usefulness of a measurement instrument (De Vellis, 2003). OLSQ scale reliability was calculated by Cronbach’s coefficient alpha. Validity was determined by exploratory factor analysis and structural equation modelling (confirmatory factor analysis). SPSS and AMOS statistical packages were used for the analysis.

4.6.1.1 Reliability

According to Nunnally and Bernstein (1994) reliability is a fundamental issue in psychological measurement. *Reliability* refers to “the proportion of variance attributable to the true score of the latent variable” (De Vellis, 2003) and indicates the degree to which a measurement instrument performs consistently. Reliability of a scale also indicates how free the scale is from random error.
Internal consistency reliability is concerned with “homogeneity” of items within a scale. Relationships among items are logically connected to the relationships of the items to the latent variable. A scale is internally consistent to the extent that its items are highly correlated (Nunnally and Bernstein, 1994). High inter-item correlations suggest that the items in the scale are all measuring the same thing (strong link between items and the latent variable). Single dimension scales (uni-dimensional) or a single dimension of a multi-dimensional scale should consist of a set of items that correlate well with each other and each dimension in a multi-dimensional scale is a scale in its own right. Internal consistency is generally measured by Cronbach’s alpha. The conventional minimum co-efficient alpha is 0.7 (Cronbach, 1951). Alpha scores closest to one are stronger indicators that the scale is internally consistent.

4.6.1.2 Validity
Scale validity is concerned with the adequacy of a measure of a particular variable, that is, whether the variable is the underlying cause of item co-variation. Validity is “inferred from the manner in which a scale is constructed, its ability to predict specific events, or its relationship to measures of other constructs” (De Vellis, 2003:49). De Vellis (2003) suggests that four types of validity need to be considered when developing measurement instruments: face validity, content validity, convergent and discriminant validity, and construct validity.

Face validity refers to a set of items that assess what they appear to measure on their face (De Vellis, 2003). A question raised by De Vellis (2003) relates to who should be the judge of the face validity of the instrument, the respondent or a member/s of the wider scientific community. The dilemma is that an instrument that looks like it
measures one variable to some experts might look like it measures another to an equally qualified person. In order to assess face validity of the OLSQ scale and to address the issues detailed above the OLSQ scale items were reviewed by a panel of experts experienced in scale development from a range of disciplines (IS, Marketing and Psychology) as well a representative group of business customers.

Content validity concerns the extent to which a specific set of items reflects a content domain. A scale is content valid when its items are a randomly chosen subset of the universe of appropriate items. Content validity becomes difficult to determine when measuring attributes such as beliefs or attitudes when problems are encountered when trying to determining exactly what the range of potential items is. The method employed in developing the scale, and having items reviewed by a panel of experts for relevance to the domain of the construct can help to maximise the appropriateness of the items included in the scale (Churchill, 1979; De Vellis, 2003).

Convergent and discriminant validity is concerned with the evaluation of measures against one another instead of against some external criterion (Kline, 1998). Intercorrelations among a set of indicators presumed to measure the same construct that are at least moderate in magnitude demonstrate convergent validity. Discriminant validity of a measure is evidenced if the estimated correlations of the factors that underlie the sets of indicators supposed to measure different constructs are not excessively high.

Construct validity is directly concerned with the theoretical relationship of a variable (score on some scale) to other variables. Construct validity is “the extent to which a measure behaves the way that construct it purports to measure should behave with
regard to established measures of other constructs” (De Vellis, 2003:53). Construct validity including its discriminant and convergent validity can be directly tested by higher order confirmatory factor analysis (CFA) (Marsh and Hocevar, 1985). The advantages of using CFA to determine construct validity is widely recognised (Anderson and Gerbing, 1988; Marsh and Hocevar, 1985; Segars and Grover, 1993, 1998; Nunnally, 1967).

According to De Vellis (2003:53), adequate measures are a necessary condition for valid research and cautions that poor measurement can impose an absolute limit on the validity of conclusions drawn and suggests researchers should “strive for an isomorphism between the theoretical constructs in which they have an interest and the methods they use to operationalise them”. De Vellis (2003) further stresses that the inherent problems of using poor measures, which have not undergone rigorous development and extensive validation testing can lead to dire consequences.

4.7 Summary
This chapter presented the research approach and design adopted in this study. The knowledge claim position and strategy of enquiry along with the data collection and analysis procedures employed in the two phases of the study were also presented and justified. The scale development paradigm adopted for the OLSQ scale was also presented and discussed. In the exploratory phase of the research, literature survey and interviews were used to identify the determinants of OLSQ, develop the OLSQ conceptual model and generate a pool of candidate scale items. The second phase of the study utilised a survey research method to collect data to empirically test and validate the OLSQ scale and measurement model. The following chapter presents and discusses the results of the exploratory phase of the research and proposes a
preliminary conceptual model of OLSQ. Chapter six details the procedure used to develop and refine the OLSQ scale and test and validate the OLSQ measurement model and instrument.
CHAPTER FIVE

Phase I: Exploratory Research

He who loves practice without theory is like the sailor who boards ship without a rudder and compass and never knows where he may cast. Leonardo Da Vinci

5.1 Introduction

A review of existing literature from Information Systems and Marketing disciplines that provides the theoretical foundation for, and underpins the research was presented in chapters two and three. Chapter four detailed the epistemological position of the research, the methods in design, data collection and analysis and the scale development procedure employed. This chapter presents the results of the exploratory phase of the research, proposes a preliminary model of B2B online service quality and identifies and discusses determinants of OLSQ that form the basis for the development of the measurement instrument presented in Chapter seven of this thesis.

Preliminary research was conducted to determine the attributes on which business customers (users) judge the online service offering of their business partners (service providers) and to propose a preliminary model of B2B online service quality. As stated in chapter one of this thesis, existing research into the determinants and measurement of online service quality in business markets is immature and there are no published studies that propose a conceptual framework for understanding, and/or an instrument for measuring the construct. The exploratory phase of the research which involved a literature survey and semi-structured interviews with business customers was undertaken to 1) develop an initial understanding of the OLSQ construct, 2) identify its key determinants and 3) generate a pool of items for inclusion in the measurement instrument (OLSQ scale) that is developed, tested and validated in the second, confirmatory phase of the research.
5.2 Interview Procedure

A semi-structured interview format was used to provide structure as well as the flexibility to probe participants on the meaning of criteria expressed in their responses to interview questions. Sixteen interviews were conducted over a six month period between September 2002 and March 2003. The final number of interviews was determined when no new insights were gained and no new information emerged (ie. no new attributes or information was derived from the interviews) (Creswell, 2003).

A purposive selection technique, combined with a snowballing method was used to recruit interview participants (a detailed discussion on the interview process is provided in Chapter 6.4.4). At the conclusion of each interview, participants were asked to recommend and/or provide contact details of colleagues or associates (from the population of interest) that could be approached to take part in the research. Each person recommended was contacted by the researcher and asked to participate in the study by agreeing to an interview.

Participants for the interviews were selected on the basis of the industry sector to which they belonged, and their level of experience with online customer service systems. Backgrounds and expertise of the interviewees were distinctly different (see table 5.1 and 5.2), ensuring that there was reasonable collective representation of participants (Ackroyd and Hughes, 1992). Industry sectors represented include: Manufacturing, Information Technology and Telecommunications (IT&T), Retail, Services, Education, and Government. Table 5.1 presents a breakdown of participants by industry sector.
Participants represented a range of levels of experience with online customer service systems from minimal experience (monthly OCSS interaction) to extensive experience (daily OCSS interaction). Table 5.2 details participant OCSS experience.

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**Table 5.2 OCSS Experience**

*NOTE: D denotes Daily Access, W denotes Weekly Access, M denotes Monthly Access*

All sixteen respondents reported that they had some degree of experience in the use of online customer service systems. The majority of participants (71%) access online customer service on a daily basis and are considered to have extensive experience in their use. The remaining twenty nine percent of respondents are either inexperienced (14.5%) or moderately experienced users (14.5%).

**5.2.1 Data Collection Instrument**

As detailed in chapter five, an interview protocol was used as a guide in eliciting participant perceptions of the quality of business partner online service and support systems. Questions included in the protocol were drawn from a review of service quality literature and then adapted to meet the needs of the study. The interview protocol was designed to collect data related to:

1. industry sector to which participants belonged and position held in the employer organisation
2. the number of business partner websites providing online customer service and support and frequency of interaction
3. the meaning of online customer service
4. the meaning of online service quality
5. facets of good and bad online service
6. what service providers should do to improve their online customer service offering
7. provide additional information/address issues not already covered in the interview

To ensure content validity, the protocol was reviewed by a panel of marketing academics with extensive experience in service quality measurement. Based on recommendations from the reviews, some existing questions were reworded and/or reframed. Two additional questions related to positive and negative service experiences were added to the protocol. Participants were asked to think about a time when they experienced exceptional online service and a recent experience of exceptionally poor online service. They were then asked to describe the experience and explain the facets of the experience that made it good or bad. Participants were also probed on the meaning of criteria expressed in their responses. For example, if a participant suggested that website design was important, they were probed until evaluative criteria for website design was comprehensively expressed (Zeithaml et al., 2000). Participants were also given the opportunity to provide additional information about online service and support experiences not covered in the pre-determined set of interview questions.

5.2.2 Format of the Interviews
A number of formats were used for the interviews (Babbie, 2004). Personal interviews: the majority of the interviews comprised conversation style direct face-to-face interaction between the interviewer and the interviewee/respondent; telephone interviews where interaction between the interviewer and interviewee took place over
the telephone at an appointed time (to overcome time and distance constraints) and *email interviews* where participants were emailed a copy of the interview questions, asked to answer the questions and return them to the researcher as an email attachment. Personal and telephone interviews were structured around the 18 pre-determined questions in the interview protocol and were at least 30 minutes in duration. Email interviews were followed up with telephone contact as required to clarify responses and probe participants further on the meaning of criteria expressed.

### 5.3 Data Processing Procedure

The procedure used to process the data derived from the interviews is depicted in Figure 5.1 and discussed in the following sections.

![Steps in data processing](image)

*Figure 5.1 Data Processing Procedure (Adapted from Kumar, 1996)*

At the conclusion of each interview, handwritten notes made during the interviews were transcribed and typed. Copies of the interview transcripts can be found in Appendix F.
5.3.1 Step One: Edit Data

The first step involved in processing the data from the interviews involved ensuring that the data was “clean”, that is free from inconsistencies and incompleteness. This process involved editing the transcripts to identify and minimise as far as possible, gaps in the information obtained from the respondents and errors made during the data transcription process (Kumar, 1996). During the editing process, interview transcriptions were sent to participants for review and feedback regarding correct recording of responses to the interview questions. This process continued until all sixteen respondents attested to the integrity of the documents.

5.3.2 Step Two: Analyse and Code Data

The data analysis and coding procedure depicted in step three in figure 5.1 above, is shown in more detail in figure 5.2. The data analysis and coding process used is essentially iterative and progressive.
Figure 5.2 Data Analysis and Coding Process (Adapted from Seidel, 1988)

The aim of step two was to uncover indicators (attributes) of online service quality across the three categories: Web Quality, Information Quality and Service Quality, derived a priori from the literature survey, than code and sort them into categories that fit together. The method of coding used is consistent with the inductive approach advocated by Glaser (1992) and Miles and Huberman (1984) which allows codes to emerge from the data during analysis, rather than using a more generic “start list” approach to code generation.

A descriptive coding system was used to code the attributes. The coding system used assisted in 1) reducing the data into readily analysable units, 2) identifying attributes as they appeared in the text, and 3) sorting and grouping of attributes into categories
(dimensions of OLSQ). According to Miles and Huberman (1984:56) codes are used to classify words into categories and can be represented by a symbol or abbreviation. Codes were derived from key concepts (attributes of OLSQ) as they emerged during the analysis.

Codes assigned to attributes were generated using an inductive technique advocated by Glaser (1992). This involved allowing codes to emerge progressively during data collection and analysis to avoid the problem of force fitting the data to pre-existing codes (Miles and Huberman, 1984). As each interview transcript was examined codes were assigned to attributes as they emerged and then applied to subsequent transcripts. Additional codes were generated as new attributes emerged from each transcript. This process of code generation continued until all sixteen transcripts had been examined and no new attributes emerged. A list of the codes developed during the coding process is available in Appendix G. Each attribute was then assigned a meaning (based on information obtained from the transcripts) and grouped according to the three categories detailed above.

A table containing the attributes and conceptual definitions derived from the assigned meanings was created and emailed to participants and a panel of experts for review and corroboration to ensure phenomenological validity of the data (Guba and Lincoln, 1994). Interview transcripts were re-examined in light of the comments received back from the review to ensure integrity of the process used and where appropriate attributes were refined and/or reconceptualised.
5.4 Results from the Interviews

5.4.1 Participant Profiles

Participants in the interviews occupied a range of positions in their organisations and their roles varied across organisations. A summary of participant profiles is presented in Table 5.3.

<table>
<thead>
<tr>
<th>Participant #</th>
<th>Interview Type</th>
<th>Industry Sector</th>
<th>Position Held</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Phone</td>
<td>Government (State)</td>
<td>Systems Support Officer</td>
<td>System Support to Internal Users</td>
</tr>
<tr>
<td>02</td>
<td>Face-Face</td>
<td>Education</td>
<td>Operations Manager (Tech Support)</td>
<td>Tech Support to Internal Users</td>
</tr>
<tr>
<td>03</td>
<td>Face-Face</td>
<td>Education</td>
<td>IT Manager</td>
<td>Manage IT Infrastructure and provide IT Support to internal users</td>
</tr>
<tr>
<td>04</td>
<td>Face-Face</td>
<td>Education</td>
<td>Project Manager (Desktops)</td>
<td>Internal Support to User Departments</td>
</tr>
<tr>
<td>05</td>
<td>Face-Face</td>
<td>IT&amp;T</td>
<td>Owner-Operator Network Consulting Company</td>
<td>Provide Network Consultancy Service to Businesses</td>
</tr>
<tr>
<td>06</td>
<td>Face-Face</td>
<td>IT&amp;T</td>
<td>Procurement Consultant</td>
<td>Procurement of Computer Equipment</td>
</tr>
<tr>
<td>07</td>
<td>Face-Face</td>
<td>IT&amp;T</td>
<td>Systems Analyst</td>
<td>Procurement of IT Equipment and Components</td>
</tr>
<tr>
<td>08</td>
<td>Phone</td>
<td>Manufacturing (Food)</td>
<td>eProcurement Officer</td>
<td>Procurement of Raw Materials</td>
</tr>
<tr>
<td>09</td>
<td>Phone</td>
<td>Retail</td>
<td>National Business Development Manager</td>
<td>New Business Development</td>
</tr>
<tr>
<td>10</td>
<td>Email</td>
<td>Manufacturing (Health &amp; Beauty)</td>
<td>Business Manager</td>
<td>Manage business operations</td>
</tr>
<tr>
<td>11</td>
<td>Phone</td>
<td>Manufacturing</td>
<td>Director of Customer Service and Logistics</td>
<td>Manage Logistics and Customer Service Centre</td>
</tr>
<tr>
<td>12</td>
<td>Phone</td>
<td>Retail (IT&amp;T)</td>
<td>Department Manager (Networking)</td>
<td>Procurement of Networking Equipment and Components and Customer Support</td>
</tr>
<tr>
<td>13</td>
<td>Phone</td>
<td>Manufacturing (Food)</td>
<td>National Business Manager</td>
<td>Manager of Australian Business Units</td>
</tr>
<tr>
<td>14</td>
<td>Email</td>
<td>Services (Marketing)</td>
<td>Managing Director</td>
<td>Manage Australian Business Operations</td>
</tr>
<tr>
<td>15</td>
<td>Email</td>
<td>Retail</td>
<td>Supply Chain Analyst</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Email</td>
<td>Government (Local)</td>
<td>IT Manager</td>
<td>Manage IT Infrastructure and provide IT support to internal users</td>
</tr>
</tbody>
</table>

Table 5.3 Participant Profiles

All participants reported that the majority of their business partner’s provide some form of online customer service and support which was used to varying degrees depending on the position the participant occupied in their employing organisation. For instance, participants responsible for providing direct support to internal or external customer’s accessed partner OCSSs typically on a daily basis, some on multiple occasions.
Participant’s who did not occupy a role that involved direct provision of service and/or support and who used partner online systems mainly to search for information, download forms and product catalogues, make travel bookings or procure products and equipment accessed partner systems on a less frequent basis. In these instances, access ranged from 2-3 times weekly to monthly access.

5.4.2 Meaning of Online Customer Service

Participants were also questioned about the meaning of online customer service. Meanings expressed encompassed a range of service elements related to availability, accessibility, responsiveness, timeliness, OCSS design, provision of value-add, comprehensiveness of information and various facets of traditional customer service. Online customer service was expressed as:

- services and products which can be obtained via the Web
- the ability to order, track, identify contacts, locate information on products and the organisation, warranty and service wholly online
- everything needed would have to be on the site, no human contact required, up and running when required
- get support via email/online, specs, pricing and product details available online
- everything you need online, no need to use phone/fax
- “user-friendly”
- ability to identify contact details without trouble, quick turnaround response, troubleshooting or FAQs
- service delivered via email, auto-response or human response option
• a website that offers online archives of process/procedure or even live interactive contact
• anything web-based, traditional customer service provided online
• full range of CRM offerings……..would also include a balanced scorecard of performance against mutually agreed KPIs. Data integrity would be a critical element
• FAQ section, detailed product specs, current drivers for a variety of platforms, firmware updates, links to authorised repair agents and related suppliers
• Access to comprehensive information (order, product, terms, specifications, timings etc) which negates the need to speak to a service operator
• Service that is readily (if not instantly) available and accessible - I would expect to be either able to find the answer with a search of the site and/or receive a response within an hour.

5.4.3 Meaning of Online Service Quality

In regard to participant views on the meaning of online service quality various aspects of the three evaluative criteria detailed in section 5.4 were offered. Key concepts derived from participant responses and considered when determining items for inclusion in the OLSQ scale are shown in italics.

• The ease with which the services and products can be obtained. The simplicity of obtaining a service or product when needed.
• Clearly identified products, query online – enough information online – product description and technical specifications.
• Being there when needed, quick response, option of human contact, clear, precise, user-friendly.
Can go and get support and help via email/online, customised area on website, access to contracts online, options to customise products, specs, pricing and product details online, timeliness of response – within 24 hours for specialised requirements.

Site updated regularly, kept timely, accurate, available first time every time.

Online service quality is reliability.

Availability of website, validity of information – timely and up to date, relevance, site structure, layout and navigation, search facility, support multiple browsers, speed.

Quick resolution of problems, speed of response, clarity of what to do, responsibility taken by vendor.

What I would expect is an easy to navigate system that answers my queries.

Service equal to or better than traditional service.

Efficient, process simplification, support electronic transactions, management and all administrative aspects, should be accurate with order response and follow up, should deal effectively with exception management, integrated with customer databases and be alert-driven.

Very current and detailed information, easy navigation.

Providing correct results/answers relating to enquiries within an acceptable time frame.

5.4.4 Customer Evaluations of Online Service Quality

An examination of information obtained from the interview transcripts revealed three important aspects of online service quality that business customers use in assessing the quality of the online service offering of their business partners: website-specific
criteria (Web Quality), information-specific criteria (Information Quality) and service-specific criteria (Service Quality). Each of the evaluative criteria and the attributes of OLSQ which emerged from the interviews are depicted in Figure 5.3.

Figure 5.3 Higher-level Construct and Dimensions of Perceived B2B OLSQ

5.5 Theoretical Foundation

A review of existing literature that underpins the research and provides the theoretical foundation for the development of the OLSQ conceptual framework is provided in Chapters two and three of this thesis. A discussion of each of the key theoretical concepts is provided below.
5.5.1 Web Quality

Web Quality is generally concerned with the *usability* of a website, that is, how easy websites are to use and how effective they are in helping users accomplish their tasks (Zeithaml *et al.*, 2000). Web quality is defined by Aladwani and Palvia (2001) as users’ evaluation of how well a website’s features meet users’ needs and reflect the overall “excellence” of the website. According to Agarwal and Venkatesh (2002) the usability of a website is a fundamental component of the total user experience. “A site high in usability should generate a desirable perception of its use and an intention to use the site” (Agarwal and Venkatesh, 2002:153). Websites that are high in usability are consistent, easy to use, easy to read and provide clarity of interaction. A site’s search function, download speed, design and organization of components have been purported to be key elements that affect usability (Took, 1990; Jarvenpaa and Todd, 1997; Nielsen, 2000). According to Nielsen (2000) user interaction with sites that exhibit higher levels of usability have been significantly associated with performance improvement. Elements of web quality related to usability and design drawn from the interviews and emerging literature on web quality include quality of the web interface (Rose *et al.*, 1999), visual appeal of web pages (Misic and Johnson, 1999), representation of site components (Huizingh, 2000; Liu and Arnett, 2000) ease of navigation (Misic and Johnson, 1999; Bell and Tang, 1998; Schacklett, 2000), quality of search facility (Liu and Arnett, 2000; Rose *et al.*, 1999), ease of use (Schacklett, 2000; Bell and Tang, 1998) intuitiveness and structure, function and relevance of hyperlinks (Aladwani and Palvia, 2001; Bell and Tang, 1998).
5.5.2 Information Quality (IQ)

Measures of information quality generally focus on the output produced by a system and the value, usefulness or relative importance attributed to the system by the user (Grover et al., 2002; DeLone and McLean, 1992). Nine characteristics of information quality; accuracy, precision, currency, output, timeliness, reliability, completeness, conciseness, format and relevance were proposed by Bailey and Pearson (1983). Rainer et al. (1995) later identified five IQ attributes from a study of executive information system quality: accuracy, timeliness, conciseness, convenience and relevance. Seddon (1997), in defining information quality included accuracy, timeliness and relevance as important indicators of IQ. In the current study, participants cited accuracy and presentation as important criteria used in assessing the quality of information provided through websites.

5.5.3 Service Quality (SQ)

Recent academic research has identified a number of criteria that consumers use in evaluating websites and/or service delivered through websites (Zeithaml et al., 2002). Evaluative criteria includes: information availability and content (Li et al., 1999; Wolfinger and Gilly, 2003), ease of use or usability (Nielsen, 2000; Novak et al., 2000) privacy and security (Quelch and Klein, 1996; Hoffman et al., 1999; Zeithaml et al., 2000), graphic style (Novak et al., 2000) and fulfillment/reliability (Wolfinbarger and Gilly, 2002). Criteria related to online service delivery identified in recent research includes accessibility (provision of email address and telephone contact for customer service staff) (Mulvenna, Anand and Nuchner, 2000; Griffith and Krampf, 1998), responsiveness (promptness with which the service provider responds to emails) (Mulvenna, Anand and Buchner, 2000; Griffith and Krampf,
1998) and reliability (correct technical functioning of the site and accuracy of service promises) (Palmer, Bailey and Faraj, 1999; Zeithaml et al, 2000). Service attributes highlighted by respondents in the current study relate to availability of service personnel (provision of multiple points of contact for the service provider), reliability (consistent, timely, dependable and unfailing service delivery) and flexibility (flexibility in provision of options for service access, delivery and contact with the service provider).

5.6 B2B Online Service Quality Perceptual Attributes

Information gathered from the interviews revealed that business customers use a number of criteria to evaluate online service quality: website design, ease of use, technical reliability, usefulness, intuitiveness, presentation, accuracy, availability, service reliability and flexibility. Surprisingly, participant responses were consistent across industry sectors and experience levels, supporting earlier research on B2C electronic service quality (Zeithaml et al., 2000). This result indicates that business customers use the same evaluative criteria when assessing the quality of OCSSs.
Conceptual definitions of the ten OLSQ perceptual attributes are presented in Table 5.4.

<table>
<thead>
<tr>
<th>Perceptual Attributes of B2B OLSQ</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Website Design</strong> refers to site aesthetics ie. visual appeal; the representation of site components; the ease of navigation; ie don’t have to “drill” too far into the site to locate information required; the quantity, functionality and relevance of hyperlinks; simplicity and functional aspects of site design;</td>
<td></td>
</tr>
<tr>
<td><strong>Ease of Use</strong> search facility is available within the site and is adequate for user needs; degree to which the site is well laid out and easy to move around; how simple the site is to understand and comprehend; how easy the site is to learn to use; degree of user-friendliness of the user interface</td>
<td></td>
</tr>
<tr>
<td><strong>Technical Reliability</strong> refers to the technical function of the site; degree to which site components and hyperlinks function properly; no broken or redundant links on the site; system response time is within reasonable limits; fast web page load time; fast download time; site is up and running and available for business when and where needed</td>
<td></td>
</tr>
<tr>
<td><strong>Usefulness</strong> refers to how well the site meets the service and support needs of users, the ability of the site to facilitate resolution of customer service problems; the degree of fit for purpose ie the degree to which the provider’s perceived online service objectives meet customer service needs</td>
<td></td>
</tr>
<tr>
<td><strong>Intuitiveness</strong> the degree of alert-driven interaction between organisation and users; degree to which the site learns about user information needs and responds accordingly</td>
<td></td>
</tr>
<tr>
<td><strong>Presentation</strong> refers to the organization of information provided on the site; the amount, the structure and representation of information provided on the site</td>
<td></td>
</tr>
<tr>
<td><strong>Accuracy</strong> degree to which information on the site is free of errors ie. correct versions of product technical support information are provided; the degree of assurance that user organisation account data has not been altered, tampered with or corrupted</td>
<td></td>
</tr>
<tr>
<td><strong>Availability</strong> multiple points of contact for the service provider are detailed on the website; the ease of contacting the service provider; the approachability of the service provider; the completeness of the service provided through the site ie one-stop service provision</td>
<td></td>
</tr>
<tr>
<td><strong>Service Reliability</strong> refers to consistent, timely, dependable and unfailing service delivery; the service provider consistently delivers on service promises; the timeliness of service response (turnaround time within 12 hours); the service provider provides an immediate response to mission critical service requests; the reputation of the service provider for delivery of high quality service</td>
<td></td>
</tr>
<tr>
<td><strong>Flexibility</strong> a range of available service and support options are provided from the site; a number of access options are provided; a number of download options are provided; a number of contact options are provided</td>
<td></td>
</tr>
</tbody>
</table>

Table 5.4 Attributes of B2B OLSQ

5.6.1 Website Design

Respondents cited aspects of design concerned with the aesthetics of the site (ie. visual appeal, correct use of fonts and colours); the quality, functionality and relevance of site components and hyperlinks, the degree of “value-add” provided through hyperlinks to additional information or services, the design of the site (ie. layout and structure of web pages, use of graphics) and ease of site search and navigation (ie. number of pages and levels and location of information on the web pages) as essential elements of good website design. Sites that met the design criteria detailed above were perceived positively by respondents. Well designed and laid out sites generally made it easier for users to interact with the site. Conversely, sites that were poorly designed were perceived as frustrating and costly in terms of the time required to find what users were looking for.
5.6.2 Ease of Use

Ease of use is expressed as the degree of user-friendliness of the site and encompassed elements of the user interface (ie. the amount of effort required to use the site), the quality of the search facility provided on the site (ie. well designed, easy to use, degree to which it meets user search needs) and usability aspects of the site (ie. how easy the site is to learn to use and comprehend). From a user’s perspective, sites that provide a search facility within the site designed to be as user friendly as possible and easy to operate and comprehend was viewed positively.

On the other hand, sites which were considered to be overly complex and difficult to use are perceived negatively by respondents. Other factors considered undesirable were a lack of search facility within the site or the provision of one that is either poorly designed or inadequate in meeting user search needs. One respondent stated that they would leave a site that was considered too “difficult” and seek out more viable service delivery options.

5.6.3 Technical Reliability

Technical reliability is expressed as the degree to which web site components and hyperlinks function as they should, how responsive the site is to user commands (ie. system response time, load and download times) and the availability of the site (ie. site should be up and running and available for business when and where needed). Respondents viewed sites positively if response time was less than or equal to ten seconds and expressed little patience with sites that were not available for business when required or had pages that didn’t load properly or “hung”.

115
5.6.4 Usefulness

Usefulness is expressed in terms of the degree of fit with the purpose of the site. Elements of fit include adequacy of the OCSS in meeting the service and support needs of the user (ie. user perceived goodness of fit with online service requirements), and aspects related to online problem resolution (ie. the degree to which service and support problems can be resolved online - “one-stop service provision”). Respondents expressed frustration at not being able to have all of their service and support needs met through the site, suggesting that if a provider is sincere in providing true online service and support, then all of their service and support needs should be able to be met online. OCSSs which do not satisfy the requirement of one stop service provision were not perceived to constitute online customer service.

According to respondents, the ability to provide one stop service appears to have eluded most service providers, as echoed in the sentiments of one of the respondents:

“there is not one website that meets all my expectations in terms of desirable service attributes”

5.6.5 Intuitiveness

Intuitiveness is expressed in terms of the mode of interaction between the user and the OCSS. Respondents cited alert-driven interaction as an important element of user-system interaction. User-desired attributes include automatic retrieval and display of user account information on “login”, provision of alerts to users regarding information on new products and services, and sites that learn about user needs (during interaction with the site) and respond accordingly, reducing the amount of effort required on the part of the user.
5.6.6 Presentation

Presentation refers to how information on the web site is structured and presented to the user. Facets of presentation include how the information is organised (logically and well-structured), the range of formats provided (ie. information is presented in a format that meets user needs, for example, reports and spreadsheets), the amount of information provided on the site (adequate vs overwhelming) and the way information is displayed (ie. easy to read and understand, for example, the use of tables and graphs in lieu of text where relevant). Respondents considered information which is available in a format that can be easily and seamlessly integrated into their backend systems a major advantage.

5.6.7 Accuracy

Accuracy refers to the degree that information on the site is free of errors and the degree to which product and technical support information provided matched the product it was purported to represent (ie. troubleshooting information and technical specifications match the version of the product in use). For example, some respondents expressed frustration with sites that provided troubleshooting assistance for the incorrect model or version of products they had purchased. Accuracy also relates to the degree of accuracy of account information, for example, contracts and agreements, invoices, orders and delivery.

5.6.8 Availability

Availability refers to the approachability of the service provider, the ease with which the service provider can be contacted from the website and the completeness of the OCSS. Ease of contact was expressed in terms of how many points of contact for the service provider were listed on the website. Respondents expressed a desire to be able to contact the provider by phone, fax or email if they could not resolve their service
problems online. Frustration at providers who did not provide complete online service and support and failed to provide alternative means of contact for customer service personnel, rendering users helpless when it came to resolving problems that arose with product use was expressed by a number of respondents. In the case of mission-critical service requests, respondents expected to have the option of speaking directly to service and/or help desk personnel. In regard to approachability of the service provider, respondents stressed the importance of being able to contact service and support personnel at their convenience, not that of the service provider (ie. 24 hours/day 7 days/week), suggesting that if full one-stop service was not provided online, then alternative means of accessing service and support should be made available around the clock.

5.6.9 Service Reliability

Service reliability refers to the level of responsiveness of the service provider to user requests for service and/or support. Respondents stated that for non-urgent problem resolution they would expect a turnaround of twelve hours or less. In the case of mission-critical service requests an immediate response was expected, particularly in instances when they are required to quickly resolve problems experienced by their own customers (internal and external to the organization). A lack of response by the service provider in these instances was perceived to impact negatively on the reputation of the user organisation. Respondents also stressed a strong desire to have their service requests confirmed via an automated acknowledgement as well as being kept up to date on the status of their service requests. Service that is delivered in a consistent, dependable and unfailing manner (ie. right first time, every time) and the ability of service providers to deliver consistently on service promises was perceived positively by respondents.
5.6.10 Flexibility

Flexibility refers to the mode and form of service delivery. Respondents expressed a desire to be able to choose how they would like their service requests resolved and viewed sites that were rigid and did not provide the user with a choice of options for service delivery were perceived negatively. Conversely, providers that allowed the user the flexibility to customise pages on the site to meet their specific business requirements (being able to replicate internal forms etc on the site) were viewed positively. Respondents also perceived the provision of a range of service access and contact points and modes of contact (phone, fax and email) as positive.

5.7 OLSQ Elements

In addition to the attributes of OLSQ detailed above, respondents cited a number of more specific criteria (elements) used in evaluating online service quality. For example, when probed about the meaning of website design, respondents discussed aspects of site aesthetics (the visual appeal of the site and correct use of colours and fonts); site components and hyperlinks (design, layout and relevance of components; design of hyperlinks and value add provided); page design (simplicity and functionality, layout, organization) and navigation (how easy it is to maneuver around the site; provision of a search facility; provision of a site map; number of pages and levels incorporated into the site; how easy information on the site is to locate). Perceptual attributes for each of the ten OLSQ perceptual attributes are presented in Table 5.5 along with selected illustrative quotes from respondents.
## OLSQ Perceptual Attributes, Elements and Selected Illustrative Quotes

<table>
<thead>
<tr>
<th>OLSQ Attributes</th>
<th>Elements</th>
<th>Illustrative Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Website Design</td>
<td>Site Aesthetics</td>
<td>“Good screen design”</td>
</tr>
<tr>
<td></td>
<td>- visual appeal of web-pages</td>
<td>“Should support multiple browsers”</td>
</tr>
<tr>
<td></td>
<td>- correct use of colours and fonts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Site Components and Hyperlinks</td>
<td>“Overly complex websites are” problematic</td>
</tr>
<tr>
<td></td>
<td>- site components are well designed and laid out</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- site components are relevant to purpose of Site</td>
<td>“More functionality than the customer wants is a negative”</td>
</tr>
<tr>
<td></td>
<td>- hyperlinks are well designed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Information, products and services</td>
<td></td>
</tr>
<tr>
<td>Page Design</td>
<td>- design of web pages is simple, but functional</td>
<td>“The simplicity of obtaining a service or product”</td>
</tr>
<tr>
<td></td>
<td>- balanced use of text and graphics</td>
<td>“Slow sites – too many graphics”</td>
</tr>
<tr>
<td></td>
<td>- pages are well laid out</td>
<td>“Consistency of design”</td>
</tr>
<tr>
<td></td>
<td>- pages are well organised</td>
<td></td>
</tr>
<tr>
<td>Navigation</td>
<td>- site is easy to manoeuvre around</td>
<td>“Need to make info easier to locate”</td>
</tr>
<tr>
<td></td>
<td>- information is easy to locate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- search facility is provided</td>
<td>“A search facility is provided on the site itself”</td>
</tr>
<tr>
<td></td>
<td>- site map is provided</td>
<td>“Don’t have to drill too far into the site to find what you’re looking for”</td>
</tr>
<tr>
<td></td>
<td>- number of pages and levels on the site kept</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- number of pages and levels on the site kept</td>
<td></td>
</tr>
<tr>
<td>Ease of Use</td>
<td>User Interface</td>
<td>“User-friendly”</td>
</tr>
<tr>
<td></td>
<td>- interface is “user-friendly”</td>
<td>“self-explanatory”</td>
</tr>
<tr>
<td>Search Facility</td>
<td>- search facility is well-designed and easy to</td>
<td>“Search facility within the site”</td>
</tr>
<tr>
<td></td>
<td>use</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- search facility is adequate for user needs</td>
<td>“If it’s too hard to drive, I’ll get on the phone”</td>
</tr>
<tr>
<td>Usability</td>
<td>- site is easy to learn to use</td>
<td>“Website is overly complex”</td>
</tr>
<tr>
<td>Technical</td>
<td>Reliability</td>
<td>“Slow and pages “hanging””</td>
</tr>
<tr>
<td>Reliability</td>
<td>- site components function correctly</td>
<td>“Technical unreliability”</td>
</tr>
<tr>
<td>Availability</td>
<td>- system response time is fast (&lt; 10 secs)</td>
<td>“Speed – fast page loads”</td>
</tr>
<tr>
<td></td>
<td>- load/download time is within reasonable limits</td>
<td></td>
</tr>
<tr>
<td>Responsiveness</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Availability</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- site is up and running and available for</td>
<td>“Downtime – unable to access”</td>
</tr>
<tr>
<td></td>
<td>business when and where needed</td>
<td></td>
</tr>
<tr>
<td>Usefulness</td>
<td>Fit for Purpose</td>
<td>“There is not one website that meets all my expectations in terms of desirable service attributes”</td>
</tr>
<tr>
<td></td>
<td>- site adequately meets service and support needs of users</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- perceived goodness of fit with online service</td>
<td>“Full service – one stop online service and support”</td>
</tr>
<tr>
<td></td>
<td>Online Problem Resolution</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- degree to which service and support problems can be resolved online (one-stop service)</td>
<td></td>
</tr>
<tr>
<td>Intuitiveness</td>
<td>Interaction Mode</td>
<td>“When you enter the site it should provide auto login – company info should be automatically displayed”</td>
</tr>
<tr>
<td></td>
<td>- alert-driven interaction between provider and user</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- user account information automatically displayed when user “logs on”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- user is automatically alerted to information about new products/services</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Learnability</td>
<td>“Sites that learn about the user as he works his way around the site making it easier to use next time”</td>
</tr>
<tr>
<td></td>
<td>- site learns about user needs and responds</td>
<td></td>
</tr>
<tr>
<td>OLSQ Attributes</td>
<td>Elements</td>
<td>Illustrative Quotes</td>
</tr>
<tr>
<td>-----------------</td>
<td>----------</td>
<td>---------------------</td>
</tr>
</tbody>
</table>
| **Presentation** | Organisation and Structure of Information | - information is logically organised  
- information is well structured  
- information is presented in a format which meets user needs (reports, spreadsheets etc)  
- the amount of information provided on the site is not overwhelming  
- information is displayed in a way that is easy to read and understand (tables, graphs etc) | “Structure, layout”  
“Enough info – product descriptions, tech specs”  
“Printable format”  
“Tech manuals online” |
| **Accuracy** | Error-Free Information | - correct versions of product technical support information is provided  
- User account data is maintained accurately | “Providing up to date information to customers”  
“False stock levels” |
| **Availability** | Ease of Contact | - there are multiple points of contact listed on the web site (phone, fax, email)  
- service and support staff are available when required to provide support to users  
- service and support staff are always willing to assist in resolving user service-related problems | “The ease of obtaining the service”  
“Provide more access options”  
“Trying to contact XYZ is useless”  
“Being there when needed”  
“Only respond when they are owed money.”  
“Everything you need would have” |
| **Service Reliability** | Responsiveness | - Provides timely service response (turnaround within 12 hours)  
- Provides immediate response for mission-critical service requests  
- Provides automated acknowledgement of service Requests  
- Provides service request status reports  
- Service is always delivered in a consistent, dependable and unfailing manner  
- Consistently delivers on service promises;  
- Has a reputation for delivery of high quality | “Want a quick response”  
“Timeliness of response”  
“Customer focussed - place customer first”  
“Keeping you informed throughout the process”  
“provides status reports on service requests”  
“Live up to promises, don’t screw up, right first time, every time”  
“Unreliable – will same problem happen? – trust eroded” |
| **Flexibility** | User Needs Met | - Allows the user to choose how they would like service and support needs met  
- Allows the user to customise pages on the website to meet their specific service and support needs | “Can track and measure”  
“Area of site tailored to customer needs”  
“Customised website area”  
“Option of human interaction”  
“Go and get support via email/online”  
“Offer full service over the Web as well as phone back-up” |

**Table 5.5 B2B OLSQ Perceptual Attributes, Elements and Selective Illustrative Quotes**

### 5.8 Conceptual Model

Common themes emerging from the interviews and insights gained from previous research provided the foundation for the development of the Preliminary Conceptual Model of B2B OLSQ depicted in Figure 5.4.
Service can be viewed from either a provider’s or a customer’s perspective and the “phenomenological nature of the service experience means that these viewpoints will always be distinct” (Johnston, 1995:968).

5.8.1 User Perspective

The customer OLSQ evaluative process is depicted in the top half of the model. *Customer-desired attributes* of OLSQ are influenced by prior experience (good and bad) with online customer service systems and service needs. *Service needs* are inextricably linked to business needs. A number of participants expressed a desire to be given the flexibility to customize pages on the provider’s website to “mirror”
components of their internal systems. They also expressed a preference for download formats that were compatible with their internal systems (for example, spreadsheets, tables, graphs) and preferred to be involved in co-production of the OCSS. Customer perceptions of OLSQ are based on each service consumption experience. While online customer service and support can potentially reduce service provision costs, customer satisfaction and loyalty can be severely damaged by a bad online experience (Heim and Sinha, 2000; Barnes et al., 2005).

Each customer contact with the service provider contributes to the formation of customer impressions of the organization and in turn, influences their perceptions of the service experience (Heim and Sinha, 2000; Boyer et al., 2002). Customer assessment of OLSQ is based on a comparison between desired service attributes and the delivered service.

Satisfaction with past service encounters is key to the customer’s desire to continue the relationship with the service provider. Ongoing interaction with the OCSS is contingent upon how well the OCSS meets the service needs of the customer, the benefits the OCSS provides over existing service delivery channels and the desire for a better and more unique customer service experience.

5.8.2 Service Provider Perspective

The service provider’s OCS process is depicted in the bottom half of the OLSQ model. From the provider’s viewpoint, the service process contains elements of core delivery and performance which are present in varying degrees in different service experiences and therefore, need to be managed in different ways. In the competitive
marketplace, the success of a business is measured by how effectively it interacts with its customer’s and a proactive strategy to develop and implement online service is an important requirement for success (Singh, 2003). Online service operations encompass all customer-centric activities from pre-transaction (search), transaction (purchase) and post-transaction (service and support) within a service-level agreement (Surjadjaja et al., 2003). As depicted in the model, a company’s OCS strategy is directly influenced by its beliefs about what constitutes 1) online customer service and 2) its customers’ service and support needs. According to Zeithaml et al. (2000) what a company believes to be an ideal OCSS for its target market might be inaccurate due to insufficient or incorrect information about OCSS features desired by customers, a lack of understanding of customer-perceived OLSQ attributes and customer evaluation of the quality of the OCSS.

Service delivery strategies whereby a customer conducts repeated business with a specific provider such that socially-embedded relationships can be established are particularly desirable in the B2B setting (Anderson et al., 1994). Since customers play a role in the production of the service they receive (Moon and Frei, 2000), the importance of co-operation in service co-production cannot be underestimated in the service strategy design (Schultze, 2003). Failure to match the online service strategy with the business needs of customers could result in dissatisfaction with the service and loss of customers. This presents a significant challenge for the service provider in balancing the two sides (provider-customer) of the online service relationship.

The online service strategy is implemented in the design of the OCSS. The focus of OCSS design is backend support for service operations and includes system
specifications, design of facilities, equipment and other company resources required to deliver the service (Surjadaja et al., 2003). Customer facing activities (front-end function) centre on the delivery of the core service to the customer (Slack et al., 2001). It is important for service providers to continuously review the quality of their online service offering in line with changing customer service needs. Modifications to the online service strategy should be informed by the provider’s knowledge of customer-desired service features obtained through customer feedback.

Marketing deals with the expected quality of the service and involves matching customer needs with company resources (Meredith, 1987). Marketing also means determining service features such as accessibility of services, price, brand image and value add (Palmer et al., 1999). Today’s more sophisticated and demanding customers expect high quality online service which emphasizes aligning service standards with service guarantees (Nguyen et al., 2003). Service standards are based on a balance between customer requirements of the service, perceived attributes of quality and the facilities, equipment and other resources required to deliver the service.

5.9 Summary

This chapter presented the results of the exploratory phase of the research, proposed a conceptual model of B2B online service quality and identified and conceptualised the determinants of OLSQ. The following chapter details the application of Churchill’s (1979) paradigm to the development of the OLSQ scale. Exploratory factor analysis (EFA) is used to identify the factor structure of the OLSQ construct and to develop an a priori measurement model.
CHAPTER SIX

Phase II: Confirmatory Research

It is the ideas about data that count, it is they that provide the cement, the integration… no amount of fancy statistical acrobatics will undo the harm that may result by using an ill-conceived theory, or a caricature of a theory. Elazar J Pedhazur (1982, p.30)

6.1 Introduction

Chapter 5 presented and discussed the results of the exploratory phase of the research. Determinants of B2B OLSQ derived from interviews were discussed and from this, an a priori conceptual model of OLSQ was developed. In this chapter, Churchill’s (1979) scale development paradigm is applied to the development of the measurement instrument (OLSQ scale). Firstly, the OLSQ construct is defined and its domain specified. This is followed by a discussion on the procedure used to develop, refine, empirically test and validate the measurement model and its associated instrument.

6.2 Development and Refinement of the OLSQ Scale

The process used to develop, refine and validate the OLSQ scale is depicted in Figure 6.1

**Figure 6.1 Scale Development Process (Adapted from Parasuraman et al., 2005)**
6.2.1 Step 1: Definition and Domain of Online Service Quality

A critical first step in the scale development process is the correct specification of the domain from which items representing the construct of interest, in this case, online service quality, are to be derived (Churchill, 1979; DeVellis, 2003). A review of extant literature on e-service quality (B2C service domain) and information derived from interviews (detailed in Chapter 5) suggested that business customer assessment of the quality of service delivered through Web-based provider online customer service systems (OCSS) encompasses aspects of the design of the service delivery medium (OCSS ie. website design), the information provided on the site and customer interaction with the service provider.

For the purpose of this research, online service quality in B2B service delivery environments is defined as: the customers’ overall evaluation and judgment of the excellence and quality of service delivered by partner organisations through an online customer service system (OCSS). An OCSS is an interactive, Web-based information system (ie. corporate website, extranet or intranet) that delivers service to a customer. The definition adopted in this study is consistent with van Riel et al’s. (2001) assertion that in an online customer service environment, customers are more likely to perceive the delivered service as “an overall process and outcome” rather than evaluate each sub-process during a single interaction with the system and/or service provider.

When interview respondents were questioned on what they considered to be desirable characteristics of online customer service, a variety of features ranging from broad dimensions (eg. quality of the service delivery medium) to more general perceptual
attributes (related to the design and ease of use of the service delivery medium) were discussed. The full range of evaluative criteria derived from the interviews is postulated in the theoretical framework that is developed and presented in Chapter 5.

As detailed above, the core evaluative process for OLSQ encompasses both perceptual and dimensional levels. Therefore, online service system features associated with the core evaluative process (perceptual-level attributes) for online service quality constitutes the domain of items considered for the OLSQ scale. Phase I of the study identified 24 OCSS features at the perceptual-level which were categorised into 10 OLSQ dimensions. Summary descriptions of the 10 dimensions are provided below (for a more detailed discussion of the OLSQ dimensions see Chapter 5.6).

1. *Website Design:* relates to OCSS (website) aesthetics, ie, visual appeal; the representation of site components; the ease of navigation (ie. not having to “drill” too far into the site to locate the information required); the quantity, functionality and relevance of hyperlinks, and simplicity of design.

2. *Ease of Use:* is concerned with the quality of the search facility (ie. the search facility is available within the site and is adequate for user needs); the degree to which the site is logically laid out and easy to move around; how simple the site is to understand and comprehend; how easy the site is to learn to use; and the degree of “friendliness” of the user interface.

3. *Technical Reliability:* refers to the technical function of the site; the degree to which site components and hyperlinks function properly; (ie. no broken or redundant links on the site); system response time (ie. within reasonable
limits); fast page load time (within 10 seconds); and site is up and running and available for business when and where needed.

4. **Usefulness:** refers to how well the site meets the service and support needs of the user, the ability of the site to facilitate resolution of customer service problems; the degree of *fit for purpose* (ie. the degree to which the provider’s perceived online service objectives meet customer service needs).

5. **Intuitiveness:** refers to the degree of *alert-driven* interaction between service provider and the user; the degree to which the site learns about user information needs and responds accordingly.

6. **Presentation:** refers to the organisation of information provided on the site; the amount, structure and representation of information.

7. **Accuracy:** is concerned with the degree to which information on the site is free of errors (ie. correct versions of product technical support information are provided); the degree of assurance that user account data cannot be altered, tampered with or corrupted.

8. **Availability:** concerns the ease of contacting the service provider; the approachability of the service provider; and the completeness of the service provided through the site (ie. *one-stop* service provision).

9. **Service Reliability:** refers to consistent, timely, dependable and unfailing service delivery; the ability of the service provider to consistently delivers on service promises; the timeliness of the service response (turnaround time within 12 hours); the service provider’s ability to provide immediate response to mission critical service requests; and the reputation of the service provider for delivery of high quality service.
10. **Flexibility**: refers to the degree of flexibility of choice of available service and support options; the range of service access options provided; the range of download options provided; and the number of service agent contact options provided.

The collection of attributes pertaining to the 10 dimensions (detailed in Table 5.4) served as the OLSQ domain from which the items for the scale were drawn. The domain and consequences of OLSQ is depicted in Figure 6.2.

![Figure 6.2 Domain and Consequences of OLSQ (Adapted from Parasuraman, 2005)](image)

**NOTE**: OLSQ = Online Service Quality

The specification of perceptual-level attributes as the domain of OLSQ indicators (scale items) is justified on the following grounds:

1. Perceptual attributes are more enduring than other evaluative criteria such as antecedents of OLSQ which may change as technology changes. The more abstract perceptual attributes triggered by the OLSQ antecedents (prior events or cues that trigger/lead to formation of perceptual attributes) are less likely to change. For example, in a Web-based OCSS, a perceptual attribute of the website may be “site is easy to maneuver around”. Antecedents of this attribute may include search engine quality and effort required to locate...
information within the site. Although the antecedents may change over time with advances in technology, or be replaced by new ones, the perceptual attribute “site is easy to maneuver around” is expected to remain relevant as an evaluative criteria.

2. Perceptual attributes are more experiential than technical, and therefore, easier for the customer to conceptualize. In contrast to the antecedents of OLSQ which are either present or absent, perceptual attributes are more scalable and as a result, lend themselves more readily to being rated along a continuum (scale) (Parasuraman et al., 2005:218).

6.2.2 Step 2: Development and Refinement of the Preliminary Scale

Each item in a scale is a test in its own right of the strength of the latent variables underlying them (Nunnally, 1967; Nunnally and Bernstein, 1994; DeVellis, 2003). The number of items in a scale has a direct influence on the internal consistency reliability of the instrument as well as how strongly the items correlate with one another, therefore, having a larger number of items is “a form of insurance against poor internal consistency” (DeVellis, 2003:66). To address the issue of internal consistency, DeVellis (2003) suggests beginning with a pool of items (reflecting the construct of interest), three or four times as large as the final scale.

An initial item pool of 72 items (see Appendix L) based on the 10 OLSQ dimensions and representing the OLSQ domain was generated from information obtained from interviews conducted in Phase I of the study. The items were then incorporated into a Likert scale format. A Likert scale is one of the most commonly used item formats (DeVellis, 2003), typically utilised in instruments measuring opinions, beliefs and
attitudes. According to Parasuraman et al., (1988) service quality is “an overall evaluation” similar to an attitude, which supports the use of Likert scale formats in service quality measures. Given that the purpose of the OLSQ scale was to measure business customers’ attitudes towards the online service offering of their business partners, a Likert scale format was the most logical choice.

The preliminary scale, comprising the initial item pool consisting of 72 items, was sent to a panel of experts from Information Systems (with expertise in information quality and usability measurement); Marketing (with expertise in service quality and its measurement, and marketing scale development); Psychology (with expertise in psychometrics/scale development and validation), a representative group of Business Customers (to assess clarity/wording of items/statements) and a Marketing Manager (to assess conciseness of items) for review.

Each expert was provided with a working definition of the construct, and the preliminary scale and was asked to comment on:

1. how relevant each item was to measuring the OLSQ construct (content validity)
2. clarity and conciseness of items (face validity)
3. alternate means of tapping the construct (content validity) (DeVellis, 2003)

The purpose of the expert review was to (a) reword items to improve clarity and remove ambiguity (b) reformat double barreled items (c) remove redundant items (where wording, vocabulary and sentence structure of items was too similar to differentiate between them) and (d) obtain feedback on the length, format and clarity
of instructions and initial instrument draft. After considering feedback received from the expert panel, the instrument was revised and sent back for further review. The process continued through three cycles, at which point the scale was considered to contain a set of items that intuitively “tapped” the OLSQ construct and satisfied the requirements of face and content validity (Churchill, 1979; DeVellis, 2003). This process resulted in the elimination of 30 items considered to be measuring the same or similar attributes, in addition to items comprising wording, vocabulary and sentence structure too similar to differentiate between them. A total of 42 items were retained for inclusion in the scale (See Appendix T).

6.2.3 Step 3: Items Administered to a Representative Sample of Subjects
The next step in the scale development process involved administering the final instrument to a representative sample of subjects. DeVellis (2003) recommends using a large sample of subjects and cautions on the risks inherent in using too few subjects for the following reasons: First, patterns of covariance among items may not be stable resulting in items being selected for inclusion on the basis of their contribution to the coefficient alpha, thus, having a negative effect on internal consistency. Further, correlations among items can be influenced by chance to a substantial degree when the sample size is small. Second, the development sample may not be truly representative of the population for which it is intended if certain individuals are excluded from the sample. Nunnally (1967) supports this position, pointing out that the primary sampling issue in scale development involves the sampling of items from a hypothetical universe. Therefore, in order to concentrate on the adequacy of the items in a scale, the sample should be sufficiently large enough to eliminate subject
variance as a significant concern. Nunnally (1967) suggests a sample of at least 300 respondents for scale development purposes.

Another issue related to sample size concerns non-representativeness and involves the level of attribute present in the sample versus the intended population (DeVellis, 2003). In this case, a sample might represent a narrower range of the attribute than would be expected of the population. To demonstrate this phenomenon, DeVellis (2003) suggests that opinions regarding the appropriate legal drinking age may differ in a sample of college students and the community at large (DeVellis, 2003). Non-representativeness can also be of concern in a sample in which the relationships among items are different from those in the population. For instance, items may have quite different meanings for a sample than for people in general. These issues were largely overcome by ensuring that the respondents in Phase II of the study were drawn from a diverse sample of business customers (see Chapter 4.3.3 for a detailed discussion on the sampling strategy used).

A self-administered, online Web-based data collection method was used to obtain data from the sample of business customers. The scale was loaded to a secure server residing on the University of Wollongong’s network and linked to the participating organization’s (for confidentiality purposes referred to as XYZ organization) website. XYZ customers considered to be representative of the population of interest were contacted by the organization and requested to participate in the survey. Respondents logged on to the site using a unique password and ID and completed the scale. An automated screening process was used to ensure that each customer completed the scale once only. This process yielded 699 usable responses.
6.2.4 Step 4: Data Analysis and Scale Reduction

Given that the sample (N=699) was large enough, it was split into 2 sub-samples for analysis (Nunnally, 1967; DeVellis, 2003; Fabrigar et al., 1999). The first sub-sample (N=299) served as the primary development sample for exploratory factor analysis (EFA) purposes and provided the basis for specifying a confirmatory factor model (CFM) to fit the second half of the data (N=400). The advantages of using a split sample technique in scale development include:

1) Computing alphas and other statistics (see Chapter 4.6.1 for a discussion on coefficient alpha and other statistical tests for scale reliability and validity) for the first group ensures that the choice of items to retain in the final version of the scale is not at all based on the second sub-sample, eliminating problems associated with alpha inflation (for example, the likelihood that alpha values are distorted by chance).

2) Special conditions that may have applied to data collection from the first sub-sample (eg. exposure to particular research personnel, physical settings and clarity of printing of the instrument) would apply equally to the second.

3) Valuable information about scale stability is gained when findings are replicated by splitting the development sample. When item selection is based on data from the first sub-sample, the opportunity for systematically attributing chance results to reliability in the second group is eliminated because its data did not influence item selection (DeVellis, 2003:99).
Data from the first sub-sample was entered into the SPSS statistical package and subjected to scale reduction and refinement analyses consistent with standard procedures for developing and refining scales (DeVellis, 2003; Nunnally, 1967). Item performance was examined using exploratory factor analysis (EFA). The goal of the EFA was to understand the structure of correlations among each of the measured variables by estimating the pattern of relations between the common factors and each of the variables as indexed by factor loadings (Fabrigar et al., 1999). EFA was considered relevant as there was little theoretical or empirical basis to make strong assumptions about how many common factors existed (Fabrigar et al., 1999). SPSS output from the exploratory analysis is provided in Appendices U-W.

EFA was conducted using Principal Axis Factoring (PAF or PFA) as the extraction method, and Promax (with Kaiser normalisation) as the rotation method. Although PAF is less common than Principal Components Analysis (PCA), Widaman (1993) suggests that PCA should not be used when a researcher wishes to obtain parameters reflecting latent variables or factors, as was the case with this research. Breaks-in-Eigenvalues criterion (Kaiser, 1960) and Scree plot (Cattell, 1966) were used to determine the initial number of factors to retain. The breaks-in-eigenvalues rule was proposed by Kaiser (1960) and represents the amount of information captured by a factor. A factor that achieves an Eigenvalue of 1.0 contains the same proportion of total information as does the typical single item. The Eigenvalue rule asserts that factors with an Eigenvalue less than 1.0 should not be retained. The Scree test is also based on Eigenvalues but uses their relative, rather than absolute values as a criterion. Cattell (1966) suggests that the right number of factors can be determined by looking at the drop in the amount of information across successive factors. The Scree test
implies that the vertical portion of the plot is where the substantial factors are located, while the horizontal portion that represents the Scree should be discarded (DeVellis, 2003). Examination of the Scree plot and breaks-in-eigenvalues criteria strongly suggested a three factor OLSQ structure, pertaining to service interaction, OCSS design (website) and technical quality of the OCSS. The identified factors accounted for 49.62% of the total variance among the items, which is within the range of 50% suggested by Garson (2005). Initial eigenvalues and total variance explained by the three factors is detailed in Table 6.1, below.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Total</th>
<th>% of Variance</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (SQ)</td>
<td>17.118</td>
<td>37.212</td>
<td>37.212</td>
</tr>
<tr>
<td>2 (WQ)</td>
<td>3.405</td>
<td>7.402</td>
<td>44.614</td>
</tr>
<tr>
<td>3 (TQ)</td>
<td>2.303</td>
<td>5.007</td>
<td>49.621</td>
</tr>
</tbody>
</table>

Table 6.1 Total Variance Explained

Of the three factors extracted, service quality appeared to be the most important, explaining the largest portion of total variance (37.2%). This factor comprises items related to service interactions between the user and service provider. The second factor, Web quality which measures aspects of the design and usability of the OCSS environment explained 7.4% of the variance. The third factor, technical quality, accounted for 5.0% of the variances and consists of items related to the technical functioning of the OCSS.

Once the factor structure was determined, reliability analysis (of the factor structure) was conducted by grouping the items according to the 10 a priori perceptual attributes from which they were derived. Next, corrected item-to-total correlations were examined and items whose elimination improved coefficient alpha (for a detailed
discussion on co-efficient alpha see Chapter 4.5.4.4) were deleted. EFA was repeated and item factor loadings reexamined. According to DeVellis (2003), higher factor loadings indicate better fit on the factor onto which the item loads, stressing that items clearly “tap” one factor when loadings are greater than .65, especially in cases where Likert scales are used. A series of iterations, involving elimination of items with low loadings on all factors or high cross loadings on two or more factors, resulted in the identification of 33 items with loadings above the recommended cutoff of .65. Re-examination of corrected item-to-total correlations resulted in the trimming of 13 additional items from the item pool. 20 items were retained for Confirmatory Factor Analysis (CFA). Factor loadings for the items are depicted in Table 6.2.

<table>
<thead>
<tr>
<th>Factors</th>
<th>Variables</th>
<th>Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1: SQ (37.2% variance)</td>
<td>The service and support content on the website can be tailored to meet my specific service and support needs</td>
<td>.879</td>
</tr>
<tr>
<td></td>
<td>The organization gives me the flexibility to customize pages on its website to align with my specific business needs</td>
<td>.838</td>
</tr>
<tr>
<td></td>
<td>Customer service and support staff are easy to contact from the website (ie. through provision of email and online forms)</td>
<td>.790</td>
</tr>
<tr>
<td></td>
<td>Customer service and support staff provide immediate responses to “mission critical” service requests (ie. within a half hour)</td>
<td>.685</td>
</tr>
<tr>
<td></td>
<td>The organization always delivers on service promises</td>
<td>.680</td>
</tr>
<tr>
<td></td>
<td>The organization gives an assurance to resolve my service and support problems promptly</td>
<td>.668</td>
</tr>
<tr>
<td></td>
<td>The organization gives me the flexibility to determine which service points I would like to access</td>
<td>.604</td>
</tr>
<tr>
<td>F2: WQ (7.4% variance)</td>
<td>Information provided on the website is easy to locate (ie. I don’t have to drill too far into the site to find the information I am looking for)</td>
<td>.843</td>
</tr>
<tr>
<td></td>
<td>The design of the website is simple, yet functional</td>
<td>.781</td>
</tr>
<tr>
<td></td>
<td>The website is well laid out and easy to navigate</td>
<td>.754</td>
</tr>
<tr>
<td></td>
<td>Components on the website are well organised</td>
<td>.728</td>
</tr>
<tr>
<td></td>
<td>The website is easy to use</td>
<td>.716</td>
</tr>
<tr>
<td></td>
<td>The design of the website allows me to have control of the interaction with the site</td>
<td>.683</td>
</tr>
<tr>
<td></td>
<td>Components on the website are clearly represented</td>
<td>.674</td>
</tr>
<tr>
<td></td>
<td>The website interface is user-friendly</td>
<td>.666</td>
</tr>
<tr>
<td></td>
<td>Information is presented in a well-structured manner (ie. logically organized)</td>
<td>.650</td>
</tr>
<tr>
<td>F3: TQ (5.0% variance)</td>
<td>Webpage load time is within reasonable limits (&lt; or = 10 seconds)</td>
<td>.725</td>
</tr>
<tr>
<td></td>
<td>Downloads from the website are within reasonable limits (&lt; or = 10 seconds)</td>
<td>.687</td>
</tr>
<tr>
<td></td>
<td>System response time is reasonable (ie. system responds to requests for data from databases within 10 seconds)</td>
<td>.651</td>
</tr>
<tr>
<td></td>
<td>Website components function properly (ie. do what they are designed to do eg. order facility functions as it should)</td>
<td>.658</td>
</tr>
</tbody>
</table>

*Table 6.2 Item factor loadings*
Although the loading of one retained item was slightly below the cutoff of .65, it was cited by a number of interviewees in Phase I of the study as a crucial component in their assessment of service quality and therefore, considered important enough to retain for confirmatory analysis. The AMOS statistical package (widely used in social science research) was utilised for the confirmatory analysis.

6.2.5 Step 5: Reliability and Validity Assessment

Confirmatory factor analysis, using a structural equation modeling technique (SEM) was used to further assess the factor structure of the OLSQ construct and to validate the OLSQ measurement model and associated instrument. The analysis was conducted using the remaining 400 cases in the dataset and involved specification, identification and estimation of the measurement model and evaluation of fit of the model with the data from which it was derived.

Step 1: Specification

Specification involves specifying and fitting the measurement model through path analysis with the set of latent variables hypothesized to underlie the construct of interest (Kline, 1998), and forming a statement about a set of parameters that indicate the nature of the relationship between two variables typically specified as fixed or free (Hoyle, 1995). Fixed parameters are not estimated from the data and their values are fixed to zero. Free parameters on the other hand are estimated from the data and are believed to be non-zero. The degree to which the pattern of fixed and free parameters specified in a model is consistent with the pattern of variances and co-variances from a set of observed data is indicated by indexes of model adequacy (discussed in Section 6.2.5.1, below) (Kline, 1998). This approach involves testing of one or more models
to determine which has best fit with the data. (See Appendices X and Y for output from the analysis).

Based on hierarchical model guidelines suggested by Kline (1998), along with knowledge gained from theory two models of factor structure were specified using an alternative model approach. The alternative model approach involves specification and testing of one or more plausible models to determine which has the best fit with the data.

1. **Model One:** three first order factor model (correlated). Support for a first order factor structure is provided in Parasuraman *et al.*, (2005) confirmed a first order factor structure in their study of electronic service quality (eSQ) of B2C retail websites. Results from Gounaris and Dimitriadis’s (2003), study of B2C Web portals further supports the first order factor structure.

2. **Model Two:** three first order and one second-order (OLSQ) factor model (correlated). Support for a second order factor structure is provided in Wang and Tang (2003) and Yang *et al.*, (2005). Parasuraman *et al.* (2005), in addition to their validated first-order factor model, also ran a second order CFA. The authors’ found that factor loadings and model fit statistics were similar to the first order factor structure, however, based on model specification criteria suggested by Jarvis *et al.* (2003) concluded that specifying a second order model would have required at least two other indicators for the second order construct. The additional indicators were not available in their 2005 study.
Step 2 Identification

The next step in the SEM process involved identification of the model parameters. According to Kline (1998), identification is a fundamental consideration when specifying a model. Identification concerns the correspondence between information to be estimated (ie. the free parameters) and information from which it is to be extracted (ie. observed variances and covariances in the sample covariance matrix) (Kline, 1998). Identification also involves determining whether a single unique value for each and every free parameter can be obtained from the observed data (Kline, 1998).

According to Kline (1998:205), a model is identified if it meets two conditions: 1) the number of free parameters must be less than or equal to the number of observations (ie. variances and covariances among the observed variables in the model), and 2)
every factor must have a scale (i.e., metric). Identification involved obtaining estimates of the free parameters from the set of observed data.

**Step 3 Estimation**

Parameters were estimated using *maximum likelihood estimation* (MLE). MLE is one of the most frequently used estimation methods in CFA. MLE involves an iterative process to obtain estimates of free parameters which are computed and compared to the observed covariance matrix (Kline, 1998). The result is a residual matrix containing elements whose values are differences between corresponding values in the implied and observed matrices. The estimation process continues until the values in the residual matrix cannot be minimized any further and the estimation procedure has converged on a solution (Kline, 1998). Anderson and Gerbing (1988) support the use of MLE over other estimation methods because its estimates have been found to be robust, providing estimates that are good even when the data are not normally distributed.

In order to calculate estimates of effects (involving factors) in a measurement model, each factor must have a scale. Factors can be scaled in two ways (Kline, 1998). The first involves fixing the variance of a factor to a constant, usually 1.0. This method standardizes the latent variable. The second method, involves fixing the loading of one factor to equal 1.0, giving the latent variable the same metric as the indicator. Both methods reduce the number of parameters and result in the same overall fit of the model to the data (Kline, 1998). The residual path coefficient for the direct effect of a measurement error term on its indicator in CFA is also typically fixed to 1.0 (Kline, 1998). Following Kline (1998) the derived models were specified as follows:
Model 1: (1) The three identified factors were specified as first-order factors; (2) the three factors are correlated; (3) the three factors are one level away from the observed variables; (4) one indicator of each observed variable was scaled to equal 1.0; (5) the measurement error terms associated with each observed variable were scaled to 1.0; and (6) the measurement error terms associated with each observed variable are uncorrelated. (See Appendix X) for diagrammatical representation of the model as specified in AMOS).

Model 2: (1) Was specified to include the three identified first-order factors and one second-order factor (overall service quality); (2) covariance among the three first-order factors is fully explained by their regression on the second-order factor; (3) one indicator of each observed variable was scaled to equal 1.0; (4) the measurement error terms associated with the observed variables are uncorrelated; and (5) the measurement error terms associated with each observed variable were scaled to equal 1.0. (See Appendix Y) for diagrammatical representation of the model as specified in AMOS).

**Step 3 Evaluation of Fit**

Following specification and estimation of model parameters, each of the structures was assessed for fit with the dataset from which it was derived (Hoyle, 1995). Fit indexes commonly used in social and behavioural research are discussed below.

**Fit Indexes**

The *chi-square goodness-of-fit* test statistic is the most common model fit index. Chi-square assesses the magnitude of the discrepancy between the sample and fitted covariance matrix (Hoyle, 1995). Garson (2005) suggests chi-square ratios between 2
and 5 are required for adequate model fit. The validity of the statistic as an index of fit however, has recently been called into question. Garson (2005) cautions that the chi-square test may be misleading due to its sensitivity to violations of assumptions of multivariate normality. Hoyle (1995:78) further cautions that “the standard chi-square test may not be a good enough guide to model adequacy, because a significant goodness-of-fit chi-square value may be a reflection of model misspecification, power of the test, or violation of some technical assumptions underlying the estimation method”.

In order to address the problems associated with the chi-square test statistic detailed above, a number of adjunct fit indexes (Hoyle, 1995) have been proposed. Adjunct fit indexes are global indexes of model adequacy and its indicators generally vary between zero and 1.0. It is widely accepted that values equal to, or exceeding .90 are required before a model can be viewed as being consistent with the data it was estimated from (Hoyle, 1995; Kline, 1998). Adjunct fit indexes are indicators of goodness-of-fit and the higher the value of the indicator the better. According to Hoyle (1995:15) “the most defensible strategy for evaluating the fit of structural equation models is to consult fit indexes from multiple classes of adjunct fit indexes and evaluate the chi-square goodness-of-fit test with reference to the statistical power of the test given the characteristics of the model and the data”.

According to Hu and Bentler (1993:82; in Hoyle, 1995), the most widely adopted dimensions for classifying fit indexes are the absolute and incremental distinction of fit indexes. Absolute fit indexes directly assess how well an a priori model reproduces the sample data. Incremental fit indexes (or comparative fit indexes) measure the
proportionate improvement in fit by comparing a target model with a more restricted, nested baseline model (Hu and Bentler, 1993, in Hoyle, 1995:82). The most widely used absolute fit index is the goodness-of-fit index or GFI. GFI is defined as “a measure of the relative amount of variances and covariances that is accounted for by the implied model” (Joreskog and Sorbom, 1984). Typical values range between zero and 1.0. While there is no agreed empirical or reasoned basis for choosing particular alternative cutoff values, a reasonable minimum value for model acceptance of .90 is widely used by social and behavioural scientists (Hoyle and Panter, 1995). Garson (2005) cautions on the strict interpretation of GFI cutoff values of .90 or above, as GFI is sensitive to sample size, increasing in value as sample size increases. Sedera and Gable (2004) support Garson (2005) highlighting the problem of suppressed GFI values in second and third-order confirmatory factor solutions.

Another widely reported absolute fit index is the Root Mean Squared Error of Approximation (RMSEA). RMSEA computes average lack of fit per degree of freedom and corrects for model complexity. RMSEA values less than or equal to .10, indicate good fit, while values below .05 are associated with very good fit. Excellent fit is indicated when the values are below .01 (Stinger, 1990). RMSEA is one of the fit indexes less affected by sample size, however, may overestimate goodness-of-fit for very small samples.

Hu and Bentler (1993, in Hoyle, 1995:83) propose the use of three types of Incremental fit Indexes. Type-1 Indexes assess the adequacy of the target model in relation to the baseline model. Bentler and Bonett’s (1980) normed fit index (NFI) is the most widely reported Type-1 index. NFI represents “the proportion of total
covariance among observed variables explained by a target model when using the null model as a baseline model” (Mullik et al., 1989, in Hoyle, 1995:83). NFI has a range of zero to 1.0. Values of .90 or above indicate adequate model fit.

*Type-2 Indexes* quantify the degree to which a particular exploratory factor model is an improvement over a zero factor model when assessed by maximum likelihood and was first developed by Tucker and Lewis (1973). The index is referred to as the Tucker-Lewis Index or TLI. Other indexes include the *normed fit index* (NFI) and Bentler and Bonnet’s (1990) *non-normed fit index* (NNFI). As is the case with Type-1 indexes, values above 0.90 are indicative of good fit.

*Type-3 Indexes* or noncentrality fit indexes assess “the reduction in the amount of misfit of a target model relative to a baseline model” (Hu and Bentler, 1993, in Hoyle, 1995:84). Type three indexes include Bentler’s (1989; 1990) fit index (BFI) and the modified BFI, the comparative fit index (CFI). Values equal to or greater than .90 indicates an acceptable fit to the data.

When the goal of the researcher is to develop a parsimonious measure (ie. a model with relatively less parameters to estimate in relation to the number of variables and relationships in the model) Garson (2005) recommends the use of parsimony measures in addition to the absolute and incremental fit indexes detailed above.

Parsimony measures penalise for lack of parsimony, since more complex models will, if all other things are equal, generate better fit than less complex models (Garson, 2005). These measures do not use the same cutoffs as their counterparts and are noticeably lower in most cases. Parsimony measures are generally used when
comparing models and a higher parsimony measure indicates a better fit (Garson, 2005). Parsimony is measured by parsimony ratio, PRATIO, (used in goodness of fit measures like PNFI and PCFI), which rewards parsimonious models (ie. models with relatively less parameters to estimate in relation to the number of variables and relationships in the model). Values range between 0 and 1, however, values closer to 1 are more desirable.

There is currently no consensus concerning the best index of overall fit for structural equation models, however, reporting of multiple indexes of fit is encouraged in the SEM literature (Hoyle, 1995; Bollen, 1989b; Marsh et al., 1988; Tanaka, 1993). Kline (1998) cautions on the use of a single index as an indicator of model fit, suggesting that a single fit index reflects only one particular aspect of fit and a favorable value of that index is not sufficient by itself to indicate good fit. Hoyle (1995) suggests that researchers report at least the chi-square statistic and goodness-of-fit index (GFI). In addition, one each from type-2 and type-3 adjunct fit indexes should be reported. The Tucker-Lewis Index (TLI) also called Non-normed Fit Index (NNFI) or Incremental Fit Index (IFI) (Type-2), and Comparative Fit Index (CFI) or Fit Index (FI) (Type-3) is suggested (Hoyle, 1995; Kline, 1998; Hu and Bentler, 1993, in Hoyle, 1995:76). Fit indexes suggested by Hoyle (1995) above, were used to assess model fit. The results of the assessment are detailed in Table 6.4, below.
6.2.5.1 Model Fit Assessment

The results of the fit assessment for each of the models is summarized in Table 6.4.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Abbreviation</th>
<th>Best Range</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Absolute Fit Measures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chi-Square/DF</td>
<td>CMINDF</td>
<td>&lt; 5</td>
<td>2.801</td>
<td>3.145</td>
</tr>
<tr>
<td>Goodness-of-Fit Index</td>
<td>GFI</td>
<td>.90 or above</td>
<td>.86</td>
<td>.88</td>
</tr>
<tr>
<td><strong>Incremental Fit Measures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incremental Fit Index</td>
<td>IFI</td>
<td>.90 or above</td>
<td>.92</td>
<td>.92</td>
</tr>
<tr>
<td>Tucker-Lewis Index</td>
<td>TLI</td>
<td>.90 or above</td>
<td>.91</td>
<td>.91</td>
</tr>
<tr>
<td>Comparative Fit Index</td>
<td>CFI</td>
<td>.90 or above</td>
<td>.92</td>
<td>.92</td>
</tr>
<tr>
<td>** Parsimony Fit Measures**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parsimony-Adjusted Normed Fit Index</td>
<td>PNFI</td>
<td>Closer to 1</td>
<td>.78</td>
<td>.79</td>
</tr>
<tr>
<td>Parsimony-Adjusted Comparative Fit Index</td>
<td>PCFI</td>
<td>Closer to 1</td>
<td>.81</td>
<td>.82</td>
</tr>
</tbody>
</table>

*Table 6.3 Fit Assessment Results*

NOTE: Based on one-tailed tests, *-values greater than 1.65 are significant at p < 0.05.

The chi-square statistic for both models is well within the acceptable range of between 2 and 5 suggested by Medsker *et al.* (1994). However, the first-order factor model performed slightly better than the second-order model on this index. Both models are also within the acceptable root mean square (RMR) range (close to zero). Given that RMR is sensitive to the scale of measurement, therefore it is difficult to establish what is an acceptably low index, however, RMR values for both models are below the recommended range indicating reasonable fit with the data.

The goodness-of-fit index is slightly below the recommended level of .90 or above, however, as Kelloway (1998) suggests, GFI should be treated with caution due to its sensitivity to sample size. Kelloway (1998) further suggests that values over .90 are rarely achieved. The second-order model returned the highest GFI value (.88), which is considered to indicate adequate fit (Sedera and Gable, 2004).
The root mean squared error of approximation (RMSEA) provides similar information to RMR (Stinger, 1990). RMSEA values below .10 indicate good fit, while values below .05 are indicative of very good fit. RMSEA indicators for both models are less than .10, indicating reasonable fit. Superior fit on this indicator is evidenced in the second-order factor model.

When examining the comparative fit measures, all three measures (Incremental Fit Index (IFI), Tucker-Lewis Index (TLI) and Comparative Fit Index (CFI) are above the acceptable cutoff of .90. Values for each of the three indicators are identical across the two models.

Although parsimonious goodness-of-fit index recommended values range from 0-1 with higher values indicating better model fit, Sedera and Gable (2004) suggest that they are unlikely to reach the .90 level used for most other fit indicators. Sedera and Gable (2004) further suggest that these indicators are best used for comparing alternative models. PCNI and PCFI values are slightly better for the second-order factor model than the first-order model.

The overall results of the fit assessment demonstrate superior fit of model 2. All three first order factors loaded on the second-order factor (OLSQ) strongly (>0.64), confirming the existence of a second-order factor of ‘overall service quality’.

Following confirmation of adequate fit of model 2, reliability and validity was assessed. As detailed in Chapter four (Chapter 4.5.4.5), reliability is indicated by the
strength of the reliability co-efficient. Nunnally and Bernstein (1994) suggest a conventional minimum for reliability co-efficient of .70. Reliability was assessed by computing coefficient alpha’s for each of the three factors confirmed by the CFA. Coefficient alpha values of .92 (quality of OCSS design (WQ)), .87 (technical reliability of the OCSS (TR)) and .87 (quality of the delivered service (SQ)) respectively, were derived. All values are well above the conventional minimum suggested by Nunnally and Bernstein (1994), demonstrating high internal consistency and therefore, reliability of each factor (dimension).

Having established reliability of the scale’s component dimensions validity of the measure was assessed. According to Kline (1998) four types of validity should be considered when assessing the psychometric properties of a measure. These include: content validity, construct validity; convergent and discriminant validity; and criterion-related validity. Content validity was assessed in the exploratory phase of the research (see Section 6.2.2). Construct validity is the most general type of validity and is directly concerned with the theoretical relationship of a variable to other variables (DeVellis, 2003). The remaining three types of validity are said to be subsumed within construct validity. Convergent and discriminant validity measure aspects of construct validity and involve the evaluation of measures against one another. A set of indicators presumed to measure the same construct, demonstrates convergent validity if they are substantially correlated with one another (DeVellis, 2003; Kline, 1998). Coefficient alpha values along with strong loadings of indicators on their corresponding factors (see Table 6.2), support the convergent validity of the measure.
Discriminant validity was assessed by constraining inter-factor correlations between the pairs of dimensions (one at a time) to unity in the measurement model, leaving all other parameters to be free and repeating the CFA. The constrained CFA model produced an increase in chi-square that was significant at p<.01, therefore supporting the distinctiveness of the OLSQ scale’s component dimensions (Yang et al., 2005; Parasuraman et al., 2005). Criterion-related validity was not relevant to the context of the current study and therefore, was not included in the assessment. These results collectively, provide support for the soundness of the scale’s factor structure. Based on results from the validity and reliability tests the OLSQ scale demonstrates good psychometric properties.

The results of the confirmatory phase of the research support the proposition that B2B online service quality is a multi-dimensional construct (Gounaris, 2005; Parasuraman et al., 2005). In line with a number of earlier studies into the determinants of B2C online service quality, three key dimensions of B2B online service quality comprising items pertaining to the quality of the service delivery medium (Web Quality), the quality of the service delivery system (Technical Quality) and quality of the service delivery process (Service Quality) were identified through confirmatory factor analysis.

6.3 Summary

This Chapter detailed the procedure used to develop, test and validate the OLSQ measurement model and its associated instrument. The results of the confirmatory factor analysis support the hypothesis that OLSQ is a second order construct, comprising three dimensions, quality of OCSS (website) design, technical reliability
of the OCSS and quality of service interaction (SQ). Validity and reliability of the instrument was established through confirmatory factor analysis. Chapter 7 discusses conclusions drawn from the research, key findings, implications of these findings for practitioners as well as limitations of the current study and offers suggestions for future research into the determinants and measurement of the OLSQ construct.
7.1 Introduction

Chapter 5 discussed the results of the exploratory phase of the research. The determinants of B2B online service quality derived from in-depth interviews with business customers, were discussed and from this, a conceptual model of online service quality was developed. Chapter 6 discussed the application of Churchill’s (1979) scale development paradigm to the development of the measurement instrument (OLSQ scale) and detailed the process used to empirically validate the measure. This chapter discusses the results of both phases of the research and the main findings from the study. It describes the significance of the research and limitations of the study and concludes by suggesting directions for future research.

A review of relevant literature revealed that research into the determinants and measurement of B2B service quality in online service environments is still in its infancy and much of the existing research is largely anecdotal, centering on the consumer and ignoring the business customer perspective. An evident lack of an appropriate conceptual framework for understanding, and a valid and reliable measure for B2B online service quality, motivated the study. The primary aim of the research was to contribute to the body of literature on service quality by proposing a conceptual model of B2B online service quality and a scale for measuring the construct. Three research questions were addressed in this study: 1) What is the meaning of B2B online service quality? 2) What are the determinants of B2B online service quality? 3) What is a valid and reliable measure of B2B online service quality?
quality? These research questions were addressed through a two-phase study design. First, exploratory research, using an in-depth interview technique was undertaken with business customers from a range of industry sectors (Education, IT&T, Manufacturing, Retail, Services, Government) to explore the “meaning” (Question 1) and identify the key “determinants of B2B online service quality” (Question 2). In the second phase of the study, the indicators of online service quality obtained from Phase I were used to develop (following Churchill’s (1979) scale development paradigm), test and validate a measure (OLSQ scale) of “B2B online service quality” (Question 3).

7.2 Phase I Results
In regard to the meaning of online service quality (Question 1), there is an expectation that online service quality should be, at the very least, equal to traditional service quality (Parasuraman et al., 2005). Respondents cited a number of service elements deemed to be crucial to the provision of quality online service. Of these, one of the most important elements of online service quality relates to the concept of service completeness. To the business customer, service completeness means the provision of “one-stop” service and support via an OCSS. This means being able to have all their service and support problems resolved online without the need to access components of customer service from other service delivery access points. Notwithstanding, there was general agreement that providers have yet to achieve true online service provision. As a result, business customers expect to have the option of human contact as well as multiple points of contact for customer service personnel (such as phone, fax and email) detailed on provider websites. This was of particular importance for mission-critical service requests. Another important requirement was the need for
service and support personnel to be available when required to answer service enquiries. This means being available outside normal business hours. The willingness of customer service personnel to work with the customer in resolving service-related problems in a prompt and timely manner was also cited as an important element of OLSQ.

Information gathered from the interviews also revealed that business customers base their assessment of the quality of provider online service offerings across a range of perceptual attributes including: website design, ease of use, usefulness, technical reliability, intuitiveness, presentation, accuracy, availability, service reliability and flexibility. Insights gained from the interviews and literature survey formed the basis for the development of the OLSQ conceptual model, depicted in Figure 7.1.

![Figure 7.1 Conceptual Model of B2B Online Service Quality (Adapted from Parasurman et al., 2005)](image-url)
Given that customer assessment of OLSQ is based on a comparison between desired service attributes and the delivered service, an inability to meet customer needs across the desired attributes may result in customer dissatisfaction. In addition, customer-desired service attributes of OLSQ are also influenced by prior experience (both good and bad) with online customer service systems. Satisfaction with past service encounters is key to the customer’s desire to continue the relationship with the service provider, with each contact with the provider contributing to the formation of customer impressions of the provider organization and in turn, their perceptions of the service experience (Boyer et al., 2002; Heim and Sinha, 2001; Huete and Roth, 1988; Roth, 2000; 2001). While online customer service can potentially reduce service provision costs, customer satisfaction and loyalty can be severely damaged by a bad online experience (Barnes and Vidgen, 2000; Heim and Sinha, 2001).

Ongoing interaction with the OCSS is contingent upon how well the OCSS meets the service needs of the customer, the benefits of the OCSS over existing service delivery channels and the desire for a better and more unique customer service experience (Parasuraman et al., 2002). In the case of the business customer, service needs are inexorably linked to business needs and this means giving customers the flexibility to customize pages on the provider’s website to “mirror” components of their internal systems and download formats that are compatible with the customer’s internal business systems. Involving the customer in the design of the OCSS can assist in meeting this need and gives the customer a sense of control over how customer service is delivered. It is expected that the OLSQ model and its associated instrument (see Table 7.1 Section 7.3, below) will assist providers in better understanding their
customers’ service needs and requirements, enabling them to develop strategies to better meet these needs and to take corrective action when required.

In the competitive marketplace, the success of a business is measured by how effectively it interacts with its customer's and a proactive strategy to develop and implement online service, in line with customer needs, is an important requirement for success (Singh, 2003). As depicted in the OLSQ model developed in Chapter 5, a provider’s OCS strategy is directly influenced by its beliefs about what constitutes online customer service and its customers’ service and support needs. According to Zeithaml et al. (2000), what a company believes to be an ideal OCSS for its target market might be inaccurate due to insufficient or incorrect information about OCSS features desired by customers, a lack of understanding of customer-perceived OLSQ attributes and the customer evaluation of the quality of the OCSS. The attributes of OLSQ identified in this study, along with the conceptual model of OLSQ, will assist providers in developing a better understanding of customer service needs and the attributes of OLSQ on which customers base their assessment of OCSS, thereby providing a basis on which to develop more viable online customer service strategies.

7.3 Phase II Results
The attributes of OLSQ identified in Phase I of the study formed the basis for the development of the OLSQ scale which was developed in Phase II (Question 3). The OLSQ scale was developed using a widely accepted and rigorous methodology (see 6.2.2). The collection of perceptual attributes (detailed in Table 5.4) served as the OLSQ domain from which the items for the OLSQ scale were drawn. Based on the 10 OLSQ perceptual attributes and representing the OLSQ domain a pool of 72 items
was generated from information obtained from the interviews conducted on Phase I of the study. The list of items was sent to a panel of experts from Information Systems (with expertise in information quality and usability measurement); Marketing (with expertise in service quality and its measurement, and marketing scale development) and Psychology (with expertise in psychometrics and scale development and validation) and a Marketing Manager (to assess wording and conciseness of items) for review. Reviewer comments can be found in Appendices M-P. After considering feedback received from the expert panel and insights gained from the interviews and literature survey, the pool of items was revised to reflect a set of items that were considered to intuitively “tap” the OLSQ construct and satisfied the requirements of face and content validity (Churchill, 1979; DeVellis, 2003). A total of 42 items were retained for inclusion in the final scale (see Appendix Z (i)). The items were then incorporated into a Likert format and administered to a representative sample of subjects. A self-administered, online Web-based data collection method was used to obtain data from the target sample of business customers. This process yielded 699 usable responses. Given that the sample was sufficiently large enough (N=699) it was split into 2 sub-samples for analysis. The first sub-sample (N=299) served as the primary development sample for exploratory factor analysis purposes. First, item performance and the factor structure of the items constituting the measure was assessed using exploratory factor analysis (see Section 6.2.4). Examination of output from the analysis (scree plot and breaks-in-eigenvalues criteria) suggested a three factor OLSQ structure comprising: 1) Service Quality, 2) Web Quality, and 3) Technical Quality. Of the three factors extracted, Service Quality emerged as the most important factor, accounting for the largest portion of total variance (37.2%). Once the factor structure was determined, reliability analysis was conducted by grouping
the items according to the 10 *a priori* perceptual attributes from which they were derived. Corrected item-to-total correlations were also examined to eliminate items that improved reliability of the measure. Next item loadings were examined and a series of iterations, involving elimination of items with low loadings on all factors or high cross loadings on two or more factors, resulting in identification of 33 items with loadings above the recommended cutoff of .65 (De Vellis, 2003). Re-examination of corrected item-to-total correlations resulted in the trimming of an additional 13 items. 20 items were retained for the next stage of the analysis.

Data from the second sub-sample (N=400) was used to confirm the factor structure using a structural equation modeling technique. Two plausible alternate models (first-order and second-order structures) were specified and model-data fit assessed. Fit indexes commonly used in social and behavioural research were used for the assessment (see 6.2.5 Step 3, evaluation of fit, pg. 144). The overall results of the fit assessment demonstrated superior fit of a second-order model. All three first order factors loaded on the second-order factor (OLSQ) strongly (> .64), confirming the existence of the second order factor of ‘overall OLSQ’. Next, reliability of the measure was assessed by computing co-efficient alpha’s for each of the three factors. Alpha values of .92 (WQ); .87 (TQ) and .87 (SQ) were derived, demonstrating high *internal consistency* and therefore, *reliability* of the measure (Nunnally and Bernstein, 1994).

Having established reliability of the measure’s component dimensions, four types of validity: content, construct, convergent and discriminant validity, suggested by Kline (1998) was assessed. These results, along with the results from the reliability
assessment collectively provide support for the soundness of the measure’s factor structure and its psychometric properties. The final set of OLSQ scale items representing the remaining 7 perceptual attributes and associated dimensions are depicted in Table 7.1

**OLSQ SCALE ITEMS**

<table>
<thead>
<tr>
<th>1. SERVICE QUALITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The organization gives me the flexibility to determine which service points I would like to access</td>
</tr>
<tr>
<td>2. The service and support content on the website can be tailored to meet my specific service and support needs</td>
</tr>
<tr>
<td>3. The organization gives me the flexibility to customize pages on its website to align with my specific business needs</td>
</tr>
<tr>
<td>4. Customer service and support staff provide immediate responses to “mission critical” service requests (ie. within a half hour)</td>
</tr>
<tr>
<td>5. The organization always delivers on service promises</td>
</tr>
<tr>
<td>6. The organization gives an assurance to resolve my service and support problems promptly</td>
</tr>
<tr>
<td>7. Customer service and support staff are easy to contact from the website (ie. through provision of email and online forms)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. WEB QUALITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Information provided on the website is easy to locate (ie. I don’t have to drill too far into the site to find the information I am looking for)</td>
</tr>
<tr>
<td>9. The website is easy to use</td>
</tr>
<tr>
<td>10. The website is well laid out and easy to navigate</td>
</tr>
<tr>
<td>11. The design of the website allows me to have control of the interaction with the site</td>
</tr>
<tr>
<td>12. The website interface is user-friendly</td>
</tr>
<tr>
<td>13. The design of the website is simple, yet functional</td>
</tr>
<tr>
<td>14. Components on the website are well organized</td>
</tr>
<tr>
<td>15. Components on the website are clearly represented</td>
</tr>
<tr>
<td>16. Information is presented in a well-structured manner (ie. logically organized)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. TECHNICAL QUALITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>17. Webpage load time is within reasonable limits (&lt; or = 10 seconds)</td>
</tr>
<tr>
<td>18. Downloads from the website are within reasonable limits (&lt; or = 10 seconds)</td>
</tr>
<tr>
<td>19. System response time is reasonable (responds within 10 seconds)</td>
</tr>
<tr>
<td>20. Website components function properly (do what they were designed to do)</td>
</tr>
</tbody>
</table>

*Table 7.1 OLSQ Scale Items*

**7.4 Main Findings from the Research**

This study offers a first insight into the determinants and measurement of B2B online service quality. A discussion of the main findings from the study follows.
7.4.1 Determinants, Dimensionality and Measurement of B2B Online Service Quality

The results of the study revealed that the determinants of OLSQ are considerably different to those identified in previous studies of traditional service quality. This is supported by exploratory research undertaken by Parasuraman et al. (2002), (later confirmed by empirical research (Parasuraman et al., 2005)) in which the authors stress that traditional service quality literature is dominated by human-centred service delivery and question whether conclusions drawn from such research can be extended to technology-mediated service delivery contexts. The findings from a number of other extant studies into the determinants of B2C online service quality further support this notion.

Although this thesis proposed that quality of information was a key determinant of OLSQ in B2B online service assessments, items related to this dimension failed to emerge as a single factor in the exploratory analysis. Of the two items comprising this proposed dimension (see Figure 5.3), information accuracy, failed to load on any dimension. This was an unexpected finding and is inconsistent with the results obtained from phase I of the study, where accuracy was cited as an important indicator of OLSQ by the majority of participants. The reason for this result is unclear and warrants further investigation. In regard to the importance of information presentation (the only information quality attribute that remained after the confirmatory factor analysis), the need for information in a format (tables, graphs and spreadsheets) that is easily and readily integrated with business applications and/or is immediately available to managers of the user organization for decision-making purposes is a plausible explanation.
Another interesting finding from the current study is that the majority of study participants did not consider security and privacy (identified as key determinants of B2C OLSQ) as an important indicator of quality in their assessment of B2B OLSQ. This is possibly due to the fact that the B2B online trading environment is largely a closed domain and governed by contractual arrangements that address the security and privacy issues inherent in the capture, storage and use of trading partner information and business data.

Another key finding from the current study, consistent with earlier research in both offline and online service environments, is the multi-dimensional nature of the OLSQ construct. The results of the study revealed that business customers’ assessment of overall service quality is based on perceptions of trading partner online service offerings across multiple dimensions. This result supports the findings of a number of earlier studies detailed in Table 3.1.

The final finding of significance relates to the measurement of OLSQ. Although a number of studies of OLSQ have emerged in the academic literature in recent years, few have proposed valid and reliable measures. Some have developed measures based on literature surveys, while others focus on narrowly-defined aspects of OLSQ (for example, website design) or modified or adapted versions of measures developed for offline service environments (SERVQUAL). Yet, other studies have used convenience samples of students in marketing and business programs to either derive determinants of OLSQ or to collect data to validate measures. Unlike these studies, the current study has developed, through rigorous research a measure of B2B OLSQ which considers a range of indicators of OLSQ. The measure was empirically tested.
and validated, thus providing a basis from which to base future research into the measurement of the construct.

7.4.2 Implications for Providers

Service quality is of critical concern for B2B services because of its impact on the business customer’s own service to its customers (Gounaris, 2005). In addition, the success of a business in the increasingly competitive marketplace that firm’s now face, is measured by how effectively it interacts with its customers and a proactive strategy to develop and implement online service is a crucial requirement for success (Singh, 2003). Service delivery strategies whereby a customer conducts repeated business with a specific provider such that socially embedded relationships can be established are particularly desirable in the B2B setting (Anderson et al., 1994).

Another key element of success is the creation of value for the customer. This is accomplished by not only meeting customer’s service needs but exceeding their service expectations (Zeithaml et al., 2000). Iacobucci et al. (1994) in an earlier study found that customer evaluation of service quality is connected to repurchase, loyalty and willingness of the customer to maintain a long-term relationship with the provider. Further, Athanassopoulos et al. (2001) found evidence of empirical support for the relationship between service quality and business performance in the academic literature. However, Zeithaml et al. (2000), suggest that what a company believes the be an ideal online customer service system for its target market may be inaccurate due to insufficient or incorrect information about OCSS features desired by customers, a lack of understanding of customer-perceived OLSQ attributes and customer evaluation of the quality of the OCSS.
Since customers play a role in the production of the service they receive (Moon and Frei, 2000), the importance of co-operation in service co-production cannot be underestimated in service strategy design (Schultz, 2003). Failure to match online service strategy with the needs of customers could result in dissatisfaction and loss of customers. This presents a significant challenge for the service provider in balancing the two sides of the online service relationship (Schultz, 2003). It is therefore important for service providers to continually review the quality of their online service offering in line with the changing needs of customers. Modifications to the online service strategy should be informed by the provider’s knowledge of customer-desired features obtained through customer feedback.

The attributes of OLSQ identified in this study provide a good starting point on which providers can base the development of their online service strategy and modifications to strategy as customer needs and expectations change over time. In order to do this, providers need a valid and reliable instrument to gather information about customer service requirements and indicators of the quality of their online service offering as perceived by customers. Understanding the relative importance of each of the OLSQ indicators will assist providers in pinpointing weaknesses in their online service strategy, enabling them to take corrective action where necessary.

Attributes of OLSQ as perceived by business customers identified in this study, in order of importance relate to 1) the design of the service delivery process (Service Quality); 2) the design of the service delivery environment (Web Quality; and 3) design of the OCSS (Technical Quality). In designing service delivery processes,
providers need to provide customers with the option of tailoring service and support content to meet the customer’s specific business service needs. They must also ensure that customer service and support staff are easy to contact from the website and provide immediate responses to mission-critical service requests, deliver on service promises, give an assurance to resolve customer service and support problems promptly and give the customer the flexibility to determine which service points they would like to access.

When designing the service delivery environment (website) important criteria related to site design includes: simple, yet functional design, information on the website is easy to locate (customers don’t have to “drill” too far into the site to find the information they are looking for), the website is well laid out and easy to navigate, components on the website are well organized, the website is easy to use and the design of the site enables the customer to have control over the interaction with the site, the interface is user-friendly, and information is presented in a well-structured format.

Important criteria to consider when designing the OCSS includes reasonable load times for Web pages and downloads (ie. less than 10 seconds), reasonable system response time (response to requests from databases etc is less than 10 seconds) and correct functioning of website components (eg. order facility functions as it should). Failure to meet these requirements could have important repercussions for the provider in terms of customer dissatisfaction and the resulting impact on repurchase decisions, loyalty and desire of the customer to maintain a long-term relationship with the provider.
7.5 Limitations of the Research

The first limitation of the research relates to the development and validation of the OLSQ scale, which is based on the collection of empirical data from one industry sector, that is, corporate supply. This may limit the generalisability of the results to other industry contexts. Notwithstanding, data obtained from in-depth interviews in the exploratory phase of the study failed to identify any significant difference in business customer perceptions of online service quality across the industry sectors examined.

The second limitation of the study relates to the cultural context on which the study was based. For convenience purposes, only Australian businesses were included in the study. Confining the study to a single cultural context has implications for the application of the OLSQ measure to other cultures. Given the suggestion that perceived dimensions of service quality are culture bound (Gounaris and Dimitriadis, 2003), the dimensions of OLSQ identified in this study may need to be modified depending on the cultural context of the market in which future research is applied.

The study is further limited in that the website of only one business (a corporate supplier, albeit one of Australia’s largest) was assessed in the empirical phase of the study. While the results of the assessment provide valuable insight into the key determinants of B2B online service quality and its measurement, it may not adequately capture aspects of OLSQ which are peculiar to businesses in other sectors such as pure service businesses.

The fourth limitation of the study is that it sought to identify the determinants of OLSQ from the customer perspective and as such, did not consider the provider
perspective in relation to their perceptions of the delivered service. This is an area that
should be investigated in the future in order to obtain a more complete picture of the
determinants of OLSQ.

The final limitation of the study is its focus on the customer-provider interaction. The
role of third party providers such as Teleco’s and Internet Service Providers was not
within the scope of the current study. In terms of customer perceptions of the service
delivered by online providers, the role of Teleco’s and ISP’s (provider and customer ISP) in the service delivery process could have implications for the provider in terms
of customer perceptions of the delivered service. For example, it is conceivable that
failures in the telecommunications infrastructure or ISP services (server failure etc)
may have an impact on customer perceptions of the online service offering of their
providers, in particular, those attributes of online service related to the technical
functioning of the website and availability of the online service system.

7.6 Contributions of the Research

The major contributions of the thesis to theory and practice are discussed
below.

7.6.1 Theoretical Contributions

The research provides a number of valuable contributions to existing theory. With the
infusion of technology into services and the potential of I&CT in reducing the cost of
service delivery, interest amongst academic researchers from both services marketing
and IS disciplines has been heightened. At the 1999 AMA Educator's Conference,
discussions amongst key services marketing researchers (Zeithaml; Parasuraman;
Bitner; Brown) centred on identifying key research directions for the 21st Century.
High on the agenda were issues surrounding online service delivery and measurement.
However, despite the high priority for this research within Services Marketing there has been few studies that seek to advance service quality research into the online service delivery environment. The first theoretical contribution of the thesis is to address this issue by providing a foundation for future scholarly enquiry into online service quality.

Second, the thesis posits that existing approaches to conceptualisation and measurement of online service quality derived from research in consumer services are not adequate in capturing the business customer perspective. This research addressed this gap in existing scholarly literature through the provision of a conceptual model of B2B online service quality and a valid and reliable multi-dimensional scale for measuring the construct.

The third valuable contribution of the research is the integration and extension of theories from marketing, concepts from IS theory and the resulting development of a comprehensive, cross-discipline conceptual framework for understanding and measuring B2B online service quality.

7.6.2 Contribution to Practice

In the case of this research, an important question is whether the results can provide valuable insight into the service quality measurement process that can be effectively implemented when a business develops its online service delivery strategy. Through this research, managers are able to gain insight into how their business customers perceive the quality of their online service offering and use this information to develop, modify and/or adapt its online service strategy. The results of the research may also be of value in competitive analysis and benchmarking. The second insight
of value is the provision of a diagnostic tool that will enable managers to identify aspects of their online service offering that need improvement and to implement strategies to address this.

More generally, it is possible that the outcome of the research may be of use not only to the participating organisation, but to other online service providers across a range of industry sectors, providing valuable information upon which to base further research into how business customers perceive the quality of their online service offering.

7.7 Suggestions for Future Research

This research was restricted to the identification of determinants and the measurement of OLSQ and did not consider the relative importance of each of the dimensions derived from the study in respect to their contribution to the overall service quality assessment process. Further investigation, using a relevant framework such as the means-end framework is required to address this aspect of OLSQ assessment. If providers are able to better understand which aspects of their online service offering are of greatest importance to their customers, they may be able to make better use of limited resources by targeting these areas in the development of their online service strategy.

Second, this research involved a “point in time” study. Although useful in highlighting criteria used by business customers in their assessment of the quality of the online service offering of their business partners, it does not provide insight into how these perceptions or the relative importance of each of the criteria used in evaluating OLSQ change over time. Longitudinal studies that focus on this process
would give providers insight into changing customer service needs and requirements, enabling providers to modify their online service strategy accordingly.

Another area that warrants further investigation is the use of the OLSQ scale in the assessment of B2B OLSQ in other industry sectors. Although the results of Phase I of this study did not find any evidence of differences in the criteria used to assess OLSQ across the industry sectors studied, this was not empirically tested in the second Phase of the research. Of particular interest would be whether or not, the attributes of OLSQ identified in this study are relevant to business customer assessment of online service quality in pure services. It is conceivable that due to the nature of services, the dimensions and/or their relative importance in the assessment of OLSQ may be different to those where service is only one component of customer-provider interaction.

A study that includes the assessment of websites of other businesses in the corporate supply industry to identify differences in the design and quality of the service delivery environment (website) is also warranted. It is conceivable that the quality of design for instance, may vary substantially from one business to another.

The OLSQ scale was developed using Churchill’s (1979) scale development paradigm. Although this methodology is one of the most widely acknowledged and used approaches to the development of marketing scales, new approaches have recently emerged in the marketing literature. Rossiter (2002) for example, proposed the C-O-A-R-S-E approach which utilises experts to validate measures of marketing constructs. Future research using Rossiter’s scale development process could be
applied to the development and validation of an alternate scale to measure B2B OLSQ. It would be interesting to note if there are any major differences in the results of the two approaches to the development of the OLSQ scale and its dimensionality.

This study focused on the customer perspective and considered the provider perspective only in relation to the role played in the delivery of online service. Future research focusing on the provider’s perspective of the quality of online customer service would broaden our understanding of the OLSQ construct.

The role of third party providers (Teleco’s and ISPs) in the delivery of online customer service and the resulting impact on customer-perceived OLSQ should be investigated to gain a more complete picture of OLSQ. As stated earlier, it is conceivable that the level of service delivered by third parties to service providers and business customers (particularly ISPs) may have an impact (positive or negative) on the customer’s perception of the quality of the service offering of their service providers. For instance, if a service provider website is unavailable for customer service delivery due to circumstances beyond the control of the provider (eg. failure of the telecommunications infrastructure) will this have a negative impact on the customer’s perception of the service provider?

Finally, this study was limited to Australian businesses and therefore conducted within a single cultural context. Given that research has shown that service quality is culturally bound (Gounaris, 2005), it is conceivable that the dimensions of OLSQ may vary across cultures. For example, are the dimensions of B2B OLSQ relevant to customers in western cultures the same as those of eastern cultures? Further, the dimensions of B2B OLSQ relevant to businesses in countries within each of these
cultural groups may also vary substantially. Future research which replicates this study in different cultural contexts would be valuable in identifying any differences in perceptions of B2B OLSQ which are peculiar to customers from different cultural groups.
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Additional References


APPENDIX A  ETHICS APPROVAL LETTERS
16 December 2002
Ms L Burgess
C/- Professor Joan Cooper
Faculty of Informatics
University of Wollongong

Dear Ms Burgess,

I am pleased to advise that the following Human Research Ethics application has been finally approved. As a condition of approval, the Human Research Ethics Committee requires that researchers immediately report anything which might warrant review of ethical approval of the protocol, including: serious or unexpected adverse effects on participants, proposed changes to the protocol, unforeseen events that might affect continued ethical acceptability of the project and discontinuation of the research project before the expected date of completion.

Ethics Number: HE02/405

Project Title: Measuring Online Service Quality in b-b Trade on the Internet

Name of Researchers: L. Burgess;

Final Approval Date: 13 December 2002

Date for Renewal: 12 December 2003

This certificate relates to the research protocol submitted in your original application and includes all approved amendments to date.

Please note that research projects of long duration must be reviewed annually by the Committee and it will be necessary for you to apply for renewal of this application if this project is to continue beyond one year.

Yours Sincerely,

Assoc. Prof. Sue Dodds
Chairperson
Human Research Ethics Committee
RENEWAL
In reply please quote: RN:ES HE02/405
Further Enquiries: Eve Steinke (PH. 42214457)

26 November 2003

Ms L Burgess
Cl/ Professor Joan Cooper
Faculty of Informatics
University of Wollongong

Dear Ms Burgess,

I am pleased to advise that renewal of the following Human Research Ethics application has been approved. As a condition of approval, the Human Research Ethics Committee requires that researchers immediately report anything which might warrant review of ethical approval of the protocol, including: serious or unexpected adverse effects on participants, proposed changes to the protocol, unforeseen events that might affect continued ethical acceptability of the project and discontinuation of the research project before the expected date of completion.

Ethics Number: HE02/405
Project Title: Measuring Online Service Quality in b-b Trade on the Internet
Name of Researcher/s: Ms L Burgess

Renewed from: 13 December 2003
Renewed to: 12 December 2004

This certificate relates to the research protocol submitted in your original application and includes all approved amendments to date. Please note that research projects of long duration must be reviewed annually by the Committee and it will be necessary for you to apply for renewal of this application if experimentation is to continue beyond one year.

[Signature]
Assoc. Prof. Rod Nillsen
Chairperson,
Human Research Ethics Committee
AMENDMENTS APPROVAL

In reply please quote: RN:ES HE02/405
Further Enquiries: Eve Steinke, Ph: 4221 4457

26 October 2004

Ms L Burgess
SITACS
University of Wollongong

Dear Ms Burgess,

I am pleased to advise that the annual renewal and the amendments dated 24 September 2004 to the following Human Research Ethics application have been approved subject to the following conditions.

i) The HREC notes that the title of the research has changed. The change of title and minor amendments are approved on the understanding that the change of title does not represent a change in the project beyond the amendments detailed in the annual renewal form.

ii) Please ensure that the Participant Information Sheet (PIS) and Consent Form are put on University letterhead.

iii) On the PIS ‘participants’ is misspelt.

Ethics Number: HE 02/405

Project Title: A Conceptual Framework for Understanding and Measuring Online Service Quality in b to b Service Interactions on the Internet

Name of Researchers: Lois Burgess

Approval Date: 22 October 2004

Date for Renewal: 30 June 2005

This certificate relates to the research protocol submitted in your original application and includes all approved amendments to date. As a condition of approval, the Human Research Ethics Committee requires that researchers immediately report anything which might warrant review of ethical approval of the protocol, including: serious or unexpected adverse effects on participants, proposed changes to the protocol, unforeseen events that might affect continued ethical acceptability of the project and discontinuation of the research project before the expected date of completion. Please note that the Committee must review research projects of long duration annually and it will be necessary for you to apply for renewal of this application if this project is to continue beyond the nominated completion date.

Yours Sincerely,

[Signature]
Assoc. Prof. Rod Nilsen
Chairperson
Human Research Ethics Committee

cc. Supervisor: Prof P Eklund, SITACS
APPENDIX B

CONSENT FORM – PHASE I

I have been given information about “Measuring Online Service Quality in b-b Trade on the Internet” and discussed the research project with Lois Burgess who is conducting this research as part of a Doctor of Philosophy supervised by Professor Joan Cooper in the Faculty of Informatics at the University of Wollongong.

I understand that if I consent to participate in this project I will be asked to take part in a 20 minute interview, either in person, via telephone or email. I understand that the interview questions are designed to elicit my perceptions of the online service offering of my vendors and/or suppliers. The responses to these questions will then be used to generate a list of attributes of online service quality that will be returned to participants to check that they represent a true reflection of the responses given to the interview questions. I further understand that the attributes generated from phase one of the research will be used in the second phase of the research, for the purpose of developing a scale (Online Service Quality Scale) to measure business customer perceptions of the online service offering of their business partners.

I have been advised of the potential risks and burdens associated with this research and have an opportunity to ask Lois Burgess any questions I may have about the research and my participation.

I understand that my participation in this research is voluntary, I am free to refuse to participate and I am free to withdraw from the research at any time. My refusal to participate or withdrawal of consent will not effect my relationship with the Faculty of Informatics or my relationship with the University of Wollongong.

If I have any enquiries about the research, I can contact Lois Burgess and Professor Joan Cooper on (02) 42 214839 and (02) 42 214001 respectively, or if I have any concerns or complaints regarding the way the research is or has been conducted, I can contact the Complaints Officer, Human research Ethics Committee, University of Wollongong on (20) 42 214457.

By signing below, I am indicating my consent to participate in the research entitled “Measuring Online Service Quality in b-b Trade on the Internet as it has been describes to me in the information sheet and in discussion with Lois Burgess. I understand that the data collected from my participation will be used for a Doctor of Philosophy Thesis and publication at relevant conferences and in journals, in an aggregated, de-identified form and I consent for it to be used in that manner.

Signed ............................................................................................................ Date ........................................

......................................................... Date ........................................
APPENDIX C

PARTICIPANT INFORMATION SHEET

Research Title: Measuring Online Service Quality in Bto B Trade on the Internet

Researcher: Lois Burgess

Supervisor: Professor Joan Cooper

Research Unit: Centre for e-Applications Research (CeAR)
Faculty of Informatics
University of Wollongong

Contact Details: Lois Burgess Tel: (02) 42214839
Professor Cooper Tel: (02) 42214001

Aim of the Research

The overall aim of the research is to develop a scale to measure perceived online service quality (OLSQ) from the perspective of business customers. The primary question addressed by this research is: What is a valid and reliable measure that can be used for online service quality in business-to-business interactions on the Internet? A two-phase study has been designed to 1) determine the attributes on which business customers’ judge the online service offering of their trading partners (phase I), and, from this, 2) develop a scale (OLSQ scale) to measure the online service quality construct (phase II).

Research Procedure

Because the research is exploratory in nature, the methodology employed in phase one of the study involves a one-off, in-depth interview with business managers, e-procurement officers and service and support staff from a number of organisations across a range of industry sectors: Manufacturing, IT, Telecommunications, Retailing, Banking and Finance and Government sector. An interview protocol will be used as a guide in probing participants about perceptions of their interactions with trading partner websites. Questions relating to both positive and negative service experiences will be used in the interviews and participants will be probed on the meaning of criteria expressed. A combination of techniques will be used for the interviews.

Where feasible, interviews will be conducted in person at the University of Wollongong. At the request of participants, telephone and email interviews will be used. Participants will either be contacted by telephone at their place of work at a time nominated by the participant, or sent an email message with the interview questions attached. In the face to face and telephone interviews, responses will be read back to participants to ensure correct recording of responses. Email responses to the interview questions may be
followed up with telephone contact where clarification is required. A spreadsheet of responses will be created and from this a final set of attributes generated. To ensure that the attributes represent a true reflection of the perceptions of participants involved, the list of attributes will be emailed back to each of the participants for clarification and feedback on changes that may be required.

Data Collection and Storage Procedure

Data will be collected from participants via the interview process detailed above. Data will be stored in both hard and soft copy formats in a locked cupboard in the office of the researcher, in the school of IT and Computer Science, Faculty of Informatics at the University of Wollongong. The researcher is the only person who has keyed access to the storage cupboard. Anonymity of participants will be maintained by using a numbered coding system and referring only to the industry sector to which the participants belong. Data will be used in aggregate format only and at no time will individual participant data be referred to. Data will, at the consent of the participants also be used in de-identified, aggregate format in the doctoral thesis and conference and journal articles submitted by the researcher.

There are no anticipated risks involved for participants in the research. Participants will have an opportunity to ask the researcher, Lois Burgess any questions they may have about the research and their participation.

Participation in this research is voluntary and participants are free to refuse to participate and free to withdraw from the research at any time. Refusal to participate or withdrawal of consent will not effect participants relationship with the Faculty of Informatics or the University of Wollongong.

If participants have any enquiries about the research, they can contact Lois Burgess and Professor Joan Cooper on (02) 42 214839 and (02) 42 214001 respectively, or if there are any concerns or complaints regarding the way the research is or has been conducted, participants can contact the Complaints Officer, Human research Ethics Committee, University of Wollongong on (20) 42 214457.

Benefits of the Research

Through this research, managers will be able to gain insights into how business customers perceive the quality of their online service offering. The results of the research will also be of value in competitive analysis and benchmarking. The first insight of value to management is the provision of a diagnostic tool that will enable managers to identify aspects of their online service offering that need improvement, and to implement strategies to address this. It is also conceivable that the research outcome will provide valuable information upon which service providers may be able to base further research into the development of their online service offering and its measurement.
APPENDIX D

Interview Protocol OLSQ (adapted from Krueger, 1998)

1. Introduce myself
2. Thank interviewee for their time and participation
3. Detail study/purpose/context
4. Outline purpose/format of interview
5. Commence interview/questions
6. Sum up
7. Close interview – thank interviewee again for participation and invite them to contact me if they think of anything else they’d like to add

Topic Guide OLSQ

1. Level of experience with Online service
2. Understanding of “customer service” on the Internet
3. Describe OLSQ
4. Describe exceptionally good Online service experience
5. Describe poor Online service experience
6. Detail criteria used to judge (4) and (5)
7. Explain meaning of each criteria revealed at (6)
8. Most important thing for service provider (suppliers) to keep doing
9. Missed anything

Questioning Route for OLSQ

1. Can you tell me the name of the Organisation you work for?
2. What position do you hold there?
3. Do any of your suppliers offer “online ordering” facilities via their website?
4. How many supplier sites have you ordered from?
5. How often do you order from them?
6. How many times would you estimate that you have ordered from their websites?
7. Do any of your suppliers also provide customer service/product support online?
8. How often do you access customer service/support from these sites?
9. What do you understand the term Online Customer Service to mean?
10. Can you describe what is meant by Online Service Quality?
11. Think about the last time you experienced exceptionally good service from a supplier website. What happened that makes you describe your experience as “exceptionally good service”?
12. Think about a recent experience when you received poor service. What happened to make your describe your service experience as poor?
13. Probing Q’s re: meaning of criteria expressed at (8) and (9). Eg. Can you explain what you mean by ........... (eg. Ease of use etc).
14. When you do business with ........... (the supplier detailed at (8)) what is the single most important thing that could happen that would make you say the service is fantastic?
15. On the other hand, what single thing detailed in (9) above would make you say that the service is just simply awful?
16. Think about what we’ve talked about today. What do you think is most important for your suppliers (detailed in (8)) to keep doing?
17. How could Online Service Quality be improved further at ............. website?
18. Can you take a look at the list of attributes of service quality on the sheet of paper I have given you. Can you rank these in order of importance to you?
19. Have we missed anything?
APPENDIX E

Questioning Route for OLSQ

1. Can you tell me the name of the Organisation you work for?

2. What position do you hold there?

3. Do any of your suppliers/vendors/partners offer “online ordering” facilities via their website?

4. How many supplier sites have you ordered from?

5. How often do you order from them?

6. How many times would you estimate that you have ordered from their websites?

7. Do any of your suppliers/vendors/partners also provide customer service/product support online?

8. How often do you access customer service/support from these sites?

9. What do you understand the term Online Customer Service to mean?

10. Can you describe what is meant by Online Service Quality?

11. Think about the last time you experienced exceptionally good service from a supplier website. What happened that makes you describe your experience as “exceptionally good service”

12. Think about a recent experience when you received poor service. What happened to make your describe your service experience as poor?

13. Meaning of criteria expressed at (9) and (10). Eg. Can you explain what you mean by ........... (eg, Ease of use etc).
14. When you do business with ……….. (the supplier detailed at (11)) what is the single most important thing that could happen that would make you say the service is fantastic?

15. On the other hand, what single thing detailed in (12) above would make you say that the service is just simply awful?

16. Think about what we’ve talked about today. What do you think is most important for your suppliers/vendors/partners (detailed in (11)) to keep doing?

17. How could Online Service Quality be improved further at the website detailed in (11)?

18. Anything else you would like to add?
## APPENDIX F

Coding Scheme for OLSQ Attributes

<table>
<thead>
<tr>
<th>Category</th>
<th>Dimension</th>
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## APPENDIX G

Coding Scheme for OLSQ Attributes

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APPENDIX G - 1

Questioning Route for OLSQ

Interview No: OLSQ 01

1. Industry Sector: Government

2. Position: Systems Support Officer

3. Do any of your suppliers/vendors/partners offer online ordering facilities via their websites?
   Yes

4. How many supplier websites have you ordered from?
   11

5. How often do you order from these sites?
   Frequently - daily

6. How many times would you estimate that you have ordered from these websites?
   All accessed through our supplier portal on a weekly basis

7. Do any of your suppliers/vendors/partners also provide customer service/product support online?
   Yes

8. How often do you access customer service/support from these sites?
   The online support is the first step in troubleshooting any problem with the IT systems so we use it daily

9. What do you understand the term online customer service to mean?
   Services and products which can be obtained via the Internet

10. Can you describe what is meant by Online service quality?
    The ease with which the services and product can be obtained. The simplicity of obtaining a service or product when needed. SQ/FLEX/NEEDMET

11. Think about the last time you experienced exceptionally good service from a supplier website. What happened that makes you describe your experience as exceptionally good?
    Good navigational facilities within the site WQ/WSD/NAV
    A search facility within the site itself WQ/WSD/SEARCHFAC
    A contact details page SQ/FLEX/OPTS
    A site that offers product for trial before obtaining a license
    A site that displays all information you need on products eg. HP site has detailed printer specifications etc. which is very useful as it helps you place printer models within your own network setup IQ/PRES/INFOPRES
12. Think about a recent experience when you received poor service? What happened to make you describe your service experience as poor?

Sites that tend to make you go in circles, poor description of links to other areas on the site. The HP site displaying the latest printer model with full printer specs was only available for the US. Contacting HP dealers here, we found different products on the market here.

In the case of Microsoft products, you need to deal with a supplier, who provides the product code and CD after which online registration is required to obtain another set of codes, then you are able to use the product. This is a very lengthy process especially, if you are dealing with many products.

Product descriptions – Update on each product, and since lots of Software application has now become either bundled or unbundled (Microsoft) it is very difficult to understand what is required for your task.

13. Can you explain what you mean by criteria expressed at 11 and 12?

How easily and quickly something can be obtained.

14. When you do business with (supplier detailed at 11) what is the single most important thing that could happen that would make you say the service is fantastic?

The ease of obtaining the service.

15. On the other hand, what would make you say that service is just simply awful?

Too many steps to follow before the actual product or service can be obtained.

16. What do you think is the most important for your supplier/s (listed at 11) to keep doing?

Suppliers should provide adequate information (without the need to contact them) on their site, for their products, or the updates/troubleshooting section. Also download for trial purpose is great.

17. How could service be improved further at the website detailed in 11?

No response

18. Anything else you would like to add?

No response
APPENDIX G - 2

Questioning Route for OLSQ

Interview No: OLSQ 02

1. Industry Sector: Education
2. Position: Operations Manager, Tech Support

3. Do any of your suppliers/vendors/partners offer online ordering facilities via their websites?
   Yes – a lot do

4. How Many supplier websites have you ordered from?
   20-30

5. How often do you order from these sites?
   Weekly

6. How many times would you estimate that you have ordered from these websites?
   Some regularly (Dell, Harris technology) – others one off for specialised components

7. Do any of your suppliers/vendors/partners also provide customer service/product support online?
   Most – some provide order status info – some are eStores alone – not much functionality – no infrastructure behind the website

8. How often do you access customer service/support from these sites?
   Regularly – almost on a daily basis

9. What do you understand the term online customer service to mean?
   Ability to order, track, identify contacts (acct mgr, sales) information access on products and the organisation. Warranty and service wholly online
   SQ/FLEX/NEEDMET SQ/AVAIL/SERVCOMP

10. Can you describe what is meant by online service quality?
    Clearly identified products, query all products etc online – enough information online such as product description, technical specifications IQ/PRES/INFOPRES

11. Think about the last time you experienced exceptionally good service from a supplier website. What happened that makes you describe your experience as exceptionally good?
    Harris Technology where I placed order with corporate credit card. Details of “in stock” or “back order” were provided and I got a quick response. They live up to promises and do not screw up orders. Everything is always correct. They get it right first time, every time. SQ/SR/RESP IQ/ACC/ERRORFREE SQ/SR/ASSURE
12. Think about a recent experience when you received poor service? What happened to make you describe your service experience as poor?
   EStore.com. they are just a dotCom with nothing behind it. Suppliers are really third party suppliers and the site does not have a good system behind it
   Took 2 months to get the order
   They screwed up the order
   Trying to contact them was useless
   Got “no response” except when they were owed money or I became really irate
   Even then, there was no feedback
   They forced the sale through indicating no customer orientation

13. Can you explain what you mean by criteria expressed at 11 and 12?
   Right goods get delivered as soon as possible and provide reliable service
   SQ/SR/ASSURE SQ/SR/RESP

14. When you do business with (supplier detailed at 11) what is the single most important thing that could happen that would make you say the service is fantastic?
   The ease of obtaining the service SQ/AVAIL/EASYCONTACT
   SQ/AVAIL/SERVCOMP

15. On the other hand, what would make you say that service is just simply awful?
   No feedback from eStore

16. What do you think is the most important for your supplier (listed at 11) to keep doing?
   Providing up to date information to customers IQ/ACC/ERRORFREE
   Keeping you informed throughout the process SQ/SR/RESP

17. How could service be improved further at the website detailed in 11?
   eStore – the converse of 12
   Harris Technology – need to improve navigation because it is a little complicated
   Make information on the site easier to locate WQ/WSD/NAV
   WQ/EOU/SERACHFAC

18. Anything else you would like to add?
   No response
Appendix G - 3

Questioning Route for OLSQ

Interview No: OLSQ 03

1. Industry Sector: Education
2. Position: IT manager

3. Do any of your suppliers/vendors/partners offer online ordering facilities via their websites?
   Yes – Dell only – don’t use online order facility because of our organisation structure – quoting side only is used. Previously used phone/fax for this
   One on one personal communication is lost when you use the website

4. How many supplier websites have you ordered from?
   Use only catalogues/specs/third party products (Dell, no has prices listed) this creates problems because you need to ring or email to get the information you need

5. How often do you order from these sites?
   2-3 times/week from Dell

6. How many times would you estimate that you have ordered from these websites?
   2-3 times a week

7. Do any of your suppliers/vendors/partners also provide customer service/product support online?
   Yes, Dell

8. How often do you access customer service/support from these sites?
   Regularly on a daily basis

9. What do you understand the term online customer service to mean?
   Everything needed would have to be on the site – no human contact required and the site should be up and running when required SQ/AVAIL/SERVCOMP WQ/TR/AVAIL

10. Can you describe what is meant by online service quality?
   Being there when needed SQ/SR/RESP
   User friendly site WQ/EOU/INTERFACE
   Clear and precise information IQ/ACC/ERRORFREE
   Option of human interacting SQ/AVAIL/EASYCONTACT
   Quick response SQ/SR/RESP

11. Think about the last time you experienced exceptionally good service from a supplier website. What happened that makes you describe your experience as exceptionally good?
    None experienced to date
12. Think about a recent experience when you received poor service? What happened to make you describe your service experience as poor?
   Slow sites (Compaq)
   Too many graphics
   Frustrating to get around the site and find what you are looking for
   Meets needs but not to a level I'd like
   Difficult to locate information – too many levels in the site

13. Can you explain what you mean by criteria expressed at 11 and 12?
   Just what I said in response to the last question

14. When you do business with (supplier detailed at 11) what is the single most important thing that could happen that would make you say the service is fantastic?
   Information can be easily located WQ/WSD/NAV  WQ/EOU/SEARCHFAC
   Interaction happens quickly from beginning to end in less than 1/2 hour
   SQ/SR/RESP
   Actually respond to enquiries SQ/SR/RESP  SQ/SR/ASSURE

15. On the other hand, what would make you say that service is just simply awful?
   Time consuming site that take more than a day to have problems resolved
   Converse of 14

16. What do you think is the most important for your supplier (listed at 11) to keep doing?
   To be customer focussed and place the customer first  SQ/AVAIL/APPROACH

17. How could service be improved further at the website detailed in 11?
   They should list prices on the site SQ/AVAIL/SERVCOMP
   Should provide an area of site tailored to customer needs (customisation)
   SQ/FLEX/NEEDMET

18. Anything else you would like to add?
   No response
APPENDIX G - 4

Questioning Route for OLSQ

Interview No: OLSQ 04

1. Industry Sector: Education
2. Position: Project manager Desktops

3. Do any of your suppliers/vendors/partners offer online ordering facilities via their websites?
   Yes – Dell and Apple and some small software suppliers
   We use these sites to place orders and to get product support

4. How many supplier websites have you ordered from?
   The two above

5. How often do you order from these sites?
   Daily

6. How many times would you estimate that you have ordered from these websites?
   50 over a three month period

7. Do any of your suppliers/vendors/partners also provide customer service/product support online?
   Both Dell and Apple offer full service from their website as well as phone backup

8. How often do you access customer service/support from these sites?
   Less than ordering
   Usually for technical support for after sales and support during order process and pre-purchase

9. What do you understand the term online customer service to mean?
   Go and get support and help via email or online via a website
   SQ/AVAIL/SERVCOMP
   Includes online chat SQ/AVAIL/SERVCOMP
   Customised area on the site (offered by Dell and Apple) making our job easier
   SQ/FLEX/NEEDMET
   Should provide specifications, pricing, product details
   Should provide the option to customise products (eg. PCs)
   SQ/FLEX/NEEDMET
   Should provide access to contracts
   The timeliness of responses – within 24 hours for specialised requirements
   SQ/SR/RESP

10. Can you describe what is meant by online service quality?
Whole service from the website **SQ/FLEX/SERVCOMP**
No downtime – available when needed **WQ/TR/RESP**
Site and information on the site should be current **WQ/WSD/DES**
Service should be reliable **SQ/SR/ASSURE**
Availability of customer service and support from the site **SQ/AVAIL/APPROACH**
Quality information on the site **IQ/ACC/ERRORFREE**

11. Think about the last time you experienced exceptionally good service from a supplier website. What happened that makes you describe your experience as exceptionally good? 
Functionality added to the site for instance the ability to log hardware products online **WQ/WSD/DES**
They provided a help desk and maintenance facility **WQ/U/FIT**
Provided a 24 hour fix guarantee **SQ/SR/ASSURE**
Ability to track and measure **WQ/U/FIT**

12. Think about a recent experience when you received poor service? What happened to make you describe your service experience as poor? 
   The website down and couldn’t recover for 3 days and then was still not right
   This put us back 3 days in meeting our own customer requirements
   Hadn’t recorded pricing structure correctly (contractual arrangements)

13. Can you explain what you mean by criteria expressed at 11 and 12? 
    See 12

14. When you do business with (supplier detailed at 11) what is the single most important thing that could happen that would make you say the service is fantastic? 
    Customisation of the site **SQ/FLEX/NEEDMET**

15. On the other hand, what would make you say that service is just simply awful?
    Providers that are unreliable – you have to question the reputation and skill level of their employees
    Websites that are overly complex
    Will same problem happen? – results in trust in the provider being eroded
    I would consider not going back to the site
    If a website is not functioning it impacts on the time factor to access service

16. What do you think is the most important for your supplier (listed at 11) to keep doing? 
    Make sure the website is easy to use **WQ/EOU/INTERFACE WQ/EOU/USAB**
    Make sure it is easy to navigate **WQ/WSD/NAV**
    And provide consistency of design throughout the site **WQ/WSD/DES**

17. How could service be improved further at the website detailed in 11?
Dell and Apple – if customer had more control over functionality on the site it would make site easier to use WQ/WSD/DES – perhaps some collaboration in the design phase in order to allow the customer to customise the site to look and feel of our own systems SQ/FLEX/NEEDMET
More functionality than what customer wants or needs is a negative IQ/PRES/INFO/PRES WQ/WSD/DES

18. Anything else you would like to add?
No response
APPENDIX G - 5

Questioning Route for OLSQ

Interview No: OLSQ 05

1. Industry Sector: IT&T
2. Position: Network Consultant (Owner/Operator)

3. Do any of your suppliers/vendors/partners offer online ordering facilities via their websites?
   Yes

4. How Many supplier websites have you ordered from?
   Five

5. How often do you order from these sites?
   Daily – multiple daily orders are generally placed

6. How many times would you estimate that you have ordered from these websites?
   Five times/day X five days a week for the past four years

7. Do any of your suppliers/vendors/partners also provide customer service/product support online?
   Yes – two out of the five

8. How often do you access customer service/support from these sites?
   Daily

9. What do you understand the term online customer service to mean?
   Everything you need is available online – no need to use phone/fax
   Eg. ETA, Stock Availability SQ/AVAIL/SERVCOMP

10. Can you describe what is meant by online service quality?
    Systems that are updated regularly, kept timely and accurate and are available first time, everytime WQ/WSD/DES IQ/ACC/ERRORFREE WQ/TR/REL

11. Think about the last time you experienced exceptionally good service from a supplier website. What happened that makes you describe your experience as exceptionally good?
    Tech Pacific – hardware supplier in Australia
    Exceptionally good website features and functionality of the site WQ/WSD/DES
    Site is always up and running (backup server) WQ/TR/REL
    High reliability of the service provider – very accurate information and responses SQ/SR/ASSURE

12. Think about a recent experience when you received poor service? What happened to make you describe your service experience as poor?
Non responsiveness and poor after sales service
product faults that were not put right in the expected timeframe

13. Can you explain what you mean by criteria expressed at 11 and 12?
   Just what I said in response to question 11 and 12

14. When you do business with (supplier detailed at 11) what is the single most important
    thing that could happen that would make you say the service is fantastic?
    If they made stock levels information available on line SQ/AVAIL/SERVCOMP
    ETA (expected time of arrival – product delivery date) promises – very important
    to my customers and my ability to deliver on my service promises SQ/SR/ASSURE

15. On the other hand, what would make you say that service is just simply awful?
    False stock levels
    Inability to deliver on promises
    Stock not available when they say it is (quality of information on the site is either
    poor or outdated)

16. What do you think is the most important for your supplier (listed at 11) to keep
doing?
    To exceed my expectations WSD/U/FIT
    Consistently deliver on promises SQ/SR/ASSURE

17. How could service be improved further at the website detailed in 11?
    TecPac – nothing at this point – top of line supplier website
    Perhaps decrease prices (more competitive pricing online)
    We are getting high quality service but paying for it
    We sometimes get product information from TecPac and then order from a
    cheaper supplier – my own customers are very price sensitive

18. Anything else you would like to add?
    TecPac offer automatic emailing of order status on a daily basis – one email/order
    placed making it easier to check on the status of orders placed SQ/SR/RESP
APPENDIX G - 6

Questioning Route for OLSQ

Interview No: OLSQ 06

1. Industry Sector: IT&T
2. Position: Procurement Consultant for Computer Company

3. Do any of your suppliers/vendors/partners offer online ordering facilities via their websites?

   No – they provide online service and support only

4. How Many supplier websites have you ordered from?

   None

5. How often do you order from these sites?

   Never

6. How many times would you estimate that you have ordered from these websites?

   Never

7. Do any of your suppliers/vendors/partners also provide customer service/product support online?

   Yes – they are used for product support and availability. We also check product catalogues

8. How often do you access customer service/support from these sites?

   Daily

9. What do you understand the term online customer service to mean?

   Online customer service is “user-friendly”. I think it is self-explanatory

   WQ/EOU/INTERFACE

   Should have good front screen design and navigation

   WQ/EOU/INTERFACE WQ/WSD/NAV

   Should also a high profile help section SQ/FLEX/NEEDMET

10. Can you describe what is meant by online service quality?

    OLSQ is “reliability” SQ/SR/ASSURE

11. Think about the last time you experienced exceptionally good service from a supplier website. What happened that makes you describe your experience as exceptionally good?

    Speed, fast page loads WQ/TR/RESP

    Easy navigation WQ/WSD/NAV

    Accessibility of the site – always up and running WQ/TR/AVAIL

    One stop service shop SQ/AVAIL/SERVCOMP
12. Think about a recent experience when you received poor service? What happened to make you describe your service experience as poor?
   Site was down for a period of time meaning there was no service available
   Slow loading and pages “hanging”
   Error messages constantly appearing
   Not providing full online service

13. Can you explain what you mean by criteria expressed at 11 and 12?
   It’s pretty self explanatory

14. When you do business with (supplier detailed at 11) what is the single most important thing that could happen that would make you say the service is fantastic?
   Full service – one stop online service and support system
   SQ/AVAIL/SERVCOMP

15. On the other hand, what would make you say that service is just simply awful?
   Site downtime
   Technically unreliable

16. What do you think is the most important for your supplier (listed at 11) to keep doing?
   Provide up to date information IQ/ACC/ERRORFREE
   Timeliness of information provided on the site IQ/QCC/ERRORFREE

17. How could service be improved further at the website detailed in 11?
   Improve all service and support attributes on the site – most sites don’t do well on all SQ/FLEX/NEEDMET WQ/U/FIT

18. Anything else you would like to add?
   All websites I’ve used have some good attributes, however, there is not one that meets all my expectations in terms of desirable attributes. If a site satisfied all it would be what I would call Quality Online Service – at the moment most sites don’t provide what I call quality service
APPENDIX G - 7

Questioning Route for OLSQ

Interview No: OLSQ 07

1. Industry Sector: IT&T
2. Position: Systems Analyst

3. Do any of your suppliers/vendors/partners offer online ordering facilities via their websites?
   Yes, the majority

4. How many supplier websites have you ordered from?
   Most

5. How often do you order from these sites?
   4-5 times a week

6. How many times would you estimate that you have ordered from these websites?
   See the previous question

7. Do any of your suppliers/vendors/partners also provide customer service/product support online?
   Yes

8. How often do you access customer service/support from these sites?
   Daily

9. What do you understand the term online customer service to mean?
   Ability to identify contact details for the provider without trouble
   SQ/AVAIL/EASYCONTACT
   A quick turnaround response SQ/SR/RESP
   Provision of troubleshooting or FAQs WQ/U/PROBRES

10. Can you describe what is meant by online service quality?
    Availability of the website WQ/TR/AVAIL
    Validity of information and data on the site eg. timely & up to date
    IQ/ACC/ERRORFREE
    Relevance of information on the site WQ/U/FIT
    Structure, layout and navigation IQ/PRES/ORGSTRUCT WQ/WSD/NAV
    Quality of search facility WQ/EOU/SEARCHFAC
    Printable data (format) IQ/PRES/INFOPRES
    Support for multiple browsers WQ/WSD/DES
    Speed of interaction WQ/EOU/INTERFACE WQ/WSD/DES
11. Think about the last time you experienced exceptionally good service from a supplier website. What happened that makes you describe your experience as exceptionally good?
   MSDN - provided additional features eg. value-add links WQ/U/FIT
   Technical manuals were available online SQ/AVAIL/SERVCOMP
   The features in 10 above as well as the design of the pages WQ/WSD/DES
   Ability for the customer to rank the usefulness of the site ie. fit for purpose
   WQ/U/FIT

12. Think about a recent experience when you received poor service? What happened to make you describe your service experience as poor?
   ActivePdf site
   Had limited functionality
   Was full of errors
   Information was not mapped to correct product
   Site is a FREE PRODUCT – therefore, this could be the reason for the problems associated with the site

13. Can you explain what you mean by criteria expressed at 11 and 12?
    I think that’s fairly self explanatory

14. When you do business with (supplier detailed at 11) what is the single most important thing that could happen that would make you say the service is fantastic?
    MSDN
    They provide more options for access eg. provision of downloadable files to desktop to enable access to information when connections are down
    IQ/PRES/INFOPRES

15. On the other hand, what would make you say that service is just simply awful?
    Incorrect info on the site - ActivePdf site

16. What do you think is the most important for your supplier (listed at 11) to keep doing?
    Keeping up to date – most important to enable me to do my job properly
    IQ/ACC/ERRORFREE

17. How could service be improved further at the website detailed in 11?
    Same as last response

18. Anything else you would like to add?
    No response
APPENDIX G - 8

Questioning Route for OLSQ

Interview No: OLSQ 08

1. Industry Sector: Manufacturer (Food Industry)
2. Position: eProcurement Manager

3. Do any of your suppliers/vendors/partners offer online ordering facilities via their websites?
   Yes

4. How Many supplier websites have you ordered from?
   Mostly Woolworths, Coles and Tesco

5. How often do you order from these sites?
   weekly

6. How many times would you estimate that you have ordered from these websites?
   Yes, weekly from all above

7. Do any of your suppliers/vendors/partners also provide customer service/product support online?
   They are all 90% service and support sites

8. How often do you access customer service/support from these sites?
   Daily

9. What do you understand the term online customer service to mean?
   Service delivered via email, auto-response or customer support reps
   SQ/AVAIL/SERVCOMP SQ/FLEX/NEEDMET

10. Can you describe what is meant by online service quality?
    Quick resolution of service problems SQ/SR/RESP
    Speed of response to service requests SQ/SR/RESP
    Clarity of what to do on the site eg. text searches WQ/EOU/INT
    Responsibility taken by vendor SQ/SR/ASSURE

11. Think about the last time you experienced exceptionally good service from a supplier website. What happened that makes you describe your experience as exceptionally good?
    None have been exceptionally good

12. Think about a recent experience when you received poor service? What happened to make you describe your service experience as poor?
    Coles - data is old or not there at all
13. Can you explain what you mean by criteria expressed at 11 and 12?
   As I said in response to the questions

14. When you do business with (supplier detailed at 11) what is the single most important thing that could happen that would make you say the service is fantastic?
   When you enter the site it should provide “auto” login i.e. when I log in, all my company and account information should be automatically displayed
   **WQ/INTUIT /INTMODE**

15. On the other hand, what would make you say that service is just simply awful?
   Sites that meet none of the criteria expressed earlier

16. What do you think is the most important for your supplier (listed at 11) to keep doing?
   All at present, plus 14. An ideal extra would be to make interaction with the site more simplistic  **WQ/EOU/INTERFACE  WQ/EOU/USAB**

17. How could service be improved further at the website detailed in 11?
   Summaries of account activity should be pushed out by the vendor to the customer when the site is accessed  **WQ/INTUIT/INTMODE**

18. Anything else you would like to add?
   No response
APPENDIX G - 9

Questioning Route for OLSQ

Interview No: OLSQ 09

1. Industry Sector: Retail
2. Position: National Business Development Manager

3. Do any of your suppliers/vendors/partners offer online ordering facilities via their websites?
   From the perspective of us ordering from them - No

4. How Many supplier websites have you ordered from?
   None

5. How often do you order from these sites?
   N/A

6. How many times would you estimate that you have ordered from these websites?
   None

7. Do any of your suppliers/vendors/partners also provide customer service/product support online?
   Woolworths as one of our customers, in fact, the only customer whose website we use as part of doing business, getting information, downloading forms etc. Other suppliers that we purchase from all have websites, but they are of little value other than an interesting (or not so) good read. There is no customer partnership or operational benefit in those of our suppliers

8. How often do you access customer service/support from these sites?
   Woolworths maybe between the team, once a week

9. What do you understand the term online customer service to mean?
   Exactly that – a website that offers online archives of process and procedure, or even live interactive contact WQ/INTUIT/INTMODE

10. Can you describe what is meant by online service quality?
    What I would expect is an easy to navigate system that answers my queries – if its too hard to drive, I’ll get on the phone and speak to someone! WQ/WSD/NAV
    WQ/U/PROBRES

11. Think about the last time you experienced exceptionally good service from a supplier website. What happened that makes you describe your experience as exceptionally good?
    Generally don’t use them - Woolworths is one of our customers
12. Think about a recent experience when you received poor service? What happened to make you describe your service experience as poor?
   Generally don’t use them – Woolworths is one of our customers

13. Can you explain what you mean by criteria expressed at 11 and 12?

In regard to online customer service and support I haven’t got time to go around in loops on websites. If what I want (information/items/forms) isn’t readily apparent, I’ll use a different method – usually direct. The thing to remember about websites is they are not the way to get information or place orders. They are a secondary way and if they are not more convenient for me and do not answer queries thoroughly, then I will pick the phone up instead. WQ/WSD/DES WQ/WSD/NAV_SR/AVAIL/SERVCOMP

14. When you do business with (supplier detailed at 11) what is the single most important thing that could happen that would make you say the service is fantastic?
   It’s quick and accurate IQ/ACC/ERRORFREE SQ/SR/RESP

15. On the other hand, what would make you say that service is just simply awful?
   Not getting quickly to what I want

16. What do you think is the most important for your supplier (listed at 11) to keep doing?
   Keep it simple and easy to use and communicate WQ/EOU/USAB

17. How could service be improved further at the website detailed in 11?
   I don’t have an answer to that

18. Anything else you would like to add?
   Websites need to be updated, but many are changed for fashion, mainly aesthetics which means I have to learn my way around again and it wastes my time. Too many passwords also are a pain – I can’t remember them! WQ/WSD/AES WQ/INTUIT/LEARN
APPENDIX G - 10

Questioning Route for OLSQ

Interview No: OLSQ 10

1. Industry Sector: Manufacturing (Health and Beauty Products)
2. Position: Business Manager

3. Do any of your suppliers/vendors/partners offer online ordering facilities via their websites?
   Websites used mainly for Customer service/support and mainly through Asian Office in Singapore

4. How many supplier websites have you ordered from?
   None

5. How often do you order from these sites?
   N/A

6. How many times would you estimate that you have ordered from these websites?
   None

7. Do any of your suppliers/vendors/partners also provide customer service/product support online?
   Yes – they’re used mainly for IT HelpDesk
   Relocations and transfers (products)
   Systems help

8. How often do you access customer service/support from these sites?
   Daily at least

9. What do you understand the term online customer service to mean?
   Anything web-based delivery
   Traditional customer service provided online SQ/SR/AVAIL/SERVCOMP

10. Can you describe what is meant by online service quality?
    Service equal to or better than traditional service SQ/SR/AVAIL/SERVCOMP

11. Think about the last time you experienced exceptionally good service from a supplier website. What happened that makes you describe your experience as exceptionally good?
    Site was intuitive WQ/INTUIT/INTMODE
    Easy to navigate WQ/WSD/NAV
    Simple but functional design WQ/WSD/DES
    Accessible all the time WQ/TR/AVAIL
A number of printable formats are available (flexibility was offered in options)

**SQ/FLEX/OPTS**

12. Think about a recent experience when you received poor service? What happened to make you describe your service experience as poor?
   Opposite of 11 plus not the same level of ability in online service delivery as face-to-face
   Not a one stop service shop – not all service components were offered online

13. Can you explain what you mean by criteria expressed at 11 and 12?
    Just what I said

14. When you do business with (supplier detailed at 11) what is the single most important thing that could happen that would make you say the service is fantastic?
    Speed of access and service delivery **WQ/TR/AVAIL**  **SQ/SR/RESP**

15. On the other hand, what would make you say that service is just simply awful?
    Not resolving service problems first time **WQ/U/PROBRES**

16. What do you think is the most important for your supplier (listed at 11) to keep doing?
    Keep it simple and easy to use **WQ/WSD/DES**  **WQ/EOU/USAB**
    **WQ/EOU/INTERFACE**

17. How could service be improved further at the website detailed in 11?
    No response

18. Anything else you would like to add?
    Sites that can learn about the user as he works around the site (intelligent system)
    - making it easier to use next time **WQ/INTUIT/LEARN**
    Customised site/personalisation **SQ/FLEX/NEEDMET**
APPENDIX G - 11

Questioning Route for OLSQ

Interview No: OLSQ 11

1. **Industry Sector:** Manufacturing (Health and Beauty Products)

2. **Position:** Director, Customer Service and Logistics

3. Do any of your suppliers/vendors/partners offer online ordering facilities via their websites?
   - Some do

4. How many supplier websites have you ordered from?
   - Very few, we are promoting SMI (Supply managed Inventory). Our major suppliers log onto our ERP system (SAP) and replenish materials as determined by our own MRP explosions. These are fed from our demand forecasts. These forecasts are updated monthly on a rolling 18 month basis. The demand is in weekly buckets. We have used reverse auctions to access best global pricing.

5. How often do you order from these sites?
   - Not very often

6. How many times would you estimate that you have ordered from these websites?
   - Very limited

7. Do any of your suppliers/vendors/partners also provide customer service/product support online?
   - Yes

8. How often do you access customer service/support from these sites?
   - Depends on the site. The Woolworths WOWlink site, for example, would be accessed daily

9. What do you understand the term online customer service to mean?
   - Full range of CRM offerings: from specifications and safety and handling information through to order management (placement, acknowledgement, supply chain tracking, invoicing and POD). Also would include a balanced scorecard of performance, against mutually agreed KPIs. All this would culminate in the perfect order. Data integrity would be a critical element **SQ/AVAIL/SERVCOMP IQ/ACC/ERRORFREE**

10. Can you describe what is meant by online service quality?
It should be efficient & quick release time from the buyer/seller interface

SQ/SR/RESP  WQ/TR/RESP  WQ/EOU/INTERFACE
It should enable process simplification and support electronic transaction
management and all administrative aspects of the customer/supplier interaction

WQ/EOU/USAB
It should be accurate with efficient order response and order follow-up
functionality IQ/ACC/ERRORFREE.
It should deal effectively with exception management, be integrated with
customer databases and be alert-driven WQ/U/PROBRES

WQ/INTUTT/INTMODE

11. Think about the last time you experienced exceptionally good service from a supplier
website. What happened that makes you describe your experience as exceptionally good?
Not applicable as stated – we have very limited use of supplier websites

12. Think about a recent experience when you received poor service? What happened to
make you describe your service experience as poor?
As above

13. Can you explain what you mean by criteria expressed at 11 and 12?
Explained above (I think)

14. When you do business with (supplier detailed at 11) what is the single most important
thing that could happen that would make you say the service is fantastic?
Ability to facilitate a perfect order (as explained above)

15. On the other hand, what would make you say that service is just simply awful?
Lack of prompt order acknowledgement, with a responsive delivery schedule and
details SQ/SR/RESP

16. What do you think is the most important for your supplier (listed at 11) to keep
doing?
Continuous improvement with the execution of concepts of scalability, integration
and exception-based management.

17. How could service be improved further at the website detailed in 11?
Not applicable

18. Anything else you would like to add?
As stated earlier we have limited use of supplier based websites
APPENDIX G - 12

Questioning Route for OLSQ

Interview No: OLSQ 12

1. Industry Sector: Retail (IT&T Products)

2. Position: Department Manager, Networking

3. Do any of your suppliers/vendors/partners offer online ordering facilities via their websites?
   Yes, but it is not utilised. All our ordering is conducted through Point of Sale system. My orders go through a purchasing manager who may combine them with orders from other departments. This is done so our store can order in the largest possible quantities. We can therefore lower freight costs and often gain volume discounts.

4. How many supplier websites have you ordered from?
   None

5. How often do you order from these sites?
   N/A

6. How many times would you estimate that you have ordered from these websites?
   N/A

7. Do any of your suppliers/vendors/partners also provide customer service/product support online?
   Yes, nearly all of them

8. How often do you access customer service/support from these sites?
   Daily

9. What do you understand the term online customer service to mean?
   Should include a FAQ section, detailed product specifications, current drivers for a variety of platforms, firmware updates, links to authorised repair agents and related suppliers. WQ/WSD/DES IQ/ACC/ERRORFREE SQ/FLEX/OPTS

10. Can you describe what is meant by online service quality?
    Very current and detailed information, easy navigation – this becomes a major issue with US-based sites with Australian mirror sites. Australian specific information can be easily lost in the shuffle. IQ/ACC/ERRORFREE WQ/WSD/NAV

11. Think about the last time you experienced exceptionally good service from a supplier website. What happened that makes you describe your experience as exceptionally good?
The two best sites I regularly use are the IBM and HP/Compaq sites. Both offer current and older drivers, updates and very detailed product specs for even their oldest models. Both sites are very easy to navigate. This prevents the user from needing to load many pages to gain access to more obscure parts of their sites. SQ/AVAIL/SERVCOMP WQ/WSD/NAV SQ/FLEX/OPTS SQFLEX/NEEDMET

12. Think about a recent experience when you received poor service? What happened to make you describe your service experience as poor?
   Netcomm, a local IT hardware manufacturer has a very poor site. Often detailed product information is simply a scan of the box of the product. They offer very little online product support and instead encourage the user to ring the company. Often, their product information is quite dated. Sanyo has a very poorly organised website. They have separate websites for home and business users with no links between them. A person shopping for a digital camera and a fax machine would have no problem finding camera information at Sanyo.com.au, but would have much greater difficulty finding the fax. They would most likely need to utilise a search engine to locate the more obscure Sanyo-IT.com.au SQ/AVAIL/SERVCOMP SQ/AVAIL/NEEDMET IQ/ACC/ERRORFREE WQ/EOU/SEARCHFAC

13. Can you explain what you mean by criteria expressed at 11 and 12?
   Just what I said

14. When you do business with (supplier detailed at 11) what is the single most important thing that could happen that would make you say the service is fantastic?
   The ability to gain real time responses to enquiries SQ/SR/RESP

15. On the other hand, what would make you say that service is just simply awful?
   Dated product information and lack of drivers are the worst problems

16. What do you think is the most important for your supplier (listed at 11) to keep doing?
   Making sure drivers and related updates for products are kept very current. This dramatically cuts down on the enormous amount of time spent resolving customer compatibility issues. IQ/ACC/ERRORFREE

17. How could service be improved further at the website detailed in 11?
   Being able to check detailed stock availability information without having to ring/email the company SQ/AVAIL/SERVCOMP

18. Anything else you would like to add?
   It would be possible for my company to utilise online ordering, but the technology would have to be much more robust. It would have to hold general stock orders until quantities were sufficient to gain free shipping or other discounts while allowing special orders to be advanced quickly through the system.
APPENDIX G - 13

Questioning Route for OLSQ

Interview No: OLSQ 13

1. Industry Sector: Manufacturer (Food Industry)

2. Position: National Business Manager

3. Do any of your suppliers/vendors/partners offer online ordering facilities via their websites?  
   Yes

4. How Many supplier websites have you ordered from?  
   None

5. How often do you order from these sites?  
   N/A

6. How many times would you estimate that you have ordered from these websites?  
   N/A

7. Do any of your suppliers/vendors/partners also provide customer service/product support online?  
   Yes

8. How often do you access customer service/support from them?  
   +/- once a month

9. What do you understand the term online customer service to mean?  
   Access to comprehensive information (order/product/terms/specifications/timings etc) which negates the need for me to speak to a service operator.  
   IQ/ACC/ERRORFREE  SQ/AVAIL/SERVCOMP

10. Can you describe what is meant by online service quality?  
    I don’t know

11. Think about the last time you experienced exceptionally good service from a supplier website. What happened that makes you describe your experience as exceptionally good?  
    I don’t use enough to really have experienced this

12. Think about a recent experience when you received poor service? What happened to make you describe your service experience as poor?  
    As above
13. Can you explain what you mean by criteria expressed at 11 and 12?
   Not applicable

14. When you do business with (supplier detailed at 11) what is the single most important thing that could happen that would make you say the service is fantastic?
   I don't know

15. On the other hand, what would make you say that service is just simply awful?
   I haven't had enough experience to answer that question

16. What do you think is the most important for your supplier (listed at 11) to keep doing?
   Same as the last question

17. How could service be improved further at the website detailed in 11?
   Same as the last question

18. Anything else you would like to add?
   Nothing
APPENDIX G - 14

Questioning Route for OLSQ

Interview No: OLSQ 14

1. **Industry Sector:** Services (Marketing)

2. **Position:** Managing Director

3. Do any of your suppliers/vendors/partners offer online ordering facilities via their websites?
   - No

4. How many supplier websites have you ordered from?
   - If related to Q3 then answer is No. If the question is more general then the answer is probably around 10 – used for work-related travel bookings

5. How often do you order from these sites?
   - Irregularly. Travel and IT sites I would use a dozen times per year

6. How many times would you estimate that you have ordered from these websites?
   - Qantas – 20; Virgin Blue – 7; Dell – 2.

7. Do any of your suppliers/vendors/partners also provide customer service/product support online?
   - If related to Q3 – not yet

8. How often do you access customer service/support from them?
   - N/A

9. What do you understand the term online customer service to mean?
   - Service that is readily (if not instantly) available and accessible – would expect to be either able to find the answer with a search of the site &/or receive a response within an hour. **SQ/AVAIL/SERVCOMP SQ/SR/RESP**

10. Can you describe what is meant by online service quality?
    - I’d see it as providing correct results or answers relating to enquiries within an acceptable time frame. **SQ/SR/RESP IQ/ACC/ERRORFREE**

11. Think about the last time you experienced exceptionally good service from a supplier website. What happened that makes you describe your experience as exceptionally good?
    - Exceptionally good service? – yet to encounter it on the Web. In terms of good service/easily usable sites, I’d pick would be Virgin Blue’s online booking service. **SQ/SR/ASSURE WQ/EQU/USAB**
12. Think about a recent experience when you received poor service? What happened to make you describe your service experience as poor?

I don’t use enough to really have experienced this

13. Can you explain what you mean by criteria expressed at 11 and 12?
   Ease of Use – to me means a site that a) fits neatly on my computer screen with no “overlapping” and is clearly labelled (in normal language) to assist navigation (the “KISS” principle). WQ/EOU/USAB WQ/EOU/INTERFACE
   WQ/EOU/SEARCHFAC WQ/WSD/NAV

14. When you do business with (supplier detailed at 11) what is the single most important thing that could happen that would make you say the service is fantastic?
   “Fantastic” has not yet occurred – ultimately, if a site is easy to use and or/response is fast & accurate, and the business itself is honest & provides value, then I’d continue to use it. WQ/EOU/USAB SQ/SR/RESP SQ/SR/ASSURE

15. On the other hand, what would make you say that service is just simply awful?
   Unable to “get through” &/or poor service delivery.

16. What do you think is the most important for your supplier (listed at 11) to keep doing?
   Keep asking for our input – and keep providing the right product/service/advice at the right price within the right time parameters. SQ/SR/ASSURE

17. How could service be improved further at the website detailed in 11?
   Make it even more responsive, even faster to access. WQ/TR/RESP

18. Anything else you would like to add?
   Despite all the new language, new skills and huge promises – providing product &/or services on the Web still requires the same top level marketing, sales and service skills required prior to its introduction. We still need to provide “transaction satisfaction” (an area where the banks got it completely wrong!!). SQ/SR/ASSURE
APPENDIX G - 15

Questioning Route for OLSQ

Interview No: OLSQ 15

1. Industry Sector: Retailer

2. Position: Supply Chain Analyst

3. Do any of your suppliers/vendors/partners offer online ordering facilities via their websites?  
   Not sure

4. How many supplier websites have you ordered from?  
   N/A

5. How often do you order from these sites?  
   N/A

6. How many times would you estimate that you have ordered from these websites?  
   N/A

7. Do any of your suppliers/vendors/partners also provide customer service/product support online?  
   Yes, Woolworths site – service/support  
   UniLever – Online service centre for stock levels/planned

8. How often do you access customer service/support from them?  
   Daily

9. What do you understand the term online customer service to mean?  
   Ability to fulfil order on time SQ/SR/RESP SQ/SR/ASSURE

10. Can you describe what is meant by online service quality?  
    Above and beyond the standard  
    Additional features SQ/AVAIL/SERVCOMP  
    Flexibility of options SQ/FLEX/NEEDMET  
    Value add SQ/AVAIL/SERVCOMP  
    Quality – consistent result SQ/SR/ASSURE

11. Think about the last time you experienced exceptionally good service from a supplier website. What happened that makes you describe your experience as exceptionally good?  
    Ease of use WQ/EQU/USAB  
    Online help relevant IQ/ACC/ERRORFREE  
    Value add SQ/AVAIL/SERVCOMP
12. Think about a recent experience when you received poor service? What happened to make you describe your service experience as poor?
   - Not available
   - Format of information
   - Can't transfer to other applications
   - Frequent crashes

13. Can you explain what you mean by criteria expressed at 11 and 12?
   - Self explanatory

14. When you do business with (supplier detailed at 11) what is the single most important thing that could happen that would make you say the service is fantastic?
   - Partnership
   - Session to discuss how to “use” SQ/FLEX/OPTS
   - How to use info – not just make it available WQ/U/FIT
   - Part of process – staged approach SQ/FLEX/OPTS

15. On the other hand, what would make you say that service is just simply awful?
   - Info quality and format – if not available more frustrating than use

16. What do you think is the most important for your supplier (listed at 11) to keep doing?
   - Working with partners to get new “applications”
   - To deliver on these opportunities SQ/SR/ASSURE
   - Improve service delivery and quality SQ/SR/ASSURE

17. How could service be improved further at the website detailed in 11?
   - No response.

18. Anything else you would like to add?
   - No response
APPENDIX G - 16

Questioning Route for OLSQ

Interview No: OLSQ 16

1. Industry Sector: Government (3)

2. Position: IT Manager

3. Do any of your suppliers/vendors/partners offer online ordering facilities via their websites? 
   Yes.

4. How many supplier websites have you ordered from? 
   4 or 5

5. How often do you order from these sites? 
   Very rarely

6. How many times would you estimate that you have ordered from these websites? 
   Regular suppliers – never. One off purchases (generally S/W) occasionally

7. Do any of your suppliers/vendors/partners also provide customer service/product support online? 
   Yes

8. How often do you access customer service/support from them? 
   Daily

9. What do you understand the term online customer service to mean? 
   The ability for a user to seek to resolve problems, glean additional information or secure an update for a product or service directly from the Web without waiting for a support person to respond directly to the request. WQ/U/PROBRES SQ/AVAIL/SERVCOMP

10. Can you describe what is meant by Online service quality? 
    The ability to support an organisation to provide support and solutions to customer problems and requests that resolve the problem in a timely, effective manner that is consistent and easy to use. WQ/U/PROBRES SQ/SR/RESP SQ/SR/ASSURE WQ/EOU/USAB WQ/EOU/INTFACE

11. Think about the last time you experienced exceptionally good service from a supplier website. What happened that makes you describe your experience as exceptionally good? 
    Support information was easy to find, directly from the site’s home page (obvious links such as “support”). WQ/WSD/DES WQ/WSD/NAV WQ/WSD/COMPLINK
The site provides a comprehensive search facility to access the knowledge base **WQ/EOU/SEARCHFAC**. Downloads are easy to find, virus free, well documented and work. (recently had the case of a 298mb driver update that once downloaded was corrupt on the server). Support also provides alternative contact methods including e-mail (that they respond to) and phone. **SQ/FLEX/OPTS**

12. Think about a recent experience when you received poor service? What happened to make you describe your service experience as poor?
   Organisations that tell you what wonderful service they supply by no means of accessing that service (http://www.flow.com.au). No self-help, email not returned, helpdesk staff don't have a clue.

13. Can you explain what you mean by criteria expressed at 11 and 12?
   Easy to use – logical grouping of information, good search facilities, detailed description of problem/solution, links to similar issues, provision of “How to” documents and clear examples. **WQ/EOU/USAB**  **WQ/WSD/COMPLINK**  **WQ/EOU/SEARCHFAC**

14. When you do business with (supplier detailed at 11) what is the single most important thing that could happen that would make you say the service is fantastic?
   The amount of time it takes to resolve the issue **SQ/SR/RESP**

15. On the other hand, What would make you say that service is just simply awful?
   Unable to solve the problem and left up in the air with regard to the next step. For example, e-mails to support that bounce, forms that don’t work etc,

16. What do you think is the most important for your supplier (listed at 11) to keep doing?
   Think how the customer thinks. Someone who knows the networks (knowledge) in their organisation and provide that information in a consistent and easy to use manner. If all else fails, have someone at the end of a phone line. **IQ/PRES/ORGSTRUCT**  **WQ/EOU/INTERFACE**  **WQ/EOU/USAB**  **SQ/AVAIL/EASYCONTACT**  **SQ/FLEX/OPTS**

17. How could service be improved further at the website detailed in 11?
   Better contact details, provide information (completely lacking) **SQ/FLEX/OPTS**  **SQ/AVAIL/SERVCOMP**

18. Anything else you would like to add?
   No response
## APPENDIX H

### Perceptual Attributes of B2B OLSQ

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Website Design</strong></td>
<td>refers to site aesthetics i.e. visual appeal; the representation of site components; the ease of navigation; i.e. don’t have to “drill” too far into the site to locate information required; the quantity, functionality and relevance of hyperlinks; simplicity and functional aspects of site design.</td>
</tr>
<tr>
<td><strong>Ease of Use</strong></td>
<td>search facility is available within the site and is adequate for user needs; degree to which the site is well laid out and easy to move around; how simple the site is to understand and comprehend; how easy the site is to learn to use; degree of user-friendliness of the user interface.</td>
</tr>
<tr>
<td><strong>Technical Reliability</strong></td>
<td>refers to the technical function of the site; degree to which site components and hyperlinks function properly; no broken or redundant links on the site; system response time is within reasonable limits; fast webpage load time; fast download time; site is up and running and available for business when and where needed.</td>
</tr>
<tr>
<td><strong>Usefulness</strong></td>
<td>refers to how well the site meets the service and support needs of users, the ability of the site to facilitate resolution of customer service problems; the degree of fit for purpose is the degree to which the provider’s perceived online service objectives meet customer service needs.</td>
</tr>
<tr>
<td><strong>Intuitiveness</strong></td>
<td>the degree of alert-driven interaction between organisation and users; degree to which the site learns about user information needs and responds accordingly.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>refers to the organisation of information provided on the site; the amount, the structure and representation of information provided on the site.</td>
</tr>
<tr>
<td><strong>Accuracy</strong></td>
<td>degree to which information on the site is free of errors i.e. correct versions of product technical support information are provided; the degree of assurance that user organisation account data has not been altered, tampered with or corrupted.</td>
</tr>
<tr>
<td><strong>Availability</strong></td>
<td>multiple points of contact for the service provider are detailed on the website; the ease of contacting the service provider; the approachability of the service provider; the completeness of the service provided through the site is one-stop service provision.</td>
</tr>
<tr>
<td><strong>Service Reliability</strong></td>
<td>refers to consistent, timely, dependable and unerring service delivery; the service provider consistently delivers on service promises; the timeliness of service response (turnaround time within 12 hours); the service provider provides an immediate response to mission critical service requests; the reputation of the service provider for delivery of high quality service.</td>
</tr>
<tr>
<td><strong>Flexibility</strong></td>
<td>a range of available service and support options are provided from the site; a number of access options are provided; a number of download options are provided; a number of contact options are provided.</td>
</tr>
</tbody>
</table>

*Table 5.4 Attributes of B2B OLSQ*
APPENDIX I

B2B OLSQ CONCEPTUAL MODEL
APPENDIX J

PARTICIPANT INFORMATION SHEET

Research Title: Measuring Online Service Quality in Bto B Trade on the Internet
Research Context: PhD Thesis
Researcher: Lois Burgess
Supervisor: Professor Joan Cooper
Research Unit: Centre for e-Applications Research (CeaR)
Faculty of Informatics
University of Wollongong

Contact Details: Lois Burgess Tel: (02) 42214839
Professor Cooper Tel: (02) 42214001

Aim of the Research

The overall aim of the research is to develop a scale to measure perceived online service quality (OLSQ) from the perspective of business customers. The primary question addressed by this research is: What is a valid and reliable measure that can be used for online service quality in business to business interactions on the Internet? A two-phase study has been designed to 1) determine the attributes on which business customers’ judge the online service offering of their trading partners (phase I), and, from this, 2) develop a scale (OLSQ scale) to measure the online service quality construct (phase II).

Research Procedure

Participants in phase II of this project will be asked to request their business partners, (vendors, suppliers and customers) who interact with their organisation through a corporate website to complete an online survey (either posted to participant websites or via a link from that website to a secure server located in the Faculty of Informatics at the University of Wollongong) detailing their perceptions of the quality of the participating organisation’s online service offering. The survey is strictly anonymous and those participants completing the survey will not be asked to provide names or name of the organisation they represent. The only demographic data requested will be the Industry sector to which they belong. This will enable comparison of data across industry sectors, and therefore, greater generalisability of the results.

Data Collection and Storage Procedure
Data will be collected from participants via the process detailed above. Data will be stored in soft copy format on a secure server in the school of IT and Computer Science, Faculty of Informatics at the University of Wollongong. Anonymity of participants will be maintained using a numbered coding system and referring only to the industry sector to which the participant belongs. Data will be used in aggregate format only and at no time will individual participant data be referred to, eliminating the possibility of linking participants with responses given. Data will, at the consent of the participants also be used in de-identified, aggregate format in the doctoral thesis and conference and journal articles submitted by the researcher. At the request of the participating organisations, data collected from phase II of the research will be provided to them in an aggregated, de-identified form. Data provided will be aggregated and de-identified and will list in order of importance, the attributes on which their online service offering is judged from the perspective of their business customers.

There are no anticipated risks involved for participants in the research. Participants will have an opportunity to ask the researcher, Lois Burgess any questions they may have about the research and their participation.

Participation in this research is voluntary and participants are free to refuse to participate and free to withdraw from the research at any time. Refusal to participate or withdrawal of consent will not effect participants relationship with the Faculty of Informatics or the University of Wollongong.

If participants have any enquiries about the research, they can contact Lois Burgess and Professor Joan Cooper on (02) 42 214839 and (02) 42 214001 respectively, or if there are any concerns or complaints regarding the way the research is or has been conducted, participants can contact the Complaints Officer, Human research Ethics Committee, University of Wollongong on (20) 42 214457.

Benefits of the Research

Through this research, managers will be able to gain insights into how business customers perceive the quality of their online service offering. The results of the research will also be of value in competitive analysis and benchmarking. The first insight of value to management is the provision of a diagnostic tool that will enable managers to identify aspects of their online service offering that need improvement, and to implement strategies to address this. It is also conceivable that the research outcome will provide valuable information upon which service providers may be able to base further research into the development of their online service offering and its measurement.
APPENDIX K

CONSENT FORM – PHASE II

I have been given information about “A Conceptual Framework for Understanding and Measuring Online Service Quality in b-b Service Interactions on the Internet” and discussed the research project with Lois Burgess who is conducting this research as part of a Doctor of Philosophy supervised by Professor Joan Cooper at Flinders University, Adelaide and Professor Peter Eklund in the Faculty of Informatics at the University of Wollongong.

I understand that, if I consent to participate in this project I will be asked to request my business partners who interact with my organisation through our website to complete an online survey (via a link from our website to a secure server located in the Faculty of Informatics at the University of Wollongong) detailing their perceptions of the quality of my organisations online service offering.

I have been advised of the potential risks and burdens associated with this research and have an opportunity to ask Lois Burgess any questions I may have about the research and my participation.

I understand that my participation in this research is voluntary, I am free to refuse to participate and I am free to withdraw from the research at any time. My refusal to participate or withdrawal of consent will not affect my relationship with the Faculty of Informatics or my relationship with the University of Wollongong.

If I have any enquiries about the research, I can contact Lois Burgess; Professor Joan Cooper or Professor Peter Eklund on +61 2 42 214839; +61 8 82015636 and +61 2 42 213874 respectively, or if I have any concerns or complaints regarding the way the research is or has been conducted, I can contact the Complaints Officer, Human research Ethics Committee, University of Wollongong on (20) 42 214457.

By signing below, I am indicating my consent to participate in the research entitled “A Conceptual Framework for Understanding and Measuring Online Service Quality in b-b Service Interactions on the Internet” as it has been described to me in the information sheet and in discussion with Lois Burgess. I understand that the data collected from my participation will be used for a Doctor of Philosophy Thesis and publication at relevant conferences and in journals, in an aggregated, de-identified form and I consent for it to be used in that manner.

Signed ........................................... Date ......................................
Name (please print)
APPENDIX L

SCALE ITEMS – INITIAL ITEM POOL

EB QUALITY

Ease of Navigation

1. The website is well laid out and easy to navigate
2. Information on the website is easy to locate
3. Links on the website are relevant to the context of the site
4. Links and system components on the website are well organised

Ease of Use

1. The interface on the website is user-friendly
2. The website is easy to operate
3. The website is easy to learn to use
4. I have control of the interaction with the website

Simplicity

1. Website components are simple and functional
2. The website is easy to understand
3. The website provides information at the right level of detail
4. The website has a simple search function

Site Design

1. The website is visually appealing
2. Website components are clearly represented
3. Website components are well organised
4. The website demonstrates a balanced approach to the use of text and graphics

Technical Reliability

1. There are no redundant or broken links on the site
2. Website components function properly
3. The website is always available
4. The Web Server, systems software and hardware are responsive

Speed (technology-related)

1. Webpage load time is within reasonable limits
2. Downloads from the website are fast
3. Systems response time is reasonable?? (what do I mean by reasonable – need to look at design criteria for definition of reasonable) maybe expedient??

**Availability (technology-related)**

1. The website is available for business 24 hours, 7 days a week
2. The customer service and support system on the website functions properly
3. The customer service and support system on the website is always up and running and available when required

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**INFORMATION QUALITY**

**Intuitiveness**

1. The website automatically generates mission-critical status reports (eg. stock levels)
2. The website alerts me to new information about products, promotions and downloads
3. The website learns about my needs and preferences and responds with the appropriate information
4. The website presents the information I need in the format I require

**Usefulness**

1. The online service and support system generally meets my service and support needs
2. The online service and support options provided can be tailored to meet to my specific service and support needs
3. The service providers online service and support goals and objectives align with my service and support goals and objectives

**Presentation**

1. Information provided on the website is presented in a format that is appropriate to its purpose (eg. spreadsheets)
2. Information on the website is organised in a way that is easy to comprehend (eg. language, grammar).
3. Information is presented in a well-structured manner (logically organised)
4. Information on the website is represented in a way that makes it easier to understand (eg. graphs, tables etc.)
Accuracy

1. Information on the site is free of errors
2. Information on the site is complete
3. Information on the site is up to date
4. Information on the site is specific to the products and/or services provided

Data Integrity

1. I am confident that my company data is secured from intrusion from ‘unauthorised’ persons
2. I am confident that my company data will be used for stated, authorised purposes only
3. I am confident that my company data will not be accidentally or maliciously modified, altered or destroyed either during storage, transfer or retrieval
4. I am confident that my company data will not be “shared” with third parties without my express approval

Completeness

1. All of my service and support requests can be resolved from the website (eg. one-stop service shop)
2. The website offers a complete range of online service and support options
3. I don’t have to go elsewhere to have my service and support needs met
4. The service and support content on the website is comprehensive

SERVICE QUALITY

Accessibility (service-related)

1. Online service and support is available from the website 24 hours/7 days a week
2. The website provides details of alternate points of contact for customer service and support staff
3. Customer service and support staff are easy to contact from the website (eg. email, online enquiry forms)
4. Customer service and support staff display a willingness to resolve my online service and support requests

Responsiveness

1. The organisation responds to my online service requests in a timely manner (within reasonable limits ie. <12 hours)
2. The website provides status reports on my online service requests
3. An automated response that acknowledges receipt of my online service requests is provided from the website
4. Customer service and support staff provide immediate responses to “mission critical” online service requests

Service Reliability

1. The organisation consistently delivers online service that exceeds my expectations
2. I can rely on the organisation to meet my online service and support needs
3. The organisation always delivers online service in a dependable and unfailing manner
4. The organisation always delivers on service promises

Reputation

1. The organisation has a good reputation for delivering high quality online service and support
2. The organisation conveys a professional and competent image through its website
3. I feel confident that goods/services ordered via the website will be delivered as promised
4. The organisation gives an assurance to resolve my online service and support problems promptly

Flexibility

1. The organisation gives me the flexibility to choose an online service and support option that provides the “best fit” with my online service and support needs
2. The organisation gives me the flexibility to determine which service access point/s I would like to use
3. The organisation gives me the flexibility to choose how I would like my service requests resolved

Customisation

1. The content on the website can be tailored to meet my service and support needs
2. The website provides a customisable search facility
3. The website provides information that specifically supports my business objectives
4. The organisation has allowed me to customise service and support pages on its website to align with my specific business documentation requirements
WEB QUALITY

Ease of Navigation

1. Site is well laid out and easy to navigate
2. Information on the site is easy to locate
3. Links are relevant to the context of the site
4. Well organised links and system components

Is the concept of site well defined? Could there be components or aspects of the site that have all the desirable features or characteristics and others that are poor. If that is the case then your questions as they stand are giving you a “general” rather than specific assessment of the site. And there is nothing wrong with that if you are only after a general evaluation.

Ease of Use

1. The interface is user-friendly
2. Site is easy to operate
3. Site is easy to learn to use this item introduces a new concept namely learning to use the site. This may not necessarily be about ease of use per se.
4. Site allows user to control the transaction

Simplicity

1. Design of the site is simple, yet functional
2. Information on the site is easy to understand
3. Site provides information at the right level of detail
4. Site provides a simple to use search function

The concepts of Ease of Use and Simplicity seem to be correlated. Is there the possibility of redundancy? I think a factor analysis of this scale may result in these items clustering together to form one single factor.

Site Design

1. Site is visually pleasing
2. Site components are clearly represented and well organised
3. Design incorporates effective use of graphics and colours will the respondent be able to comment on the effective use of graphics and colour? Are the respondents lay people, naive users?
4. Site design is appropriate for site type. Again, can your respondents really assess appropriateness? May be you need different words. I suppose I'm not sure what you mean by "appropriate" and I suppose your respondents need to be clear about this issue as well.

Technical Reliability

1. There are no redundant or broken links on the site
2. Site components function properly
3. Site is always available and accessible. Are the concepts of availability and accessibility equivalent? If so drop one of the terms; otherwise you are assessing two things in the one questions
4. Server, systems software and hardware is responsive

Again if the respondents are lay users then the use of technical language may not be appropriate eg "server"

Speed

1. Page load time is within reasonable limits
2. Site has fast download speeds
3. Site has fast systems response time
4. Site enables fast navigation to information

Ditto: is use of technical language an issue?

Availability

1. There are multiple points of contact for the organisation (eg. phone, fax, email)
2. It is easy to contact the organisation from any location
3. The customer service staff are approachable and responsive to my needs
4. Customer support is available 24 hours/7 days a week

Again you may have some redundancy of items. You have an item on availability in the reliability group.

INFORMATION QUALITY

Intuitiveness

1. Site automatically generates mission-critical status reports (eg. stock levels)
2. Site alerts me to new information about products, promotions and downloads
3. Site learns about my needs and preferences and responds in an appropriate manner
4. Site provides the precise information I need. Does this item really fit in this group? It may be a usefulness item?

Ditto: tech language eg I have no idea what a “mission-critical status report” is?

Usefulness

1. Site is highly relevant to my business needs
2. Content and service options available at the site are relevant to the goals of the site owner
3. Site goals and objectives align with my business objectives
4. Site serviceability and fitness for purpose of the service and products on offer is consistently high. Wording is difficult to follow and not sure if it fits in this group. Items 1 to 3 are about relevance which may be a component of usefulness but not necessarily that construct – See Venkatesh & Davis (2000) Management Science vol. 46(2) pp186-204.

Presentation

1. Site presents information in an appropriate format
2. Information on the site is organised in a way that is easy to understand
3. Information on the site is believable
4. I clearly understand the services and products of the company by looking at the site. How is this set of items different from those presented earlier looking at web site design etc?

Accuracy

1. Information on the site is free of errors
2. Information on the site is complete
3. Information on the site is up to date and accurate – two concepts in the one item? Are they responding to the notion of accuracy or being up to date?
4. Information on the site is specific to the products and/or services provided
Data Integrity

1. I am confident that my account information is secured from “attack”. Will the reader know what you mean by attack?
2. I am confident that access to my account information is restricted to those employees in the organisation who need access to it for business purposes only
3. I am confident that my account information cannot be altered without the proper authority
4. I am confident that my account information will not be “shared” with third parties without my express approval

Completeness

1. All my service needs are met through the site (one-stop service shop)
2. Content is always current and up to date
3. Complete product/service descriptions are available on the site

Why only 3 items in this set? I’m not sure what you are trying to measure here. There are a number of concepts being explored?

SERVICE QUALITY

Accessibility

1. Site is available for business 24 hours/7 days a week
2. I can access service and support staff from any location
3. Customer service and support staff are always approachable. Two concepts. Could customer service be approachable but support staff impossible to approach?
4. The organisation is responsive to my service and support needs

Again how is this concept different from the availability items/concepts presented earlier?

Responsiveness

1. The organisation responds to my requests in a timely manner (within reasonable limits i.e. <12 hours). How is this item evaluating the service provide online? Can the organisation have both online and offline services. This item needs rewording I think.
2. Site provides status reports on service requests
3. Site provides an automated response that acknowledges receipt of service requests
4. Site performs consistently at a high level
Again is there overlap with previous items? Eg usefulness etc.

Service Reliability

1. Organisation consistently delivers service that exceeds my expectations
2. Responses to service requests are timely
3. Site always delivers service in a dependable and unfailing manner
4. Organisation always delivers on service promises

Again you need to be sure that you are evaluating online services and not overall services provided by the organisation

Reputation

1. Site has a good reputation
2. Site conveys a professional and competent image
3. I feel confident that goods/services will be delivered as promised
4. Organisation gives assurance to solve my service problems and makes it easy for me to provide feedback

Flexibility

1. Site provides a range of support and service options
2. Site provides a range of service access options
3. Site provides a range of download options
4. Site provides multiple contact options

Customisation

1. Site provides content that can be tailored to meet my individual service needs
2. Site provides customised search facilities
3. Site provides information that supports my business objectives
4. Site provides a range of output options that are sufficient for my business needs

Again notions of flexibility and customisation may be high related to other items or concepts in your item pool. Check for redundancy.
Hope comments are helpful. Ring me or email me if you need clarification of my comments.

Cheers, Peter
APPENDIX N – IS ACADEMIC

SCALE ITEMS

WEB QUALITY

Ease of Navigation

1. Site is well laid out and easy to navigate
2. Information on the site is easy to locate
3. Links are relevant to the context of the site
4. Well organised links and system components

Ease of Use

1. The interface is user-friendly
2. Site is easy to operate
3. Site is easy to learn to use
4. Site allows user to control the transaction

Simplicity

1. Design of the site is simple, yet functional
2. Information on the site is easy to understand
3. Site provides information at the right level of detail
4. Site provides a simple to use search function

Site Design

1. Site is visually pleasing
2. Site components are clearly represented and well organised
3. Design incorporates effective use of graphics and colours
4. Site design is appropriate for site type

Technical Reliability

1. There are no redundant or broken links on the site
2. Site components function properly
3. Site is always available and accessible
4. Server, systems software and hardware is responsive

Speed

1. Page load time is within reasonable limits
2. Site has fast down loads
3. Site has fast systems response time
4. Site enables fast navigation to information

Availability

1. There are multiple points of contact for the organisation (eg. phone, fax, email)
2. It is easy to contact the organisation from any location
3. The customer service staff are approachable and responsive to my needs
4. Customer support is available 24 hours/7 days a week

*If your definition of Availability refers to the availability of the Website other than support availability for the site, availability of web features then items 1, 3 and 4 seemed not to be appropriate. I am not sure what item 2 is measuring.*

INFORMATION QUALITY

Intuitiveness

1. Site automatically generates mission-critical status reports (eg. stock levels)
2. Site alerts me to new information about products, promotions and downloads
3. Site learns about my needs and preferences and responds in an appropriate manner with the information
4. Site provides the precise information I need

Usefulness

1. Site is highly relevant to my business information needs
2. Content and service options available at the site are relevant to the goals of the site owner
3. Site goals and objectives align with my business objectives
4. Site serviceability and fitness for purpose of the service and products on offer is consistently high

Presentation

1. Site presents information in an appropriate format
2. Information on the site is organised in a way that is easy to understand
3. Information on the site is believable accurate?
4. I clearly understand the services and products of the company by looking at the site
Accuracy

1. Information on the site is free of errors
2. Information on the site is complete
3. Information on the site is up to date and accurate
4. Information on the site is specific to the products and/or services provided

Data Integrity

1. I am confident that my account information is secured from “attack”
2. I am confident that access to my account information is restricted to those employees in the organisation who need access to it for business purposes only
3. I am confident that my account information cannot be altered without the proper authority
4. I am confident that my account information will not be “shared” with third parties without my express approval

*Data integrity refers more than just account information. You may have to look for the definition of Data integrity, especially in relation to web.*

Completeness

1. All my service needs are met through the site (one-stop service shop)
2. Content is always current and up to date
3. Complete product/service descriptions are available on the site

*I think there would more on completeness than only these three.*

SERVICE QUALITY

Accessibility

1. Site is available for business 24 hours/7 days a week
2. I can access service and support staff from any location
3. Customer service and support staff are always approachable
4. The organisation is responsive to my service and support needs

Responsiveness

1. The organisation responds to my requests in a timely manner (within reasonable limits ie. <12 hours)
2. Site provides status reports on service requests
3. Site provides an automated response that acknowledges receipt of service requests
4. Site performs consistently at a high level

Service Reliability

1. Organisation consistently delivers service that exceeds my expectations
2. Responses to service requests are timely
3. Site always delivers service in a dependable and unfailing manner
4. Organisation always delivers on service promises

Reputation

1. Site has a good reputation
2. Site conveys a professional and competent image
3. I feel confident that goods/services will be delivered as promised
4. Organisation gives assurance to solve my service problems and makes it easy for me to provide feedback

Flexibility

1. Site provides a range of support and service options
2. Site provides a range of service access options
3. Site provides a range of download options
4. Site provides multiple contact options

Customisation

1. Site provides content that can be tailored to meet my individual service needs
2. Site provides customised search facilities
3. Site provides information that supports my business objectives
4. Site provides a range of output options that are sufficient for my business needs
APPENDIX O – MARKETING ACADEMIC

SCALE ITEMS

WEB QUALITY

Ease of Navigation

1. The website is well laid out and easy to navigate
2. Information on the website is easy to locate
3. Links on the website are relevant to the context of the site
4. Links and system components on the website are well organised

Ease of Use

1. The interface on the website is user-friendly
2. The website is easy to operate
3. The website is easy to learn to use
4. I have control of the interaction with the website

Simplicity

1. Website components are simple and functional
2. The website is easy to understand
3. The website provides information at the right level of detail
4. The website has a simple search function

Site Design

1. The website is visually appealing
2. Website components are clearly represented
3. Website components are well organised
4. The website demonstrates a balanced approach to the use of text and graphics

Technical Reliability

1. There are no redundant or broken links on the site
2. Website components function properly
3. The website is always available
4. The Web Server, systems software and hardware are responsive

Speed (technology-related)

1. Webpage load time is within reasonable limits
2. Downloads from the website are fast
3. Systems response time is reasonable (what do you mean by reasonable? You need to specify this)

**Availability (technology-related)**

1. The website is available for business 24 hours, 7 days a week
2. The customer service and support system on the website functions properly
3. The customer service and support system on the website is always up and running and available when required

**INFORMATION QUALITY**

**Intuitiveness**

1. The website automatically generates mission-critical status reports (e.g., stock levels)
2. The website alerts me to new information about products, promotions and downloads
3. The website learns about my needs and preferences and responds with the appropriate information
4. The website presents the information I need in the format I require

**Usefulness**

1. The online service and support system *generally* meets my service and support needs
2. The online service and support options provided can be tailored to meet to my specific service and support needs
3. The service providers online service and support goals and objectives align with my service and support goals and objectives

**Presentation**

1. Information provided on the website is presented in a format that is appropriate to its purpose (e.g., spreadsheets)
2. Information on the website is organised in a way that is easy to comprehend (e.g., language, grammar).
3. Information is presented in a well-structured manner (logically organised)
4. Information on the website is represented in a way that makes it easier to understand (e.g., graphs, tables etc.)
Accuracy

1. Information on the site is free of errors
2. Information on the site is complete
3. Information on the site is up to date
4. Information on the site is specific to the products and/or services provided

Data Integrity

1. I am confident that my company data is secured from intrusion from “unauthorised” persons
2. I am confident that my company data will be used for stated, authorised purposes only
3. I am confident that my company data will not be accidentally or maliciously modified, altered or destroyed either during storage, transfer or retrieval
4. I am confident that my company data will not be “shared” with third parties without my express approval

Completeness

1. All of my service and support requests can be resolved from the website (e.g. one-stop service shop)
2. The website offers a complete range of online service and support options
3. I don’t have to go elsewhere to have my service and support needs met
4. The service and support content on the website is comprehensive

SERVICE QUALITY

Accessibility (service-related)

1. Online service and support is available from the website 24 hours/7 days a week
2. The website provides details of alternate points of contact for customer service and support staff
3. Customer service and support staff are easy to contact from the website (e.g. email, online enquiry forms)
4. Customer service and support staff display a willingness to resolve my online service and support requests

Responsiveness

1. The organisation responds to my online service requests in a timely manner (within reasonable limits i.e. <12 hours)
2. The website provides status reports on my online service requests
3. An automated response that acknowledges receipt of my online service requests is provided from the website
4. Customer service and support staff provide immediate responses to “mission critical” online service requests

Service Reliability

1. The organisation consistently delivers online service that exceeds my expectations
2. I can rely on the organisation to meet my online service and support needs
3. The organisation always delivers online service in a dependable and unfailing manner
4. The organisation always delivers on service promises

Reputation

1. The organisation has a good reputation for delivering high quality online service and support
2. The organisation conveys a professional and competent image through its website
3. I feel confident that goods/services ordered via the website will be delivered as promised
4. The organisation gives an assurance to resolve my online service and support problems promptly

Flexibility

1. The organisation gives me the flexibility to choose an online service and support option that provides the “best fit” with my online service and support needs
2. The organisation gives me the flexibility to determine which service access point/s I would like to use
3. The organisation gives me the flexibility to choose how I would like my service requests resolved

Customisation

1. The content on the website can be tailored to meet my service and support needs
2. The website provides a customisable search facility
3. The website provides information that specifically supports my business objectives
4. The organisation has allowed me to customise service and support pages on its website to align with my specific business documentation requirements.
APPENDIX P

RESPONSE FROM MARKETING MANAGER

I have now had a chance to review and digest the scale.

The wording and clarity is fine.

I had a couple of questions though.

1) Are the items listed able to be slightly customised? Or are you required to use identical questions across all the surveys you conduct?

2) Where some of the questions are still very similar can they be further consolidated to reduce the overall number of questions? (eg. Information on the site is free of errors, Information on the site is complete, Information on the site is up to date. All of these are more or less getting at the same point)

>From the discussions that I have had with organisations that conduct online surveys the thing they always stress is ensuring it does not take too much of the customers time to complete so that is my only concern really.
APPENDIX Q

Refined June 2004 Battery of Candidate Items for OLSQ Scale

WEB QUALITY

Website Design

- Ease of interaction with site
- Site well laid out
- Information on site easy to find
- Quality of links high
- Functionality of links
- Relevance of links
- User-friendliness of interface
- User-friendliness of overall design
- Site easy to operate
- Simple and functional design
- Simple to understand
- Simple to comprehend
- Aesthetics of site – visually appealing
  - colours, text & graphics, layout, look and feel
- Representation of site components
- Use of frames etc

Usefulness

- How well the site meets the customer online service and support needs
- Relevance of the site and content to customer service and support objectives

Technical Reliability

- Technical functioning of the site
  - site components work, hyperlinks work, no redundant links
- System response time
- Page load time
- Download time
INFORMATION QUALITY

Intuitiveness

Alert-driven
Alerts user re: new info and products
Learns about the user/user needs/preferences during interaction with the site and
alerts user to relevant new information and products

Presentation

The way the information on the site is organised
The amount of information
Structure of information
Representation of information (graphics, text, tables etc)

Accuracy

Degree to which the information on the site is free of errors
Accuracy of product support information eg. whether info regarding a particular
Model printer pertains to that model

SERVICE QUALITY

Service Reliability

Consistently reliable service delivery
Timely resolution of service requests
Dependable and unfailing service delivery
consistent delivery on service promises
Timeliness of service response
Provides “automated” immediate notification of service requests
Provides immediate service response for “mission critical” service requests
Organizations reputation for delivering high quality service and support

Availability
Multiple points of contact with organization listed on website
Ease of contact through website
Availability of other service options if website not functioning
Approachability of the organization
    adequate back-end service and support delivery system to deal with online
    service requests
    willingness to resolve customer online service requests]
“one-stop” service shop
    full service provision from website
    don’t have to go elsewhere to have service requests resolved
    ie. some web sites direct the user to a phone or fax number for
    service and support

Flexibility

Offers range of service and support delivery options from website
Offers range of service access options
Offers range of download options
Offers range of presentation options – way information is displayed on the site eg.
spreadsheet, tables, word doc etc.
Ease with which service can be tailored to meet individual customers needs
e.g. if customer needs including their business’ account details displayed in
Customer-preferred format automatically when customer log on to the site

Assurance

Assurance that my company data is tamper proof
Data unchanged from its source
Data not accidentally or maliciously modified, altered or destroyed either during
storage, transfer or retrieval
Data preserved for intended use only
Quality of the data not compromised in any way
Security of data stored in databases and servers etc
APPENDIX R

SURVEY INTRO LETTER

This survey is part of research being conducted by Lois Burgess at the University of Wollongong NSW Australia. The purpose of the survey is to ascertain your perceptions of the online service delivered by XYZ through the XYZ website.

This survey will take about ten minutes of your time to complete. The survey is comprised of three sections: Web Quality; Information Quality and Service Quality. The sections relate to Web site design, content and service quality issues. For each statement simply click on the circle that best describes the importance of each, on a scale from 1 to 5, where 1 is 'strongly disagree' and 5 is 'strongly agree'. Each statement on the survey requires a response. If you wish to change your selection simply click on the button of your new choice. If you have any questions regarding completion of the survey, please contact Lois Burgess on (02) 42 214839 or email lburgess@uow.edu.au. Thank you for completing the survey.
APPENDIX S

LETTER OF INTRODUCTION FROM PARTICIPATING SUPPLIER ORGANISATION (TO BE POSTED TO PARTICIPATING ORGANISATION WEBSITE)

In order to continually improve our online ordering solution, XYZ we would appreciate it if you could spare a few moments to complete a survey developed by the University of Wollongong to measure the online service delivery of XYZ.

If you would like to take part, please click on the link below, or otherwise simply close this window.

Thank you for your time.
XYZ
Section 1: Web Quality - *Web Site Design*

1. The website conveys a professional and competent image
   - [ ] Strongly Disagree  [ ] Disagree  [ ] Neither Disagree nor Agree  [ ] Agree  [ ] Strongly Agree

2. The overall design of the website matches its purpose
   - [ ] Strongly Disagree  [ ] Disagree  [ ] Neither Disagree nor Agree  [ ] Agree  [ ] Strongly Agree

3. The design of the website is simple, yet functional
   - [ ] Strongly Disagree  [ ] Disagree  [ ] Neither Disagree nor Agree  [ ] Agree  [ ] Strongly Agree

4. The use of graphics on the website has been kept to the minimum required
   - [ ] Strongly Disagree  [ ] Disagree  [ ] Neither Disagree nor Agree  [ ] Agree  [ ] Strongly Agree

5. Components on the website are clearly represented
   - [ ] Strongly Disagree  [ ] Disagree  [ ] Neither Disagree nor Agree  [ ] Agree  [ ] Strongly Agree

6. Components on the website are well organised
   - [ ] Strongly Disagree  [ ] Disagree  [ ] Neither Disagree nor Agree  [ ] Agree  [ ] Strongly Agree

Section 1: Web Quality - *Ease of Use*

7. The website is easy to use
   - [ ] Strongly Disagree  [ ] Disagree  [ ] Neither Disagree nor Agree  [ ] Agree  [ ] Strongly Agree

8. The website interface is user-friendly
   - [ ] Strongly Disagree  [ ] Disagree  [ ] Neither Disagree nor Agree  [ ] Agree  [ ] Strongly Agree

9. The search function provided on the website is adequate for my needs
   - [ ] Strongly Disagree  [ ] Disagree  [ ] Neither Disagree nor Agree  [ ] Agree  [ ] Strongly Agree
10. The website is well laid out and easy to navigate

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

11. The design of the website allows me to have control of the interaction with the site

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

12. Information provided on the website is easy to locate (ie. I don't have to "drill" too far into the find the information I am looking for)

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

Section 1: Web Quality - Technical Reliability

13. The website is available for business when and where I need it (ie. at all times, at all places)

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

14. There are no redundant or broken links on the site

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

15. Website components function properly (ie. do what they were designed to do - eg. order facilit
functions as it should)

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

16. Webpage load time is within reasonable limits (< or = 10 seconds)

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

17. Downloads from the website are within reasonable limits (< or = 10 seconds)

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

18. Systems response time is reasonable (eg. system responds to requests for data from databases within 10 seconds)

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree
Section 1: Web Quality - *Usefulness*

19. The service and support system provided on the website generally meets my service and support needs

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

20. The service and support options provided on the website can be tailored to meet my specific service and support needs

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

21. The organisation gives me the flexibility to choose a service and support option that provides a "best fit" with my service and support needs

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

Your progress through the survey is indicated here ☑

Section 2: Information Quality - *Intuitiveness*

22. The website automatically generates mission-critical status reports (e.g. stock levels; account information summaries; order status reports)

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

23. The website alerts me to new information about products, promotions and downloads

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

24. The website learns about my needs and preferences and responds with the appropriate information

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

Section 2: Information Quality - *Presentation*

25. Information provided on the website is presented in a format that is appropriate to its purpose (e.g. summary reports)
26. The website presents the information I need in the format I require (e.g. a number of options at available for displaying account information)

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

27. Information on the website is organised in a way that is easy to comprehend (e.g. language, grid)

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

28. Information is presented in a well-structured manner (logically organised)

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

29. Information on the website is represented in a way that makes it easier to understand (e.g. graphs, tables etc.)

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

Section 2: Information Quality - Accuracy

30. Information on the site is complete

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

31. Information on the site is up to date

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

32. Information provided on the site is relevant to the version or model specified

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

Your progress through the survey is indicated here □

Section 3: Service Quality - Availability
33. There are multiple points of contact for the organisation listed on the website (eg. phone, fax,

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

34. All of my service and support requests can be resolved from the website (eg. one-stop service

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

35. Customer service and support staff are easy to contact from the website (ie. through provision email and online forms)

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

Section 3: Service Quality - Service Reliability

36. The organisation gives an assurance to resolve my service and support problems promptly

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

37. An automated response that acknowledges receipt of my service requests is provided from the website

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

38. The website provides status reports on my service requests

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

39. Customer service and support staff provide immediate responses to "mission critical" service requests (ie. within a half hour)

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

40. The organisation responds to my online service requests in a timely manner (within reasonableness ie. < 4 hours)

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

41. The organisation always delivers service in a dependable and unfailing manner

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree
42. The organisation always delivers on service promises

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

Section 3: Service Quality - Flexibility

43. The organisation gives me the flexibility to determine which service access points I would like

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

44. The organisation gives me the flexibility to choose how I would like my service requests resolved

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

45. The service and support content on the website can be tailored to meet my specific service and support needs

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

46. The organisation gives me the flexibility to customise pages on its website to align with my specific business needs

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree nor Agree ☐ Agree ☐ Strongly Agree

Your progress through the survey is indicated here

Click "submit survey" to save your responses

submit survey
## APPENDIX U

<table>
<thead>
<tr>
<th>Factors</th>
<th>Variables</th>
<th>Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1: SQ</td>
<td>The service and support content on the website can be tailored to meet my specific service and support needs</td>
<td>.879</td>
</tr>
<tr>
<td>(37.2% variance)</td>
<td>The organization gives me the flexibility to customize pages on its website to align with my specific business needs</td>
<td>.838</td>
</tr>
<tr>
<td></td>
<td>Customer service and support staff are easy to contact from the website (i.e. through provision of email and online forms)</td>
<td>.790</td>
</tr>
<tr>
<td></td>
<td>Customer service and support staff provide immediate responses to “mission critical” service requests (i.e. within a half hour)</td>
<td>.685</td>
</tr>
<tr>
<td></td>
<td>The organization always delivers on service promises</td>
<td>.680</td>
</tr>
<tr>
<td></td>
<td>The organization gives an assurance to resolve my service and support problems promptly</td>
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</tr>
<tr>
<td></td>
<td>The organization gives me the flexibility to determine which service points I would like to access</td>
<td>.504</td>
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<td>F2: WQ</td>
<td>Information provided on the website is easy to locate (i.e. I don’t have to drill too far into the site to find the information I am looking for)</td>
<td>.843</td>
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<td>(7.4% variance)</td>
<td>The design of the website is simple, yet functional</td>
<td>.781</td>
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<td>The website is well laid out and easy to navigate</td>
<td>.754</td>
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<td>Components on the website are well organised</td>
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<tr>
<td></td>
<td>The website is easy to use</td>
<td>.716</td>
</tr>
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<td></td>
<td>The design of the website allows me to have control of the interaction with the site</td>
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<tr>
<td></td>
<td>Components on the website are clearly represented</td>
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<tr>
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<td>The website interface is user-friendly</td>
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<td></td>
<td>Information is presented in a well-structured manner (i.e. logically organized)</td>
<td>.650</td>
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<td>F3: TQ</td>
<td>Webpage load time is within reasonable limits (&lt; or = 10 seconds)</td>
<td>.725</td>
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<td>(5.0% variance)</td>
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<td></td>
<td>System response time is reasonable (i.e. system responds for data from databases within 10 seconds)</td>
<td>.651</td>
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<tr>
<td></td>
<td>Website components function properly (i.e. do what they are designed to do eg. order facility functions as it should)</td>
<td>.658</td>
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Scree Plot

Eigenvalue

Factor Number
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<tr>
<th>Factor</th>
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<td>2.902</td>
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<tr>
<td>3</td>
<td>1.834</td>
<td>3.986</td>
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Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.
APPENDIX X 3 FIRST ORDER FACTOR MODEL
CORRELATED
FACTORS CONSTRAINED TO 1.0
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tr>
<td>Upper Bound</td>
<td>0.086</td>
</tr>
<tr>
<td>Lower Bound</td>
<td>0.000</td>
</tr>
<tr>
<td>F0</td>
<td>1.000</td>
</tr>
<tr>
<td>Upper Bound</td>
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</tr>
<tr>
<td>Lower Bound</td>
<td>1.000</td>
</tr>
<tr>
<td>Noncentrality Parameter</td>
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</tr>
<tr>
<td>GFI</td>
<td>0.000</td>
</tr>
<tr>
<td>ACFI</td>
<td>1.000</td>
</tr>
<tr>
<td>GFI</td>
<td>0.000</td>
</tr>
<tr>
<td>NFI</td>
<td>1.000</td>
</tr>
<tr>
<td>CFI</td>
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</tr>
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<td>TLI</td>
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<tr>
<td>IFI</td>
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<tr>
<td>RM</td>
<td>0.000</td>
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<td>NPMI</td>
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<tr>
<td>p</td>
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</tr>
<tr>
<td>Macro</td>
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</table>

For more detailed analysis, see the following indices:
- **RMSEA (Root Mean Square Error of Approximation)**: Measures the discrepancy between the fit of the model and the fit of the null model.
- **F0**: A fit index.
- **Noncentrality Parameter**: A measure of noncentrality in the model.
- **GFI (Goodness of Fit Index)**, **ACFI (Adjusted Goodness of Fit Index)**, **GFI (Adjusted Goodness of Fit Index)**, **NFI (Normed Fit Index)**, **CFI (Comparative Fit Index)**, **TLI (Tucker-Lewis Index)**: Fit indices that compare the fit of the model to a baseline model.
- **RM (Root Mean Square Residual)**: Measures the discrepancy between the fit of the model and the fit of the baseline model.
- **CMIN (Chi-Square)**: A measure of discrepancy between the observed and predicted covariance matrices.

For sample size, please refer to the following:
- **Coresize 3 Factor**: 2309.0/2005 1.44 PM
- **Coresize 3 Factor Friday**: 23 September 2005 0.44 PM
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<tr>
<th></th>
<th>HOME 18</th>
<th>RIVE 17</th>
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<tr>
<td>MECVI</td>
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<td>ECVI</td>
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<tr>
<td>AIC</td>
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</tr>
</tbody>
</table>

Expected cross-validation index (ECVI)
Consistent AIC
Bayesian information criterion
Browne-Cudeck criterion (AIC)
APPENDIX Y  SECOND ORDER FACTOR MODEL
CORRELATED
FACTORS CONSTRAINED TO 1.0


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<tr>
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Maximum likelihood estimate

Chi-square with degrees of freedom:

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<th>Parameter</th>
<th>Value 1</th>
<th>Value 2</th>
</tr>
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<tbody>
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<td>GFI</td>
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<td>GFI</td>
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<td>0.414</td>
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Chi-square with degrees of freedom:

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<thead>
<tr>
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<tr>
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Default model saturated Independence Macro

New Factorz: 23 September 2005 01:23 Pm
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Note: The table contains values for various criteria, likely related to model selection or statistical analysis, with columns for different indices such as MECVI, ECVI, ECVLO, etc., and rows for different values or conditions.
Regression Weights T/I

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0.860
0.849
0.873
0.661
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0.656
0.761
0.780
0.824
0.716
0.730
0.744
0.788
0.635
0.646

Estimate

New 3 factor: Friday, 23 September 2005 01:23 Pm
APPENDIX Z  RELIABILITY ANALYSIS
RELIABILITY ANALYSIS - SCALE (ALPHA)

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<th>Cases</th>
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N of Cases = 400.0

Statistics for Scale

Mean: 35.0450
Variance: 30.6145
Std Dev: 5.5330
n of Variables: 9
### Item-total Statistics

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### Reliability Coefficients

- **Alpha = .9155**
- Standardized item alpha = .9163

### Reliability

******* Method 2 (covariance matrix) will be used for this analysis *******
## RELIABILITY ANALYSIS - SCALE (ALPHA)

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### Covariance Matrix

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N of Cases = 400.0

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Page 4
### Reliability Analysis - Scale (Alpha)

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#### Reliability Coefficients

- 7 items
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- Standardized item alpha = 0.8694

#### Reliability

***** Method 2 (covariance matrix) will be used for this analysis *****
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N of Cases = 400.0

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### Item-total Statistics

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<td>.7829</td>
<td>.6405</td>
<td>.8113</td>
</tr>
</tbody>
</table>

### Reliability Coefficients

Alpha = 0.8702  
Standardized item alpha = 0.8700
APPENDIX Z (i)

FINAL OLSQ SCALE ITEMS

<table>
<thead>
<tr>
<th>1. SERVICE QUALITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The organization gives me the flexibility to determine which service points I would like to access</td>
</tr>
<tr>
<td>2. The service and support content on the website can be tailored to meet my specific service and support needs</td>
</tr>
<tr>
<td>3. The organization gives me the flexibility to customize pages on its website to align with my specific business needs</td>
</tr>
<tr>
<td>4. Customer service and support staff provide immediate responses to “mission critical” service requests (i.e. within a half hour)</td>
</tr>
<tr>
<td>5. The organization always delivers on service promises</td>
</tr>
<tr>
<td>6. The organization gives an assurance to resolve my service and support problems promptly</td>
</tr>
<tr>
<td>7. Customer service and support staff are easy to contact from the website (i.e. through provision of email and online forms)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. WEB QUALITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Information provided on the website is easy to locate (i.e. I don’t have to drill too far into the site to find the information I am looking for)</td>
</tr>
<tr>
<td>9. The website is easy to use</td>
</tr>
<tr>
<td>10. The website is well laid out and easy to navigate</td>
</tr>
<tr>
<td>11. The design of the website allows me to have control of the interaction with the site</td>
</tr>
<tr>
<td>12. The website interface is user-friendly</td>
</tr>
<tr>
<td>13. The design of the website is simple, yet functional</td>
</tr>
<tr>
<td>14. Components on the website are well organized</td>
</tr>
<tr>
<td>15. Components on the website are clearly represented</td>
</tr>
<tr>
<td>16. Information is presented in a well-structured manner (i.e. logically organized)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. TECHNICAL QUALITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>17. Webpage load time is within reasonable limits (&lt; 10 seconds)</td>
</tr>
<tr>
<td>18. Downloads from the website are within reasonable limits (&lt; 10 seconds)</td>
</tr>
<tr>
<td>19. System response time is reasonable (responds within 10 seconds)</td>
</tr>
<tr>
<td>20. Website components function properly (do what they were designed to do)</td>
</tr>
</tbody>
</table>