The Diffusion of Web-Based Shopping Systems: A Comparative Analysis of the Key Impact Factors in the UK and Korea

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ABSTRACT

As a major driving force of the global digital economy, Web-Based Shopping Systems (WBSS) are diffusing very rapidly across national boundaries. Though the diffusion of WBSS is recognized as one of the most important issues of electronic commerce, the research on WBSS is just beginning. There is little comprehensive research and only a few examples of empirical research on the topic.

This research attempts to examine the phenomenon of WBSS diffusion in different national contexts, based on a combination of qualitative and quantitative approaches. In particular, this dissertation attempts to answer the following questions: What are WBSS? Are WBSS an enabler of new business? What kinds of factors affect the diffusion of WBSS? Are there any distinguishing characteristics of WBSS diffusion in different national contexts? How do organisations tend to enable WBSS diffusion? What kinds of driving forces influence the shaping process of WBSS?

In order to answer these questions, this research introduces several research models: a classification model of WBSS, a research model of WBSS diffusion, and a comparison model of key impact factors. On the basis of these models, this dissertation examines and attempts to explain the phenomenon of WBSS diffusion. It does so by relating survey research and interviews in two particular national contexts: the UK and Korea. The findings arising from the quantitative and qualitative data collected are applied to provide guidance as to the further diffusion of WBSS in both countries. Some of the major findings of the dissertation are:

- At the macro level, a systemic view of WBSS diffusion is provided by analyzing the characteristics of four types of WBSS. Major characteristics of WBSS associated

with each of these types of WBSS – their strengths, critical success factors and suitable strategic options – have also been identified. On the basis of this background knowledge of WBSS, a research model of WBSS diffusion was derived.

- At the micro level arising from empirical investigations, key impact factors influencing the diffusion of WBSS in the UK and Korean contexts have been identified. Following cross-national analysis, the diffusion of WBSS was observed as a series of shaping processes being influenced by different cultural issues and similar ICT-related factors in global Web-based shopping circumstances.

- The implications emerging from the quantitative survey and qualitative interviews from both countries are:

  -Theoretical implications were highlighted by comparing the WBSS diffusion model with previous ICT diffusion studies. It was observed that WBSS diffusion in both the UK and Korea is a dynamic, complex, and interactive shaping process being influenced by internal organisation and internal system factors, as well as external market and external technical factors.

  -Practical implications for further WBSS diffusion in both countries have been suggested in the interests of both promoting e-commerce, and establishing a solid base for the digital economy.

Overall, this dissertation has attempted to provide a theoretical foundation for further research relevant to WBSS, electronic commerce and ICT diffusion in different national contexts. It is hoped that this research will serve as a catalyst for triggering new research agendas on e-commerce and ICT innovation diffusion, paving the way for other researchers who wish to build on the research findings of this dissertation.

ACKNOWLEDGEMENTS

As I look back upon my PhD work in the UK, it has been a very profound academic journey across a sophisticated study related to research methodology and philosophical issues, with a widened intellectual horizon on IS research, as well as academic and practical knowledge for the two different nations: the UK and Korea.

Now, casting anchor at the end of the long intellectual journey, I wish to express my thanks to the following people who have supported the role of sunshine, moisture, soil, nourishment, and sometimes shade, in producing this glorious fruit of many years of arduous industry.

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Chapter 1. Overview of Research

1.1 Introduction

This dissertation is concerned with the diffusion of Web-based shopping systems (WBSS) in two highly distinctive contexts: the UK and Korea. In providing something of an introduction to this research, this chapter presents both an overview and a contextual backdrop to the overall research project. In particular, the central concepts and processes pertaining to the dissertation are introduced, as are the related concepts, contextual approach of the research, data collection methods, and structure of the dissertation – all of which are discussed in more depth in the ensuing chapters. Firstly, however, some background on digital economy and e-commerce is provided.

1.2 The Backdrop: the Digital Economy and E-Commerce

As the new millennium approached, the world witnessed an unprecedented expansion of global electronic markets into the global digital economy associated with the rise of information and communication technologies (ICTs), in particular the Internet and e-commerce (OECD, 2000; Howcroft, 2001; Brynjolfsson and Kahin, 2002; Hudson, 2002). According to an OECD report (2000), ICTs are at the heart of the current debate about economic growth and performance in advanced economies. The pervasive nature of this technology and its widespread diffusion has profoundly altered the ways in which business and customers, and business and business interact on the basis of digital transactions (Ticoll et al., 1998; Murphy, 1998; Adler and Christopher, 1999; David, 2002; Varian, 2002).

As Tapscott (1995; 6) pointed out, the economy for the age of networked intelligence is a digital economy, which means information is in digital form rather than the previous physical or analog form. As information shifts from analog to digital, the digital economy is seen to generate economic growth and social reform, changing the metabolism of the economy, the types of institutions and relationships, and the nature of economic activity itself (Tapscott, 1995; Tapscott et al., 1998; Brynjolfsson and Kahin, 2002; Moulton, 2002; Hudson, 2002). However, innovative Internet technologies, new business models, new economic forces and new digital-driven policies are needed to facilitate the shaping process of the digital economy (Tapscott, 1995; Woolner, 1998; Rayport and Jaworski, 2001; David, 2002; Greenstein, 2002; Hudson, 2002).

According to Bill Gates (1999), there are three fundamental business shifts that will occur as a result of the new digital economy: First, most transactions between business and customers, business and business, and consumers and government will become self-service digital transactions. Second, human involvement in service will shift from routine, low-value tasks to a high-value, personal consultancy on issues of importance to the customer. Finally, the pace of transactions and the need for more personalized attention to customers will drive companies to adopt digital processes globally. Gates argues that business is going to change even more in the next ten years, because the Internet creates a new universal space for information sharing, collaboration and e-commerce.

Electronic commerce via the Internet has been actively diffused on the basis of advanced Internet technologies, enlarging its sphere of utilization and scale of a global electronic market radically (Rayport and Jaworski, 2001; Feeny, 2001; Looney and Chatterjee, 2002; Chaudhury and Kuilboer, 2002). To succeed in this kind of Internet business, the most well known Internet business models are the so-called dot-coms (Porter, 2001), which are adopting several types of Web-based shopping systems (WBSS) applications. Dot-coms are doing business online via the Internet, providing

the product and service at lower cost, and with greater convenience and customisation. These dot-coms are located around the world and are pursuing a variety of opportunities for being global marketers, interacting with global customers and businesses through the Internet (Worthington and Boyes, 2001; Howcroft, 2001; Rifkin and Kurtzman, 2002; Pinker et al., 2002).

However, early in 2000 many so-called dot-com companies collapsed (Howcroft, 2001; Rifkin and Kurtzman, 2002; Pinker et al., 2002). The lesson is that making money on the Internet is still not easy, and also that it is necessary to create new ways of doing business (Gulati and Garino, 2000; Porter, 2001; Pinker et al., 2002). Even though many dot-coms have disappeared, the diffusion of Web-based shopping businesses is continuous, increasing both the number of customers and the volume of business (cf. about 17,000 Web-based shopping sites in the UK Yahoo.co.uk, and 24,000 Web-based shopping sites in the Korean Yahoo.co.uk). However, many Web-based shopping businesses are still struggling to find the route to survival and success in the Internet business world (Porter, 2001; Howcroft, 2001; Rifkin and Kurtzman, 2002; Pinker et al., 2002).

On this basis, academics interested in e-commerce and the digital economy strive to provide a theoretical account and some meaningful guidelines for such new social phenomena. This thesis aims to do just that, i.e. by opening up new research horizons within the chosen research subject – WBSS diffusion – and by providing foundations for academic research into electronic commerce more generally.

1.3 WBSS: An Introduction

As business transactions have shifted from the physical to the digital, "electronic commerce has been a major topic of interest in recent years, with considerable

importance being placed on the opportunities provided by information and communication technologies (ICT) to improve communication between businesses and with customers" (Galliers and Newell, 2000; 717). The Internet technologies are also creating opportunities to rethink strategic business models, processes and relationships (Feeny, 2001). According to Arlitt et al. (2001), Web-based shopping aims to personalize online shopping to provide global interactive business, customer convenience, and global market efficiency. Koufaris et al. (1999) classified the scope of Web-based applications into four general kinds of Web-based systems: 1) Intranets to support internal work, 2) Web presence sites that are marketing tools, 3) Electronic commerce systems that support consumer interaction such as Web-based shopping, and 4) Extranets to support business to business communication. This research focuses on the third of these – Web-based shopping systems (WBSS).

There are many similar terms for Web-based shopping (Cheung and Lee, 2000; Arlitt et al., 2001; Slyke et al., 2002). These include Internet Mall (Sarkar et al., 1995), Virtual Mall (Burke, 1996), Cybermall (Lohse and Spiller, 2000), Electronic Mall (Baty and Lee, 1995; Schumann, 2000), Virtual Storefront (Hamilton, 1997), Online Storefront (Riggins, 1999), Online Store (Spiller and Lohse, 1998), Online Shopping Mall (Lohr, 1997), Electronic Shopping Mall (Lederer et al., 1997; Schumann, 2000), Internet Shopping Mall (Rowley, 1996), Electronic Shopping Systems (Baty and Lee, 1995), Cyber Mall Systems (Choi et al., 1998), WBSS (Arlitt et al., 2001) and so on. As can be seen from these variations, there is as yet no agreed terminology for Web-based shopping, primarily because research on Web-based shopping is only just beginning (Cheung and Lee, 2000; Arlitt et al., 2001; Slyke et al., 2002). The majority of the research that has been carried out thus far has used these varied terms in order to explain Web-based shopping from a business perspective. However, Internet technologies play a very important part in Web-based shopping and in electronic commerce more generally (Kalakota and Whinston, 1996; Korper and Ellis, 2000; Porter, 2001; Arlitt et al., 2001). Thus, Internet technologies are providing effective

searches, security and privacy, increasing networkability between products, services, and processes, reducing transaction costs, interacting with a global range of customers and business partners and increasing competitiveness (Vetter, 1999; Alt et al., 2000; Korper and Ellis, 2000; Feeny, 2001; Papazoglou, 2001; Porter, 2001; Looney and Chatterjee, 2002). Furthermore, it is absolutely necessary to have supporting Internet technologies to execute Web-based shopping (Arlitt et al., 2001). Thus, this research attempts to reflect on both aspects of the topic: Internet technology as well as the business issues associated with Web-based shopping.

As a result of this orientation, this thesis adopts the term "Web-Based Shopping Systems" (WBSS) – a term coined by Arlitt et al. (2001). WBSS are global-oriented network systems that consist of Web servers, application servers and database servers (see Figure 2-4). Dot-coms (Porter, 2001) such as Amazon.com, eBay.com, Dell.com and Tesco.com are some of the well-known applications of WBSS. These applications of WBSS provide the foundation of Internet business by allowing organisations to conduct digital transactions with customers or business partners, potentially on a global scale (Mahadevan, 2000; Laudon and Laudon, 2000; Korper and Ellis, 2000; Arlitt et al., 2001). In addition, WBSS enable a company to do business that it might not otherwise be able to do, as is the case with Amazon.com. For instance, Amazon.com, which is a well-known example of WBSS application, has provided a blueprint for entrepreneurs who would wish to do likewise, as well as for managers in traditional businesses who see WBSS as a new business enabler.

WBSS are diffusing very rapidly across national boundaries. Diffusion is a process whereby an innovation spreads across disparate communities (Newell et al., 2000). According to Rogers (1995), the diffusion process begins with the introduction of the innovation to a population, and ends when the population becomes saturated with adoptions. However, Rogers' diffusion model is limited in explaining such global phenomena as WBSS diffusion, because he describes diffusion as a simple, linear, and

sequential process. However, the diffusion of WBSS takes place between organisations and customers, between enterprises and the global market and across countries. Therefore, it seems that the extent of WBSS diffusion will be influenced by the broader social contexts relevant to the global Web-based shopping circumstances. Despite the global context of the phenomenon, little attention has thus far been paid to cross-national comparisons of WBSS diffusion. In addition, "ICT innovation diffusion is heavily dependent on the context of application" (Newell et al., 2000; 246). It may be argued, therefore, that in this connection, there are likely to be different characteristics of WBSS diffusion in different countries, in particular the West and the East, according to the different cultures, customers, political systems, historical backgrounds, environments and ICT infrastructure. In consequence, this research will consider WBSS diffusion in different national contexts.

1.4 Objective of the Research

While WBSS are a major example of the impact of electronic commerce via the Internet (Arlitt et al., 2001), there are still many barriers to the diffusion of WBSS. As recent studies indicate, organisations are finding it difficult to address some of the issues related to successful WBSS adoption and diffusion (Koufaris et al., 1999; Korper and Ellis, 2000; Arlitt et al., 2001). Actually, many dot-com companies, running various types of WBSS, are struggling to find new business strategies in order to survive in the Internet business world (Gulati and Garino, 2000; Porter, 2001; Howcroft, 2001; Pinker et al., 2002).

Although there have been many studies on the Internet and electronic commerce (e.g. Buck, 1996, Liddy, 1996, Auger and Gallaugher, 1997; Mason, 1997; Rai et al, 1998; Pisanias and Willcocks, 1999; Nambisan and Wang, 1999; Huizingh, 2000; Li et al., 2000; Bradlow and Schmittlein, 2000; Walczuch et al., 2000, Van Akkeren and Cavaye,

2000), there has been little research focusing specifically on the diffusion of WBSS (Arlitt et al., 2001). Most recent research into the diffusion of Internet technologies has tended to study one particular WBSS technology, for instance the diffusion of the WWW (Nambisan and Wang, 1999; Huizingh, 2000), Internet payment mechanisms (Buck, 1996; Birch, 1997; Westland et al., 1998), security infrastructure (Liddy, 1996; Li et al., 2000), search engines (Bradlow and Schmittlein, 2000; Arasu et al., 2001), the Internet itself (Auger and Gallaugher, 1997; Rai et al., 1998; Pisanias and Willcocks, 1999, Walczuch et al., 2000; Blumenthal and Clark, 2001), or limited aspects of Internet technology (Mason, 1997, Van Akkeren and Cavaye, 2000). These studies do not provide a comprehensive perspective on WBSS diffusion because they only focus on a single component of WBSS technology. For example, research on Web technology has tended to focus on a single aspect such as Web technology adoption levels (Nambisan and Wang, 1999) or Web site design (Huizingh, 2000). However, WBSS consist of several kinds of Internet technologies such as Web, payment, security, search engines and Internet, as well as requiring interactions between businesses, customers, banks, shipping companies, legal departments, governments, and vendors (Korper and Ellis, 2000; Arlitt et al., 2001). Thus, it would appear that the studies relevant to one particular Internet technology are inadequate in terms of WBSS diffusion research, due to their limited focus, scope and explanatory power.

Hence an argument for undertaking this research is that it is necessary to focus on WBSS diffusion in general, rather than on the diffusion of a Web site or any other single Internet technology. More specifically, this research is centred on the following questions: firstly, what are WBSS? This question introduces the detailed concept of WBSS that are opening up these new research horizons. Based on this understanding of the WBSS concept, what kinds of factors affect the diffusion of WBSS? Are there any distinguishing characteristics of WBSS diffusion in different national contexts? These are the questions that the empirical study of this research will attempt to answer, using qualitative and quantitative data from the UK and Korea. Next, this research attempts to

highlight the following issues: what are the theoretical implications for WBSS diffusion? and what practical implications may be provided for further WBSS diffusion?

In order to answer these questions, this thesis examines the following major question in the positive perspective since the diffusion of Web-based shopping business and electronic commerce is continuous: ***What key impact factors influence the diffusion of WBSS in different national contexts?*** Since the nature of this research is exploratory enquiry without a priori empirical research, it attempts to investigate this question using "triangulation" (Denzin, 1978; Jick, 1979) – an empirically-based method combining both qualitative and quantitative approaches – to gain a credible in-depth understanding of the phenomenon, as explained in greater detail in chapter 4. According to Denzin (1978), triangulation is 'the combination of methodologies in the study of the same phenomenon'. A combination of a quantitative and a qualitative approach allow for triangulation of the data from two different methods, which improves the reliability and validity of research findings (Kaplan and Duchon, 1988; Lee, 1991; Creswell, 1994; Gable, 1994; Ranganathan and Sethi, 2000; Bryman, 2000).

The diffusion of WBSS is recognized as one of the most important issues of electronic commerce to be addressed (Korper and Ellis, 2000; Cheung and Lee, 2000; Arlitt et al., 2001), because it can provide substantial e-business interaction with customers and businesses all over the world. However, as indicated, there is little empirical research on WBSS diffusion (Arlitt et al., 2001). Hence, the intention for this research is to provide a theoretical background to facilitate further research on WBSS. This study will also provide insights for further research by linking WBSS and new social phenomena, such as the digital economy. As a result, researchers might better be able to draw on, and extend, their existing knowledge of electronic commerce and the Internet. For practitioners, this research might serve as a useful guideline for organisations planning their strategies for new Internet businesses.

1.5 Structure of the Dissertation

As can be seen from Figure 1-1, this dissertation is organized into ten chapters. The first three chapters provide a conceptual overview and theoretical background. That is, following this introductory chapter 1, chapter 2 explores the fundamental concepts of WBSS, dealing with the question: What are WBSS? It aims to provide a comprehensive underpinning for research on WBSS. Following this, chapter 3 reviews ICT innovation diffusion theory, in terms of its implications for this research.

Chapter 4 deals with the research design and methodology. It presents a brief overview of the research undertaken in this study and describes the range of approaches suitable for this research – both qualitative and quantitative. Chapter 5 develops a classification model of WBSS, providing a theoretical background for further study. In chapter 6, a research model of WBSS diffusion is developed, identifying new fundamental variables and generating hypotheses related to the relationship between the research variables and the diffusion of WBSS. Chapter 7 describes the data collection procedures undertaken in the two countries – the UK and Korea.

Chapter 8 presents findings from the preliminary data analysis. The respondent profiles are first presented, and then the reliability and validity of the survey instruments are tested. Further, descriptive statistical analysis of the research variables is carried out, examining the key impact factors that influence the diffusion of WBSS in the two national contexts. After that, the research findings derived from the quantitative data collected will be discussed in terms of their impact on WBSS diffusion, combined with qualitative data gathered from interviews. Chapter 9 considers the research findings derived from the quantitative survey and qualitative interviews in terms of their implications for WBSS diffusion, particularly in relation to theoretical and practical aspects. Chapter 10 concludes this dissertation by discussing the contributions and limitations of the research, and by suggesting a future agenda for WBSS research.

To provide a better understanding of this research as a whole, the dissertation structure is depicted in Figure 1-1, as follows.

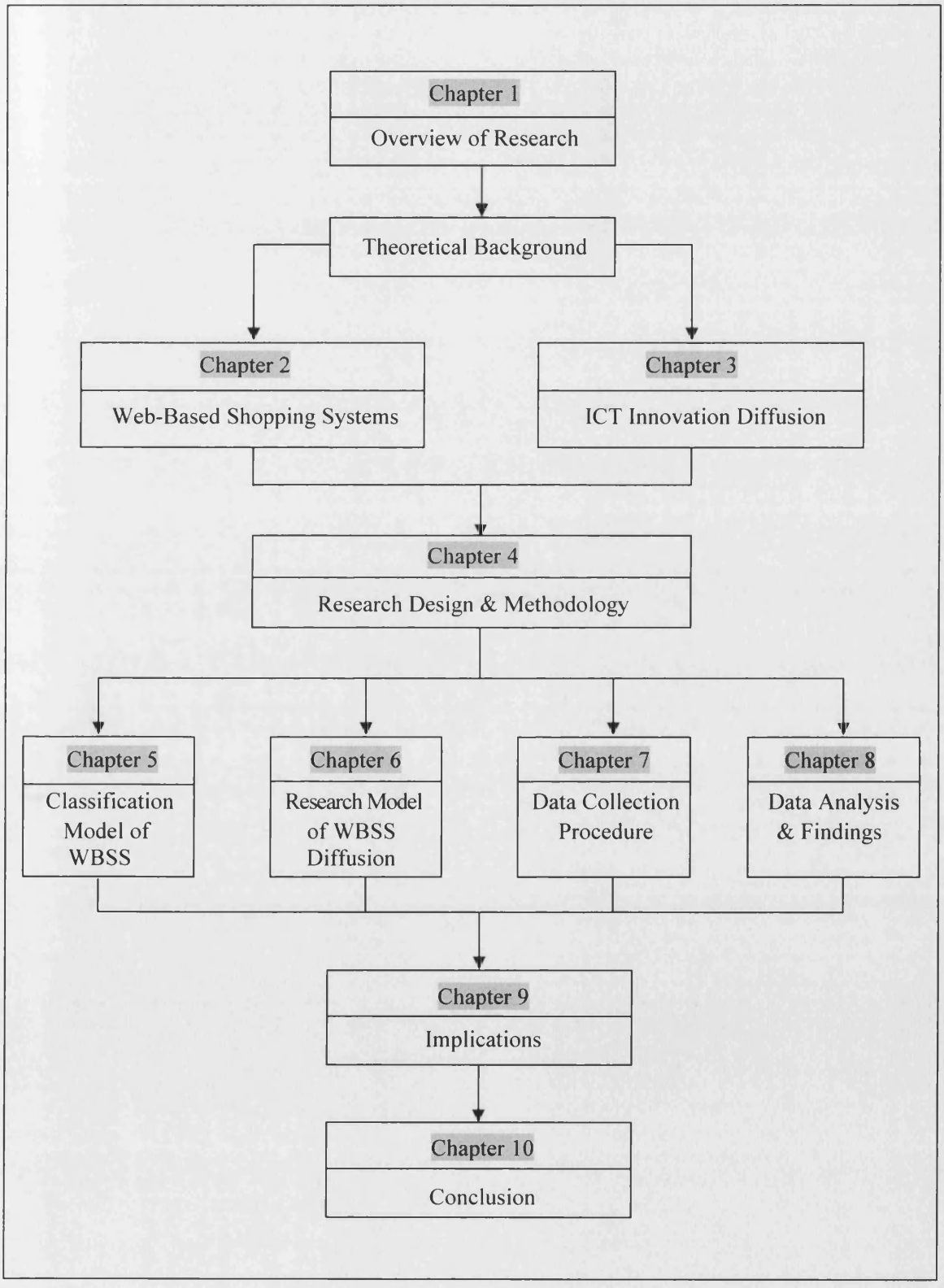

Figure 1-1. The Dissertation Structure

Chapter 2. Web-Based Shopping Systems

2.1 Introduction

The primary goal of this chapter is to introduce fundamental characteristics of WBSS, before addressing aspects of ICT diffusion in chapter 3, and then research design considerations in chapter 4. Section 2.2 provides an overview of electronic commerce. Section 2.3 provides an overview of the Internet, explaining the relationship between the Internet and WBSS. This is followed by a closer look at WBSS in order to clarify the terminology used. Section 2.5 reviews previous research relevant to WBSS as a background to this study. Section 2.6 provides a comparison between WBSS and other IS, and, finally, section 2.7 describes the major characteristics of WBSS as an enabler of new business, in comparison with traditional business.

2.2 Electronic Commerce: An Overview

Electronic commerce is rapidly expanding across national boundaries by means of the Internet and the World Wide Web (Kalakota and Robinson, 1999; Timmers, 2000; Nagi and Wat, 2002). There is a growing interest in researching electronic commece (EC) on the Internet (Kalakota and Whinston, 1996; Wigand, 1997; Timmers, 2000; Galliers and Newell, 2000; Feeny, 2001; Looney and Chatterjee, 2002). In relation to this, there are many definitions of electronic commerce in the literature. Broadly speaking, according to Wigand (1997), "electronic commerce includes any form of economic activity conducted via electronic connections." Zwass (1996) defines e-commerce as "the sharing of business information, maintaining business relationships, and conducting business transactions by means of telecommunications networks." In addition, Kalakota and Whinston (1996) state that electronic commerce is "the buying and selling of

information, products, and services via computer networks today and in future via any one of the myriad of networks." In spite of various definitions of EC, it is clear that a common feature of EC is 'doing business electronically'. The advent of the Internet and the explosion of the Web have facilitated e-commerce to organisations in shifting from a local enterprise to a Web-based global e-commerce company (Kalakota and Whinston, 1996; Ticoll et al., 1998; Timmers, 2000). A major emphasis in most discussions of electronic commerce is the global nature of electronic markets, and the lower transaction costs that formerly served as a barrier to entry in local markets (Kalakota and Whinston, 1996; Korper and Ellis, 2000; Timmers, 2000; Feeny, 2001).

To better understand the comprehensive views of e-commerce, it is useful to consider the e-commerce model illustrated in Table 2-1. As shown, there are nine segments to this e-commerce model: business to business (B-to-B), business to customer (B-to-C), business to government (B-to-G), customer to business (C-to-B), customer to customer (C-to-C), customer to government (C-to-G), government to business (G-to-B), government to customer (G-to-C), and government to government (G-to-G).

Table 2-1. Electronic Commerce Models

EC Models	Business	Customer	Government
Business	B-to-B	B-to-C	B-to-G
Customer	C-to-B	C-to-C	C-to-G
Government	G-to-B	G-to-C	G-to-G

Source: "The e-commerce matrix, in the E-Commerce Survey," *The Economist*, February, 2000, p.6.

Till now, research focused on different aspects of the electronic commerce model, based on different concerns. For example, Timmers (2000) is concerned about business to business electronic commerce (B-to-B). Others have focused their interest on the business to customer (B-to-C) of the model (e.g., Laudon and Laudon, 2002; Elliot, 2002). Yet others provide a more balanced view concerning these two types of

electronic commerce – business to business and business to customer (e.g., Kalakota and Whinston, 1996; Korper and Ellis, 2000). On the basis of this observation, an attempt is made to investigate the phenomenon of WBSS diffusion by focusing on the business to business (B-to-B) and the business to customer (B-to-C) aspects. This is because WBSS are Internet-based shopping systems for selling and buying products, information, and services, so that their major clientele are both businesses and customers.

As regards technical aspects, Kalakota and Whinston (1996) propose that the architectural framework for electronic commerce systems consists of six layers: application services, brokerage and data management, interface, secure messaging, middleware services, and network infrastructure. The application services layer includes business-to-business, business-to-customer and intra-organisational transactions. The brokerage and data management layer consists of payment schemes, order processing and virtual malls. The interface layer contains software agents, interactive catalogs and directory support functions. The secure messaging layer includes security systems and the encrypted protocol. The middleware services layer consists of structured documents such as SGML and HTML. The final layer is network infrastructure such as coaxial, fibre optic, cellular, and PCS.

Table 2-2. Architectural Framework of Electronic Commerce Systems (Kalakota et al., 1996)

Application services	• Customer-to-business • Business-to-business • Intra-organisational transactions
Brokerage and data Management	• Order processing • Payment schemes
Interface layer	• Interactive catalogs • Software agents
Secure messaging	• Secure transfer protocol • Encrypted protocol
Middleware services	• Structured documents (SGML, HTML)
Network infrastructure	• Wireless-cellular, radio, PCS • Wireline-EDI, EFT, e-mail, Internet

As can be seen from Table 2-2, there are a number of applications of electronic commerce such as business-to-business (B-to-B), business-to-customer (B-to-C), and intra-organisational transactions, which are based on several kinds of network infrastructures such as EDI, cable television, electronic funds transfer (EFT), e-mail, personal communications systems (PCS), and the Internet. In particular, Kalakota and Whinston (1996) call intra-organisational transactions market-driven business. This category seems to be a combination of cross-functional and businesses orientations. On this basis, a B-to-B WBSS can be regarded as a type of inter-organisational systems (IOS). Though the above framework provides a reasonably comprehensive view of electronic commerce (EC) systems, it is necessary to focus on Internet systems, as this will provide more detailed understanding of the research subject – WBSS.

Based on an overall view of e-commerce, an attempt is made to review different models of e- business to provide meaningful insights for further study. According to Timmers (2000; 32), a business model is defined as "an architecture for product, service and information flows, including a description of the various business actors and their roles." Based on the two dimensions – the extent of integration of functions and the degree of innovation – a classification model of Internet business is provided by Timmers (2000; 41), as shown in Figure 2-1.

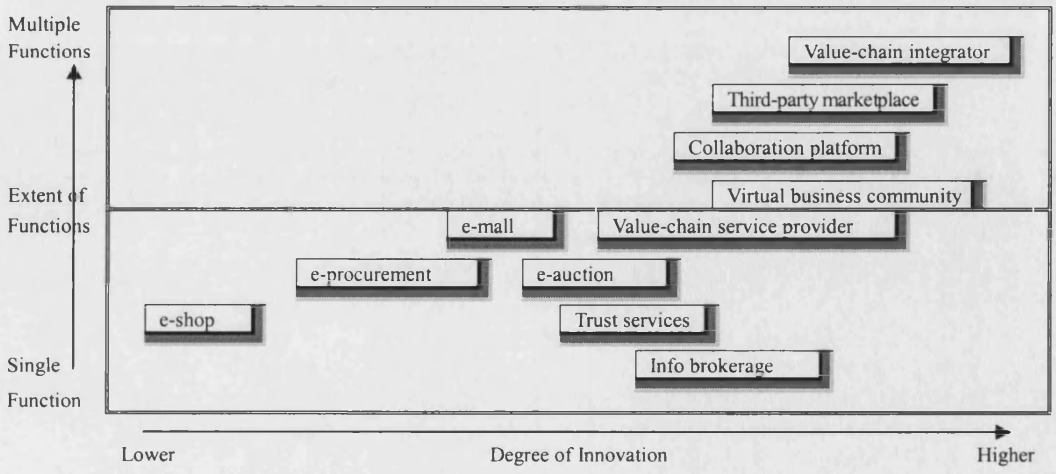

Figure 2-1. Classification of Internet Business Model (Timmers, 2000; 41)

The strengths of this classification model of Internet business is that it helps to understand the various applications of WBSS. This is because the various kinds of Internet business models suggested by Timmers (2000) carry out their business functions on the basis of several types of WBSS application, which can support business-to-business and business-to-customer Internet business (ref. Figure 2-4).

In addition, Rappa (2002) suggests various types of business models on the Web, including brokerage, advertising, informediary, merchant, manufacturer, affiliate, community, subscription, and utility models. These business models are comprehensive and are broadly categorized. Furthermore, Looney and Chatterjee (2002) provide four types of Internet business models, according to their analysis of firms' Web sites. These are the inquiry, layered, discount, and e-broker models. Unfortunately, however, they do not define how each of these four models is classified.

From a review of the Internet business models suggested by these researchers, it appears that the Internet business models are defined and classified in many different ways, and seem to simply convert the physical business functions into the Internet business models. However, what is clear is that Internet business is different from previous business processes, business management and business strategies (Tapscott, 1995; Roberts and Mackay, 1998; Timmers, 2000; Feeny, 2001, Porter, 2001). Thus, it will be beneficial if further research focuses on a more specific Internet business model such as Web-based shopping to identify new business types, new business management and new business strategies. Based on this introduction to e-commerce and Internet business, an overview of the Internet is given in the following section 2.3.

2.3 The Internet: An Overview

The Internet is an interconnected network of thousands of networks and millions of computers, while the World Wide Web (WWW) is the most popular Internet navigation tool for finding and retrieving information in a multimedia format (Kalakota and Whinston, 1996; Timmers, 2000). The biggest obstacle to commercialization of the Internet disappeared rapidly in the early 1990s when the Web emerged on the scene (Ticoll et al., 1998; Timmers, 2000). With its easy-to-use and graphical interface, the Web seems an ideal medium for electronic commerce. On the basis of this, this section firstly sets out to explain the components of Internet systems. Internet systems support a worldwide broadcasting capability, a mechanism for information dissemination, and a medium for electronic commerce (EC) between organisations and customers across countries (Leiner et al., 1997; Koufaris et al., 1999; Levy and Weld, 2000). We can classify Internet systems by their functional aspect and their technical aspect.

As regards the functional aspect, Internet systems include intranet systems and extranet systems (Cashin, 1998; Riggins, 1999; Timmers, 2000). Intranet systems are internal network systems that allow information to be shared within an organisation. Extranet systems are external network systems that share information, resources and tools with an organisation's business partners, customers, and suppliers. Therefore, Internet systems support not only internal/external communication and real time interorganisational document sharing and meetings, but also electronic commerce, overcoming the limits of time and place (Choi and Whinston, 2000; Korper and Ellis, 2000; Timmers, 2000).

Recently, Internet systems have been described and classified by Choi and Whinston (2000). In terms of a hierarchical perspective, they classified Internet systems into three layers, as shown in Table 2-3: network infrastructure layer, network application layer and software layer.

Table 2-3. Hierarchical Framework of the Internet Systems (Choi and Whinston, 2000)

Software layer	• Online banking system • Online shopping system • Online advertising system • Supply chain management system • Electronic payment system • Security system, Authentication system • E-mailing, Teleconferencing system
Network applications layer	• Web-authoring software • Browsers, HTML, Http protocols, Java • Supports multimedia content • Network publishing Web servers
Network infrastructure layer	• Broadcasting infrastructure • Telecommunications technologies

The network infrastructure is the bottom layer of the Internet systems. This layer comprises all forms of telecommunications, broadcasting infrastructure, computer and network hardware. Therefore, this network infrastructure can be seen as the backbone of the Internet systems. The second layer is the network applications layer. This consists of multimedia content, network publishing Web servers, browsers, HTML, http protocols, Java, Web-authorising software, and so on. The network applications layer supports user interfaces as well as managing and distributing the contents. Above the network applications layer is the software layer. This includes the online banking, shopping and advertising systems, supply chain management system, electronic payment system, security system, e-mailing, teleconferencing, authentication, etc. Hierarchical frameworks of the Internet systems emphasize the complex multiplicity of roles of network and Internet technologies in electronic commerce (EC).

The above conceptual exploration of Internet systems leads to further insights into WBSS. As can be seen in Table 2-3, Internet systems consist of several domain Internet technologies and systems. Most of these systems and technologies have not been used in previous information systems such as EDI. Internet systems require new approaches to design and development (Koufaris et al., 1999) because they are an example of technology innovation that enhances new and innovative activity at the individual,

organisational and societal levels, in terms of communicating, networking, and conducting business (Wulf, 1997; Nambisan and Wang, 1999). In addition, the Internet technologies as a component of Internet systems are also having a profound effect on global electronic commerce, and their ultimate potential is considerable, when successfully implemented (Porter, 2001; Looney and Chatterjee, 2002). This review of Internet systems provides a useful backdrop for further research, pointing to the need to incorporate a systems view in researching the diffusion of WBSS.

At this stage, it seems pertinent to briefly discuss the relationship between systems and technology. Understanding how to adopt and implement information technology (IT) is one of the prominent issues facing the information systems (IS) field (Monk, 1987; Brancheau and Wetherbe, 1990; Cooper and Zmud, 1990; Willcocks, 1992; Swanson, 1994; Prescott and Conger, 1995; Swanson and Ramiller, 1997; Lai and Mahapatra, 1997; Nambisan and Wang, 1999). According to Lai and Mahapatra (1997; 187), IT can be described as "technologies dedicated to information storage, processing, and communications", while Willcocks (1992; 245) defines IT as hardware, software and communications technologies. On this basis, we can regard IT as digital computing and communications technology (Swanson and Ramiller, 1997; 460). As mentioned by several researchers, the Internet technologies and other new ICTs are crucial components for several types of e-commerce architecture (e.g Kalakota and Whinston, 1996; Laudon and Laudon, 2000; Barua et al., 2000; Korper and Ellis, 2000; Load, 2000; Arlitt et al., 2001; Porter, 2001; Looney and Chatterjee, 2002). Accordingly, as can be seen from Table 2-3, Internet systems consist of various systems including online banking, online shopping, online advertising, supply chain management, electronic payment, security, and authentication systems. Each of these Internet systems is obviously made up of several kinds of Internet technologies, which are also essential elements of WBSS. Thus, it is reasonable that this research examines WBSS diffusion based on both the technical and business aspects of the phenomenon.

As regards Internet access, broadband access is of particular importance. Broadband gives the population of Internet users tremendous access, allowing quicker data dissemination and service execution, so that it has been increasingly recognized that broadband access would play a significant role in the shaping process of the Internet business (OECD, 2001; Banks, 2001; Rayport and Jaworski, 2001). There are two types of Internet access: narrowband and broadband. Narrowband access is the traditional telephone modem connection generally operating at 56.6 Kbps, while broadband access is based on DSL, cable modem, T1 and T3 lines, and satellite technologies (Kalakota and Whinston, 1996; OECD, 2001; Banks, 2001; Rayport and Jaworski, 2001). According to Kalakota and Whinston (1996; 696), "broadband access has come to mean any data rate greater than or equal to T-1 speeds (i.e., 1.544 Mbps)." On the basis, the broadband accesses are expected to become increasingly important in enabling clients to play video on demand or multiplayer games, and providing them with streaming audio and video files, and software distribution offered over the Internet at acceptable speeds (OECD, 2001; Banks, 2001; Rayport and Jaworski, 2001). For example, one of the advantages of broadband access is the ability to easily access advanced WBSS, so that customers' access to WBSS is expected to grow rapidly for bandwidth-intensive digital products such as animation, drama, movie, game, and streaming audio and video.

Based on this review, Figure 2-2 provides statistics on the extent of Internet broadband access subscription for the G7 countries and Korea as at mid-2001 (OECD, 2001). As can be seen from Figure 2-2, among the G7 countries, Canada has the highest broadband penetration at 6.22 subscribers per 100 inhabitants. The U.S has a middle penetration of broadband at 3.24 per 100 inhabitants. The UK has the lowest penetration of broadband at 0.28 per 100 inhabitants. Among all members of the OECD, in terms of broadband access to the Internet, Korea has the highest rate of broadband subscribers at 13.91 subscribers per 100 inhabitants, in an OECD report (2001).

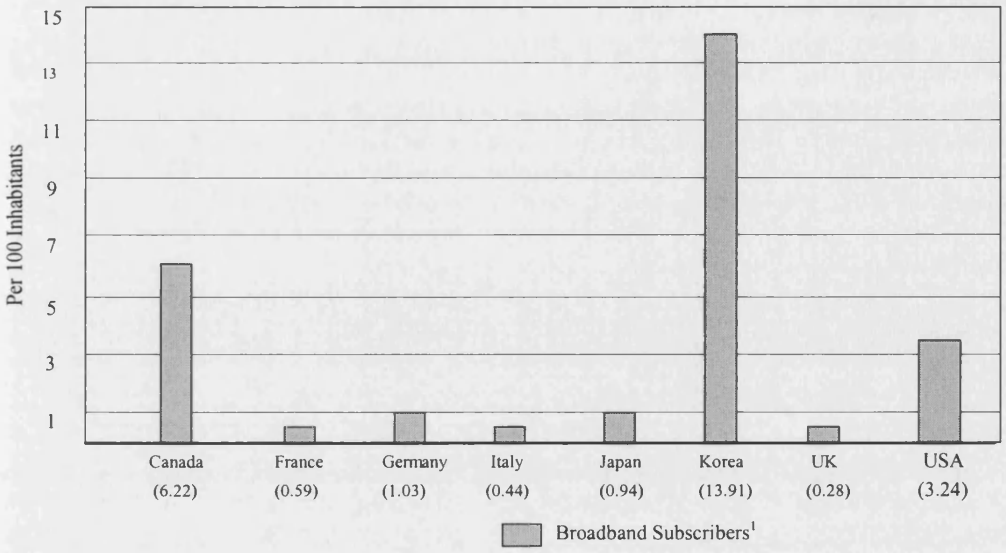

Figure 2-2. Internet Broadband Access of G7 Countries & Korea (OECD, 2001)

It seems that although several factors affect the high penetration in Korea, government involvement seems to be most significantly influenced in broadband deployment (Korea Ministry of Information and Communication, 2001). The Korean Government has promoted the use of computers and Internet services through a series of nation-wide campaigns to increase public awareness of the importance of the Internet. The Korean government is also committed to developing an advanced information society through its Korea Information Infrastructure (KII) initiative. The Korean government launched a plan in the mid 1990s to lay fiber-optic cable connecting the entire country, to reinvent Korea as an information powerhouse by creating a pro-Internet environment. As a consequence of this, some 67% of Korean households now have broadband connections, which are linking 144 cities on the basis of 40Gbps backbone network (Schofield, 2002).

To sum up, the broadband access is the latest manifestation of technical advance in Internet technology. According to the literature (Kalakota and Whinston, 1996; OECD, 2001; Banks, 2001; Rayport and Jaworski, 2001), the broadband access seems to strongly affect the extent of WBSS diffusion. While the governments concerning the e-business promotion are keenly interested in the progress of broadband access (OECD,

[1] Includes DSL, cable modem, and other broadband technologies

2001), certain practical implications will be provided in this research, based on interview data, regarding it as a significant facilitator of further WBSS diffusion. On the basis of this review, an overview of WBSS is provided in the following section.

2.4 Web-Based Shopping Systems

As mentioned in the introductory chapter, the terms related to Web-based shopping may vary from researcher to researcher, e.g.: Internet Mall (Sarkar et al., 1995), Virtual Mall (Burke, 1996), Cybermall (Lohse and Spiller, 2000), Electronic Mall (Baty and Lee, 1995; Schumann, 2000), Virtual Storefront (Hamilton, 1997), Online Storefront (Riggins, 1999), Online Store (Spiller and Lohse, 1998), Online Shopping Mall (Lohr, 1997), Electronic Shopping Mall (Lederer et al., 1997; Schumann, 2000), Internet Shopping Mall (Rowley, 1996), Internet Shopping (Cheung and Lee, 2000), Electronic Shopping System (Baty and Lee, 1995), Cyber Mall System (Choi et al., 1998), Web-Based Shopping System (Arlitt et al., 2001) and so on. Although there are many terms related to Web-based shopping (Cheung and Lee, 2000; Slyke et al., 2002) from a business perspective, unified terminology is scant, especially from the perspective of the technical aspects. These several terms of Web-based shopping are classified into two categories: the business and the technical perspective.

Table 2-4. Two Groups of Terminology Related to WBSS

Aspects	Terminologies
Business Perspective	Internet Mall (Sarkar et al., 1995), Virtual Mall (Burke, 1996), Cybermall (Lohse and Spiller, 2000), Electronic Mall (Baty and Lee, 1995; Schumann, 2000), Virtual Storefront (Hamilton, 1997), Online Storefront (Riggins, 1999), Online Store (Spiller and Lohse, 1998), Online Shopping Mall (Lohr, 1997), Electronic Shopping Mall (Lederer et al., 1997; Schumann, 2000), Internet Shopping Mall (Rowley, 1996), Internet Shopping (Cheung and Lee, 2000)
Technical Perspective	Electronic Shopping System (Baty and Lee, 1995), Cyber Mall System (Choi et al., 1998), Web-Based Shopping System (Arlitt et al., 2001)

As can be seen from the previous section, Internet technology plays a very important part in Web-based shopping and in electronic commerce more generally (Kalakota and Whinston, 1996; Choi et al., 1998; Korper and Ellis, 2000; Porter, 2001; Arlitt et al., 2001; Looney and Chatterjee, 2002). Internet technology provides effective searches, payment, security and privacy, increasing networkability between products, services, and processes, reducing transaction costs, interacting with a global range of customers and business partners, and increasing competitiveness (Vetter, 1999; Alt et al., 2000; Korper and Ellis, 2000; Feeny, 2001; Papazoglou, 2001; Looney and Chatterjee, 2002). Furthermore, as noted in the previous section, Internet technologies are significantly affecting the shape of Web-based shopping systems and electronic commerce. It would thus appear helpful to attempt to identify a unifying term for this research in technological terms.

In view of this, this research adopts the term Web-based shopping systems (WBSS), formally introduced by Arlitt et al. (2001). WBSS can be described as Internet-based shopping systems for selling and buying products, information, and services (Arlitt et al., 2001). According to Porter (2001; 77), "the organisations that will be most successful will be those that use Internet technology to make traditional activities better, and those that find and implement new combinations of virtual and physical activities that were not previously possible." Though there will be several ways to do this on the Internet, WBSS can succeed in this regard due to their particular characteristics, which this study discusses in more detail below.

There are various types of configuration of WBSS, such as those adopted by Amazon.com, eBay.com, Dell.com, Tesco.com and so on. Figure 2-3 provides a multi-tier architecture for WBSS – one which is adopted for the purposes of this research. It is taken from Arlitt et al. (2001; 47). As can be seen in Figure 2-3, WBSS consist of Web servers, application servers, and database servers. First, Web servers support Web-based shopping between seller and buyer, merchant and customer, and manufacturer and

supplier. Web servers fill the role of middleman between the back-end systems and front-end clients (Korper and Ellis, 2000). Web clients use Web browsers that supply a graphical interface to view and interact with all the information available on the World Wide Web (Loshin, 1995; Kalakota and Robinson, 1999; Korper and Ellis, 2000).

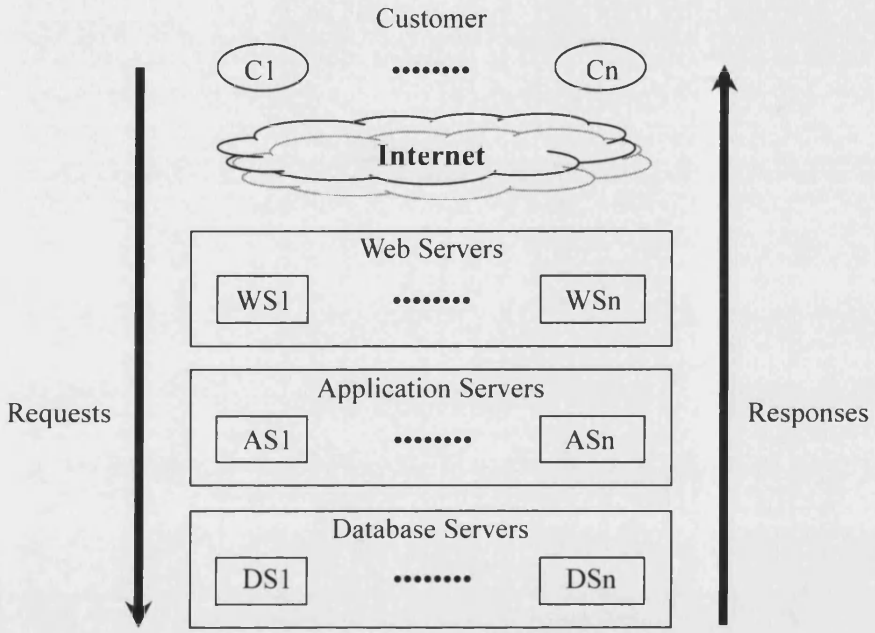

Figure 2-3. Multi-tier Architecture of Web-Based Shopping Systems (Arlitt et al., 2001)

Second, application servers support information retrieval, personalization, transaction management, security management, and payment management. They include shopping agents or search engines, security systems, certification systems, customer relationship management (CRM) systems, and payment systems (Korper and Ellis, 2000; Arlitt et al., 2001). For example, Amazon.com has not only developed its Web site but also incorporates WBSS applications for order processing, invoicing, payment, shipment, inventory management and procurement.

Finally, database servers manage all the data that are related to Web-based shopping between WBSS and customers as well as WBSS and businesses. For instance, eBay.com runs Web and database connectivity systems to carry out its successful business process of creating a feedback and rating system for all buyers and sellers on its auction site

(Barua et al., 2000).

The three systems – Web servers, payment systems in application servers and database servers – are essential elements of a WBSS architecture (Arlitt et al., 2001; Bichler, 2001). For example, when a Web-based shopping customer buys goods or services via a WBSS, he or she must pay for products and services. At that time, if the customer pays with a credit card, the payment systems should check the card type, the name of the cardholder, the card number and expiry date. There are various payment instruments in WBSS: credit card, electronic cash, electronic cheques, electronic wallet, smart cards and so on (Kalakota and Whinston, 1996; Birch, 1997; Westland et al., 1998; Korper and Ellis, 2000). The payment option varies from one WBSS to another. Some WBSS carry out business transactions with customers based on credit cards whilst others use electronic cash or smart cards.

In conclusion, the role of WBSS can be seen as providing product information, managing business transactions, supporting payment systems, and ensuring the security of systems to customers or buyers. As can be seen in the above examples, dot-coms are carrying out their Internet business based on several types of WBSS (Korper and Ellis, 2000; Arlitt et al., 2001). Web servers, payment systems in application servers and database servers are indispensable to WBSS, despite the features and functions of each of these components being different. It might be concluded that the application of WBSS promises to be a driving force for electronic commerce by allowing organisations to create global electronic markets, increase efficiency, and lower transaction costs through digital commerce with customers and businesses around the world. However, despite these characteristics of WBSS, several kinds of dot-coms, which carry out Web-based shopping business on the various types of WBSS application, are looking for ways to survive in the Internet business world. On the basis of these reviews, it appears that research in this area should attempt to shed light on the nature of the forces that drive WBSS diffusion.

2.5 Review of Previous Research Relevant to WBSS

As previously indicated, although there have been many studies of the Internet and electronic commerce, there has been little research focusing on the diffusion of WBSS per se (Arlitt et al., 2001). Most current research within this area has tended to study one particular technical element of WBSS, for example the diffusion of WWW (Nambisan and Wang, 1999; Huizingh, 2000), Internet payment mechanisms (Buck, 1996; Birch, 1997; Westland et al., 1998), security infrastructure (Liddy, 1996; Li et al., 2000), search engines (Bradlow and Schmittlein, 2000; Arasu et al., 2001), the Internet itself (Auger and Gallaugher, 1997; Rai et al., 1998; Pisanias and Willcocks, 1999, Walczuch et al., 2000; Blumenthal and Clark, 2001), or Internet technologies (Mason, 1997; Van Akkeren and Cavaye, 2000). However, there are some studies relating to technical aspects of WBSS. The following review of these studies will provide useful background to this research.

Arlitt et al. (2001) investigate the issues affecting the performance and scalability of a Web-based shopping system. They find that personalization and robots can have a significant impact on scalability. Their study was one of the first to adopt the terminology of WBSS. As such, it provides useful theoretical background to this study. Prior research by Choi et al. (1998) examines the issue of reducing the volume of network traffic in the cyber mall system. They also suggest that the basic architecture of the cyber mall system consists of four major technical components: the Cyber Mall Creator, the Cyber Mall Server, the Cyber Mall Player and the WWW Server. They argue that the increasing demands of the world of vitual reality are placing excessive strain on current network volume. Yet earlier research, by Baty and Lee (1995), proposes a functional architecture of electronic shopping systems to promote comparison and contrast between product differentiation. This study is limited in explaining the WBSS phenomenon, however, given its enormous scale and variety of electronic shopping systems.

In addition, there are a number of studies on Web sites, online stores and virtual markets which explore the phenomenon of Internet business as a limited concept of WBSS (Hoffman and Novak, 1996; Spiller and Lohse, 1998; Nour and Fadlalla, 2000). While not directly related to this specific research subject area, certain aspects are comparable.

Hoffman et al. (1996) propose a framework for evaluating the commercial development of the World Wide Web on the Internet. They identify six categories of Web sites: (1) online storefront (2) Internet presence (3) content (4) mall (5) incentive site and (6) search engine. However, they do not define how each category of Web site is classified. Moreover, a search engine is a familiar tool of Internet technology on WBSS, due to its effective searching and its effective interaction between diverse shopping processes and a variety of product information (Papazoglou, 2001; 71).

Spiller and Lohse (1998) identify five different Internet retail stores: superstores, promotional stores, plain sales stores, one page stores and product listings. These are classified by size, service offerings and interface quality. However, their model overlaps with each online store group and does not consider the technological and systemic aspects of the Internet.

Nour and Fadlalla (2000) also classify Internet-based virtual markets according to two principal categories: product type and delivery mode. They identify four distinct Internet-based virtual markets: electronic publishing & software (EPS), electronic tele-services (ETS), digitally-enabled merchandising (DEM), and digitally-enabled services (DES). However, this is a broad conceptual model for virtual markets rather than a model of WBSS. Research such as this therefore seems to be somewhat limited in explaining the diffusion of WBSS.

In order to provider further insight into WBSS diffusion, this study attempts to organise the above review into two research dimensions: 1) a technical perspective, and 2) a

business perspective.

Table 2-5. Summary of Previous Research Related to WBSS

Dimension	Author(s)	Research Domain	Insight and Analysis
Technical Perspective	Arlitt et al. (2001)	Web-based shopping system	Examines the issues affecting the performance and scalability of a Web-based shopping system
	Choi et al. (1998)	Cyber mall system	Investigates the issue of reducing the volume of network traffic in the cyber mall system
	Baty and Lee (1995)	Electronic shopping system	Provides an architecture of electronic shopping systems to promote comparison and contrast between product differentiation
Business Perspective	Nour et al. (2000)	Internet-based virtual market	Classifies a broad conceptual model for Internet-based virtual markets rather than a model of WBSS
	Spiller et al. (1998)	Internet retail Store	Identifies five different Internet retail stores, which overlap with each online store group
	Hoffman et al. (1996)	Web sites	Identifies six categories of Web sites, but it is unclear How each category of Web site is classified

To summarize, previous research related to WBSS can be viewed as having been carried out from two different perspectives: 1) technical and 2) business. As can be seen in Table 2-5, the research based on the technical view has a somewhat narrow focus and hardly considers such aspects as human beings, organisation and society, all of which are clearly closely associated with WBSS diffusion. Conversely, studies based on the business perspective are much broader in focus but are limited in their explanatory capability due to their lack of technical considerations. Therefore, it can reasonably be argued that further research on WBSS diffusion needs to have both a business and a technical orientation, because both views together may help explain and analyze more adequately the diffusion of WBSS.

Furthermore, by reviewing previous research, it can be seen that it is necessary to identify the detailed characteristics of WBSS for further research. Previous research has been unclear in its definitions and classification of terms. Most studies focus on a limited view of Web sites, Internet retail stores and virtual markets. Therefore, to supplement the limitation of previous research and to provide a detailed understanding

of WBSS diffusion, this research attempts to develop a WBSS classification model and analyze the characteristics of each type of WBSS identified. It also suggests a starting point for further research on WBSS and electronic commerce.

Thus, on the basis of the above observations on previous research, an attempt will be made to review the characteristics of WBSS from two different perspectives: 1) the technical aspect and 2) the business aspect. This approach elaborates a theoretical foundation for this research and facilitates a more detailed understanding of WBSS. In the following section, a comparison will be made between WBSS and other information systems from a technical perspective; then, in the next section, a review of WBSS from a business perspective will be attempted.

2.6 Comparison Between WBSS and Other IS

As mentioned previously, WBSS are global oriented network systems which include back-end systems, Web servers and front-end clients (Korper and Ellis, 2000). Furthermore, WBSS are based on such Internet technologies as a certification system, payment system, search engine, agent system, HTML, VRML, SMTP and so on. These Internet technologies have not been used in previous information systems such as EDI. Thus, Internet technologies are fundamentally different from previous information technologies because of their ubiquitous and open nature, low access costs, and the global ease of using related applications (Barua et al., 2000; Feeny, 2001). Hence "Internet technology provides better opportunities for companies to establish distinctive strategic positioning than did previous generations of information technology" (Porter, 2001; 64). In summary, the advantages of Internet technologies are that they enable companies to provide global connectivity, to reduce selling product cost, to enhance customer service quality, and to establish new business models.

Among other IS, EDI is closely related to WBSS in that EDI technology immediately

preceded the use of the Internet to conduct inter-organisational commerce. It is therefore appropriate to attempt to distinguish between WBSS and traditional EDI. A comparison between WBSS and traditional EDI is summarized in Table 2-6.

Table 2-6. Comparison between WBSS and Traditional EDI

Classification	WBSS	Traditional EDI
Business Type	• Business-to-Business • Business-to-Consumer	• Business-to-Business
System Object	• Electronic Commerce	• Data Exchange
System Character	• Open	• Closed
Data Format	• Unstructured Data Format	• More Structured Data Format
Information Forms	• Multimedia	• More Text-Based Data
Network Range	• Global Network	• More Local Network
Number of Usage Company	• Unlimited Number of Firms	• Small Number of Firms
Major Use Firms	• SME and Large Companies	• Large Companies

Previous information technology (IT) such as EDI was mainly used in order to automate data processing or to improve effectiveness and competitiveness at the intra and inter-organisation level (business-to-business) (Kalakota and Whinston, 1996). However, WBSS support all the previous IT functions as well as enabling organisations to provide new business such as digital business that had not previously existed (Cheung and Lee, 2000; Barua et al., 2000; Timmers, 2000). Also, WBSS are network systems that can connect customers, suppliers, collaborators and even competitors in terms of business-to-customer (B-to-C) and business-to-business (B-to-B) (Kalakota and Whinston, 1996; Laudon and Laudon, 2000; Korper and Ellis, 2000; Arlitt et al., 2001; Looney and Chatterjee, 2002). Thus, WBSS are creating a global electronic marketplace that integrates economic, social and community activities, commerce, entertainment and education, though the extent of WBSS diffusion is different according to various organisational circumstances (Korper and Ellis, 2000; Choi and Whinston, 2000; Arlitt et al., 2001).

In addition, traditional EDI allowed large corporations such as automotive manufacturers, airlines and banks to send a standardized electronic message to each other for the interchange of business information (Kalakota and Whinston, 1996; Timmers, 2000). This means that EDI message formats and communications methods had to be agreed upon between individual trading partners before the EDI could be implemented. EDI needed to standardize the data format based on ANSI X.12 and EDIFACT (Emmelhainz, 1993; Martin, 1995; Kalakota and Whinston, 1996). EDI tended to be costly to adopt and difficult to support in terms of interoperability between different industries, since each industry has its own standard for data exchange (Timmers, 2000; Li and Williams, 2001). Thus, EDI has been used by a relatively small number of companies (Timmers, 2000; 3), because of the need for a standard for EDI transactions (Emmelhainz, 1993; Barua et al., 2000). Small-medium enterprises, for instance, have tended to resist implementing EDI, due to a lack of standards, lack of technical implementation and support, and limited financial resources (Iacovou and Dexter, 1995; Barua et al., 2000; Li and Williams, 2001). Moreover, all participants in EDI tended to be required to be connected to the same network (Timmers, 2000). EDI was not connected with its private customers directly, and there were often difficulties for information sharing by all employees within an organisation (Kalakota and Whinston, 1996; Timmers, 2000).

Conversely, WBSS are open systems in that the Internet protocols are open (Loshin, 1995; Timmers, 2000; Laudon and Laudon, 2000; Porter, 2001): anyone in the world can interconnect with any organisation running Internet protocols such as TCP/IP (Kalakota and Whinston, 1996; Laudon and Laudon, 2000; Korper and Ellis, 2000). Small companies or even individual shops can therefore not only directly participate in the electronic marketplace based on WBSS, but can also access a broader range of trading partners (Korper and Ellis, 2000). Moreover, they can exchange multimedia digital data in more than one format, such as the combination of text, audio, video, graphics, voice and animation, quickly and cheaply (Laudon and Laudon, 2000; Korper

and Ellis, 2000; Timmers, 2000). WBSS carries out digital transactions directly between businesses and customers (B-to-C) and buyer and seller (B-to-B) with no intermediaries (Korper and Ellis, 2000; Barua et al., 2000). Despite the characteristics of WBSS being more advanced than EDI, however, since many so-called dot-com companies collapsed early in 2000, organisations adopting WBSS should be required to maintain a level-headed approach based on thoughtful e-business planning.

However, there are some similaries between WBSS and EDI from two aspects: non-technical and technical. First, from the non-technical aspect, both WBSS and EDI provide the means for electronic transactions with businesses, saving time and cost, and aiming for profitability and stability (Tapscott, 1995; Martin, 1995; Korper and Ellis, 2000). Second, from the technical aspect, both are a form of IOS which connects organisations and businesses, although traditional EDI transactions rely on Value Added Networks (VANs) (Kalakota and Whinston, 1996; Timmers, 2000).

To sum up, this section has addressed a review of the different characteristics of WBSS, as compared to previous information systems, in particual EDI, from a technical perspective. WBSS carry out global electronic commerce and digital business based on the following characteristics: WBSS are global network systems which include Web servers, application servers and database servers. WBSS are also open systems based on TCP/IP enabling them to communicate on different hardware and software platforms. WBSS include an electronic payment system which can handle monetary exchange transactions, such as credit cards, smart cards, debit cards, e-cash, e-checks, e-wallets and so on, electronically. WBSS are based on a multimedia platform which can communicate digital data in more than one format, such as the combination of text, audio, video, graphics, voice, animation and so on. Thus, it can be seen that WBSS are quite different from traditional information systems in terms of system objects, system architecture, system application, technical components, data format, and network configuration (Korper and Ellis, 2000; Cheung and Lee, 2000; Choi and Whinston,

2000; Arlitt et al., 2001). Using these characteristics as a backdrop, the following section attempts to address the characteristics of WBSS as an enabler of new business, this time from a business perspective.

2.7 WBSS as an Enabler of New Business

The application of WBSS can change the ways in which organisations conduct business, selling goods, information and services across national boundaries over the Internet (Korper and Ellis, 2000). According to Laudon and Laudon (2000), new business on Internet technologies has been created using the rich capabilities of these technologies. For instance, "Amazon.com, which is adopting WBSS, demonstrates how it is possible to dis-intermediate the supply chain and create new value out of it" (Mahadevan, 2000; 55). In addition, Dell.com uses its WBSS to execute both elements of its business model – direct sales and build-to-order – and provides valuable insights into how WBSS can be applied to achieve competitive advantage in global electronic markets (Korper and Ellis, 2000). This is reflected in what is called the 'new business' that is a fundamental transformation from traditional business (Mahadevan, 2000; Werbach, 2000; Feeny, 2001). This research thus regards the WBSS as an enabler of new business based on the following observations.

- **Global electronic markets**: "The structure of the Web is rapidly evolving from a loose collection of Web sites into global electronic marketplaces" (Schonberg et al., 2000; 53). Since electronic markets based on Internet technologies support the exchange of goods and services between buyers and sellers, and customers and suppliers, these are new business media as well as foundations for virtual enterprises (Lindemann and Schmid, 1999). However, there are some non-technical barriers such as different national cultural issues, taxation, logistics and supply chain management, legal and regulation issues in the diffusion of global electronic markets (Burrington,

1999; Huberman, 2001; Smith et al., 2002). In the physical market place, spatial and temporal constraints add excessive costs to organizing such seller-to-buyer transactions (Nour and Fadlalla, 2000). However, WBSS can enable firms to create a global electronic market that is not limited by time and geographical constraints and to change the way products are bought and sold. For example, many dot-com companies such as Tesco.com (retailers), Chemdex.com (chemicals), and BizBuyer.com (small business products) are taking advantage of these WBSS characteristics. Among them, eBay.com provides a global electronic market based on WBSS for the auction of collectible items. Thus, global electronic markets on WBSS can be seen as a new business model that takes place in searching for products, exchanging digital transactions and buying goods and services.

- **Digital business**: "Digital product companies like Yahoo, eBay, and America Online offer content and services directly over the Internet" (Barua et al., 2000; 104). One of the major characteristics of WBSS is to provide digital business for organisations across national boundaries based on such digitized business products as news, literary works, images, movies, animation, music, audio, information, books, magazines, electronic games, software and so on – anytime, anywhere (Tapscott, 1995; Hammond, 1996; Barua et al., 2000, Kampas, 2000; Nour and Fadlalla, 2000; Ba et al., 2002). For example, Korean WBSS can enable online digital business such as movies or drama selling (e.g., movie.korea.com; www.cinepark.com) to provide hundreds of customers via Internet anytime, anywhere based on broadband access. However, this kind of digital business is difficult in the UK, due to narrowband network connection, as mentioned by Schofield (2002). WBSS in the UK, for instance, is limited to online music sales rather than movies or drama. Since the emergence of the Web, digital business has enabled organisations to create new business models, new business processes, new business management and new business strategies (Tapscott, 1995; Roberts and Mackay, 1998; Timmers, 2000; Feeny, 2001, Porter, 2001). Recently, Web-based shopping platforms are being

recognized as new commercial media for digital business (Cheung and Lee, 2000; Barua et al., 2000). Digital product delivery may take place when products are purchased online or where information is bartered via WBSS applications (Korper and Ellis, 2000; Arlitt et al., 2001). For example, Learningstore.com carries out digital business with educational software products. Customers can buy more than 1000 titles of education software online (www.learningstore.co.uk). Also, over 1 million musical items – CDs, DVDs, videos, and games – are on sale at 101cd.com (www.101cd.com). The emergence of these digital businesses having adopted WBSS is entirely new, and was not seen when companies were reliant upon previous EDI technology.

- **Creating "cybermediaries"**: The traditional transaction process from seller to buyer involves several intermediaries playing different roles. However, WBSS can bypass traditional intermediaries and can suggest new "cybermediaries" to perform mediation of business transactions (Sarkar et al., 1995, Schumann, 2000). For example, ShopNow.com and Fastparts.com are based on a new intermediary business model using WBSS. This cybermediary type of WBSS will doubtless grow more and more in several forms of Internet business, due to the advantages of transaction cost reduction, faster delivery, quicker responses and better service.

- **Virtual value chain**: Porter and Miller (1985) proposed the value chain model as a basic tool for understanding the role of technology and information in achieving competitive advantage. The value chain model consists of two kinds of value creation activities: five primary and four secondary activities. The physical value chain is composed of a linear sequence of activities between input and output, whilst the virtual value chain is non-linear and is a matrix of potential inputs and outputs that can be accessed through several channels (Rayport and Sviokola, 1995; Christiaanse, 1998; Greenstein, 2002). According to Applegate et al. (1996), electronic commerce has affected a wide range of value-adding activities in the chain within, and outside, the organisation. WBSS support a new means of adding

value and value creation between an organisation's value chain and the value chains of its suppliers and customers (Porter, 2001). They do so through the electronic interconnection effects: the electronic communication effect, the electronic brokerage effect, and the electronic integration effect (Malone et al., 1994; Rayport and Sviokola, 1995; Farhoomand et al., 2000). For example, Amazon.com claims that this new value-adding and creation activity is achieved through various processes in the virtual value chain in such forms as product cost reductions, inventory reductions, cash flow improvements, customer service improvements, the opening of new digital business marketing, and gains in competitive advantage (www.amazon.com).

As mentioned above, previous information technologies such as EDI have been used as tools or strategic enablers of businesses to improve inter-organisations' effectiveness and competitiveness in their interactions with each other. WBSS, on the other hand, are not merely Internet-based shopping systems but also an enabler of new businesses such as cyber auction markets, digital businesses, cyber department stores, cyber shops, cyber shopping malls, cyber intermidiaries and so on. As such, this research attempts to reflect the characteristics of WBSS as an enabler of new business in a research model of WBSS diffusion. It does so in the belief that such a model may adequately explain the phenomenon of WBSS diffusion and will contribute towards designing a valuable research framework in this emerging topic area.

2.8 Summary

The above conceptual exploration of WBSS provides a theoretical background for further research on the diffusion of WBSS. It appears that research relevant to the Web-based shopping tends to either overestimate or underrate the role of Information and Communication Technology (ICT). Each perspective seems to have a limitation in

clearly explaining the phenomenon of WBSS diffusion. Therefore, this study wishes to explore major characteristics of WBSS diffusion, concerning both the technical and business aspects in contemporary Web-based shopping business settings. That is, the aim of this research is to apply two perspectives – technical perspective and business perspective – into exploring the phenomenon of WBSS diffusion, in order to highlight the significance of both perspectives within the ICT diffusion research agenda. It does so by summarizing the characteristics of WBSS from two different perspectives: a technical perspective, and a business perspective, as shown in Table 2-7.

Table 2-7. Characteristics of Web-Based Shopping Systems

Aspect	Characteristics	Remarks
Technical Perspective	• Multi-tier Architecture	Consists of Web servers, application servers and database servers
	• Global Network System	Includes back-end systems, Web-servers and front-end clients
	• Open System	Can communicate on different hardware and software platforms
	• Shopping Support System	Can handle the monetary exchange transactions through buying and selling products and services
	• Multimedia System	Can communicate digital data in more than one format, such as the combination of text, audio, video etc.
Business Perspective	• Global Electronic Market	Takes place in searching for products, exchanging digital transactions and buying goods between customers and suppliers on WBSS
	• Digital Business	Takes place when products are purchased online or where information is bartered via WBSS
	• Cybermediary	Bypasses traditional intermediaries and performs the mediating business transactions on WBSS
	• Virtual Value Chain	Means a new value adding and value creation between an organisation's value chain and the value chains of its suppliers and customers via WBSS

First, from the technical perspective, WBSS are characterized by a multitier architecture, global network system, open system, shopping support system and multimedia system. Second, from the business viewpoint, WBSS can enable organisations to create global

electronic markets, digital business and cybermediary business, thus making an impact on the virtual value chain of the new businesses. It is argued here that these characteristics of WBSS are new, and were not available in previous information systems such as EDI systems. Organisations exploit one or more of these characteristics to reach global customers, providing dynamic connectivity and a broader range of value-added customer service. In addition, it is hoped that both the technical perspective and the business perspective for exploring WBSS's characteristics presented in this chapter can be an initial step towards a more balanced debate of the role of ICT in Web-based shopping business and electronic commerce generally.

On the basis of both the Internet business models provided by Timmers (2000) from the business aspect and the multi-tier architecture of WBSS suggested by Arlitt et al. (2000) from the technical aspect, a configuration model of WBSS applications (see Figure 2-4) is developed to provide comprehensive understanding of the phenomenon of WBSS diffusion and to illustrate the issues relevant to Web-based shopping business.

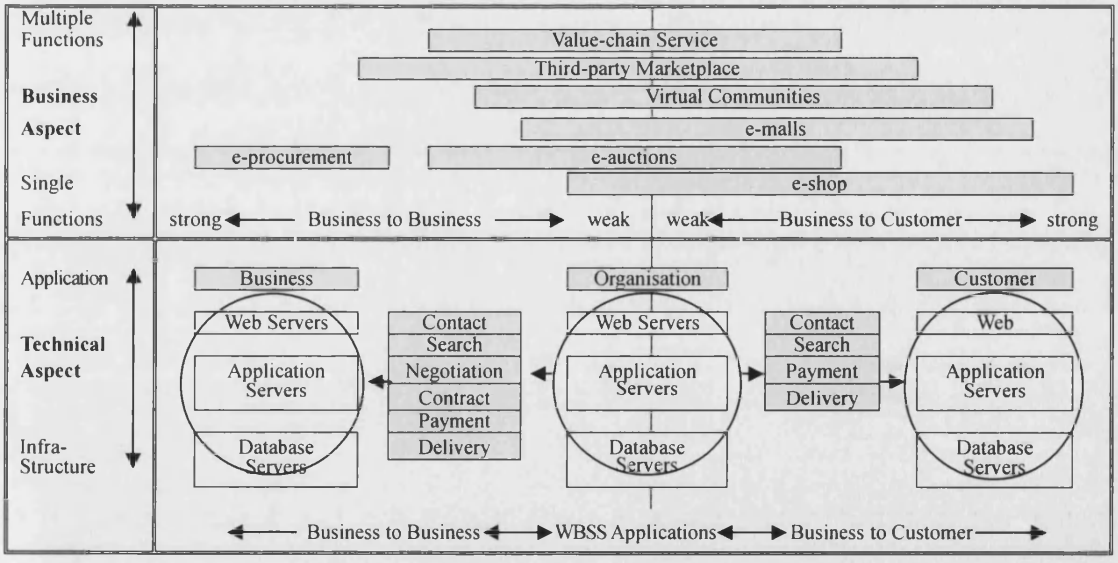

Figure 2-4. Configuration Model of WBSS Applications

As can be seen in Figure 2-4, the horizontal axis represents the type of Web-based shopping business such as B-to-B and B-to-C. The vertical axis consists of two aspects: business and technical. Based on this, the details of the configuration model of WBSS

applications are described in Figure 2-4. From the technical aspect, WBSS support both business-to-business and business-to-customer applications. From the business aspect, WBSS enable organisations to run such e-business functions as e-shop, e-procurement, e-auctions, e-malls, virtual communities, value-chain service and third-party marketplace. The configuration model developed in this chapter provides a theoretical background for further research on WBSS diffusion.

This characterization of WBSS suggests a potentially useful base point for further study. Based on this review, it seems that the diffusion of WBSS is influenced by both the technical characteristics and the business aspects. It would seem appropriate, therefore, for this research to take account of these two aspects in studying the phenomenon of WBSS diffusion, in the belief that, by doing so, it will increase the analytic and interpretative power of the research.

The next chapter now seeks to review the literature on ICT innovation diffusion, in order to provide a backdrop for a consideration of WBSS diffusion per se.

Chapter 3. ICT Innovation Diffusion

3.1 Introduction

This chapter provides a further theoretical foundation for this research by reviewing the previous research on relevant topics related to WBSS diffusion. Recently, information and communication technology (ICT), in particular the Internet and electronic commerce, has been increasingly recognized as a means of positive sustainability for driving global digital economy (OECD, 2000; Howcroft, 2001; Brynjolfsson and Kahin, 2002; Hudson, 2002). In this context, a growing body of literature has noted that the Internet technologies play a significant role in radically expanding the volume and scale of a global electronic commerce (Rayport and Jaworski, 2001; Porter, 2001; Feeny, 2001; Looney and Chatterjee, 2002; Chaudhury and Kuilboer, 2002). Among various types of e-businesses, the most well-known model is the so called dot-com (Porter, 2001), which utilizes several types of WBSS applications.

Web-based shopping businesses on WBSS are diffusing very rapidly across national boundaries, taking place between organisations and customers, and enterprises and the global market (Korper and Ellis, 2000; Looney and Chatterjee, 2002; Slyke et al., 2002). This global phenomenon of WBSS diffusion is of particular interest and can be considered as utilizing the theory of innovation diffusion, because such research seeks to explore and explain why particular new technologies do diffuse quickly and widely, while others do not (Newell et al., 2000; 242). So far, the theory of diffusion has been frequently used to explain the complex nature of new ICT diffusion (e.g., Zmud, 1982; Liang, 1986; Brancheau and Wetherbe, 1990; Krcmar and Lucas, 1991; Bouchard, 1993; Kettinger and Grover, 1997; Westland et al., 1998; Standing and Vasudavan, 2000). Given the context regarding the global phenomenon of Web-based shopping businesses, this study might also add that some technologies diffuse at different rates in

different national contexts.

Hence, this chapter reviews three categories of ICT diffusion research: a general review of ICT diffusion, a review of Internet systems diffusion more specifically and a review of ICT diffusion in different national cultures. The latter two aspects of this review need a little explanation. First, as this research subject deals with the diffusion of WBSS, it is necessary to review WBSS-related diffusion research more specifically. This is done in the belief that it will help in achieving a good grasp of the fundamental characteristics of WBSS diffusion among several domains of ICT diffusion research. However, there has been little research relevant to WBSS diffusion per se (Arlitt et al., 2001). The literature review of WBSS will therefore be extended into research on Internet systems diffusion.

Second, given the global impact of WBSS, a major research area relevant to the present study is the comparative analysis of WBSS diffusion in different national contexts (Avgerou, 2001). While Internet technology provides the means for global reach, the impact of any such technologies may be felt quite differently in different national contexts (cf. Walsham, 2001). According to Galliers et al. (1998), the majority of cross-cultural studies of ICT diffusion have concentrated on identifying and classifying the several factors that influence ICT diffusion in different national settings. In this research, the particular national setting investigated is that of a Western and an Eastern country, specifically the UK and Korea.

3.2 Previous Studies of ICT Innovation Diffusion

The most common dimension of innovation diffusion is the source of the newness, such as the organisation, the market, the technology, the product and the process (Kamm, 1987). Therefore, innovation diffusion theory has been used in several disparate fields,

including economics, policy, sociology, marketing, organisation, technology and medicine. Previous innovation diffusion research has been concerned with various issues including the definition of innovation diffusion (Rhodes & Wield, 1994; Afuah, 1998), the generation of innovation diffusion (Forsgren and Johanson, 1992; Nohria and Ghoshal, 1997), innovation diffusion in organisations (Daft, 1986; Damanpour, 1991), innovation diffusion in marketing (Simmonds, 1986), technological innovation diffusion (Howell and Higgins, 1990; Lawless and Anderson, 1996), process innovation diffusion (Davenport, 1993), value innovation diffusion (El-Sawy et al., 1999) and innovation diffusion in information systems (Cooper and Zmud, 1990; Swanson, 1994, Allen, 2000). There have been several models that attempt to explain innovation diffusion as a process of logically sequential, interacting and interdependent stages (Rothwell, 1994), but Galliers and Swan (1999; 379) suggest a more consistent process arguing that "it may be preferable to consider the process as a whole rather than a series of discrete stages, with innovation being viewed as a complex, iterative, and continuous process."

Among the various innovation diffusions, this study focuses specifically on the innovation diffusion of information and communication technology (ICT), dealing as it does with the Internet and, more specifically, with WBSS. Tornatzky and Fleischer (1990) argue that technology innovation diffusion means "either the process of getting new tools into a given social environment, or the new tools themselves." For example, the Internet technologies look like technology innovation itself (Nambisan and Wang, 1999), as well as being created and adapted to perform Web-based shopping business (Korper and Ellis, 2000; Feeny, 2001; Porter, 2001; Looney and Chatterjee, 2002). A technology usually has two components such as hardware and software. Steele (1988) defined technology innovation diffusion as encompassing three fields of activity: product, process and information technologies. These three different substantive fields of technology innovation diffusion have different traditions and different educational foundations. This is so because Internet technologies differ from previous ICT, due to their global interactivity and universal connectivity beyond organisations and individual

customers via the Internet in real time without geographical limitation, creating new business models, processes and strategies (Nath et al., 1998; Barua et al., 2000; Timmers, 2000; Feeny, 2001; Porter, 2001). Therefore, we can regard Internet technology as an example of a technology innovation (Nambisan and Wang, 1999).

A number of researchers have used the term "ICT innovation diffusion" (e.g. Monk, 1987; Moore and Benbasat, 1991; Prescott and Conger, 1995; Lockett, 1996). Monk (1987) defined ICT innovation diffusion as "a form of technological change that is shaped by the characteristics of information and information processing." Hence, the factors identified for technical innovation diffusion can apply to ICT innovation diffusion (Lockett, 1996).

Technology innovation diffusion theory has helped to explain the adoption and diffusion of different types of new ICT. These include software (Zmud, 1982), Decision Support Systems (Liang, 1986), spreadsheets (Brancheau and Wetherbe, 1990), MRP (Cooper and Zmud, 1990), Strategic Information Systems (Krcmar and Lucas, 1991), DBMS (Grover and Teng, 1992), EDI (Bouchard, 1993; Premkumar et al., 1994; Damsgaard and Lyytinen, 2001), telecommunications (Grover and Goslar, 1993), e-mail (Romm et al., 1996; Kettinger and Grover, 1997), FMS (Belassi and Fadlalla, 1998), ATMs (Santos and Peffers, 1998), Expert Systems (Shao, 1999), electronic cash (Westland et al., 1998) and the Internet (Press et al., 1996; Charlton et al., 1997; Standing and Vasudavan, 2000). In previous research of ICT diffusion, external factors identified often include compatibility, relative advantage and complexity (Tornatzky and Klein, 1982; Moore and Benbasat, 1991; Rogers, 1995; McMaster et al., 1997).

In order to understand the characteristics of previous ICT diffusion research, an attempt is made here to divide the research into micro and macro level aspects or orientations. Micro level research focuses on ICT diffusion at the level of the individual and the organisation. Macro level research takes into account diffusion at the level of the

industry and the nation. Table 3-1 provides a summary of the two groups for a selection of ICT diffusion studies.

Table 3-1. Summary of Previous ICT Innovation Diffusion Studies

Level	Author(s) and year	ResearchICT	Analysis Context	Impact Factors
Micro Level	Zmud (1982)	Software	Software Development Group	· Innovation process · Compatibility · Vested interests
	Liang (1986)	DSS	University Students	· Quality of system · Representation format · Motivation · User attitude
	Lee & Treacy (1988)	General IT	IS Users	· Motivation support · Information support · Resources support
	Brancheau & Wetherbe (1990)	Spreadsheet	End-User Computing	· Education · Opinion leadership · Media exposure · Internal communication
	Cooper & Zmud (1990)	MRP	Manufacturing Organisations	· Compatibility · Manufacturing methods
	Kremar & Lucas (1991)	SIS	Bank Organisation	· Cost justification · Seizing an opportunity · Need for sponsor · Marketing the application · Customer-oriented view · Building on infrastructure
	Grover &Teng (1992)	DBMS	IS Organisation	· Organisation size · Extent of online processing · End-user computing · Degree of centralization · Size of IS department
	Grover & Goslar (1993)	Telecommunication	IS Organisation	· Environment uncertainty · Decentralization of decision making
	Bouchard (1993)	EDI	Manufacturing Organisations	· Business partners · Actual businesses
	Premkumar et al. (1994)	EDI	IS Manager	· Relative advantage · Compatibility · Costs
	Romm et al. (1996)	E-mail	University Community	· Organisational learning · Organisational culture · Link between organisational learning and culture
	Belassi & Fadlalla (1998)	FMS	Manufacturing Organisation	· Corporate strategy · Corporate culture · Organisation structure · Management style
	Sheng et al. (1998)	Telemedicine Technology	Hospital Organisation	· Competitive pressure · Customer support · Internal support · Compatibility · Resource intensity · Benefits of telemedicine

	Shao (1999)	Expert System	Banking Organisation	· Communication channels · Organisation size · Effect of mass-media communication
	Standing & Vasudavan (2000)	Internet Technology	Travel Agencies	· Vendor support · Top management support · Customer support · Effective consultants
Macro Level	Charlton et al. (1997)	Internet	Communities in UK and Merseyside	· Greater public access · Partnerships
	Kettinger & Grover (1997)	E-mail	Interorganisational Context	· Broadcast · Task · Social communication
	Santos & Peffers. (1998)	ATM	Banking Industry	· Communication among industry competitors · Marketing efforts by the IT vendors
	Press et al. (1998)	Internet	Nation	· Telecommunication infrastructure · National security · Markets and choice · Financial resources · Cultural concerns
	Rai et al. (1998)	Internet	Social Level Diffusion	· Commercial use · Technology innovation · Partnerships · Heterogeneous adopters
	Westland et al. (1998)	Electronic Cash	Nation	· Education and change in payment habits

To summarize, as can be seen from Table 3-1, most previous research of ICT diffusion was carried out at the micro level before the Internet and electronic commerce appeared on the commercial scene around the mid 1990s (Ticoll et al., 1998; Timmers, 2000). Most micro level research has sought to identify relevant factors of the ICT diffusion on an organisational basis (e.g., Zmud, 1982; Liang, 1986; Brancheau and Wetherbe, 1990; Krcmar and Lucas, 1991; Bouchard, 1993; Romm et al., 1996; Belassi and Fadlalla, 1998; Standing and Vasudavan, 2000). These studies in micro level tend to hardly concern the factors related to the external environmental issues, focusing on the internal organisational considerations. As mentioned previously, WBSS are global oriented shopping systems, which connect with businesses and customers in global Web-based environments. Therefore, it would appear that the theory related to micro level seems to be limited in explaining the global phenomenon of WBSS diffusion.

On the other hand, as shown in Table 3-1, there are a growing number of studies of ICT diffusion at the macro level. These reflect the dynamic and global phenomena of the

Internet for commercial purposes, since the Web emerged in the 1990s (Ticoll et al., 1998; Timmers, 2000). Innovative characteristics of Internet technologies are constantly reshaping the business landscape in terms of reducing costs, lowering cycle times across business processes, enhancing customer service, and improving product quality (Nath et al., 1998; El Sawy et al., 1999). This phenomenon is reflected in increased interest in academic research related to electronic commerce diffusion (e.g., Charlton et al., 1997; Santos and Peffers, 1998; Rai et al., 1998; Westland et al., 1998). This is because "the micro level of innovation diffusion research cannot account for differences in diffusion patterns due to variances in environmental and institutional factors" (Damsgaard and Lyytinen, 1997). However, it appears that the research relevant to the macro level tends to underestimate the role of Internet technologies, so that it rarely concerns the factors related to the Internet technology per se. Among the most forceful drivers of social and economic change in recent years is the revolution in communications and information processing brought about by ICT, in particular the Internet technology (McKenney, 1996; Feeny, 2001; Porter, 2001). Moreover, "the Internet phenomenon is indeed a paradigm shift governing both business and information systems" (Wigand, 1997; 2). On this basis, it would appear necessary to take a balanced view regarding the factors related to both the technical and non-technical issues, in exploring the global phenomenon of WBSS diffusion.

In addition, there are differences across industry sectors and across countries in the extent of diffusion of ICT (Newell et al., 1998). Therefore, "the most consistent theme found in the ICT innovation research is that research findings have been inconsistent" (Wolfe, 1994; 405). It has been suggested that this lack of consistency arises from the complex and contextually-sensitive nature of innovation processes (Newell et al., 1998). Thus, research on ICT innovation diffusion requires a contextual approach related to the social nature of the innovation diffusion process, in order to reflect the global and dynamic nature of ICT innovation diffusion (Newell et al., 1998; Avgerou, 2001). In the light of this observation, this research attempts to investigate the diffusion of WBSS

within different national contexts, because "ICT innovation diffusion is heavily dependent on the context of application" (Newell et al., 2000; 246). This contextual approach, particularly with respect to different national contexts, may help us more clearly understand the diffusion of WBSS, and may improve the analytical power of WBSS diffusion research.

3.3 Previous Studies on Internet Systems Diffusion

To acquire useful insights into the development of WBSS diffusion, this section reviews previous research related to WBSS diffusion more specifically. As already indicated, there is little research of WBSS diffusion per se, because the study of Web-based shopping is at an early stage of development (Cheung and Lee, 2000; Arlitt et al., 2001). Therefore, this review looks at Internet systems diffusion and reflects on WBSS diffusion in this light. Internet systems diffusion is a subset of ICT diffusion, which was considered in the previous section. In focusing on Internet systems diffusion specifically, it is hoped that this will provide valuable insights into, and a foundation for, selecting the fundamental variables of WBSS diffusion by tracing the factors relevant to the diffusion of Internet systems.

Auger and Gallaugher (1997) examine some of the issues associated with the adoption of an Internet-based sales presence by small- to medium-size businesses. Their research identifies six factors that affect the adoption of an Internet-based sales presence: low development and maintenance costs, an interest in experimenting with a new marketing tool, the desire to promote products and build the company's image, financial considerations, benefits in obtaining and disseminating information, and competitive considerations. They concluded that among these factors, low development and maintenance costs were the most significant.

Loh and Ong (1998) provide a research framework on the adoption and development of a broad-based Internet stock-trading platform. This study reveals that customers' concerns, expectations, perceived ease of use and the real value-added by a new system, as well as their trading behaviour, are critical determinants to the ultimate adoption of Internet stock trading. The results highlighted some interesting findings such as customers' readiness to accept online transactions.

Foo and Hui (1998) propose a framework that evaluates a feature of the functionality of the Internet telephone system. They also suggest a multiplicity of factors that can affect the performance of an Internet telephone system, namely: network performance, computing resource, voice processor, signal acquisition, output transducer, system architecture and methods to establish connection between users. However, the results of this research are limited in generalizability due to the small sample size considered.

Storey et al. (2000) investigate Internet banking services in the UK and US. They argue that to provide better customer-oriented banking services, it is necessary to offer Internet banking services such as online mortgages and loans, as well as online credit card applications. However, they note that further empirical study is necessary to investigate more comprehensive factors, especially technical variables related to the diffusion of Internet banking systems.

Corbitt (2000) highlighted factors that have been identified as being important in the diffusion of electronic commerce (EC) architecture. Corbitt argues that success in EC diffusion is attributable to a number of factors, namely: organisational commitment, the existence of an executive sponsor, and frequent access by users. However, this research adopts quite a broad approach to the diffusion of electronic commerce architecture, and hence further research will need to focus on a specific domain among several EC applications, such as Internet banking systems, Web-based shopping systems, supply chain management systems and the like.

Finally, Cheung and Lee (2000) investigate the factors impacting on Web-based shopping platforms. Two categories of factors are identified: trustworthiness of Internet vendors and the external environment. However, as this study does not consider market variables and technological factors, and does not address detailed factors associated with the external environment, it would appear appropriate and timely to introduce new research related to Web-based shopping, which does address these issues. A summary of Internet systems research is provided in Table 3-2.

Table 3-2. Summary of Internet Systems Diffusion Research

Author(s) and Year	Domain of Internet Systems	Affecting Factors
Auger and Gallaugher (1997)	Internet-based sales presence	· Low development and maintenance costs · Interest in experimenting with a new marketing tool · Promote products and build the company's image · Benefits in obtaining and disseminating information · Competitive considerations · Financial considerations
Loh and Ong (1998)	Internet stock-trading platform	· Customer concerns · Expectations · Perceived ease of use · Trading behaviour · Real value of a new system
Foo and Hui (1998)	Internet telephony systems	· Network performance · Computing resource · Voice processor · Signal acquisition · Output transducer · System architecture and techniques · Methods to establish connection between users
Storey et al. (2000)	Internet banking systems	· Ability of Internet banking service · Availability of Internet payment applications
Corbitt (2000)	Electronic commerce architecture	· Frequent access by customers · Organisational commitment · Existence of an executive sponsor
Cheung and Lee (2000)	Web-based shopping platform	· Trustworthiness · External environment

Based on the above review of previous research on Internet systems diffusion, it would seen reasonable to classify the variables that have been identified into two groups – internal and external factors – in order to identify meaningful implications. These are summarised in Table 3-3.

Table 3-3. Internal and External Factors of Internet Systems Diffusion

Domain	Research Variables	Reference
Internal Factors	· Low development and maintenance costs · Financial considerations · Interest in experimenting with a new marketing tool · Benefits in obtaining and disseminating information	Auger & Gallaugher (1997)
	· Expectations · Trading behaviour · Real value of a new system · Perceived ease of use	Loh & Ong (1998)
	· Computing resource · Voice processor · Signal acquisition · System architecture and techniques · Output transducer	Foo & Hui (1998)
	· Ability of Internet banking service	Storey et al. (2000)
	· Existence of an executive sponsor · Organisational commitment	Corbitt (2000)
	· Trustworthiness	Cheung & Lee (2000)
External Factors	· Promote products and build the company's image · Competitive considerations	Auger & Gallaugher (1997)
	· Customer concerns	Loh & Ong (1998)
	· Methods to establish connection between users · Network performance	Foo & Hui (1998)
	· Availability of Internet payment applications	Storey et al. (2000)
	· Frequent access by customers	Corbitt (2000)
	· External environment	Cheung & Lee (2000)

As can be seen from Table 3-3, the external variables are different from those identified previously in more general ICT diffusion research. ICT diffusion research frequently investigated the external variables related to the technology itself such as compatibility, relative advantage, complexity, trialability, and observability (Tornatzky and Klein, 1982; Moore and Benbaset, 1991; Rogers, 1995; McMaster et al., 1997). However, in the research on Internet systems, there are many new external factors mentioned, such as customer concerns, frequent access by customers, the promotion of products and company's image, competitive considerations, external environment and so on. It can be seen that these factors are all closely linked with the customer and market. This reflects the point that previous ICT diffusion research focused on the technology itself at an

organisational level, whilst Internet systems studies focus more on aspects of electronic commerce which link organisations, customers, and global electronic markets across national boundaries. Therefore, it would seem that market and customer issues are becoming more crucial in research on Internet systems diffusion. This study will reflect these trends in design of a research model to be used in researching WBSS diffusion.

3.4 Previous Studies on Different National Cultures and ICT Diffusion

As WBSS applications grow across national boundaries, it is important to note that each country in the world has a distinct social environment, culture, set of customers, political system and so on. It seems that there are various kinds of issues affecting WBSS diffusion in the different national contexts: taxation, logistics, legal and regulation issues, e-government, education and training, national cultures, economic power, national manpower, and national network infrastructure (Burrington, 1999; Huberman, 2001; Smith et al., 2002; Tigre and O'Connor, 2002; OECD, 2000; OECD, 2002). These variables are quite broad issues and are all difficult to measure in contemporary Web-based shopping circumstances. However, it is expected that there will be some different characteristics of WBSS diffusion in different national contexts, especially between Western countries and Eastern countries, since the Web-based shopping environment is different in each country context. Therefore, though the study on different national cultures and ICT diffusion does not completely cover the phenomenon of WBSS diffusion in different national contexts, nonetheless it will adequately account for the differences in the results of this study on WBSS diffusion in the UK and Korea. In order to incorporate such considerations into the research, it is necessary to consider prior research related to different national cultures and ICT diffusion.

Reekers and Smithson (1994) carried out an empirical study based on a quantitative

analysis of questionnaire data for the adoption of EDI in Germany and the UK. The authors argue that most organisations were achieving operational benefits, rather than strategic benefits, as a result of EDI. They also concluded that there were only marginal differences in EDI diffusion between the two countries. In addition, this study adopted a combination of research methods, comprising of a postal survey and a number of interviews to collect data. Therefore, their research approach provides a theoretical grounding for this research that combines a quantitative survey and qualitative interviews.

Tractinsky and Jarvenpaa (1995) carried out a comparative analysis of information systems design decisions in a global versus domestic context. They argue that there is no substantial difference between global and domestic applications of IT with regard to the most important factors in IT distribution decisions. At that time, the authors did not consider such new phenomena as electronic commerce and the Internet. It would seem, therefore, that, were further research to be carried out on the balance of global and domestic issues incorporating electronic commerce, the results would be more informative for the purposes of the proposed research.

Damsgaard (1996) attempts to compare observed EDI diffusion patterns in Hong Kong, Finland and Denmark, on the basis of semi structured interviews. He argues that Denmark and Finland governments are not deeply involved in furthering EDI diffusion, whilst Hong Kong has been involved in seeking to sustain its position as an international trading hub. Since this research research focuses on wide EDI diffusion patterns, it highlights the necessity of recognizing the critical role of government and market affecting the EDI diffusion process.

Bazar and Boalch (1997) identify key factors that affect successful diffusion and the use of the Internet in developing countries. They argue that the rate of diffusion of the Internet within a country is dependent on a number of factors: infrastructure;

government policies and regulations; economic development; culture; language, and IT penetration in the country. It would therefore appear to be useful to refer to these variables in developing the research model of WBSS diffusion.

Furthermore, Tan et al. (1995) discuss the relationship between culture and group support systems (GSS) effects in high and low power distance countries. "Power distance is the extent to which the less powerful members of organisations within a country expect and accept that power is distributed unequally" (ibid.; 83). They argue that knowledge of GSS may not be useful in different countries because theories grounded in one culture need not necessarily apply to others.

Shore and Venkatachalam (1996) investigate the role of national culture and other variables, such as competitive environment and task congruency in the transfer of information technology. They conclude that, when the competitive environment is very strong and when a new application requires few changes, the culture's impact will be minimal because task may dominate culture.

Also Straub et al. (1997) examine the effect of cultural differences on technology acceptance across three different countries. This study indicates that the technology acceptance model may not hold equally well across cultures.

More recently still, Galliers et al. (1998) investigate how cultural factors influence the rate at which individuals adopt ICT to assist them, applying the stages model of growth to the context of development administration. They argue that "the cultural factor is a critical issue in order to have realistic expectations about the impact of ICT in development administration" (ibid.; 97). This study also highlights the utility and limitations of the stages of growth model in terms of its ability to accommodate inherent cultural characteristics.

Walsham (2001) examines issues related to cross-cultural impacts of information and communication technologies (ICTs). According to the three areas of cross-cultural case studies, he argues that globalization facilitated by ICTs is leading by effectively working on sensitive cross-cultures. Though this study provides a valuable insight for this research, in particular a cross-cultural approach, it would be more worthwhile if further research attempts to investigate cross-cultural impacts on ICT diffusion, based on both quantitative data for generalized findings and qualitative data for contextually detailed interpretations.

A summary of the ICT diffusion research in different national cultures is provided in Table 3-4.

Table 3-4. Summary of Previous Research on ICT Diffusion in Different National Cultures

Author(s)	Insights and Analysis
Reekers & Smithson (1994)	Most companies were using EDI largly to improve their operational benefits rather than strategic benefits.
Tractinsky & Jarvenpaa (1995)	The balance of global and domestic factors should be considered, because the authors did not consider the new phenomena, electronic commerce and the Internet.
Tan et al. (1995)	The knowledge of GSS may not be useful in other countries because theories grounded in one culture need not necessarily apply in other cultures.
Damsgaard (1996)	This study highlights that it is necessary to recognize the critical role of government and market affecting the diffusion process of EDI.
Shore & Venkatachalam (1996)	The impact of culture will be minimal in the following situations: when the competitive environment is very strong and when a new application requires few changes.
Straub et al. (1997)	The technology acceptance model may not hold equally well across cultures.
Bazar & Boalch (1997)	The rate of diffusion of the Internet within a country is dependent on infrastructure, government policies and regulations, culture, language, economic development, and IT penetration in the country.
Galliers et al. (1998)	Cultural factors are a critical issue in order to have realistic expectations of ICT impact.
Walsham (2001)	Globalization facilitated by ICTs is leading by effectively working on sensitive cross-cultures.

In conclusion, as can be seen from the above review, the majority of cross-cultural research of ICT diffusion has concentrated on identifying the different cultural factors that influence ICT diffusion in different national contexts. In summary, much research argues that the extent of ICT diffusion varies according to the impact of differing cultures in different countries. Hence, it would appear necessary to investigate the following questions: Is there any influence of national culture on WBSS diffusion? If the impact of culture on WBSS diffusion exists, then what are the different characteristics in different national cultures? One of the purposes of this research is to test whether this perspective is borne out or not. It will therefore be beneficial to examine the different characteristics of WBSS diffusion in different national cultural issues in the UK and Korea, as illustrative examples in this respect.

3.5 Towards a Conceptual Research Framework

This chapter has reviewed three categories of ICT diffusion research: 1) a general review of ICT diffusion, 2) a review of Internet systems diffusion and 3) a review of ICT diffusion in different national cultures. Among the three categories of ICT diffusion research, the studies on ICT diffusion in different national cultures issues are broad and have not introduced the detailed factors affecting each ICT diffusion. Moreover, the research on Internet systems diffusion focuses on specific domains of Internet systems such as Internet stock-trading platform, Internet telephone systems, and Internet banking systems, so that it is limited to identifying the general and common pattern of ICT diffusion studies. Based on this observation, this study attempts to explore the conceptual inter-relationship of highlighted factors identified in the general review of ICT diffusion (see Table 3-1). This is because, although their technical characteristics are different from WBSS, the widespread data of the general ICT diffusion would be

able to discover common relationships and categories among them to generate a conceptual research framework, by refining chosen variables, as follows.

With regard to the review of factors affecting ICT diffusion, it can be seen that a wide range of factors appear to influence the diffusion of WBSS interacting in a global and dynamic fashion. However, in building a conceptual research framework, this research attempts to focus on certain points passed over by the previous ICT diffusion studies, i.e., a balanced view regarding both the internal and external factors as well as the technical and non-technical issues.

First, WBSS are global-oriented network systems that link organisations, customers and business partners around the world. WBSS transactions occur between buyer and seller, merchant and customer, and manufacturer and supplier. Therefore, the external environment of WBSS diffusion will influence the level of digital transaction in a WBSS with a company's customers (B-to-C) and business partners (B-to-B). Also, internal circumstances of WBSS diffusion will affect the internal system integration with other applications, such as the payment system or database system, and the degree of internal usage of WBSS. Hence, the variables identified from the above review are arranged into two groups: internal factors and external factors, as indicated in Table 3-5.

Table 3-5. Internal and External Factors of Previous Research Variables

Domain	Research Variables		Reference
Internal Factors	· Experimenting with a new marketing tool	· Financial considerations	Brancheau & Wetherbe (1990)
	· Real value of a new system	· Trading behaviour	Liang (1986)
	· Perceived ease of use	· Computing resource	Kremar & Lucas (1991)
	· System architecture and techniques	· Trustworthiness	Grover & Teng (1992)
	· Executive sponsor	· Organisational commitment	Romm et al. (1996)
	· Quality of system	· Education	Auger & Gallaugher (1997)
	· Internal communication	· Building on infrastructure	Belassi & Fadlalla (1998)
	· Extent of online-processing	· Organisation culture	Loh and Ong (1998)
	· Top management support	· Corporate strategy	Foo & Hui (1998)
			Corbitt (2000)
			Cheung & Lee (2000)
			Standing & Vasudavan (2000)

External Factors	· Promote products and build the company's image · Customer concerns · Availability of Internet payment applications · Frequent access by customers · Customer-oriented view · Relative advantage · Competitive pressure · Vendor support · Telecommunications infrastructure · Marketing efforts by IT vendors	· Competitive considerations · Network performance · Compatibility · Marketing application · Business partner · Costs · Customer support · Partnerships · Commercial use · Technology innovation	Kremar & Lucas. (1992) Bouchard (1993) Premkumar et al. (1994) Auger & Gallaugher (1997) Loh and Ong (1998) Rai et al. (1998) Press et al. (1998) Sheng et al. (1998) Storey et al. (2000) Corbitt (2000) Standing & Vasudavan (2000)

Second, as mentioned earlier, information and communication technology (ICT), in particular Internet technologies, has become a major technological force influencing business success, electronic commerce and WBSS diffusion (Choi and Whinston, 2000; Feeny, 2001; Porter, 2001). Moreover, the Gartner Group estimates that "75% of all e-business ventures will fail, due to a lack of technological understanding and poor business planning" (Load, 2000). Hence, the factors related to ICT, in particular Internet technologies, appear to be important with regards to the successful adoption and diffusion of WBSS (Mahadevan, 2000; Korper and Ellis, 2000; Porter, 2001). On the basis of this observation, this study attempts to classify the factors identified in previous research into ICT-related factors and non-ICT related factors, as shown in Table 3-6. The factors can therefore be divided into four dimensions: 1) internal factors not related to ICT; 2) internal factors related to ICT; 3) external factors not related to ICT, and 4) external factors related to ICT.

Table 3-6. Classification of Previous Research Factors

Domain	Classification	Factors		Reference
Internal	Non-ICT Related Factors	· Financial considerations · Perceived ease of use · Organisational commitment · Internal communication · Top management support · Organisational culture · Experimenting with a new marketing tool	· Trading behaviour · Trustworthiness · Executive sponsor · Education · Corporate strategy	Brancheau & Wetherbe (1990) Romm et al. (1996) Auger & Gallaugher (1997) Loh & Ong (1998) Belassi & Fadlalla (1998) Cheung & Lee (2000) Corbitt (2000) Standing & Vasudavan (2000)

	ICT Related Factors	· Real value of a new system · Computing resource · System architecture and techniques · Quality of system · Building on infrastructure · Extent of online processing	Liang (1986) Kremar & Lucas (1991) Grover & Teng (1992) Loh & Ong (1998) Foo & Hui (1998)
External	Non-ICT Related Factors	· Competitive considerations · Customer concerns · Customer-oriented view · Business partner · Competitive pressure · Customer support · Partnerships · Commercial use · Frequent access by customers · Marketing application · Promote products and build the company's image	Kremar & Lucas (1991) Bouchard (1993) Auger &. Gallaugher (1997) Loh & Ong (1998) Sheng et al. (1998) Rai et al. (1998)
	ICT Related Factors	· Network performance · Compatibility · Relative advantage · Costs · Telecommunication infrastructure · Vendor support · Marketing efforts by IT vendors · Technology Innovation · Availability of Internet payment applications	Premkumar et al.(1994) Rai et al. (1998) Foo & Hui (1998) Press et al. (1998) Santos & Peffers (1998) Corbitt (2000) Storey et al. (2000) Standing & Vasudavan (2000)

As can be seen from Table 3-6, internal factors not related to ICT include perceived ease of use, organisational commitment, trustworthiness, executive sponsor, internal communication, education, top management support, organisation culture, corporate strategy, experimenting with a new marketing tool and so on. Thus, these might be called "internal organisation factors". Internal factors related to ICT include the real value of a new system, computing resource, system architecture and techniques, quality of system, building on infrastructure and extent of online-processing. Therefore, these factors may be interpreted as "internal system factors". External factors not related to ICT are competitive considerations, customer concerns, customer-oriented view, business partner, competitive pressure, customer support, partnerships, commercial use, frequent access by customers, marketing application, and so on. So, these factors may be labelled as "external market factors". External factors related to ICT include network performance, compatibility, relative advantage, costs, telecommunication infrastructure, vendor support, marketing efforts by IT vendors, technology innovation and availability of Internet payment applications. External factors related to ICT may therefore be called "external technical factors".

To summarise, this study has arranged the factors that appear to be closely relevant to WBSS diffusion research into four categories: "internal organisation factors", "internal system factors", "external market factors", and "external technical factors". As a result of this, a conceptual inter-relationship of the four categories can be proposed and is shown in Figure 3-1.

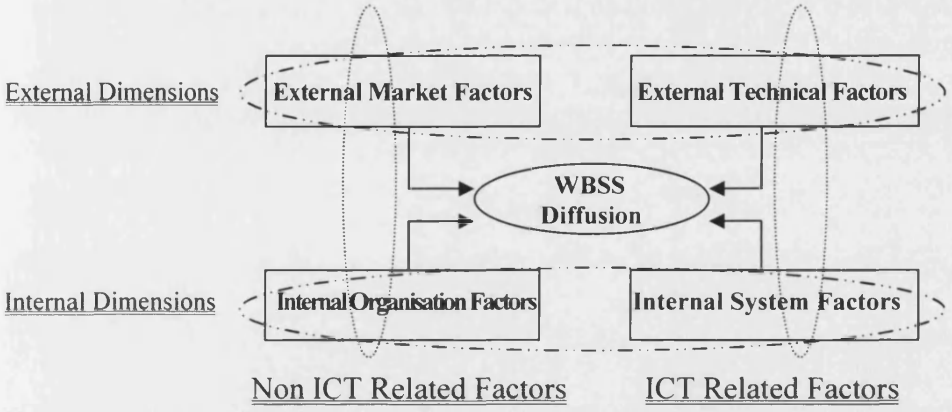

Figure 3-1. Conceptual Research Framework

This represents a conceptual research framework of WBSS diffusion and offers a theoretical background for further research on ICT diffusion. The conceptual research framework comprises five key dimensions: the four clusters identified previously, together with a fifth, concerned with the extent of WBSS diffusion per se. The five dimensions are illustrated as being organically connected with each other. For instance, the external market factors and external technical factors are external dimensions which may affect the internal organisation and internal system domains within an organisation. The internal organisation and system factors are internal dimensions that affect the diffusion of WBSS. Furthermore, external technical factors and internal system factors influence the whole area of organisation as the major driving forces of WBSS diffusion. These five dimensions are not independent and cannot therefore be addressed independently as, throughout, each affects the diffusion of WBSS and each reacts to WBSS diffusion. This model proposes a theoretical foundation for further research of WBSS diffusion.

3.6 Summary

This chapter has reviewed three categories of ICT diffusion research: ICT diffusion in general, Internet systems diffusion more specifically and ICT diffusion in different national cultures. While these categories are not mutually exclusive, they complement each other and assist in investigating the diffusion of WBSS in some detail. Thus, this complementary perspective on ICT diffusion research will be integrated into this research on WBSS diffusion.

Section 3.2 examined the overall trends of ICT diffusion and provided a summary of the two groups such as macro and micro level aspects. Based on a wide-ranging review of the literature, it appeared that the theory related to micro level was limited in explaining the global phenomenon of WBSS diffusion, because micro level has hardly considered the factors related to the external market issues, focusing on the internal organisational factors. On the other hand, the research relevant to the macro level tended to underestimate the role of Internet technologies, so that it rarely concerned the factors related to the Internet technology per se. On this basis, it appears necessary to present a balanced view regarding the factors related to both the internal and external factors as well as the technical and non-technical issues, in exploring the global phenomenon of WBSS diffusion. This discussion led to the development of a conceptual research framework that incorporates both the internal organisational factors and external market issues as well as ICT related and non-ICT related factors.

Section 3.3 dealt with a review of studies related to Internet systems diffusion. Based on this review, it was observed that market and customer factors were becoming more crucial issues in research on Internet systems diffusion, so these trends will be reflected in the design of a research model of WBSS diffusion in the following chapter.

Section 3.4 reviewed the studies on different national cultures and ICT diffusion. It

might be expected that there will be different characteristics of WBSS diffusion in different national contexts. However, as mentioned earlier, it appears that there are various kinds of issues affecting WBSS diffusion in the different national contexts: taxation, logistics, legal and regulation issues, education and training, national cultures, economic power, national manpower, and national ICT infrastructure (Burrington, 1999; Huberman, 2001; Smith et al., 2002; Tigre and O'Connor, 2002; OECD, 2000; OECD, 2002). It seems that these variables are quite broad as well as different from the factors related to organisations such as e-business planning, customer service, usability and organisational network infrastructure. However, it would be interesting to investigate the difference in characteristics of WBSS diffusion between the UK and Korea. Therefore, while the research on different national cultures and ICT diffusion does not directly relate to this research subject, certain national cultural issues will be considered in contemporary WBSS diffusion research. That is, this research will investigate whether cultural issues do impact WBSS diffusion and, if so, what kinds of cultural issues influence WBSS diffusion in both countries.

To sum up, based on the comparative review of previous ICT diffusion research, this research has provided a conceptual research framework, which is classified into four categories: external market, external technical, internal organisation, and internal systems factors. The detailed conceptual inter-relationships of the four categories are described in Figure 3-1. This conceptual research framework provides a theoretical background to further research on WBSS diffusion. In particular, this study will attempt to test the theoretical implications, which means that previous ICT diffusion research has hardly considered external market, external technical and internal systems factors in their studies. Therefore, this thesis will investigate whether these factors are associated with WBSS diffusion. The four categories will be discussed in the following chapter, in the context of a more detailed consideration of the objective and design of this research.

Chapter 4. Research Design and Methodology

4.1 Introduction

The world market is becoming one globalized digital market, facilitated by the use of Internet technology (Barua et al., 2000; Howcroft, 2001; Brynjolfsson and Kahin, 2002; Hudson, 2002). Internet technology is said to offer universal connectivity at surprisingly low transaction costs, opening up new frontiers of interaction between customers, businesses, and trading partners (Barua et al., 2000; Feeny, 2001; Looney and Chatterjee, 2002). As companies have adopted Internet technologies for their Web-based businesses, many new business models, such as Amazon.com, Tesco.com, and eBay.com have emerged in the global digital economy (Korper and Ellis, 2000; Porter, 2001; Looney and Chatterjee, 2002). However, many dot-com companies have disappeared from the Internet business field of late (Gulati and Garino, 2000; Levy, 2000; Jansen, 2001; Howcroft, 2001; Rifkin and Kurtzman, 2002; Pinker et al., 2002). Apparently, there are many barriers and obstacles in the adoption and diffusion of WBSS (Kalakota and Robinson, 1999; Korper and Ellis, 2000; Porter, 2001; Arlitt et al., 2001; Rifkin and Kurtzman, 2002). Though there are many reasons for this, The Times Survey of the European Top 500 Enterprises suggests that contributory factors include lack of effective executive support, failure to build systems with business goals, budget limitations, over-ambition and lack of communication between marketing and IT experts (Bicknell, 1998; 20). On the other hand, some dot-coms such as eBay.com, Amazon.com, and Dell.com, which are adopting various types of WBSS, are surviving and suggesting new models of Internet business. In the Internet business area, some WBSS are growing whereas others are disappearing. Why is this happening? In order to address this concern, this research attempts to examine the following main question concerning the phenomenon of WBSS diffusion in the positive perspective since the shaping process of electronic commerce is continuous:

- **What key impact factors influence the diffusion of WBSS in different national contexts?**

That is, this research aims to investigate the key impact factors that facilitate WBSS diffusion in the UK and Korean contexts. The rationale for this objective is based on the following observations. As can be seen from the review of ICT innovation diffusion (chapter 3), ICT innovation diffusion, especially Internet technologies, has recently become dynamic and globally oriented. Therefore, it has instigated the need for research on ICT innovation diffusion in different national contexts (Newell et al., 1998; Avgerou, 2001). Thus, this research attempts to gather data in two countries, the UK and Korea, with a view to providing some insight into this issue. These two countries have different cultures, customs, political systems, economic power, ICT infrastructure levels, environment and so on. It can therefore be imagined that the key impact factors of WBSS diffusion may well be different in the two countries. Hence, an attempt is made to resolve the main question depending upon different national contexts, given that ICT diffusion is heavily dependent on the context of application (Newell et al., 2000). This study opens up a new research field – WBSS diffusion, in several electronic commerce domains.

In order to address WBSS diffusion in detail, the sub-objectives of this research can be outlined as follows:

1) To derive a classification model for WBSS
2) To analyze the characteristics of WBSS
3) To develop a research model of WBSS diffusion
4) To investigate the key impact factors influencing WBSS diffusion
5) To examine the key driving forces enabling WBSS diffusion
6) To present the key diffusion strategies of WBSS.

As argued earlier, although there have been many studies on the Internet, there has been little research focusing on the diffusion of WBSS (Arlitt et al., 2001). Hence, this research examines the primary topic as well as the sub-objectives related to this research subject. Its major purpose is to provide a comprehensive understanding of WBSS diffusion in the two national contexts. In order to clearly understand, provide a well-established theoretical background, and adequately analyze the diffusion of WBSS, it is necessary to build a solid research design. Thus, the next section discusses the detailed design of the research carried out.

4.2 Research Design

The purpose of this section is to briefly outline the design of this research. Before doing that, it is necessary to clarify the research perspectives and levels of analysis. There are some different research perspectives that are brought to bear in analyzing the social phenomenon by researchers. For example, Damsgaard (1996; 34-35) argues that "the micro perspective focuses on characteristics of organisational units. ... The meso perspective focuses on networks of interacting agents that shape the trajectory of innovation diffusion. ... The macro perspective analyzes how boundaries for the diffusion process are established by highlighting regulatory regimes that constrain or enable the diffusion process." In addition, Newell et al. (1998; 303-304) point out that "the micro level of analysis is at the level of the individual and the organisation. ... The meso level context of an organisation constitutes the level intermediate to the macro level of government policy and the micro level of intra-organisational dynamics. ... The macro level social context of an organisation constitutes a large number of broad elements such as the nature of the legislative system." Moreover, Ritzer (2000; 493-519) presents two major levels of social analysis: macro and micro levels. The macro level analysis focuses on large-scale realities such as society, bureaucracy, and technology, while micro level analysis focuses on small-scale entities such as organisation, personality, and patterns of action and interaction.

Therefore, it would appear that different researchers tend to have somewhat different research viewpoints in resolving their chosen research subjects. In this thesis, the two different analysis levels – the macro and micro levels presented by Ritzer (2000) – are useful in investigating the phenomenon of WBSS diffusion. This is because it appears that the meso level suggested by Damsgaard (1996) and Newell et al. (1998) tends to be somewhat ambiguous in contemporary Web-based shopping circumstances, since organisations on WBSS can carry out their Web-based shopping businesses with global customers directly, without any intermediary. On the basis of this observation, in this research, the macro level is to focus on the large-scale reality like a classification model of WBSS in the perspective of technology. The micro level is to examine small-scale entities like key impact factors influencing WBSS diffusion, as illustrated in Figure 4-1.

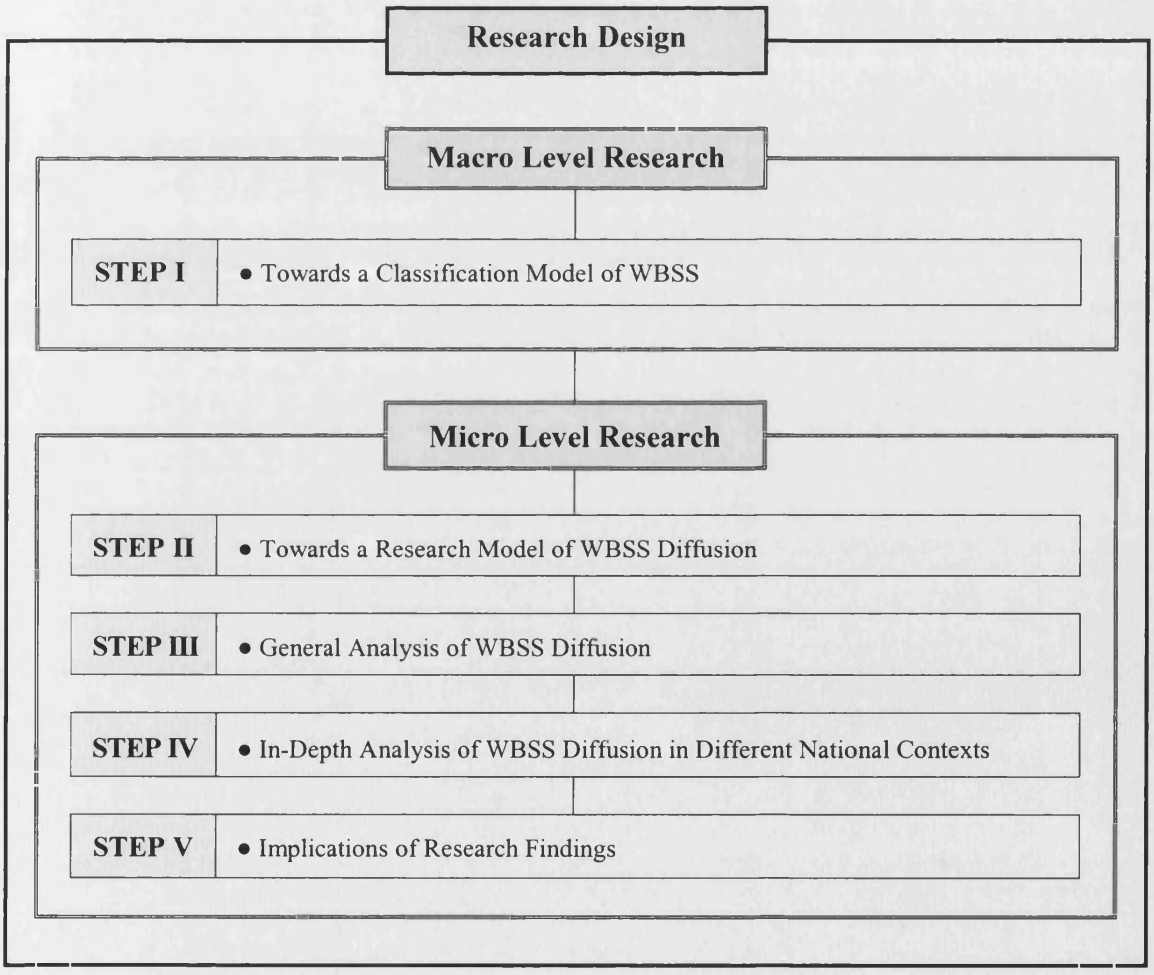

Figure 4-1. Overview of Research Design

As can be seen from Figure 4-1, this research aims to carry out five major steps in two analysis dimensions: macro level research and micro level research. That is, macro level research provides a general understanding, an extended view and a theoretical background of WBSS covering the sub-objectives of the thesis. Micro level research, on the other hand, attempts to deal with a specific and narrowed-down analysis of WBSS diffusion, which is the main research objective of the thesis. This means that, though there are several issues related to the WBSS, this research aims to investigate the key impact factors facilitating WBSS diffusion. A detailed explanation of each section is provided in section 4.2.1 below.

4.2.1 STEP I: Towards a Classification Model of WBSS

As explained previously, although there is considerable research interest in the Internet and electronic commerce, research related to WBSS is just beginning (Cheung and Lee, 2000; Arlitt et al., 2001; Slyke et al., 2002). Hence, before carrying out a major research topic of this kind, it is necessary to understand the characteristics of WBSS more clearly. With this aim, this study first develops a classification model of WBSS to analyze the characteristics of each type of WBSS. The intention is to expand our understanding of WBSS, with a view to supporting a solid research design relevant to the main research question, whilst providing a theoretical background for further WBSS research as well.

4.2.2 STEP II: Towards a Research Model of WBSS Diffusion

Although there is a growing body of literature concerned with the Internet and electronic commerce, little attention has been devoted to the diffusion of WBSS per se (Arlitt et al., 2001). There are no established theories to explain the diffusion of WBSS or to guide organisations in shifting from traditional information systems to global

WBSS. Previous research on Internet systems diffusion focuses on the adoption of the Internet (Auger and Gallaugher, 1997; Teo and Tan, 1998), the diffusion of the WWW (Nambisan and Wang, 1999; Huizingh, 2000), the diffusion of Internet payment mechanisms (Buck, 1996), the diffusion of security infrastructures (Liddy, 1996; Li et al., 2000), the diffusion of search engines (Bradlow and Schmittlein, 2000), the diffusion of the Internet itself (Rai et al., 1998; Pisanias and Willcocks, 1999, Walczuch et al., 2000), the adoption of Internet stock-trading platforms (Loh and Ong, 1998) and the diffusion of general electronic commerce (Corbitt, 2000). These research efforts can be divided into two groups; (1) research on the Internet itself or Internet technologies, and (2) research on the general concept of electronic commerce (EC). However, as explained previously, WBSS are defined as Internet-based shopping systems for buying and selling products, information and services, rather than a single Internet technology or broad EC application. As such, previous research on Internet systems diffusion and ICT diffusion has not gone far enough in clearly explaining and analyzing the phenomenon of WBSS diffusion. Thus, this research attempts to develop a research model of WBSS diffusion and to open up this new research field – WBSS diffusion – in different electronic commerce domains.

4.2.3 STEP III: General Analysis of WBSS Diffusion

To obtain a broad picture of WBSS application in organisations, this step deals with descriptive statistical analysis of field work data collected in both countries, the UK and Korea. The major results arising from this survey research are presented in two analytical groups: (1) respondent profiles and organisational aspects, and (2) profiles concerning WBSS. The first identifies each respondent's position, functional area, education level, the firm's duration of involvement, industry representation, product categories, responsibility of the sales product, delivery forms, total number of employees and annual turnover. The second attempts to investigate the systemic

characteristics of the sample in both countries. It examines the number of employees in the IT department, the team or department advocating WBSS, investment cost, major customers of WBSS, mobile phone access, payment methods, technology category, product type, potential benefits of WBSS and key diffusion strategy.

4.2.4 STEP IV: In-Depth Analysis of WBSS Diffusion

To obtain meaningful research findings, a contextual approach (Pettigrew, 1985; Newell et al., 1998; Avgerou, 2001) can be effective in examining the diffusion of WBSS, because WBSS diffusion takes place in a dynamic environment across national boundaries (Korper and Ellis, 2000; Mahadevan, 2000; Looney and Chatterjee, 2002). An increasing number of electronic commerce (EC) applications are in evidence across national boundaries. However, much EC research has focused on the West (or the East) singly. Little attention has thus far been paid to the cross-national comparisons of WBSS diffusion. It would therefore appear apposite to examine the different characteristics of WBSS diffusion between the West and the East, given that different countries have different cultures, customers, political systems, historical backgrounds, environments and so on. For example, Far Eastern cultures are based on Confucian ideas (Weber, 1964) whilst Christianity impacts Western cultures (Weber, 1958). That is, understanding the relationship between cultural issues and WBSS diffusion would be a key step towards extending our current wisdom relevant to the global phenomenon – WBSS diffusion and e-business, because e-commerce on the Internet is an increasingly common feature of our globalized world across different countries and cultural issues, as argued by Walsham (2001). Therefore, based on two different sets of data in the UK (as illustrative of the West) and in Korea (for the East), this research attempts to identify whether there are any relationships between different national cultural issues and WBSS diffusion.

Regarding research into different national circumstances, this step in the research process deals with inferential statistical analyses to test hypotheses proposed for WBSS diffusion based on large sample data collected from the UK and Korea. These include: (1) factor analysis in order to test validity, (2) correlation analysis to check multicolinearity, and (3) regression analysis to test hypotheses. Investigating large sample data collected from the UK and Korea might yield reasonably accurate results and more generalizable findings than from a study of a small number of cases. In addition, based on the research results derived from quantitative survey data, a detailed discussion will be carried out in relation to their impacts on WBSS diffusion, according to the qualitative data of interviews.

4.2.5 Step V: Implications of Research Findings

The research findings obtained from the survey and interviews should lead to theoretical, systemic, and practical implications. First, the research findings derived from quantitative survey aim to highlight the theoretical implications, as compared with previous ICT innovation diffusion studies. Second, it aims to provide systemic implications giving a critical guide to organisations looking for useful ways of advancing their WBSS. Finally, on the basis of qualitative interview data, the aim is to provide some practical implications for both countries. These three categories of implications can be a launch pad for further studies of WBSS and electronic commerce, and should provide meaningful insights for research relating to a new ICT innovation diffusion.

4.3 Research Methodology

The aim of this section is to outline the overall research perspective taken in this study, related to the selection of an appropriate research methodology. Several kinds of social

science research relevant to IS methodological issues exist. However, it is difficult to give a comprehensive account of all the methodological debates about IS research in this limited space. Therefore, this section explains the methodological issues closely associated with this research topic and describes the data sources and the data collection methods this study intends to use.

4.3.1 Understanding the IS Research Methodology

This research does not strictly follow any one particular philosophy of social science research, because any approach has its relative advantages and disadvantages. Among various research methodologies, this study attempts to briefly address two approaches: positivism and post-positivism. The epistemological basis of positivism emphasizes the use of the methods that aim to discover and analyze objective knowledge about the social world (Benbasat and Weber, 1996; Sayer, 1999; Lee, 1999). Though positivist epistemology has found widespread application in social science in general, and in IS research in particular, it tends to limit its conception of valid or warranted knowledge (Lee, 1991; Goles and Hirschheim, 2000). Therefore, the use of positivism as a social science research strategy has been the subject of much criticism from researchers who have become disillusioned by its wide use in social science research (e.g., Sayer, 1999).

The goal of post-positivism in the social sciences is the development of theories or an understanding of the social phenomenon itself, rather than the creation of generalizations (Tsoukas, 1989; Lee, 1999). However, these two different approaches can be mutually supportive, and not necessarily mutually exclusive, because there are strengths and weaknesses in both the positivist and post-positivist approaches (Lee, 1991; 363; Goles and Hirschheim, 2000; 260). Thus, "the dominance of a single perspective results in a narrow view that does not fully reflect the multifaceted nature of social, organisational and phenomenological reality" (Goles and Hirschheim, 2000;

256). Based on these considerations, the research design was divided into two sections: intensive and extensive research, as shown in Table 4-1 (cf. Sayer, 1999).

As can be seen from Table 4-1, intensive research is concerned with how a causal process is manifested in a particular case, or in a limited number of cases. Conversely, extensive research is concerned with discovering some of the common properties and general patterns of a population as a whole.

Table 4-1. Intensive and Extensive Research Design (Sayer, 1999; 243)

Characteristics	Intensive Research	Extensive Research
Research question	How does a process work in a particular case or small number of cases?	What are the regularities and distinguishing features of a population?
Type of groups studied	Causal groups	Taxonomic groups
Type of account	Causal explanation	Descriptive generalizations
Typical methods	Qualitative analysis Case study, Interviews, Ethnography	Quantitative analysis Surveys, Statistical analysis
Limitations	Generalizability	Limited explanatory power

In the above table, the limitations of intensive and extensive research are summarized. For example, intensive research suffers from a lack of generalizability and extensive research suffers from a lack of causal explanation in the sample. The limitations of one method are hence the strengths of the other. "The two types of design ask different sorts of questions, use different techniques and methods and define their objects and boundaries differently" (Sayer, 1999). Therefore, qualitative and quantitative methods should be viewed as complements rather than as competitors, because all research methods have strengths and weaknesses (Galliers and Land, 1987; Lee, 1991; Gable, 1994; Mingers and Brocklesby, 1997; Goles and Hirschheim, 2000; Bryman, 2000; Mingers, 2001). In relation to this, to assist the IS researcher in making an appropriate choice, Galliers and Land (1987; 901) propose a taxonomy of IS research methods, as outlined in Table 4-2.

Table 4-2. A Taxonomy of Information Systems Research Approaches

Object	Modes for traditional empirical approaches (observations)						Modes for newer approaches(interpretations)			
	Theorem Proof	Laboratory Experiment	Field Experiment	Case Study	Survey	Fore-casting	Simulation /Game/Role Playing	Subjective/ Argumentative	Descriptive/ Interpretive	Action Research
Society	No	No	Possibly	Possibly	Yes	Yes	Possibly	Yes	Yes	Possibly
Organisation	No	Possibly	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual	No	Yes	Yes	Possibly	Possibly	Possibly	Yes	Yes	Yes	Possibly
Technology	Yes	Yes	Yes	No	Possibly	Yes	Yes	Possibly	Possibly	No
Methodology	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes

Source: Galliers, R. D. and Land, F. F., (1987; 901)

As can be seen from Table 4-2, each IS research approach has advantages and disadvantages. On the basis of this observation, Table 4-3 summarises the relative strengths and weaknesses of the case study, survey methods and experimentation (Gable, 1994; 124).

Table 4-3. Relative Strengths of Case Study, Survey and Experimentation (Gable, 1994)

Classification	Case Study	Survey	Experimentation
Controllability	Low	Medium	High
Deductibility	Low	Medium	High
Repeatability	Low	Medium	High
Generalizability	Low	High	Medium
Dicoverability	High	Medium	Low
Representability	High	Medium	Low

It has therefore become commonplace to reject the old debate about the relative advantages and disadvantages of qualitative and quantitative methods in information systems research (Galliers and Land, 1987; Lee, 1991; Gable, 1994; Mingers and Brocklesby, 1997; Jarvinen, 2000; Goles and Hirschheim, 2000). This might be explained, in part at least, by the current environment of information systems research, which is now global and dynamic (Benbasat and Zmud, 1999; Davenport and Markus,

1999). The IS research environment is rapidly changing, and is linked with several social contexts, across national boundaries.

In an attempt to limit the inadequacies of any single research approach, the concept of triangulation (Denzin, 1978) has been introduced in information systems research (Kaplan and Duchon, 1988; Gable, 1994; Goles and Hirschheim, 2000). Triangulation is broadly defined by Denzin (1978; 291) as 'the combination of methodologies in the study of the same phenomenon'. The effectiveness of triangulation rests on the premise that the weaknesses in each single method will be compensated by the counter-balancing strengths of another (Jick, 1979; Creswell, 1994; Gable, 1994; Bryman, 2000; Mingers, 2001). Within this context, quantitative and qualitative research may be perceived as different ways of examining the same research problem. Through the use of triangulation, the robustness of results can be increased (Kaplan and Duchon, 1988; Gable, 1994; Ranganathan and Sethi, 2000). Triangulation, that is the mixing of qualitative and quantitative methods, is gradually increasing in the PhD theses of the Information Systems Department at the London School of Economics and Politics (e.g. Canevet, 1996; Psoinos, 1998; Khiaonarong, 1999; Bener, 2000; Magalhaes, 2000). However, different research approaches should not be applied blindly but should consider the nature of the research subject, the complexity of research phenomena (Galliers and Land, 1987; Sayer, 1999) and the research question (Strauss and Corbin, 1990). For example, the selection of useful research methods depends on what you want to achieve in your research (Sayer, 1999). Do you want to establish objective knowledge? Do you wish to suggest causal explanations? In addition, "the research question is also important because that determines to a larger extent the research method that is used " (Strauss and Corbin, 1990; 36). For instance, the questions will depend on the research topic and the unit of analysis because the researcher cannot cover all aspects of a problem (Strauss and Corbin, 1990; Simmons, 2001; De Vaus, 2001).

Moreover, the questions are also related to things about which the researcher collects information and from which he/she draws conclusions, so that in turn the questions will affect the selection of appropriate research method (Strauss and Corbin, 1990; De Vaus, 2001).

On the other hand, there is a growing body of debate about rigor and relevance in the IS research community (Galliers, 1994; Applegate, 1999; Benbasat and Zmud, 1999; Davenport and Markus, 1999; Lee, 1999; Lyytinen, 1999). A series of articles published in MIS Quarterly in March 1999 (Vol. 23, No. 1) discussed both the rigorous and the relevant aspects of IS research, presenting a particular perspective and highlighting the aspect they prefer. For example, Benbasat and Zmud (1999; 13) argue that "we must make a concerted effort to communicate to practitioners how our research would be relevant to them." On the other hand, Lyytinen (1999; 27) highlights the following viewpoint: "my nightmare would be to emasculate Heidegger and dress him into the HBR format." However, information systems is not simply philosophy or technology itself but a topic of study closely related to organisation, society, and people. As mentioned by Galliers and Land (1987; 901), "information systems (IS) is a meta-subject that spans many disciplines in the social sciences, in business, and, only occasionally, in the natural science." On this basis, the following questions are presented to expand a view relevant to both perspectives: Who is the major audience of your research, only academic communities or practitioners? What is the major purpose of the research, theory accumulation or practical guide? Appropriate answers to such questions will depend on what the researcher wants to achieve in his/her research, though it will be different for every researcher according to their research interests, topic, and goal. This dissertation aims to investigate the phenomenon of WBSS diffusion, concerning both the rigorous and the relevant aspects, as shown in Figure 4-2: i.e., macro level in more relevant aspect and micro level in more rigorous aspect. A more detailed explanation is provided in the following section.

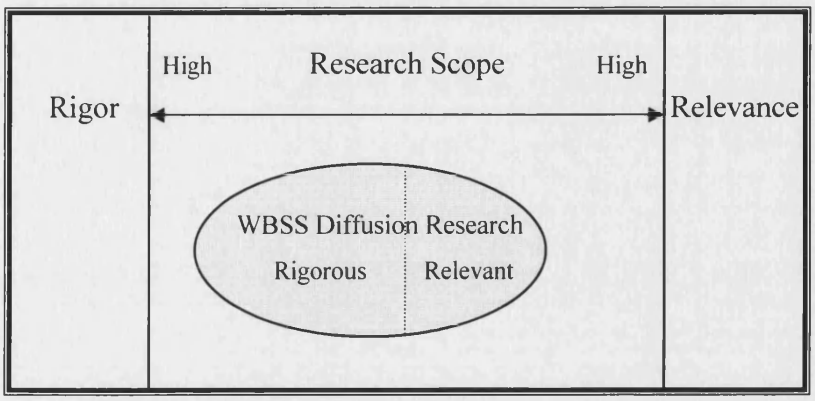

Figure 4-2. Research Scope of This Dissertation

4.3.2 Choosing an Appropriate Research Methodology

Choosing an appropriate research approach is far from easy because there are many different approaches, which have already been reviewed in the previous section. According to Galliers and Land (1987), researchers have to consider the nature of the research subject and the complexity of the research phenomenon in choosing an appropriate research approach. Furthermore, the research objective and question are addressed as considerable determinants in selecting suitable research methods by, for instance, Glaser and Strauss (1967), Sayer (1999), and De Vaus(2001). Based on these guidelines, the major principles underlying the methodology of this research are outlined as follows.

As indicated, this research focuses on macro and micro levels (Ritzer, 2000) in examining the phenomenon of WBSS diffusion, and attempts to take into account both the rigor and relevance aspects (Galliers, 1994; Benbasat and Zmud, 1999; Davenport and Markus, 1999). First, the macro level focuses on WBSS itself to provide a comprehensive view of the chosen research subject – WBSS diffusion – among various

domains of e-commerce applications. Furthermore, the macro level aims to extend our understanding of WBSS and in turn to provide background knowledge for further development of the WBSS diffusion model. That is, several kinds of WBSS applications will be classified into four categories. Once classified, the characteristics of four types of WBSS applications will be analyzed, in particular focusing on current business, technical, and strategic issues that are closely related to practical interests, so that practitioners may see the relevance of the research findings. Further rigor will be provided by this study verifying the WBSS classification model by statistical methods and will form the theoretical foundation for further research.

Second, the crucial process resolving the main research question is at the micro level, and will explore the key impact factors influencing WBSS diffusion in both countries. In social science research, there are two kinds of approaches when resolving a chosen reseach subject: theory building and theory testing (Galliers, 1992; Blaikie, 1993; Punch, 2000; Bryman, 2001; De Vaus, 2001; Partington, 2002; Robson, 2002). Theory building is a process which begins with a set of observations and moves on to develop theories based on these observations. In contrast, a theory testing approach begins with a theory and uses theory to explain particular instances (Blaikie, 1993; Punch, 2000; Bryman, 2001; De Vaus, 2001; Partington, 2002; Robson, 2002). According to Blaikie (1993), "both theory building and theory testing processes are inevitably part of social science." Which is most appropriate will depend on the topic, the context, and especially on how much prior theorizing and knowledge exists in the area (Punch, 2000; Robson, 2002). For example, "if a serviceable theory relevant to the proposed study already exists, the sensible approach is theory testing, while if researchers are casting around for a plausible theory, theory building is indicated" (Robson, 2002; 62). Good sociological research involves two related processes, i.e., theory building is the first stage of developing good explanations, and theory testing follows as an attempt to test the

tentative theory. These dual approaches capitalize on their strengths and minimize their weaknesses (Blaikie, 1993; Punch, 2000; Bryman, 2001; De Vaus, 2001; Robson, 2002).

As mentioned in the previous chapters, WBSS are a new global phenomenon and are different from EDI, the Internet itself and any single Internet technology (ref. chapter 2). Moreover, this research is a pioneering study of WBSS diffusion, with only limited prior empirical research directly relevant to WBSS on which to build (ref. chapters 2 and 3). Therefore, the application of previous ICT diffusion research models directly to WBSS diffusion research is likely to prove inadequate (ref. chapter 3). As regards the nature of this research opening new research horizons, it is reasonable to carry out theory building in the first place and then to deal with theory testing. In relation to this, this study developed a conceptual research framework as described in chapter 3 (see Figure 3-1), which was derived from a set of observations of previous ICT diffusion studies. It is a theoretical foundation for this research, so it will be used in developing a research model of WBSS diffusion, which will subsequently be tested for its explanatory power in contemporary Web-based shopping circumstances, in particular in the UK and Korea.

Given these arguments, it seems entirely appropriate to adopt triangulation (Denzin, 1978; Jick, 1979), an empirically-based method combining both qualitative and quantitative approaches (e.g. Kaplan and Duchon, 1988; Lee, 1991; Creswell, 1994; Gable, 1994; Ranganathan and Sethi, 2000) for this research. This is because their complementary characteristics, combining the strengths of each research method, can, practically at least, help to explain the phenomenon of WBSS diffusion. The aim is to produce reliable research findings derived from the combination of quantitative and qualitative data. That is, qualitative data expands our knowledge foundations for practical situations, while quantitative data provides empirical evidence of the phenomenon of WBSS diffusion.

Therefore, this research attempts to resolve the major research question posed by utilizing triangulation (Denzin, 1978; Jick, 1979; Creswell, 1994; Gable, 1994; Bryman, 2000), combining qualitative and quantitative methods, as advocated by, e.g., Glaser and Strauss (1967), Jick (1979), Kaplan and Duchon (1988), Lee (1991), Creswell (1994), Gable (1994), Goles and Hirschheim (2000), Bryman (2000) and Mingers (2001). Through triangulation, the strengths of each research method and technique, and the perspectives of different observers, are combined. An interesting example of this approach, as applied in information systems research, is a qualitative approach acting as a grounded methodology to develop a research model for quantitative research, with an interpretive approach being applied to the final discussion (e.g. Kaplan and Duchon, 1988; Gable, 1994, Ranganathan and Sethi, 2000).

Overall then, and based on these theoretical observations, this study tries to resolve the research question in two distinct research phases: 1) macro level, based on qualitative methods, that may be said to be less rigorous but more relevant, and 2) at the micro level, based on both quantitative and qualitative methods that may be said to be more rigorous but somewhat less relevant. More detailed explanations are as follows, summarizing research methodologies of the two phases in Table 4-4.

Table 4-4. Choosing Appropriate Research Methodologies

Research Level	Research Approach		Role/Contribution	Rigor&Relevance
Macro Level • Classification Model of WBSS	•Qualitative	•Literature review •Case study	•Model development •Causal analysis	•Less rigorous & more relevant
Micro Level • Development of a Research Model of WBSS Diffusion	•Quantitative & •Qualitative	•Literature review •Interview	•Model development •Model verification	•More rigorous & less relevant
• Analysis of WBSS Diffusion		•Survey •Interview	•Empirical evidence •Generalizations •Extended explanatory power	
• Implications of Findings		•Interpretive	•Interpretations	

As can be seen from Table 4-4, in the first place, the macro level aims to gain an understanding of the phenomenon of WBSS diffusion and to provide a comprehensive backdrop for the following micro level analysis. In order to achieve this objective, an attempt is made to develop a classification model of WBSS, based on the literature review, and analyze the characteristics of WBSS on the basis of a case study (see chapter 5). According to the analysis of appropriate instances for each type of WBSS, this research suggests a characteristic model identifying different types of WBSS architectures. On the basis of better understanding of WBSS at macro level, a research model of WBSS diffusion can be generated at the micro level. We can therefore regard this macro level analysis as a foundation for resolving the major research question. Overall, then, it appears that the macro level analysis would be somewhat less rigorous but more relevant in terms of its practical application and implications.

The second phase, the micro level, is concerned with more rigorous empirical analysis, which includes both theory building and theory testing. As indicated, the main objective of this research is to identify the key impact factors that facilitate WBSS diffusion in the UK and Korea. Furthermore, one of its goals is to propose some generalizations from the research findings. In order to form a strong base of empirical evidence, as mentioned already, this phase seeks to carry out both theory building and theory testing. In advance of this, based on the conceptual research framework developed in chapter 3, a research model of WBSS diffusion will be developed with hypotheses, operationalization and survey items in chapter 6. After this, this research model will be verified by interviews with key experts before testing its utility in the UK and Korean contexts. To test and evaluate a research model of WBSS diffusion, a field survey method is adopted to analyze large sample data collected in the UK and Korea. At the time of the field surveys, interviews are also to be carried out with experts from the UK and Korea in order to obtain practical information relevant to WBSS diffusion. As a consequence of the exploratory nature of this research area, there is little prior empirical research to explain the survey results of this study. Therefore, qualitative data derived

from interviews will provide a context in which the research results arising from the survey data can be more readily explained. It would, of course, be possible to consider in-depth case study research ab initio, and doubtless, meaningful conclusions could be drawn. However, by first conducting survey research, more general impressions of WBSS diffusion will emerge, providing a rich context for the subsequent case analysis. Thus, by combining the quantitative and qualitative approaches, the validity of findings on WBSS diffusion may be enhanced. The final stage is the interpretation of the research findings, and here, a more interpretive stance is taken. Lee (1991; 351) has argued that "the positivist approach and the interpretive approach might be integrated so that researchers can simultaneously enjoy the benefits of both, rather than just one or the other." This stage is designed to highlight both theoretical and practical implications of the research findings, assessing whether the research model of WBSS diffusion is reasonable, and enabling an interpretation of the different characteristics of WBSS diffusion in the different national contexts.

It is hoped that this dual research approach concerning both macro and micro levels, and combining both qualitative and quantitative methods and positivist and interpretive stances, can enable this dissertation to produce reliable and valuable research findings for both the IS academic community and practitioners.

4.4 Summary

This research is but one of the first steps towards better understanding of the diffusion of WBSS. The object of this study is to trace key impact factors which influence the diffusion of WBSS in different national contexts. In order to achieve these research objectives, this chapter has outlined the research design which includes both the macro and the micro level. The macro level enables a reasonably comprehensive understanding of WBSS and a foundation for further research. The micro level consists of theory

building and theory testing processes, and enables the implications of the research findings.

The diffusion of WBSS is a multifarious social phenomenon which affects several social activities, including the economy, legal system, society, commerce, regulation, ICT, network infrastructure and so on (Korper and Ellis, 2000; Barua et al., 2000; Arlitt et al., 2001). Therefore, this dual research approach at the macro and micro levels aims to provide a better explanation of the phenomenon of WBSS diffusion and to produce meaningful and valuable research findings for contemporary global Web-based shopping circumstances.

In addition, this study attempts to meet its research objectives based on triangulation, the combining of qualitative and quantitative research methods. This research approach is aimed at enriching the research findings derived from integrating the quantitative survey for generalized results and the qualitative interviews for added explanatory power. By doing so, it is hoped that this research can open up new horizons for WBSS diffusion.

Based on the research design in this chapter, the following chapter deals first of all with a classification model of WBSS, particularly investigating the major characteristics of each type of WBSS, with a view to the derivation of a research model of WBSS diffusion.

Chapter 5. Towards a Classification Model of WBSS

5.1. Introduction

This chapter, focusing at the macro level, is dedicated to providing a comprehensive understanding of WBSS and to establishing the basis for developing a solid research model of WBSS diffusion, described in chapter 6. In order to do this, we attempt to classify WBSS architectures and to analyze the fundamental characteristics of each type of WBSS. Before doing that, a contextual background is laid down to introduce a research necessity of rigorous pespective and to address the issues related to relevance aspect as follows.

There is a growing desire to understand electronic commerce and to utilize new Internet technology within the Internet business (Kalakota and Robinson, 1999; Korper and Ellis, 2000; Feeny, 2001; Coltman et al., 2002). In a similar instance, the impact of the telephone on business and social communication is without doubt one of the same revolutionary properties, facilitating networking to homes, businesses, and society (Kalakota and Whinston, 1996; Rowley, 2002). Lessons from history indicate that the most successful technologies are those that can change the way customers think and the way organisations do business, as argued by Kalakota and Whinston (1996). However, many organisations lack a clear understanding of how to make effective use of Internet technology as a means of new business supporting global electronic commerce (Mahadevan, 2000; Werbach, 2000; Coltman et al., 2002). It is argued that organisations need to plan effectively before they venture into Internet business (Kalakota and Robinson, 1999; Barua et al., 2000; Feeny, 2001; Porter, 2001; Rifkin and Kurtzman, 2002). Many organisations are currently struggling with the following questions: How can Internet technology improve business? Will Internet technology bolster or erode the ability of companies to gain sustainable advantages over their

competitors? (Porter, 2001). The aim of this chapter is to answer the above two questions and to provide a theoretical background of further WBSS diffusion study. This is a sub-objective and does not replace the objective posed at the beginning of the thesis. In order to do so, this study introduces a detailed conceptualization of WBSS, analyzing the distinguishing characteristics of the different types of WBSS identified and focusing on a review of organisations that are utilizing WBSS.

This chapter is structured as follows. The development of a WBSS classification model is first described and is followed by analyzing WBSS cases, discussing the characteristics of each type of WBSS. The chapter ends with a summary and a discussion of both theoretical and practical implications.

5.2 A Classification Model of WBSS

As mentioned in the previous chapter, WBSS can be considered as a new business enabler with the potential to change the ground rules by which businesses interact with their customers. Carrying out global business on WBSS is becoming more important to many organisations. Guidelines would therefore appear to be helpful in assisting organisations to successfully adopt and utilize WBSS. The purpose of this section is to develop a classification model of WBSS and identify its characteristics with a view to providing a comprehensive overview of WBSS.

5.2.1 Development of a Classification Model of WBSS

According to Peppers and Rogers (2002; 78), "the core issue confronting marketing is how to achieve sales and which products to sell." On the basis of this definition, in

terms of a global marketing medium, it would appear helpful to classify various types of WBSS applications, therefore, by product type and sales type.

Firstly, the sales type of WBSS is examined. For instance, Tesco.com sells multiple products and is directly responsible for the products sold on its WBSS (www.tesco.com), while Fastparts.com sells electronic parts, and is indirectly responsible for sales products in the role of intermediary (www.fastparts.com). On the basis of this observation, the sales types of WBSS are classified into two types: direct sales type and indirect sales type, as can be seen in Figure 5-1.

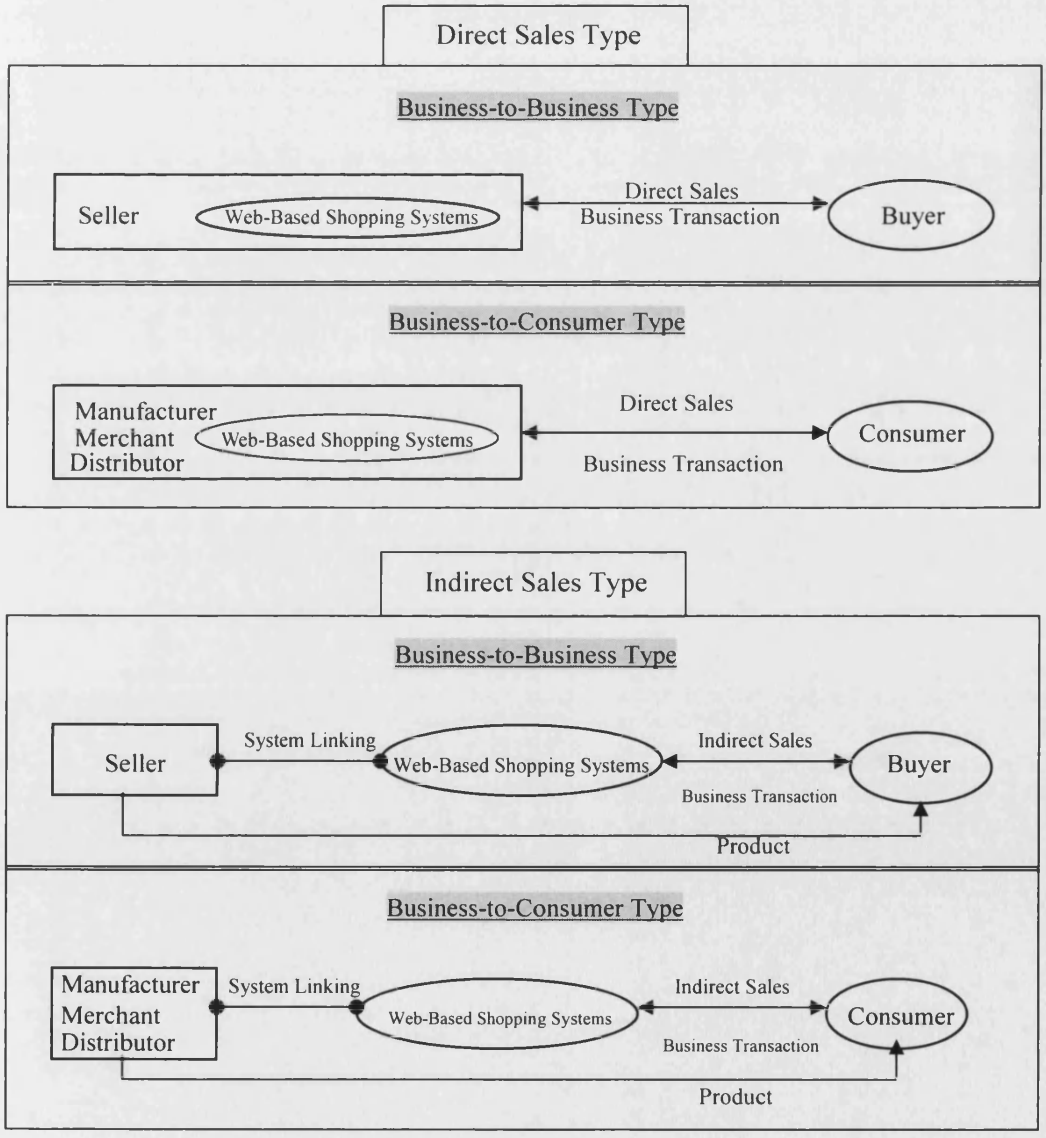

Figure 5-1. The Sales Type of Web-Based Shopping Systems

As a real marketing channel, WBSS support two-way sales types between the seller and the customer. One is a direct-sales type of Internet business, which is directly responsible for a guarantee of quality and delivery for the sales products (Adelaar, 2000; Peppers and Rogers, 2002). The other type is related to indirect sales, and is indirectly responsible for a guarantee of quality and delivery for sales products (Peppers and Rogers, 2002). That is, the indirect sales type relays business transactions between the manufacturer, merchant, distributor and consumer (Turban et al., 2000).

Another distinguishing factor of WBSS is the type of product being sold via this medium. In line with this, Ticoll et al. (1998) suggest two categories of value integration: high-value integration and low-value integration. They define high-value integration as the creation and delivery of multiple source component products such as cars and low-value integration like a supermarket as trade in a diverse basket of goods and services. However, these categories are limited to classifying the extent of value integration for all kinds of products sold on WBSS. For example, in the delivery or the trade of digital business products such as drama, movie, music, and software by WBSS, it is difficult to define the degree of their value integration, according to the definition of Ticoll et al (1998).

Therefore, in order to gain a meaningful insight for classifying the different product types sold on WBSS, this study explores the products sold by some well-known dot-com companies. For example, Del.com and Amazon.com are selling products directly to global customers without any intermediaries. However, the product types are different from each other, i.e., Dell.com is selling only a single product such as a computer (www.dell.com), whilst there are multiple products such as books, CDs and software sold by Amazon.com (www.amazon.com). Based on this observation, the product types

sold on WBSS are divided into two groups: single product type and multiple product type, as outlined in Table 5-1.

Table 5-1. Product Type of Web-Based Shopping Systems

Type	Definition	Examples
Single Product	• Single industry product	• Software, CD, Book etc.
	• Unified group image product	• Baby clothes, Sports equipment
Multiple Product	• More than two industrial products and products that are not unified into a group	• Department store products

Firstly, the single product type includes the product of a single industry such as a book, a CD, software, a flower, etc., as well as unified groups of products such as sports equipment, baby clothes and cars. Secondly, the multiple product type includes more than two industrial products, as well as products that are not part of a group of products.

On the basis of the product and the sales type of WBSS, a classification model of WBSS can be developed (see Figure 5-2). In the model, the horizontal axis displays the product type of WBSS, while the vertical axis displays the sales type of WBSS. This research thereby proposes a model which classifies Web-based shopping systems into the following four types: 1) General-Direct-Sales (GDS); 2) General-Intermediary-Sales (GIS); 3) Specialized-Direct-Sales (SDS); and 4) Specialized-Intermediary-Sales (SIS).

Classification Model of WBSS		Sales Type of WBSS	
		Direct sales	Indirect sales
Product Type	Single	SDS	SIS
	Multiple	GDS	GIS

Figure 5-2. A Classification Model of Web-Based Shopping Systems

The general-direct-sales type of WBSS means that the product type is multiple, and product sales are direct. The general-intermediary-sales type is the type of WBSS selling multiple products indirectly. The specialized direct-sales type sells single products directly. The specialized-intermediary-sales type focuses on single products and indirect sales. However, not all WBSS conform to these four types: hybrids are possible. Nonetheless, this model serves as a basic framework of WBSS for analytical purposes.

Although there are various kinds of Internet business models suggested by Timmers (2000), Rappa (2002), and Looney and Chatterjee (2002), these models are broadly categorized for the Internet business generally rather than Web-based shopping per se. The model developed in this chapter is a Web-based shopping oriented model, and includes business functions such as e-shop, e-mall, e-auction, and e-procurement (see Figure 2-4) as well as being a unifying model including two types of e-business such as B-to-B and B-to-C (see Figure 2-4 and Figure 5-1). However, although the research focus was initially limited to B-to-B and B-to-C (ref. section 2-2), this classification model of WBSS can be appropriately applied to the other e-business models such as C-to-C, G-to-C, and B-to-G (ref. Table 2-1), if business transactions such as selling and buying products or service should arise. The intention is to provide a better understanding of WBSS as an enabler of new business and to provide a theoretical foundation for further research into Web-based shopping. In the next section, four cases are introduced in order to demonstrate the characteristics of each type of WBSS in more detail.

5.2.2 Case Analysis of the Four Categories

This section aims to expand our view of WBSS and to explore the four categories of WBSS previously identified. In order to do this, we address four dot-com cases derived

from Web sites, and then attempt to analyze each category based on three kinds of analysis domain, i.e., business configuration, marketing focus and strategy type (Peppers and Rogers, 2002). The dot-coms were selected because they are well-known dot-coms in each type (e.g., Hansolcs.com, Dell.com and Fastparts.com), and by searching Web-sites it seems to be well-matched with a GIS type (ShopNow.com).

5.2.2.1 General-Direct-Sales (GDS)

Hansol CSN is a cyber department store, which does not have any physical shop and sells several kinds of product that are identical to those of an actual department store. Therefore, the product prices in this category are cheap because goods can be sold directly to the customer without a salesperson, and intermediaries such as suppliers can be cut out. In doing so, Hansol CSN can reduce the transaction costs of selling products on WBSS (source: www.hansolcs.co.kr).

Table 5-2. Case Analysis of General-Direct-Sales Type

Case	Analysis Domain	Characteristics	Remarks
Hansol CSN	Business Configuration	• Cyber department store	• Does not have physical stores • Reduces traffic congestion
	Marketing Focus	• One-to-one marketing	• Customer Management DB • Cuts out intermediaries • Reduces transaction cost
	Strategy Type	• Differentiation	• One hundred percent refund • Quick delivery • Membership management

In addition, Hansol CSN provides one-to-one marketing, based on customer management databases that store customer information to analyze their characteristics, needs and preferences. Moreover, Han CSN carries out differentiation strategies such as one hundred percent exchange/refund, quick delivery, membership management and a variety of other services. One hundred percent exchange/refund is a customer

satisfaction system that exchanges or refunds a purchase when a customer is not satisfied. Furthermore, it is claimed that this cyber department reduces traffic congestion and avoids parking difficulties, because it does not have physical stores or car parks, so that customers are directly able to access product information and order from home (source: www.hansolcs.co.kr).

5.2.2.2 General-Intermediary-Sales (GIS)

ShopNow.com is a leading electronic commerce marketing company that helps businesses participate in Web-based shopping. Based on its full suite of e-commerce solutions, ShopNow.com claims that it helps customers and merchants safely and easily buy and sell merchandise online. The ShopNow.com WBSS provides millions of products and services from more than 40,000 merchants. Customers can rapidly and efficiently search the variety of products by comparative shopping functions on ShopNow.com WBSS (source: www.stores.shopnow.com).

Table 5-3. Case Analysis of General-Intermediary-Sales Type

Case	Analysis Domain	Characteristics	Remarks
ShopNow.com	Business Configuration	• Web-based shopping business provider	• Technology outsourcing services • Supports e-business solutions
	Marketing Focus	• Mass-marketing	• 40,000 merchants • Millions of products and services • International marketplace
	Strategy Type	• Global community	• International Business Division • Alliance and partnership

ShopNow.com not only supports technology and outsourcing services to retailers, manufacturers and other businesses, but also launches and manages Web-based shopping systems on their behalf. Shoppers can purchase desired products and services from merchants located around the world. The major strategic option of ShopNow.com

focuses on the global community. Hence, an International Business Division was recently established to expand ShopNow.com into Western Europe and Asia. From North America, this is led by individual divisions, each with a good knowledge of the international marketplace. By pursuing strategic alliances and partnerships in other regions of the world, ShopNow.com is hoping to accelerate its goal of becoming a pre-eminent Internet business service provider worldwide (source: www.stores.shopnow.com).

5.2.2.3 Specialized-Direct-Sales (SDS)

Dell.com is one of the best examples of the specialized direct sales type of WBSS. Dell.com sells computer equipment directly to its customers on the WBSS. Dell.com currently sells more than $14 million in PC products over WBSS each day. Its Web-based shopping business has over 25 million visits per quarter. By the year 2002, the company expects to handle half of all its business, ranging from customer enquiries to orders and follow up services, through the SDS type of WBSS (source: www.dell.com).

Table 5-4. Case Analysis of Specialized-Direct-Sales Type

Case	Analysis Domain	Characteristics	Remarks
Dell.com	Business Configuration	• Specialized direct sales	• Direct sales of computer equipment • Destroys old competitive advantages
	Marketing Focus	• Direct marketing	• More than $14 million each day • Over 25 million visits per quarter • Ease of navigation • Up-to-date state of the art products
	Strategy Type	• Cost	• Dramatic drop in costs • Favourable cash flow • Near-zero inventory

The chairman of Dell.com has claimed that Web-based shopping as a new business model would facilitate a dramatic drop in costs and destroy old competitive advantages.

The advantages of the Dell.com model are claimed to include near-zero inventory, less risk of obsolescence, more state-of-the-art products and a favorable cash flow (Kare-Silver, 1998; Kraemer et al., 2000; Peppers and Rogers, 2002). Since March 1999, Dell.com and Amazon.com have agreed to offer linked cyber shops and provide customized contents for their respective customers. Dell.com and Amazon.com can therefore offer mutual customer services, competitive prices, and ease of navigation (source: www.dell.com; www.amazon.com).

5.2.2.4 Specialized-Intermediary-Sales (SIS)

Fastparts.com trades in electronic components and equipment. Fastparts.com is an e-commerce systems provider that enables electronic manufacturers to deliver trading exchange, auction and shopping venues. The company provides an Internet based trading exchange and marketplace for the electronics manufacturing and assembly industry, as the leading business-to-business provider (source: www.fastparts.com).

Table 5-5. Case Analysis of Specialized-Intermediary-Sales Type

Case	Analysis Domain	Characteristics	Remarks
Fastparts.com	Business Configuration	• Specialized business-to-business WBSS	• Trades in electronic components • Internet auction • Shopping venues for electronic manufacturing
	Marketing Focus	• Specialized mass-marketing	• Selling $140 billion in electronic parts • $100 million in manufacturing equipment
	Strategy Type	• Partnerships	• Membership management

Fastparts.com WBSS has sold $140 billion in electronic parts and hundreds of millions of dollars in manufacturing equipment. Fastparts.com serves as a 'spot market' where OEMs, contract manufacturers, distributors, and part makers buy and sell electronic

parts at market-driven prices, providing franchised supply service. In addition, FastParts.com periodically offers various inventories to sell its members' products via an Internet auction. Auctions are pre-announced to all members, and bidding is generally open for two or three days. Though anyone can use the FastParts.com shopping architecture to access information on parts, price and availability, the actual bidding, buying or selling of parts requires membership. There is no charge to become a member. All members must agree to abide and be bound by the FastParts.com operating rules and protocols (source: www.fastparts.com).

5.3 Distinguishing Characteristics of the Four Categories

We can analyze the distinguishing characteristics of the four categories of WBSS as follows. Firstly, the relationship between seller and WBSS is examined. For example, some sellers are themselves owners of the WBSS, whilst others are a lessee or brokerage within the WBSS (Darcy, 1999; Bichler, 2001; Looney and Chatterjee, 2002). The second focuses on the number of sellers (Turban et al., 2000; Timmers, 2000). The third considers product type (Kare-Silver, 1998; Peppers and Rogers, 2002), and the fourth, the responsibility of guarantee for the product sold (Turban et al., 2000; Peppers and Rogers, 2002). Based on these analyses of each type of WBSS, a suitable firm that is well-matched with the four types of WBSS is suggested (Kare-Silver, 1998; Turban et al., 2000). Next, we illustrate the strength of the four types of WBSS (Looney and Chatterjee, 2002). An attempt is then made to analyze the strategy type of each WBSS, in accordance with the strategic options suggested by Wiseman (1985). These are: differentiation, cost, innovation, growth and alliance. Differentiation is defined as making a distinction between product and service in comparison to a competitor's. Cost is a competitive advantage that is achieved through an increase in competitors' costs, or a decrease in one's own cost. Innovation is the act that renovates the product or the service. Growth is achieved through product variety, the expansion of marketing areas,

and the increase in the number of business transactions. Alliance gains competitive advantage through firms joining together, inter-organisational agreements, and joint investment. Finally, we consider critical success factors to continuously maintain the competitive advantage of the four types of WBSS. Critical success factors (CSF) are defined as "the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organisation" (Rockart, 1979). According to the eight analysis domains defined above, detailed characteristics of four types of WBSS are investigated.

5.3.1 General-Direct-Sales (GDS)

The general-direct-sales type is applicable to direct sales and multiple products. This type uses the WBSS to sell many products that are identical to those of an actual department store. As can be seen in the Hansol CSN case, this type is itself an owner of the WBSS as well as the only seller, selling several kinds of products to multiple buyers throughout the world. The GDS type is therefore directly responsible for the guarantee of the product sold.

As seen in the Hansol CSN case, these types of WBSS are in keen competition with each other. Therefore, a differentiation strategy will be well-matched with this type, with a view to gaining a competitive advantage through differentiation of service or product, in comparison to other competitor WBSS.

The strength of the GDS type is that it provides a cyber warehouse which needs less initial investment expense and staff requirement, in comparison to actual department stores. Therefore, the GDS type can not only make high profits due to a reduction in maintenance and other costs, but it can also solve traffic and parking problems, because customers do not need to leave home to go shopping.

The CSF of this type of WBSS are achieved by utilizing customer information and by having a creative design of WBSS (Conklin and Tapp, 2000). Firstly, the application of consumer information increases customer satisfaction, which itself facilitates a successful competitive advantage of this type. This is because utilizing customer information can reduce a customer's search time, through a quick response of product and service based on the customer database accumulated by Web-based shopping (Timmers, 2000). Secondly, customers indicate that they prefer new and attractive features of WBSS, which create a feeling of shopping at a real department store. Thus, this type of WBSS needs a creative design based on the latest information communication technology (ICT); such as virtual reality, multimedia, being three dimensional and intelligent agents (Timmers, 2000). For example, multimedia and virtual reality types of architecture are able to present the customer with an interesting experience, somewhat similar to shopping at real department stores.

5.3.2 General-Intermediary-Sales (GIS)

The general-intermediary type of WBSS is suitable for indirect sales and multiple products. This type includes many shops such as book stores, computer shops, gift shops, wine stores, sports stores, and so on. This type of WBSS sells customers various kinds of products via several different cyber shops.

In the case of ShopNow.com, there are many sellers dealing in several types of products for a variety of customers in the global electronic market. These sellers are lessees within the GIS. Thus, the GIS itself has an indirect responsibility for products sold, because individual sellers within the GIS are directly responsible for the products.

This type of WBSS provides a strategic opportunity to small- and medium-sized enterprises, which are faced with a shortage of funds, human resources and technical expertise in comparison to larger companies. This is because this type of WBSS allows relatively easy and low-cost entry of small- and medium-sized enterprises into Web-based shopping business areas. Namely, those small- and medium-sized companies that have never carried out traditional online business can undertake Internet business thereby extending their marketing territory (Timmers, 2000).

The strength of the GIS type of WBSS is that it provides various cyber malls that customers can choose according to their needs and preferences. This kind of selective buying can serve as a major attraction to customers, as compared to other types of WBSS. However, it is important for shops within GIS to maintain a high quality of products and services, because this can influence customer satisfaction, which in turn affects the successful diffusion of GIS.

Other types of WBSS cannot establish the variety of shops, nor provide the range of products that the GIS type can, due to limited capability such as systems management, operating costs and human resources. Therefore, GIS has a competitive advantage over other types of WBSS, and has a greater capacity for growth, through its ability to provide a diversity of products, a high quality service, and many kinds of shops. Thus, the most suitable strategy for the GIS would appear to be a growth strategy.

As seen in the ShopNow.com case, there are many shops and varieties of products within the GIS type. When customers visit this type of WBSS to make a purchase, they can have difficulty in finding the product best suited to their preference. Therefore, by providing a comparative shopping function based on intelligent search engines (Schubert et al., 1998; Timmers, 2000), the GIS type of WBSS can support the

customer in finding the best priced or highest quality products without spending considerable time searching for several cyber stores. Thus, the CSF of this type of WBSS is its effective comparative shopping function, which in turn will increase its advantage.

5.3.3 Specialized-Direct-Sales (SDS)

The specialized-direct-sales type is a specialized WBSS dealing with direct sales and single products. As can be seen in the case of Dell.com, the seller is identical to the owner of the SDS system. Thus, the seller is a single seller as well as an owner of the SDS type of WBSS. As a result, the SDS itself bears direct responsibility for the product sold.

This type of WBSS provides opportunities for global marketing to manufacturing companies and smaller shops, which have limited capital and business resources. For example, manufacturing companies can sell products directly to the customer without any intermediary. Also, this WBSS type will help smaller shops to become 'giants of marketing', competing with giant corporations, because physical size is not an important factor in determining market strength.

The strength of the SDS type lies in its ability to provide a specialized cyber shop. Organisations that have limited resources can efficiently focus their capabilities in selling a specialized single product. The initial stage of Dell.com is a major example of this type of application.

The SDS type needs to concentrate on a cost strategy, as in the case of Dell.com, since it is necessary to maintain low prices for specialized products, in comparison to other types of WBSS, which sells various kinds of products. Through the lowered cost of selling products, these kinds of WBSS will have a competitive advantage against general types of WBSS.

A CSF for the SDS type of WBSS is specialization. The focus is on one top priority out of service, cost, quality or speed related to the Web-based shopping business, in order to have a competitive advantage with other WBSS. In addition, people are under considerable time constraints in this day and age. If customers discover that this type of WBSS makes it easier to purchase the hard-to-find-products they prefer (Hoffman et al., 1996), customer satisfaction is likely to increase. This is a major advantage of this type of WBSS.

5.3.4 Specialized-Intermediary-Sales (SIS)

This type of WBSS sells single products indirectly. This type of WBSS can be thought of as the basic level of a virtual organisation that links people, assets and ideas to create and distribute products and service (Laudon and Laudon, 2000; Introna, 2001). This is because buyers and sellers can negotiate and trade products, services and information in real-time, based on a specialized-intermediary-sales shopping architecture.

As can be seen in the case of Fastparts.com, there are many sellers, selling a single product, within SIS. These sellers take on the role of broker. Thus, the SIS type itself has an indirect responsibility for the product sold, because individual sellers within the SIS type of WBSS are directly responsible for the product guarantee.

The SIS architecture can offer a significant opportunity for auction market, in particular, and acts as an intermediary between seller and buyer. Therefore, the SIS type needs to be kept up-to-date to provide the most recent data on products and services, because companies may want to access the latest information related to their market.

The strength of the SIS type of WBSS is that it plays the role of cyber agent, able to support business-to-business electronic commerce. Its role as cyber agent between businesses is a basic form of virtual organisation, because the key attribute of a virtual organisation is strategic alliances or partnering (Introna, 2001).

As can be seen in the Fastparts.com example, the successful diffusion of this type of WBSS will depend on alliances and tight co-ordination with various WBSS. Therefore, an alliance strategy is well matched with this type of WBSS in order to gain a competitive advantage, because firms can negotiate directly with each other and trade products and services with other types of WBSS.

The CSF at play here is risk management. For example, this WBSS type mediates business transactions between businesses, so that the SIS type requires strong risk management against electronic fraud or theft that can occur in business-to-business transactions (Palmer et al., 2000). If the SDS type reduces the risk associated with Web-based shopping, customers will trust this architecture to provide a safe and secure service. Such trust can lead to a strong competitive advantage for the SDS type in comparison to other architectures.

5.4 Summary

In these relatively early days of electronic commerce, WBSS are offering organisations new opportunities to undertake Web-based shopping around the world. However, in

spite of this, many WBSS are disappearing from the Internet business world, whilst other organisations such as eBay.com, Amazon.com, and Tesco.com, are growing in global electronic markets, providing a new business model. Successfully utilizing and upgrading WBSS to survive in the e-business world is still far from easy, apparently. Hence the need for research of the kind described here.

WBSS are diffusing rapidly across national boundaries. A growing number of companies are taking advantage of WBSS by selling products, services and information, ranging from groceries to department stores, from SMEs to large firms, and from young organisations to established organisations. WBSS not only increase the ability of organisations to trade with customers, but also offer firms a new opportunity to reach millions of global clients worldwide. In addition, WBSS have the potential to radically change the way businesses interact with their customers. The traditional roles of manufacturers, distributors and suppliers are blurring as a result of WBSS. Within the Web-based shopping environment, customers should be the ultimate winners, because they can quickly compare products and prices from a global range of seller faster and more easily than ever before, putting them in a better bargaining position.

Given this as background, this research has attempted to develop a classification model of WBSS and to analyze the characteristics of four types of WBSS. In building this model, we have classified WBSS into the following four types: 1) general-direct-sales (GDS); 2) general-intermediary-sales (GIS); 3) specialized-direct-sales (SDS); and 4) specialized-intermediary-sales (SIS). The classification model provides what is hoped to be a useful theoretical background for further studies of WBSS.

This chapter has analyzed the major characteristics of the four types of WBSS utilizing appropriate examples from practice. As a result of this analysis, specific characteristics are synthesized in Table 5-6.

Table 5-6. Characteristics of the Four Types of WBSS

Analysis Domain	Types of WBSS			
	GDS	GIS	SDS	SIS
Seller Character	• Owner	• Lessee	• Host	• Brokerage
Seller Number	• Single	• Multiple	• Single	• Multiple
Product Type	• Multiple	• Multiple	• Single	• Single
Guarantee of Product Sold	• Direct	• Indirect	• Direct	• Indirect
Suitable Firm	• Department Store	• Small-medium Enterprise	• Shop • Manufacture	• Auction
Strength	• Cyber Warehouse	• Cyber Malls	• Cyber Shop	• Cyber Agent
Strategy Type	• Differentiation	• Growth	• Cost	• Alliance
CSF	•Dynamic information •Creative development of WBSS	• Diversification • Support of comp-arative shopping	• Specialization • Easy buying of hard-to-find product	• Connection • Risk Management

As shown in Table 5-6, the four kinds of WBSS have different characteristics, with each having their own strengths and weaknesses as an enabler of new business. As such, the development of new business processes, strategic planning, and system architectures should be necessary for success. The characteristics of the four categories of WBSS provide insight for researchers investigating new research subjects related to Web-based shopping and Internet business, and potentially helpful guidelines for practitioners seeking ways to gain sustainable advantages over their competitors from e-business.

However, since this research is an exploratory study on WBSS, the number of cases analyzed to explain each type is limited. Therefore, it may be fruitful for further research to analyze more cases to test the utility of the proposed model, in particular focusing on certain types of WBSS architecture. In addition, there are like to be some examples that do not fit the four types of WBSS identified. For example, Amazon.com is well known as a specialized book-selling dot-com company. However, Amazon.com

is actually selling other products such as CDs, software and so on. Thus, it is necessary to be cautious in applying the model.

We can now recapitulate the main points of this research. This study marks one of the first steps in a new research area within the field of WBSS. It has attempted to demonstrate the key characteristics of WBSS by identifying:

- What types of WBSS exist.
- How each type of WBSS enables new business for electronic commerce.
- What CSF is effective for each of the four type of WBSS identified.
- What strategic options are available in WBSS diffusion.

It is hoped that this groundwork, and the subsequent results generated by the study, can provide both theoretical and practical contributions. From the theoretical perspective, this study proposes a model of WBSS classification and characteristics of four types of WBSS. It can therefore be utilized in research related to Web-based shopping and electronic commerce by providing theoretical basis for further study. From the practical perspective, since organisations around the world are interested in the Internet business, there is hope that this study will pave potential guidelines for organisations looking for appropriate ways of undertaking Web-based shopping business.

Finally, based on a wide-ranging analysis of the four type of WBSS, our knowledge and understanding of the phenomenon of WBSS diffusion has been much upgraded. This background understanding of WBSS enables us to derive a meaningful and solid research model in chapter 6. Furthermore, the classification model suggested in this chapter will be used as a theoretical framework for examining the systemic implications related to the WBSS strategic planning. On this basis, the following chapter is devoted to dealing with the process of developing the research model.

Chapter 6. Towards a Research Model of WBSS Diffusion

6.1 Introduction

Business on the back of Web-based shopping systems (WBSS) appears to be revolutionizing the way customers and organisations interact, independent of the temporal and spatial constraints associated with traditional forms of business. In addition, WBSS appear to offer new opportunities for organisations, in the form of increased market access and information, decreased operating and business costs, providing high-quality products, rapid service, and greater shopping convenience to customers and businesses. However, as we have seen, some e-businesses, so called dot-coms, are vanishing beyond the Internet business while others succeed. What makes organisations thrive in the Web-based shopping business, while others fail? Only limited research has been undertaken in this field of interest that takes into account the global phenomenon of WBSS diffusion.

As stated, WBSS are network systems that connect customers, businesses, suppliers, collaborators and even competitors, enabling organisations to conduct new digital business not undertaken previously (Korper and Ellis, 2000). WBSS are thus creating a new digital infrastructure that can integrate economic, social activities, commerce, entertainment and education. The extent of WBSS diffusion is, however, different in various organisational circumstances (Korper and Ellis, 2000; Arlitt et al., 2001), due to differences in organisational capability, financial resources, and Internet technical expertise. For example, some WBSS carry out their business transactions with customers, based on a simple Web site, while well-known dot-coms such as Amazon.com, eBay.com and Tesco.com incorporate their WBSS applications into payment systems, security systems, certification systems, supply chain management systems, customer relation management (CRM) systems and so on.

As discussed already in chapter 2, WBSS are different from traditional information systems. Therefore, it is inappropriate simply to apply mechanistically previous ICT diffusion models (ref. chapter 3), when studying the diffusion of WBSS. Thus, the goals of this chapter are to present a detailed research model of WBSS diffusion, identifying fundamental factors related to WBSS diffusion specifically. That is, based on the conceptual research framework developed from data obtained by the review of previous ICT diffusion research (ref. Figure 3-1), this study attempts to modify earlier research results in order to identify the research variables that may facilitate and can explain the phenomenon of WBSS diffusion. The research model is used to develop a set of hypotheses that will drive the empirical work in assessing the diffusion of WBSS in different national contexts. Since little comprehensive research has been undertaken, the research model presented in this chapter may be a step towards developing a growing body of research for the Web-based shopping and electronic commerce.

6.2 Research Variables

This research will form a backdrop for further research on WBSS and electronic commerce, by investigating new fundamental variables that are closely related to WBSS diffusion. In order to do this, and related to the conceptual research framework (see Figure 3-1), this chapter identifies research variables that may influence the process leading to the diffusion of WBSS. As can be seen from the conceptual research framework illustrated in Figure 3-1 at the end of chapter 3, there are five categories of variables: one category of dependent variables and four categories of independent variables. On the basis of this theoretical background, firstly dependent variables (that may measure the extent of WBSS diffusion), and then four categories of independent variables (that may facilitate WBSS diffusion), are identified.

6.2.1 Dependent Variables: Extent of WBSS Diffusion

6.2.1.1 Observation

WBSS link organisations with clients such as customers and businesses via the Internet (Arlitt et al., 2001). According to Korper and Ellis (2000), WBSS are global-oriented network systems which consist of back-end systems, Web-servers and front-end clients, as illustrated in Figure 6-1. It appears that the extent of WBSS diffusion seems to depend on three major domains: organisations running the WBSS application, the clients such as customers and businesses accessing WBSS, and the WBSS itself carrying out global Web-based shopping. On the basis of this observation, the dependent variables are thus measured from three perspectives: the organisation, the customer and the systems.

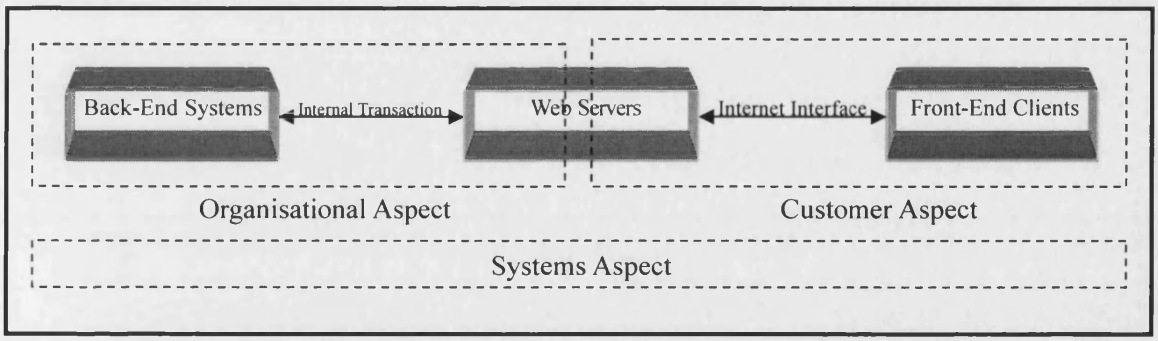

Figure 6-1. Extent of WBSS Diffusion (Korper and Ellis, 2000)

6.2.1.2 Operationalization

In order to measure the extent of WBSS diffusion in terms of 1) the extent of WBSS access from the perspective of the customer, 2) the extent of internal usage of the WBSS within the organisation, and 3) the extent of integration of the WBSS application in systems terms, these variables need to be operationalized.

First, the extent of WBSS access by customer refers to how widely the WBSS is accessed by the customer for Web-based shopping: for example, the extent of usage by customers (Heikkila et al., 2001; Slyke et al., 2002; Looney and Chatterjee, 2002), the extent of the growing number of business transactions on WBSS (Korper and Ellis, 2000; Arlitt et al., 2001; Looney and Chatterjee, 2002), and the extent of services used by customers (Baty and Lee, 1995; Heikkila et al., 2001; Slyke et al., 2002).

Second, the extent of internal usage of WBSS shows how diversely WBSS is used by internal users within an organisation: for example, the degree of internal usage of the WBSS for communication purposes (Koufaris et al., 1999; Korper and Ellis, 2000), the degree of information sharing on WBSS within the company (Salam et al., 1999; Korper and Ellis, 2000; Tiwana and Ramesh, 2001), and the degree of improvement in communications after using the WBSS (Salam et al., 1999; Korper and Ellis, 2000; Tiwana and Ramesh, 2001).

Third, the extent of integration of the WBSS application is likely to vary between WBSS. For example, some organisations are running WBSS based on payment systems and database systems, whilst others are carrying out Web-based shopping transactions based on security systems, intelligent agents technology, supply chain management systems, customer relation management (CRM) systems and so on. Therefore, the extent of integration of the WBSS application may be measured by evaluating the following: the degree of integration with various other systems such as payment mechanisms, search engines, security systems, and Intranet systems (Jutla et al., 1999, Korper and Ellis, 2000; Papazoglou, 2001); the extent of use of the WBSS application as compared to competitors in the same industry (Choi et al., 1998; Korper and Ellis, 2000; Kampas, 2000), and the degree of integration with other system applications such as such as supply chain management systems, customer relationship management systems, or certification systems (Rachlevsky-Reich et al., 1999; Fraternali and Paolini, 2000; Korper and Ellis, 2000; Kampas, 2000).

Table 6-1. Operationalization of Dependent Variables

Aspect	Description
• **Customer**	**Extent of WBSS Access by Customer:** • the extent of usage by customers • the extent of the growing number of business transactions • the extent of the services used by customers
• **Organisation**	**Extent of Internal Usage of WBSS:** • the degree of internal usage of WBSS for communication • the degree of information sharing on WBSS within the company • the degree of improvement in communications after using the WBSS
• **Systems**	**Extent of Integration of WBSS Application:** • the degree of integration with various other systems such as payment mechanisms, search engines, security systems, and Intranet systems • the extent of use of WBSS application as compared to competitors in the same industry • the degree of the integration with other system applications such as supply chain management systems or CRM systems

6.2.1.3 Survey Items

This study extends this earlier research by deriving survey items for the extent of WBSS diffusion based on the above conceptual suggestions. In particular, measurement scales are developed, as follows:

- **Extent of WBSS Access by Customer:**

(1) WBSS are frequently used by customers.

(2) The number of transactions on WBSS is growing.

(3) Services provided by WBSS are extensively used by customers.

- **Extent of Internal Usage of the WBSS:**

(4) Internal staff of our company use the WBSS for communication.

(5) The WBSS have encouraged sharing of information within our company.

(6) Our company has seen an improvement in communications after using the WBSS.

- **Extent of Integration of WBSS Application:**

(7) Our WBSS are integrated with various other systems such as payment mechanisms, search engines, security systems, and Intranet systems.

(8) The level of our WBSS application is high compared with competitors in our industry.

(9) Our WBSS are highly coupled with other application systems such as supply chain management systems, customer relationship management systems, or certification systems.

In this section, the dependent variables – the extent of WBSS diffusion – are operationalized and associated survey questioned are developed. On this basis, this research attempts to examine whether the four classes of independent variables are related to the extent of WBSS diffusion. In line with this, according to Pries-Heje (2002; 128), "diffusion begins after the initial resistance offered by the consumers is overcome ... if the resistance is too high, the innovation dies and there is no diffusion." Even though many dot-coms collaped early in 2000, the diffusion of Web-based shopping business and electronic commerce is continuous (Porter, 2001; Feeny, 2001; Howcroft, 2001; Rifkin and Kurtzman, 2002; Pinker et al., 2002; Looney and Chatterjee, 2002). Based on this observation, this research will propose the research hypotheses in the positive perspective in terms of WBSS diffusion. Four categories of independent variables – external market, external technical, internal organisational, and internal system factors – are discussed below.

6.2.2 External Market Factors

Whereas initially the Internet was perceived as a source of information for researchers, it has now become the fastest growing market place for global business (Riggins, 1999; Mahadevan, 2000; Watson et al., 2000; Porter, 2001). As mentioned in the literature

review, WBSS can enable organisations to create a global electronic market for selling and buying products, information and services. Therefore, external market factors are critical elements that could be expected to affect WBSS diffusion. Several market variables identified in previous research include customer concerns, a customer-oriented view, business partnerships, competitive pressure, frequent access by customers, customer support and so on (Krcmar and Lucas, 1991; Bouchard, 1993; Auger and Gallaugher, 1997; Loh and Ong, 1998; Sheng et al., 1998; Rai et al., 1998). However, this study attempts to introduce new variables, because the external market factors are one of the distinguishing elements in the WBSS diffusion model. Thus, digital business is selected as one of the notable variables that have not been clarified in IS research to date (Tapscott, 1995; Hammond, 1996; Choi and Whinston, 2000, Barua et al., 2000). The global electronic market also appears from recent research on the electronic marketplace (Swaminathan et al., 1999; Nour and Fadlalla, 2000). A factor associated with market dynamism also appears from recent marketing research (Maltz and Kohli, 1996). Finally, a factor associated with customer segmentation arises from recent Internet research (Lee et al., 2000; Baker et al., 2001). These four variables – digital business, global electronic markets, market dynamism and customer segmentation – have not been investigated in the context of WBSS research to date. Therefore, this research will be the first to empirically examine the extent of their impact on the diffusion of WBSS. Each of the variables is explained in more detail below, with hypotheses being identified and operationalized for the purpose of the empirical phase of this research.

6.2.2.1 Global Electronic Markets

1) Observation

Internet technologies are providing global electronic markets which act as an intermediary between seller and buyer, and merchant and customer (Schubert and Selz,

2000; Nour and Fadlalla, 2000). These global electronic markets enable a wide range of seller and customer activities to converge into value-creating activities, including marketing, order processing, distribution, payments and production that involve several separate firms (Strader and Shaw, 1997; Lindemann and Schmid, 1999; Porter, 2001). As a result, "global electronic markets are the foundation of electronic commerce" (Strader and Shaw, 1997; 187), shaped by the high connectivity and interactivity of Internet technologies (Dutta and Segev, 2001). A number of electronic markets are available to customers to buy products ranging from CDs to automobiles (Lindemann and Schmid, 1999; Nour and Fadlalla, 2000). WBSS enable firms to provide global electronic markets in diverse business ranges, such as auction houses, stock exchanges, retailers, digital products and so on. Thus, WBSS diffusion will be positively affected by the degree of expansion of global electronic markets in the industry. Based on this observation, the following hypothesis is proposed:

2) Hypothesis

H1: The extent of the expansion of the global electronic markets within an industry is positively related to the extent of WBSS diffusion.

3) Operationalization

Global electronic market factors are measured by the following: the extent of the expansion of electronic commerce in an industry, as compared to other industries (Corbitt, 2000; Chircu and Kauffman, 2000; Kshetri and Dholakia, 2002); the extent of the expansion of Internet commerce with other organisations in an industry, as compared to other industries (Poon and Swatman, 1999; Timmers, 2000); the extent of the expansion of Web-based shopping with customers in an industry, as compared to other industries (Jones and Vijayasarathy, 1998; Nour and Fadlalla, 2000; Elliot and Fowell, 2000), and the extent of the expansion of WBSS applications in an industry, as compared to other industries (Korper and Ellis, 2000; Arlitt et al., 2001; Looney and Chatterjee, 2002).

4) Survey Items

Based on the above conceptual suggestions proposed earlier by various researchers, it is possible to extend their work by developing a number of items that may be used in the survey to measure the global electronic market for particular industries as follows:

(1) The amount of electronic commerce generally within our industry is quickly expanding, as compared to other industries.

(2) Internet commerce with other firms within our industry is quickly expanding, as compared to other industries.

(3) Web-based shopping by customers within our industry is quickly expanding, as compared to other industries.

(4) The number of WBSS applications within our industry is quickly expanding, as compared to other industries.

6.2.2.2 Digital Business

1) Observation

"The fact that images, sounds and words can be stored in bits and bytes makes it possible to transfer them in seconds, from one place to another, even if they are thousands of miles apart" (Van Hout and Bekkers, 2000; 200). Organisations can deliver digital business products such as news, literary works, images, music, information, books, magazines, movies, electronic games and software on WBSS anytime, and given the availability of the necessary technological infrastructure, anywhere in the world. Thus, it has been argued that digital business is turning the commercial world upside down (Tapscott, 1995; Hammond, 1996; Barua et al., 2000; Ba et al., 2002). For example, UK Yalplay.com is selling a range of CDs, minidisks, videos, DVDs and computer games online (www.yalplay.com). Furthermore, digital product companies like Yahoo, eBay, and America Online offer content and services directly over WBSS (Barua et al., 2000). Some companies provide intangible services

such as consultation, counselling and advice online (e.g. www.uk.andersen.com). Thus, digital business via WBSS is recognised by many companies as an enabler of new business opportunities. This is because "digital business not only takes advantage of the digitization of the market mechanism, but also the distribution mechanism, resulting in very low transaction costs" (Strader and Shaw, 1997; 196). As such, the degree of digital business in an industry will positively influence the extent of WBSS diffusion. Based on this observation, the following hypothesis is proposed:

2) Hypothesis

H2: The extent of digital business within an industry is positively related to the extent of WBSS diffusion.

3) Operationalization

According to Timmers (2000), we can classify digital business into two groups: 1) 'doing business' through digital products; and 2) 'supporting business' through digital information. Based on this classification, this study focuses on measuring digital business from the first perspective – 'doing business'. This is because the first perspective is closely matched with the characteristics of WBSS as a global maketing channel. In other words, this research measures the extent of the expansion of the digital business transaction (Strader and Shaw, 1997; Timmers, 2000; Van Hout and Bekkers, 2000), the increase in the quantity of digital business products (Bakos and Brynjolfsson, 1999; Timmers, 2000; Gallaugher et al., 2001), the growth of digital business and the size of digital business within an industry (Strader and Shaw, 1997; Timmers, 2000; Ba et al., 2002), as compared with other industries.

4) Survey Items

Based on the above operationalizations, this study develops survey items, according to the conceptual suggestions provided by Strader and Shaw (1997), Bakos and Brynjolfsson (1999), Timmers (2000), Van Hout and Bekkers (2000), Gallaugher et al.

(2001), and Ba et al. (2002), it being noted that they did not provide an associated measurement scale.

(1) Digital business transactions within our industry are increasing, as compared with other industries.

(2) The quantity of digital business products within our industry is increasing, as compared with other industries.

(3) The amount of digital business trade within our industry is growing, as compared with other industries.

(4) Firms doing digital business within our industry are expanding, as compared with other industries.

6.2.2.3 Market Dynamism

1) Obesrvation

Market dynamism is "the rate of change in customers' preferences and competitors' actions" (Maltz and Kohil, 1996; 52). Companies acting in dynamic markets need to follow changes in their markets more frequently than firms in relatively stable markets (Fisher et al., 1997). For example, a company's products and services are likely to require speedy modification in dynamic markets, such as the apparel industry where customers' preferences may change considerably (Homburg et al., 1999). Recently, Internet technologies have changed the means by which customers and organisations interact, such as setting new business processes, reducing transaction costs, improving customer relationships and providing new business opportunities (Gebauer et al., 2000; Rosen and Howard, 2000). In order to cope with today's real time Web-based shopping activities, organisations need to quickly identify and respond to customer needs and changing market conditions, according to Lindroos (1997), Iyer and Gupta (2000), and Elliot and Fowell (2000). As an enabler of new business, WBSS have distinguishing advantages in meeting various customer preferences, a global market and competitor

information quickly. As such, these characteristics of WBSS appear to facilitate organisations in dealing with changing customer preferences, competitors' actions and dynamic market environments. Thus, it can be argued that the extent of market dynamism in an industry will positively influence the extent of WBSS diffusion. Based on this observation, the following hypothesis is proposed:

2) Hypothesis

H3: The extent of the market dynamism within an industry is positively related to the extent of WBSS diffusion.

3) Operationalization

The market dynamism factor is measured by the following items adapted from Maltz and Kohil (1996): the extent of change in competitor's products; the extent of change in customer preferences in product features; the extent of change in competitors' selling strategies; the extent of change in competitors' advertising strategies; and the extent of change in the price customers expect to pay.

4) Survey Items

Thus, market dynamism can be measured by five items which this study has adopted from Maltz and Kohil (1996):

(1) Competitors' products quickly change in the industry which our company belongs to.

(2) Customer's preferences for product features quickly change in the industry which our company belongs to.

(3) Competitors' selling strategies quickly change in the industry which our company belongs to.

(4) Competitors' advertising strategies quickly change in the industry which our companys belong to.

(5) The prices customers expect to pay change quickly in the industry which our

company belongs to.

6.2.2.4 Customer Segmentation

1) Observation

"One of the key characteristics of the e-business world is that companies will inevitably move more and more into a customer-centric paradigm in order to increase competitiveness" (Papazoglou, 2001; 71). "Customer segmentation is of paramount importance to marketers because it helps better understand their shoppers and their needs" (Lee et al., 2000; 21). Customer segmentation includes knowing target customers, their characteristics, their Web-based shopping activities and their shopping expectations such as timeliness, customization and accuracy (Miller, 2000; 93). Recently, "many companies' Web sites try to be all things to all people, with the result that nobody is satisfied" (Siegel, 2000; 26). Therefore, it is important to know who the customers are, who is accessing or will access the WBSS. For example, Fastparts.com's target customer is the electronic manufacturing industry, whilst Babyplanet.com is focusing sales on baby clothes. A detailed evaluation and understanding of target customers can enable organisations to establish an appropriate marketing strategy, with the expectation of giving them a competitive advantage. Thus, it can be argued that WBSS diffusion will be positively affected by a profound understanding of customer segmentation. Based on this observation, the following hypothesis is proposed:

2) Hypothesis

H4: The extent of target customer segmentation within a global electronic market is positively related to the extent of WBSS diffusion.

3) Operationalization

The extent of the customer segmentation can be measured by the following items: the

degree of segmentation of target customers in the global electronic market (Miller, 2000; Peppers and Rogers, 2002); the degree of awareness of characteristics of target customers in the global electronic market (Miller, 2000; Peppers and Rogers, 2002); the degree of understanding of Web-based shopping activities of target customers in the global electronic market (Lee et al., 2000; Slyke et al., 2002), and the degree of understanding of customer expectations of Web-based shopping in the global electronic market (Miller, 2000; Lee et al., 2000; Slyke et al., 2002).

4) Survey Items

The survey items related to customer segmentation, based on the conceptual suggestions offered by Miller (2000), Lee et al. (2000), Peppers and Rogers (2002) and Slyke et al. (2002) help to provide an actual measurement scale for customer segmentation that was previously missing. They are:

(1) Our company focuses on detailed target customers in the global electronic market.

(2) Our company is aware of the characteristics of target customers in the global electronic market.

(3) Our company understands Web-based shopping activities of target customers in the global electronic market.

(4) Our company understands customer expectations of Web-based shopping in the global electronic market.

6.2.3 External Technical Factors

ICT innovation diffusion is "a form of technological change that is shaped by the characteristics of information and information processing" (Monk, 1987). So, ICT innovation diffusion may produce "not only a dramatic shift in the technological base of modern societies but a dramatic social revolution as well" (Halal, 1993). Therefore,

external technical factors are likely to have a significant influence on the conversion from organisational information systems to global WBSS. Before the Internet was used as a commercial channel, the external technical factors that were most often studied in ICT diffusion research were compatibility, relative advantage and complexity (Tornatzky and Klein, 1982; Moore and Benbaset, 1991; Rogers, 1995; McMaster et al., 1997). However, this research focus has changed since around mid 1990, with the emergence of the Internet and electronic commerce. For example, there are some kinds of external technical factors, which are different from those identified previously, such as network performance, telecommunication infrastructure, marketing efforts by IT vendors, technology innovation and availability of Internet payment applications (Premkumar et al., 1994; Rai et al., 1998; Foo and Hui, 1998; Press et al., 1998; Santos and Peffers, 1998; Corbitt, 2000; Storey et al., 2000; Standing and Vasudavan, 2000). This is because Internet technologies are an example of technology innovation that facilitates new and innovative activity at the individual, organisational and social levels (Wigand, 1997; Nambisan and Wang, 1999). Therefore, it might be expected that such external technical factors will affect the extent of WBSS diffusion, given the global orientation of WBSS networks.

On the basis of these observations, the factors associated with trialability (Rogers, 1995) and feasibility (Laudon and Laudon, 2000) are chosen for examining their influence on WBSS diffusion. This is because it seems that organisations based on globally-oriented network systems, such as WBSS, need to test the availability of Internet technology before making large scale investments. Furthermore, interactivity and connectivity are chosen from recent Internet business research (Dutta and Segev, 2001; 7), because these two variables seem to explain the characteristics of Internet technology very well. The three variables – interactivity, connectivity and feasibility – will be empirically examined in terms of their impacts on WBSS diffusion – aspects that have not been examined in this

context until now. The rationale for these variables is provided in the following section.

6.2.3.1 Interactivity

1) Observation

Internet technologies are providing interactive applications that can be customized for multiple purposes and audiences (Laudon and Laudon, 2000; Looney and Chatterjee, 2002). Interactivity of Internet technology relates to its real-time and online nature. This enhances the richness of customer relationships and creates new paradigms of customer service and product selling between organisations and customers, according to Dutta and Segev (2001; 7). One good example of the interactivity of Internet technology is that it is possible for businesses to create Web sites that will allow them to entice customers to participate in the e-business experience. The buyer and seller on WBSS could increase interactions through interactive Internet technologies such as Web sites, e-mail, Internet chat-rooms and Web conferencing (Hoffman et al., 1996; Laudon and Laudon, 2000). This kind of global interactivity of Internet technologies is less prevalent with previous generations of ICT. Thus, the high interactivity of Internet technologies is positively to influence the extent of WBSS diffusion. Based on this observation, the following hypothesis is proposed:

2) Hypothesis

H5: The extent of perceived interactivity of Internet technologies is positively related to the extent of WBSS diffusion.

3) Operationalization

Interactivity is measured by the degree to which Internet technology can interact with global customers online. Thus, the intention of this research is to measure this

interactivity by examining how partipants in the survey subjectively perceive the extent of interactivity of Internet technology (Vijayasarathy and Jones, 2001; Essler and Whitaker, 2001). For example, WWW is an indispensable piece of technology for any WBSS. Thus, the intention of this study is to measure this interactivity by the degree to which a Web site can interact with global customers online (Dutta and Segev, 1999; Pramataris et al., 2001).

4) Survey Items

The survey items for interactivity are develped on the basis of the above conceptual suggestions proposed by Dutta and Segev (1999), Pramataris et al. (2001), Vijayasarathy and Jones (2001), and Essler and Whitaker (2001), as follows:

(1) Our company perceives that Internet technology enhances the richness of customer relationships online.

(2) Our company perceives that Internet technology enables our organisation to provide better customer service online.

(3) Our company perceives that Internet technology allows our organisation to entice customers to participate in the e-business experience.

(4) Our company perceives that a Web site is good technology to interact with global customers online.

(5) Our company perceives that a Web site will increase interactivity with customers online.

(6) Our company perceives that a Web site allows our organisation to reach new customers online.

6.2.3.2 Connectivity

1) Observation

Connectivity is "the ability of computers and computer-based devices to communicate

with one another and to share information in a meaningful way without human intervention" (Laudon and Laudon, 2000; 276). The open nature of Internet technology is promoting connectivity that fosters the creation of a global market space (Dutta and Segev, 2001; 7). Furthermore, various kinds of WBSS based on TCP/IP would be able to communicate, even if based on different hardware and software platforms (Korper and Ellis, 2000; Arlitt et al., 2001). "The radical increase in connectivity enabled by the Internet technology is giving rise to new communication and co-ordination mechanisms both across organisations and customers, and also with groups of customers themselves" (Dutta and Segev, 1999). The Internet's global connectivity provides WBSS with links directly to customers, business partners or even competitors. Based on these observations, the following hypothesis is proposed:

2) Hypothesis

H6: The extent of perceived connectivity of Internet technologies is positively related to the extent of WBSS diffusion.

3) Operationalization

WWW is one of the essential technologies for WBSS. Connectivity can be measured by the degree to which one Web site based on TCP/IP can be connected to another or to any information systems without any intervention (Korper and Ellis, 2000; Arlitt et al., 2001). On this basis, this study will measure connectivity by investigating the ways in which survey participants perceive the extent of connectivity of Internet technology (Dutta and Segev, 1999; Laudon and Laudon, 2000).

4) Survey Items

This study develops survey items based on the above operationalizations in terms of the connectivity of Internet technology (Dutta and Segev, 1999; Laudon and Laudon, 2000; Korper and Ellis, 2000; Arlitt et al., 2001) as follows:

(1) Our company perceives that Internet technology will promote connectivity to communicate with different hardware and software platforms.

(2) Our company perceives that Internet technology will increase new communication and co-ordination mechanisms both across organisations and customers.

(3) Our company perceives that Internet technology will provide our organisation with links to suppliers and business partners.

(4) Our company perceives that our Web site can be easily connected to another without any intervention.

(5) Our company perceives that our Web site can be easily connected to any information systems without any intervention.

6.2.3.3 Feasibility

1) Observation

"Internet technology provides better opportunities for companies to establish distinctive strategic positionings than did previous generations of information technology" (Porter, 2001; 64). Although Internet technologies have a potentially valuable capability, their feasibility is important and should be considered by organisations when adopting them (Perkowitz and Etzioni, 2000). Feasibility in this context has been defined as "the degree to which a proposed Internet technology can be implemented with the existing hardware, software, and technical resources" (Laudon and Laudon, 2000; 348). For example, if Internet technologies have technical characteristics that incorporate within existing network protocols and multiple hardware platforms, this will facilitate further adoption. Therefore, it is reasonable to expect that the extent of WBSS diffusion would be positively affected by the extent of feasibility of Internet technologies with existing

IS/IT infrastructure. Based on this observation, the following hypothesis is proposed:

2) Hypothesis

H7: The extent of perceived feasibility of Internet technologies is positively related to the extent of WBSS diffusion.

3) Operationalization

Feasibility will be measured by the degree to which the Internet technology can be implemented with the existing hardware, software, and technical resources (Laudon and Laudon, 2000). As mentioned previously, WBSS consists of several kinds of Internet technologies and systems. Among them, WWW is indispensable to WBSS. Therefore, feasibility will be measured by the degree to which a WWW can be implemented with the existing hardware, software and technical resources (Laudon and Laudon, 2000; Perkowitz and Etzioni, 2000).

4) Survey Items

The survey items to measure the feasibility variable are developed based on the above conceptual definition suggested by Laudon and Laudon (2000), and Perkowitz and Etzioni (2000):

(1) Our company perceives that the Web site could be easily implemented with the existing hardware environment.

(2) Our company perceives that the Web site could be easily implemented with the existing software environment.

(3) Our company perceives that the Web site could be easily implemented with the existing technical resources.

(4) Our organisation perceives that Web site development is a simple process.

6.2.3.4 Trialability

1) Observation

Trialability is the degree to which a new technology may be experimented with on a trial basis (Rogers, 1995). Organisations evaluate Internet technology in terms of whether the investment is effective or beneficial before making a large scale investment (Karahanna et al., 1999). If Internet technology has high trialability due to the small capital investment and low technical expertise required, it may be expected to affect the extent of WBSS diffusion. For example, by using Web browsers, organisations can easily build simple Web sites in order to test the possibility of Internet business. If there is this possibility, they can upgrade simple Web sites to WBSS by adding a payment system, a database system, a security system and so on. Therefore, it can be argued that high trialability of Internet technologies will positively facilitate the extent of WBSS diffusion. Based on this observation, the following hypothesis is proposed:

2) Hypothesis

H8: The extent of perceived trialability of Internet technologies is positively related to the extent of WBSS diffusion.

3) Operationalization

Trialability is measured by the degree to which the Internet technology can be trialed (Rogers, 1995). For example, a Web site is a common Internet technology of WBSS. Trialability is therefore measured by the degree to which a Web site can be trialed before the establishment of WBSS.

4) Survey Items

As Karahanna et al. (1999) measured trialability by examining Windows technology, the questions from that study are adapted for this research. Thus, trialability is measured in the following way:

(1) Before deciding on whether or not to adopt WBSS, our organisation would be able to use the Web site on a trial basis.

(2) Before deciding on whether or not to adopt WBSS, our organisation would be able to properly try out the Web site to check the possibility of Internet business.

(3) A Web site is useful to test what it can do for Internet business on a trial basis.

6.2.4 Internal Organisational Factors

Organisational factors are regarded as an important antecedent in the literature on information systems (Swanson, 1994; Tabor, 2000). For a long time, researchers have tried to explain what kinds of factors shape the organisational use of ICT (e.g. Zmud, 1982; Brancheau and Wetherbe, 1990; Grover and Goslar, 1993; Belassi and Fadlalla, 1998; Cheung and Lee, 2000). In this context, research on organisational factors considers the structure and processes of an organisation that might facilitate the diffusion of ICT. In previous research, several kinds of organisational factors have been defined: perceived ease of use, trustworthiness, executive sponsor, organisational commitment, top management support, internal communication, education, organisation culture, corporate strategy, experimenting with a new marketing tool and so on (Brancheau and Wetherbe, 1990; Romm et al., 1996; Auger and Gallaugher, 1997; Loh and Ong, 1998; Belassi and Fadlalla, 1998; Cheung and Lee, 2000; Corbitt, 2000; Standing and Vasudavan, 2000). While such variables have been identified from previous research on internal organisational factors, they are limited in explaining a global phenomenon of WBSS diffusion adequately, simply because it is a global phenomenon. Thus, it will be valuable if our research attempted to explain WBSS diffusion according to factors more relevant to Web-based shopping business and electronic commerce. On the basis of this observation, e-business planning is chosen from recent electronic commerce research (Kalakota and Robinson, 1999; Korper and Ellis, 2000). Risk management (Cule et al., 2000) is selected from the latest research on Internet systems

projects. Customer service quality is selected as a factor to investigate its effect on WBSS diffusion from recent Internet commerce research (Korper and Ellis, 2000; Elliot and Fowell, 2000; Liu et al., 2000). Knowledge intensity is selected for study from recently conducted IS research on IT-intensive value innovation (Davenport and Klahr, 1998; El Sawy et al., 1999). The three organisation factors – e-business planning, risk management and knowledge intensity – are empirically tested for the first time in IS research in this study. The reasons for the choice of these variables are based on the following.

6.2.4.1 E-business Planning

1) Observation

According to the Times European Top 500 survey, many organisations have failed to realize e-business as more than simply computerization or a way to electronically enable commerce (Bicknell, 1998). "E-business must be approached with the core components of selling products and services, providing customer support and service, marketing, sales, and communication with distributors, suppliers and other trading partners" (Korper and Ellis, 2000; 232). This is because e-business is not only an IT function, but also a critical element of organisations' core business (ibid.; 235). "E-business planning fills the gap between strategic planning and application and provides a common language that executives from marketing, information technology, and manufacturing can all understand" (Kalakota and Robinson, 1999; 334). Therefore, as organisations initiate e-business, it is advisable for them to consider every aspect of it: e-business models, business processes, strategic planning, organisational culture, relationships with customers and suppliers, new kinds of system architecture, ICT adoption and so on (Bicknell, 1998; Kalakota and Robinson, 1999; Laudon and Laudon, 2000; Huang, 2001). Thus, it might be expected that the extent of WBSS diffusion will be positively affected by the degree of e-business planning adopted by an organisation. Based on these observations, the following hypothesis is proposed:

2) Hypothesis

H9: The extent of e-business planning of an organisation is positively related to the extent of WBSS diffusion.

3) Operationalization

According to the above observations, e-business planning is measured by the following items: the extent of planning for electronic commerce of organisation generally (Schunter et al;., 1998; Papazoglou and Tsalgatidou, 1999; Corbitt, 2000; Rifkin and Kurtzman, 2002); the extent of planning for new Internet business (Werbach, 2000; Porter, 2001; Rifkin and Kurtzman, 2002); the extent of strategic planning needed to successfully establish e-business projects of organisation (Kalakota and Robinson, 1999; Corbitt, 2000); the degree of information systems planning for new Internet system adoption of an organisation (Bergeron and Raymond, 1997; Raghunathan and Mardey, 1999; Hackney et al., 2000); the degree of Internet system development planning whether in-house or outsourced (Raghunathan and Mardey, 1999; Pant, 2000), and the degree of planning for further upgrades of the Internet system (Raghunathan and Mardey, 1999; Jutla et al., 1999).

4) Survey Items

This study develops the following survey items to measure e-business planning based on the above conceptual foundations provided by several researchers, as follows:

(1) Our company undertakes strategic planning to successfully establish e-business projects.

(2) Our company has e-business planning for WBSS.

(3) Our company undertakes planning for new Internet business.

(4) Our company fomulates information systems planning for new Internet system adoption.

(5) Our company establishes further upgrade plans for WBSS.

6.2.4.2 Risk Management

1) Observation

WBSS are being established at a rapid rate across national boundaries. However, along with the various potential benefits, there are several associated risks, such as penetration by hackers, fraudulent business transactions, electronic theft or payment fraud, false information and Internet privacy (Cranor, 1998; Weinstein and Neumann, 2000; Bhatnagar et al., 2000). For example, the European Union launched the European Data Protection Directive to prohibit EU member countries from sending personal data to other countries that lack adequate Internet privacy protection (Cranor, 1998; 14). According to Bhatnagar et al. (2000), there are two types of risk in the case of Web-based shopping activities. One is product category risk, which is associated with the product itself. "The risk is greatest when the product is technologically complex" (ibid.; 99). The other is financial risk, which is associated with the Internet as a purchasing medium per se, rather than the consequences of purchasing particular goods. For example, "consumers are quite apprehensive about communicating credit card information over the Internet because it puts the consumer at risk of losing money via credit card fraud" (ibid.; 100). Therefore, it would appear that the stronger the action taken against risk related to Web-based shopping activities, the more customers' use of WBSS will positively increase, thus influencing the extent of WBSS diffusion. Based on this observation, the following hypothesis is proposed:

2) Hypothesis

H10: The extent of risk management related to Web-based shopping is positively related to the extent of WBSS diffusion.

3) Operationalization

As can be seen from the above observations, there are many kinds of risk related to WBSS. Among them, based on Bhatnagar's notion of Web-based shopping risk, this

research measures the degree of risk management from two perspectives: product category risk and financial risk (Bhatnagar et al., 2000). Product category risk will be measured by the degree of risk management for the selling of products, information or services (Kare-Silver, 1998; Bhatnagar et al., 2000), and the degree of a quality guarantee for all sales products (Kare-Silver, 1998; Bhatnagar et al., 2000). Financial risk will be measured by the degree of authentication and secure mechanisms for payment on WBSS (Loshin, 1995; Kalakota and Whinston, 1996; Tang et al., 2001); the degree of a plan to cope with financial risks such as credit card fraud (Loshin, 1995; Senecal, 2000; Bhatnagar et al., 2000); the degree of prevention of intentional or accidental fraud related to Web-based shopping (Senecal, 2000; Bhatnagar et al., 2000; Tang et al., 2001).

4) Survey Items

Risk management is measured by the following survey items which this study develops, according to the above operationalization, as follows:

(1) Our company deals with risks relevant to the selling of products, information or services.

(2) Our company provides a quality guarantee for all sales products.

(3) Our company provides authentication and secure mechanisms for payment on WBSS.

(4) Our company maintains a plan to cope with financial risks such as credit card fraud.

(5) Our company prevents intentional or accidental fraud related to Web-based shopping.

6.2.4.3 Customer Service Quality

1) Observation

It has been argued that there is a need to provide qualitative customer service in Web-based shopping as a prerequisite for succeeding in e-commerce (Kare-Silver, 1998; Elliot and Fowell, 2000; Liu et al., 2000). The major complaint of Web-based shoppers has been reported as being that shopping is troublesome due to lack of customer service (Elliot and Fowell, 2000). According to recent research, Web-based shoppers were dissatisfied because of unfulfilled expectations, malfunctions in the Web site, unsatisfactory responses from site staff and the like (ibid.; 329). In order to improve customer service, new approaches to customers are being attempted (Laudon and Laudon, 2000). For example, technology is being used to generate e-mail messages offering thanks and asking about the shopping experience, following a purchase on WBSS (Korper and Ellis, 2000; 42). Furthermore, collecting feedback from customers and measuring customer satisfaction regarding customer services is apparently more important than with traditional information systems, according to Lindroos (1997) and Kalakota and Robinson (1999). Thus, it is argued that by providing a high quality service to their customers, WBSS loyalty will be cultivated among Web-based shoppers and will lead to competitive advantage through repeated purchases. Thus, we might expect that the degree of customer service quality will positively affect the diffusion of WBSS. Based on this observation, the following hypothesis is proposed:

2) Hypothesis

H11: The extent of customer service quality is positively related to the extent of WBSS diffusion.

3) Operationalization

According to the above observation, customer service quality is measured by the following: speedy responses to customers (Liu et al., 2000); assurances in solving customers' problems (Liu et al., 2000); the degree of empathy with customers' problems (Liu et al., 2000); the extent of providing follow-up services to customers (Liu et al., 2000); the extent to which customers' information is kept confidential (Liu et al.,

2000), and e-mail messages offering thanks and asking about the experience of purchasing (Kare-Silver, 1998).

4) Survey Items

Customer service quality is thus measured by six items. The initial five items are adapted from Liu et al. (2000), while the other one is developed from Kare-Silver (1998):

(1) Our organisation provides a quick response to customers.

(2) Our organisation provides assurance to solve customers' problems related to Web-based shopping.

(3) Our organisation empathises with customers' problems related to Web-based shopping.

(4) Our organisation provides follow-up services to customers.

(5) Our organisation provides an e-mail message offering thanks and asking about the experience of purchasing products to customers.

(6) Our organisation keeps customers' information confidential.

6.2.4.4 Knowledge Intensity

1) Observation

Knowledge is now recognized by many as the core productive and strategic asset of the organisation for competive advantage (Eriksson and Dickson, 2000). Furthermore, "the speed of new knowledge creation and knowledge transfer across markets and enterprises becomes a key determinant of enterprise success in an environment which is fast, discontinuous, and volatile" (El Sawy et al., 1999; 307). Thus, it is argued that the success of an organisation depends on its ability to gather, produce, maintain, and disseminate knowledge (Eriksson and Dickson, 2000; Laudon and Laudon, 2000). Internet technology has emerged as a valuable tool which deals more easily and quickly

with the creation, storage, process dissemination, and sharing of information and knowledge than previous ICT applications, according to Barua et al. (2000) and Holsapple and Seda (2000). Therefore, "the introduction of electronic commerce is linked to the emergence of new forms of knowledge and knowledge transfer that are critical to the structure and operation of the electronically reconfigured network of relationships that constitute transactions" (Bolisani et al., 1999; 53). "Electronic commerce is itself centered on the innovative transfer of knowledge in a network of transacting organisations" (ibid.; 66). Thus, it can be expected that the extent of WBSS diffusion will be positively affected by the degree of knowledge intensity in organisations adopting WBSS. Based on this observation, the following hypothesis is proposed:

2) Hypothesis

H12: The extent of knowledge intensity in an organisation is positively related to the extent of WBSS diffusion.

3) Operationalization

It would appear that it is difficult to measure the extent of different kinds of knowledge intensity within an organisation. This is because the degree and type of knowledge within organisations is likely to vary widely across different organisations. However, it is clear that WBSS encompasses Internet-based applications with the overall goal of providing sales and services to the customer in global electronic markets. Therefore, it can be seen that knowledge related to the market and customer are important elements in the research of Web-based shopping. Recently, Li and Calantone (1998) have proposed key determinants of a firm's knowledge resources such as customer knowledge, market knowledge and competitor knowledge. This definition is useful in measuring the degree of knowledge intensity within an organisation relevant to WBSS diffusion. Thus, this study attempts to measure the degree of knowledge intensity, based on the three key determinants of a firm's knowledge resources addressed by Li and

Calantone (1998): 1) the degree of customer knowledge, 2) the degree of market knowledge, and 3) the degree of competitor knowledge.

4) Survey Items

Knowledge intensity is measured by using the survey items developed by Li and Calantone (1998), as follows:

Degree of Customer Knowledge

(1) Our knowledge of customer needs is thorough.

(2) We regularly process and analyze customer information.

(3) We fully understand our customers' needs and wants.

Degree of Market Knowledge

(4) Our company continuously collects and learns about market trends and change.

(5) We regularly use research procedures, e.g. personal interviews, focus groups and surveys to gather market information.

(6) Our company has a high level of market knowledge related to Internet business.

Degree of Competitor Knowledge

(7) Our company regularly collects and analyzes information about our competitors.

(8) Our knowledge of our competitors' strengths and weaknesses is thorough.

6.2.5 Internal System Factors

Internal system factors are related to the change management issues associated with a move from more traditional information systems to WBSS, and are relevant to the efficient management of new Internet technology adoption (Keen et al., 1999; Korper and Ellis, 2000). In previous Internet systems literature reviews, a number of variables of internal system factors have been identified. These include the real value of a new system, computing resource, system architecture and techniques, the quality of a system, and extent of online-processing (Liang, 1986; Krcmar and Lucas, 1991; Grover and

Teng, 1992; Loh and Ong, 1998; Foo and Hui, 1998). These variables are related to previous generations of information systems such as EDI. As mentioned previously, WBSS are different from such systems. Thus, it is not appropriate simply to apply the preceding variables to WBSS research. Therefore, we attempt to explore the validity of additional variables that can explain and reflect the phenomenon of WBSS diffusion. On the basis of these observations, the usability factor is identified from recent Internet research (Iyer and Gupta, 2000). Issues of security management for WBSS are chosen from recent electronic commerce literature (Gupta et al., 1998; Keen et al., 1999; Korper and Ellis, 2000). Internet technology adaptability (Lazzaro, 1994; Cline and Girou, 2000; Perkowitz and Etzioni, 2000) is selected from Internet research. Network infrastructure is selected from recent electronic commerce research (Kalakota and Whinston, 1996; Barua et al., 2000). These four internal system factors – usability, security management, Internet technology adaptability and network infrastructure – are to be tested in terms of their impact on WBSS diffusion for the first time in IS research. The chosen reasons for each of the variables selected for futher investigation in this research are based on the following observations.

6.2.5.1 Usability of WBSS

1) Observation

While traditional information systems have been oriented to back-end applications, supporting value-chain processes within organisations, WBSS focus on customer friendly front-end applications supporting e-business across national and international business boundaries (Korper and Ellis, 2000; Gebauer and Segev, 2000). In order to reflect this reorientation, Web designers are advised to consider the customer more than ever before when designing information systems, as argued by Lindroos (1997) for example. As more and more companies establish different kinds of Web-based shopping applications, the usability of systems is thus one of the most important issues

Web developers need to address (Iyer and Gupta, 2000; 257). This is because one of the key success factors of WBSS can be judged to be the usablity of WBSS access on the part of customers. The major elements of usability include good navigation, content quality, easy procedures, location transparency, positive customer experience and so on (Iyer and Gupta, 2000; Elliot and Fowell, 2000). In order to provide better designs and applications related to the customer interface, it is necessary to understand several fields including human factors, graphic design and cognitive science (Rumpradit and Donnell, 1999). Hence, launching a successful Web-based shopping presence requires careful design and structured skills reflecting the needs and goals of targeted customers (Rumpradit and Donnell, 1999). Therefore, it can be argued that better usability of WBSS will provide significant benefits, such as increased customer access, which will in turn positively influence WBSS diffusion. Based on this observation, the following hypothesis is proposed:

2) Hypothesis

H13: The extent of usability of WBSS is positively related to the extent of WBSS diffusion.

3) Operationalization

Based on the above, usability of WBSS is measured by the following items: the extent of well-organized hyperlinks of WBSS (Liu et al., 2000); the extent of customized search functions of WBSS (ibid); the degree of provision of customized help function for WBSS (ibid); the extent of the checking for the broken links of Web-based shopping sites (Lindroos, 1997; Teng et al., 1999), and the extent of content management of WBSS to attract customers (Lindroos, 1997; Rumpradit and Donnell, 1999; Iyer and and Gupta, 2000; Gebauer and Segev, 2000).

4) Survey Items

Usability is thus measured by five items. The initial three items are adapted from Liu et

al. (2000), while the other two are developed from other literature (Lindroos, 1997; Teng et al., 1999; Rumpradit and Donnell, 1999; Iyer and Gupta, 2000; Gebauer and Segev, 2000).

(1) Our WBSS provide well-organized hyperlinks.

(2) Our WBSS provide customized search functions.

(3) Our WBSS provide a customized help function.

(4) Our WBSS regularly check for broken links of Web-based shopping sites.

(5) Our WBSS manage content in an efficient way.

6.2.5.2 Security Management

1) Observation

According to Backhouse and Dhillon (1999; 2), "security management holds the key to success or failure of a company's well-being in light of the turbulent future and the existing competitive trends faced by the organisations". "Security management deals with all the security and data integrity constraints on organisational information and services" (Gupta et al., 1998; 60). Security infrastructure consists of technical methods such as encryption, digital signatures, secure electronic traction (SET), virus prevention and firewalls (Loshin, 1995; Kalakota and Whinston, 1996, Korper and Ellis, 2000). Security management is becoming one of the principal issues in Web-based shopping activities for both customers and sellers (Korper and Ellis, 2000; Elliot and Fowell, 2000; Joshi et al., 2001). For example, customers do not want to expose their information and transmit insecure payment for Web-based shopping transactions. Also, sellers should be protected against computer hackers, viruses or other forms of network intrusion which can have a detrimental effect and can shut down their system. Thus, when Internet technologies for e-commerce are adopted or when existing solutions are selected, the following security management issues should be considered (Kare-Silver,

1998; 162): personal privacy, message security and general regulation. Based on these observations, the following hypothesis is proposed:

2) Hypothesis

H14: The extent of security management of an organisation is positively related to the extent of WBSS diffusion.

3) Operationalization

Measurements of the extent of security management have not been carried out in previous ICT innovation diffusion research thus far. Based on the above observation, security management is measured by the following: the degree of security management on personal privacy (Kare-Silver, 1998; Calkins, 1998; Otto and Chung, 2000; Li et al., 2000); the degree of security management on message security (Ghosh, 1998; Kare-Silver, 1998; Calkins, 1998); the degree of security management on general regulation and control (Halbert, 1997; Gupta et al., 1998; Ghosh, 1998; Otto and Chung, 2000), and the degree of security management on credit card transactions (Ghosh, 1998; Otto and Chung, 2000).

4) Survey Items

The survey items for security management are developed on the basis of conceptual suggestions provided by the above researchers, remembering that they did not provide an actual measurement scale for security management in their research:

(1) Our WBSS provide security management of customer privacy or customer data.
(2) Our WBSS carry out security management of message security such as encryption or digital signatures.
(3) Our WBSS deal with security management of general regulation for computer hackers, intruders or viruses.
(4) Our WBSS have firewalls to shield vulnerable areas from any form of danger.

(5) Our WBSS provide secure credit card transactions such as secure electronic traction (SET).

6.2.5.3 Network Infrastructure

1) Observation

A network infrastructure refers to the capabilities of communication networks that help in the sharing of ICT resources within and across the organisational boundaries (Yates and Benjamin, 1991). Electronic commerce needs a network infrastructure to transport multiple types of information (Kalakota and Whinston, 1996; 43). The Internet is the most well-known component of the information network infrastructure, which targets not only one electronic commerce applications such as Web-based shopping or Web-based banking, but a wide range of computer-based services such as information publishing, information retrieval and video conferencing (ibid.; 85). The network infrastructure of an organisation consists of routers, gateways, firewalls, CORBA, leased lines, ISDN, LAN, WAN and Intranet (De and Mathew, 1999; 445). "There is a strong complementary relationship between the network infrastructure, Internet applications and e-commerce" (Barua et al., 2000; 102). Organisations based on a strong network infrastructure can more easily extend their business boundaries to the global marketplace (Laudon and Laudon, 2000). Conversely, a poor network infrastructure will lead to barriers in adopting new Internet technologies or Internet systems. As mentioned previously, WBSS are Internet-based shopping systems for selling and buying products, information, and services. Thus, if organisations have a strong network infrastructure, it can be argued that they will be better able to carry out Web-based shopping transactions with customers in global electronic markets. Therefore, it can be expected that the extent of WBSS diffusion will be positively affected by the degree of network infrastructure within an organisation. Based on these observations, the following hypothesis is proposed:

2) Hypothesis

H15: The extent of network infrastructure within an organisation is positively related to the extent of WBSS diffusion.

3) Operationalization

Based on the above, the network infrastructure of an organisation can be measured by the degree of intra- and inter-firm infrastructure of the communication networks of the organisation: the degree of interconnecting with LAN or Intranet (Loshin, 1995; Kalakota and Whinston, 1996; De and Mathew, 1999; Allen, 2001); the degree of connection with WAN or Extranet (Kalakota and Whinston, 1996; De and Mathew, 1999; Maier, 2000; Allen, 2001); the degree of having routers or gateways as networkware (Loshin, 1995; Kalakota and Whinston, 1996; De and Mathew, 1999); the degree of consisting of network middleware technology such as CORBA (Kalakota and Whinston, 1996; De and Mathew, 1999; Allen, 2001).

4) Survey Items

Measures of network infrastructure have not yet been examined in prior research on ICT innovation diffusion. Thus, this study develops survey items to measure the network infrastructure of an organisation, based on the above operationalization as follows:

(1) Our WBSS interconnect with LAN (local area network) or Intranet.

(2) Our WBSS connect with WAN (wide area network) or Extranet.

(3) Our WBSS have routers or gateways as networkware.

(4) Our WBSS consist of technology such as CORBA (common object request brokered architecture) that mediate transactions between our organisation and outside clients.

6.2.5.4 Internet Technology Adaptability

1) Observation

E-business architecture of the future will need to enable rapid change in order to cope with dynamic business environments according to Evans (1999; 18). Hence, Internet technology adaptability is considered one of the key enablers in establishing Internet business architecture for gaining continuous competitive advantage (Lazzaro, 1994; Evans, 1999; Cline and Girou, 2000; Perkowitz and Etzioni, 2000). Organisations with high Internet technology adaptability normally have a high tolerance for uncertainty and are eager to try out new Internet technology, in comparison with other competitor organisations. For example, successful dot-com companies such as eBay.com, Dell.com and Amazon.com are providing a new business model driven by the innovative application of Internet technologies, as a result of high Internet technology adaptability (Mahadevan, 2000; Barua et al., 2000). Therefore, it can be assumed that the degree of Internet technology adaptability of an organisation will positively affect the extent of WBSS diffusion. Based on these observations, the following hypothesis is proposed:

2) Hypothesis

H16: The extent of Internet technology adaptability of an organisation is positively related to the extent of WBSS diffusion.

3) Operationalization

Internet technology adaptability can thus be measured by the following items: the extent of awareness of recent Internet technology such as agent technology, cyber cash, virtual reality and so on (Cline and Girou, 2000; Korper and Ellis, 2000; Greenstein, 2002); the extent of understanding of the latest trends in new Internet technologies (Lazzaro, 1994; Perkowitz and Etzioni, 2000; Korper and Ellis, 2000; Greenstein, 2002); the extent of an adoption plan for new Internet technology (Lazzaro, 1994; Raghunathan and Mardey, 1999; Perkowitz and Etzioni, 2000), and the extent of adoption of new Internet

technologies (Lazzaro, 1994; Raghunathan and Mardey, 1999; Perkowitz and Etzioni, 2000).

4) Survey Items

This study develops measures of Internet technology adaptability based on the above operationalization as follows:

(1) Our organisation is aware of recent Internet technology such as agent technology, cyber cash, virtual reality and so on.

(2) Our organisation has an understanding of the newest trends in new Internet technologies.

(3) Our organisation has an adoption plan for new Internet technology.

(4) Our organisation generally keeps abreast of the latest Internet technology.

(5) Our company has a tradition for being the first to try new Internet technology.

On the basis of the observations and hypotheses formed in relation to key impact factors and WBSS diffusion, the following section illustrates the detailed research model of WBSS diffusion that is derived. The model will provide a platform for empirical research in different national contexts specifically: the UK and Korea.

6.3 Toward a Research Model of WBSS Diffusion

As a result of the above observations and hypotheses concerning key impact factors and WBSS diffusion, a research model of WBSS diffusion is derived, and is depicted in Figure 6-2.

Based on the earlier conceptual research framework (Ref. Figure 3-1), we identified four groups of factors – external market, external technical, internal organisation and

internal system factors – that may affect the extent of WBSS diffusion were identified. The expected relationships between the four group of factors and WBSS diffusion have already been discussed and proposed in the hypotheses. On this basis, this research model consists of five primary dimensions: external market factors, external technical factors, internal organisation factors, internal system factors and the extent of WBSS diffusion. External market factors consist of global electronic markets, digital business, market dynamism and customer segmentation. External technical factors include interactivity, connectivity, feasibility and trialability. Internal organisational factors contain e-business planning, risk management, customer service quality and knowledge intensity. Internal system factors deal with usability of WBSS, security management, network infrastructure and Internet technology adaptability. Finally, the extent of WBSS diffusion is measured by the extent of WBSS access by the customer, the extent of internal usage of WBSS and the extent of integration of WBSS application.

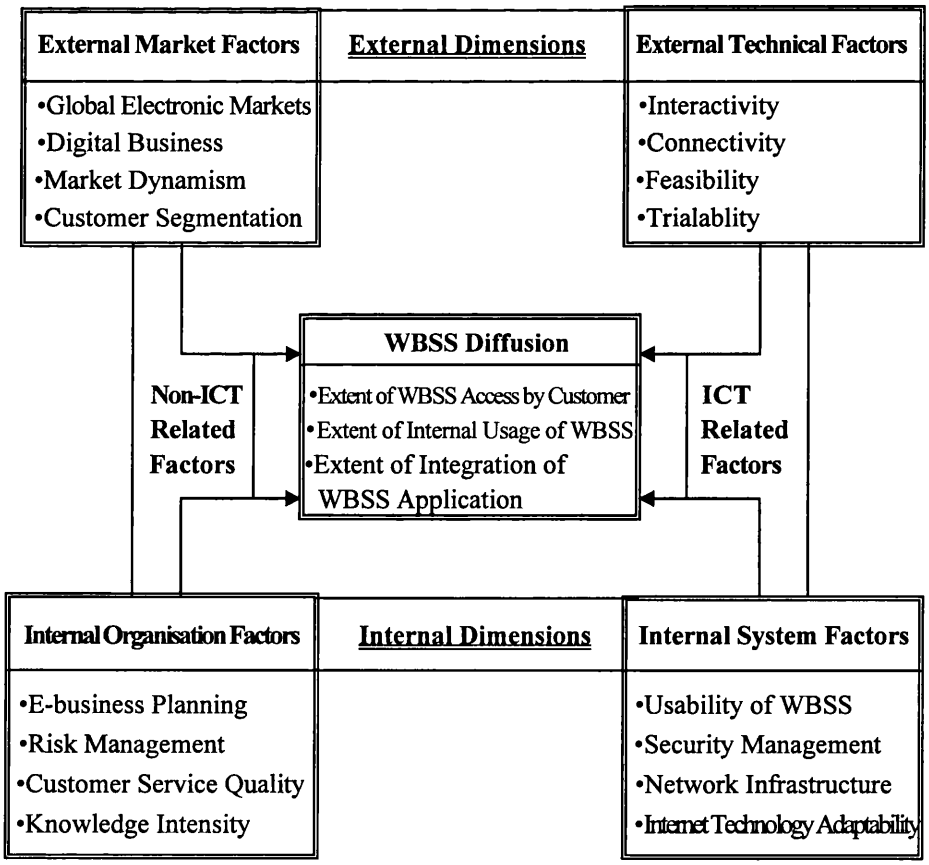

Figure 6-2. Research Model of WBSS Diffusion

Internal organisation and internal system factors are internal dimensions within organisations, whereas external market and external technical factors are external dimensions outside organisations. To put it more concretely, key concerns are the empirical testing of the impact of the four groups factors on the extent of WBSS diffusion and the identification of key driving forces according to the influencing power between internal and external dimensions, as well as ICT and non-ICT oriented factors. Following such considerations as these, this study will analyze the different characteristics of the key impact factors and the key driving forces enabling WBSS diffusion in different national contexts. Therefore, this research model provides a potentially useful starting point in order to investigate the phenomenon of the WBSS diffusion.

6.4 Summary

The major points arising from this chapter, which lead to the derivation of the research model of WBSS diffusion, are as follows. First, as can be seen from previous research, extensive empirical research of WBSS diffusion has not yet been carried out. Research on electronic commerce and the Internet has commenced in many areas; however, much of this research has concentrated on exploratory studies such as the development of conceptual frameworks, rather than empirical research (e.g. Baty and Lee, 1995; Hoffman et al., 1996; Spiller and Lohse, 1998; Nour and Fadlalla, 2000; Arlitt et al., 2001). As a result, it can be claimed that this research model is one of the first that will be used empirically to investigate the factors affecting the diffusion of WBSS.

Table 6-2 provides a means of arranging all the variables identified thus far in relation to previous empirical research concerned with IS generally, IOS, EDI, EC, the Internet and WBSS.

As can be seen in Table 6-2, only three variables, trialability, customer service quality, and usability have been empirically verified in previous IS research. All the other variables have not, as yet, been empirically tested. Thus, this study aims to verify their influence on WBSS diffusion. In so doing, it is hoped that these newly identified variables will provide useful insight and a foundation for further WBSS and electronic commerce research.

Table 6-2. Reference Comparison of Research Variables

Variables \ Research	WBSS	EC	IS, IOS, EDI	Reference
External Market Factors				
• Global Electronic Markets	X	X	X	Strader & Shaw, 1997; Nour & Fadlalla, 2000
• Digital Business	X	X	X	Tapscott, 1995; Hammond, 1996
• Market Dynamism	X	X	X	Maltz & Kohil, 1996; Fisher et al., 1997
• Customer Segmentation	X	X	X	Lee et al., 2000; Papazoglou, 2001
External Technical Factors				
• Interactivity	X	X	X	Dutta & Segev, 2001; Laudon & Laudon, 2000.
• Connectivity	X	X	X	Dutta & Segev, 2001; Laudon & Laudon, 2000
• Feasibility	X	X	X	Laudon & Laudon., 2000; Perkowitz & Etzioni, 2000
• Trialability	X	X	O	Rogers, 1995; Karahanna et al., 1999
Internal Organisation Factors				
• E-business Planning	X	X	X	Kalakota & Robinson., 1999; Korper & Ellis, 2000
• Risk Management	X	X	X	Cranor, 1998; Bhatnagar et al., 2000
• Customer Service Quality	X	O	X	Elliot & Fowell, 2000; Liu et al., 2000
• Knowledge Intensity	X	X	X	El Sawy et al., 1999; Eriksson & Dickson, 2000
Internal System Factors				
• Usability	X	O	X	Lindroos, 1997; Liu et al., 2000
• Security Management	X	X	X	Kare-Silver, 1998; Otto and Chung, 2000
• Network Infrastructure	X	X	X	De & Mathew, 1999; Laudon & Laudon, 2000
• Internet Technology Adoptability	X	X	X	Cline & Girou, 2000; Perkowitz & Etzioni, 2000

O : Variables that have been empirically verified in IS research

X : Variables that have not been empirically verified in IS research

Additionally, this research model provides a balance between internal and external factors. The research model also incorporates ICT and non-ICT related factors. This balance may more appropriately provide a means of analyzing and explaining the diffusion of WBSS, as compared to an unbalanced model (i.e., one that focuses on a single business perspective or technological viewpoint).

Furthermore, until recently, IS research in this context has rarely considered external market factors such as global electronic markets, digital business, market dynamism and customer segmentation. Their incorporation into the research model of WBSS diffusion adds a further distinguishing feature of this research, as compared to previous ICT diffusion research.

A further point to emphasise is that, as a result of the literature review, it became clear that most previous studies have not classified ICT related factors as a distinct subset in a research model, so previous ICT diffusion research merged ICT related factors into environmental, organisational, or ICT innovation factors. However, it would seem appropriate for ICT related factors to be distinguished from other factors, because they will be one of the critical components that organisations should take into account when establishing electronic commerce architecture, as argued by several researchers (e.g., Kalakota and Whinston, 1996; Laudon and Laudon, 2000; Barua et al., 2000; Korper and Ellis, 2000; Load, 2000; Arlitt et al., 2001; Porter, 2001; Looney and Chatterjee, 2002). External technical factors and internal system factors are likely to facilitate the transition from more traditional information systems to global WBSS. Therefore, this study suggests IT related factors – external technical factors and internal systems factors – as one of the critical sets of factors impacting WBSS diffusion.

Moreover, this study has developed survey items to measure the relationship between the sixteen independent variables and the extent of WBSS diffusion. The qualitative data gathered in the interviews at the LSE and with the participant organisations will be

used to test the measures before sending out the survey. These measurement variables provide a theoretical background for further research on new ICT diffusion.

Finally, this study briefly discusses the relative strengths and weaknesses of the factors-based approach chosen. The factors-based approach enables us to provide reliable research findings for some widely divergent issues such as cross-national comparisons. However, this approach also has some weaknesses such as the difficulties of causation and in-depth analysis of research factors. It will be complemented by adding interview data in the discussion of research results.

According to Currie and Galliers (1999; 497), "IS is more fruitfully served when researchers seek to broaden their intellectual horizons by venturing into other disciplinary territories. This will be marked by new thinking on themes and perspectives which are currently emerging. For example, the Internet and electronic commerce offer much scope for future projects within IS research." As can be seen from the research model of WBSS diffusion, research on WBSS needs the broad knowledge acquired by inter-disciplinary research: e.g. marketing, business, organisation, information systems, information systems planning, ICT innovation diffusion, Internet technology, electronic commerce, knowledge management and different national contexts. Based on various areas of study, the research model developed here aims to identify and investigate factors that facilitate the diffusion of WBSS in different national contexts. To this end, a set of hypotheses have been generated. These, however, need to be tested empirically. The hypotheses developed here allow the operationalization of the issues identified.

Although the literature discussing electronic commerce is abundant and growing, few research models of WBSS diffusion are on offer. There is also little empirical research addressing the diffusion of WBSS, especially in different national contexts. It can be claimed that this research model may be useful in gaining a meaningful insight into further research related to WBSS diffusion and electronic commerce more generally. As

a result, a research model of WBSS diffusion, which can provide a theoretical base for further research, may be seen as a useful contribution to this field of study.

Chapter 7 now goes on to describe the procedure used to gather data to enable the hypotheses to be tested, in the context of the research model developed from the foregoing review.

Chapter 7. Data Collection Procedure

7.1 Introduction

As indicated, this research seeks to measure and explore key impact factors that facilitate the diffusion of WBSS in different national contexts. To achieve this, two kinds of empirical research approaches – qualitative interviews and quantitative survey – for both the UK and Korean contexts were carried out. The reason these two countries were chosen for data collection is that this researcher is more familiar with them than with others: Korea as his home country and the UK as the country in which his PhD studies are being undertaken. In addition, as already discussed, the Korean nation's IT infrastructure is well advanced. This chapter discusses the data collection procedure employed to test the research model developed in Chapter 6.

As mentioned in chapter 5, combining qualitative and quantitative methods aims to overcome the limitations of one approach by undertaking the other (Jick, 1979; Creswell, 1994; Gable, 1994; Bryman, 2000; Mingers, 2001). This is often referred to as triangulation (refer to section 4.3.2) and is used in this research to provide further reliability and validity to the research findings.

According to Glaser and Strauss (1967; 162), "the emphasis on using both survey and interviews may rest on a feeling of wanting to see the concrete situation and informants." On the basis of this notion, this research therefore attempted to collect both quantitative and qualitative data to produce reliable findings for this pioneering research on WBSS diffusion. This is because quantitative data based on the survey might enable a researcher to provide generalized findings, while qualitative data based on interviews might expand our practical knowledge of WBSS diffusion, as well as increase our ability to interpret the data collected.

The following section begins with a review of the interview procedure, describing the process carried out to test both the UK and Korean version of the survey instrument and to verify a research model of WBSS diffusion. Section 7.3 describes the procedure for data collection for the quantitative survey for the UK and Korean participators. Finally, a summary of the data collection procedure employed in this research is provided in section 7.4.

7.2 Interview Procedure

As mentioned earlier, to provide valuable findings on WBSS diffusion in the two national contexts, data were collected by means of a quantitative survey and qualitative interviews. Before carrying out the main empirical work, in the first place, interviews were carried out. According to Rubin and Rubin (1995; 1) "qualitative interviewing is a way of finding out what others feel and think about their work." In detail, "interviews aim to gather information about the field before imposing a more precise process of collecting data" (Fielding and Thomas, 2001; 125). To provide a grounding for the empirical phase of the research, interviews were thus carried out with the UK and Korean participants as described below.

7.2.1 Initial Interviews with the UK Participants

According to Simmons (2001; 88), "interviews are used in preliminary research before a survey is carried out in order to develop ideas for questions and to determine what pre-coded answers should be offered in the questionnaire." Initial interviews of this kind were carried out in order to pre-test a preliminary version of the research questionnaire and to verify the research model of WBSS diffusion developed in chapter 6. Thus interviews were carried out within academic circles and with practical practitioners in

relation to electronic commerce and Web-based shopping. Initially, interviews were carried out with LSE staff and PhD students concerned with electronic commerce research and more general information systems, and then with external experts in charge of Web-based shopping businesses. The initial interviews were fairly general in nature, with questions focusing on the initial survey instrument, with the comments related to the research model, and with the opinions of both internal and external reviewers with knowledge of Web-based shopping or electronic commerce generally being sought. A more detailed account of this aspect of the research follows.

About 20 people were selected as potential interviewees at first, chosen from the following sources: experts introduced by acquaintances; PhD colleagues; voluntary participants from the pilot survey (refer to section 7.3.1); and staff at the LSE and other universities. The initial contact was made by personal meeting, telephone or e-mail, after which they were e-mailed to ask whether and when they could be interviewed. In this way, the first interviews were accomplished with 16 internal and external people. Table 7-1 provides a list of interviewees who participated in the first interviews in the UK.

Table 7-1. List of First Interviews for UK Participators

Remarks	Name	Position	Organisation	Date of Interview
Internal Review	Bob Galliers	Professor	LSE	22 November 2001
	Mike Cushman	IT Staff / Research Associate	LSE	26 November 2001
	Andrew Cooke	System Support Staff	LSE	30 November 2001
	Catherine Chu	PhD Student	LSE	30 November 2001
	Frederick Wamala	PhD Student	LSE	5 December 2001
	Prodromos Tsiavos	PhD Student	LSE	6 December 2001
External Review	Ian Brogan	New Business Development Manager	Henry Butcher International	27 November 2001
	William Beckett	Marketing Director	ArmchairTravel.Com	28 November 2001
	Russell Tebay	Technical Associate	TINY Computers Ltd	29 November 2001
	Martin Wright	Managing Director	BumperBrain.Com	3 December 2001
	David Wilson	Lecturer	University of London	4 December 2001

	David Clarkson	Solution Manager	IBM	5 December 2001
	Simon Owen	Partner in IT & Markets	Arthur Andersen	6 December 2001
	Robin Springall	Managing Director	Multimedia.Com	7 December 2001
	Annales Tebay	Marketing Manager	Omron Healthcare Ltd. (UK)	7 December 2001
	Abby Bradley	Marketing Associate	Dialog Corporation	8 December 2001

As can be seen in Table 7-1, the initial version of the questionnaire was reviewed by a number of staff members and doctoral students from the Information Systems department at LSE. Having defined key dependent and independent variables, as described in the previous chapter, a survey instrument was developed to obtain snapshots of the phenomenon of WBSS diffusion. The questionnaire was designed with a number of objectives in mind. The first objective was to gain basic information from sampling organisations as background for WBSS diffusion. A second objective was to gather data to investigate the key impact factors influencing WBSS diffusion in different national contexts. With these aims in mind, the questionnaire was divided into two distinct sections. Part I dealt with general questions related to the organisational and systemic aspects, while Part II dealt with the main survey items relevant to the measurement of key impact factors on WBSS diffusion. Most of the variables described in the model are measured by multiple items on a 5-point Likert type scale. Additionally, a brief statement of the research objectives was provided in a covering letter. The initial draft version of the questionnaire was reviewed for any ambiguity in wording and to identify any new survey items that might arise.

At the same time, an external review of the questionnaire was also carried out by academics from other institutions with an interest in the topic and practitioners in charge of Web-based shopping in companies. The interviewees were asked not only to check the wording and interpretation of questionnaire items, but also to validate a research model of WBSS diffusion (see section 7.2.6). Each interview was conducted in person, and varied in length from 45 minutes to 2 hours and 10 minutes.

At that time, different groups of interviewees gave different comments and suggestions, because of their different knowledge and backgrounds related to Web-based shopping systems. For example, for the most part, academic staff made general comments based on their previous research experience, whilst the PhD students tended to focus more on the wording of survey items. The practitioners made several suggestions for survey items and reviewed the research model, according to their work experience. For example, the managing directors provided meaningful suggestions related to the organisation, market, customer and strategy in line with their experience of Web-based shopping. Technical experts also made useful comments concerning the technical parts of survey items, such as security issues, payment methods, risk management, Internet technologies and so on. During this initial review of the survey instrument, any ambiguity in the wording of questionnaire items was identified and remedied, and new survey items were identified in addition. Table 7-2 provides a summary of these initial interviews for the UK participants. The initial version of the survey instrument is provided in Appendix 1.

Table 7-2. Summary of Initial Interviews with UK Participators

Remarks	Contents
Items Altered	Cover letter : -Mention the research scope in the different national contexts -Elucidation of the provision of summary results on completion
	Change the mark from ( ) to □
	Change mark order from horizontal direction to vertical direction
	Change industry categories to UK standard industry classification (SIC)
	Alter product categories on WBSS
	Alter the range of total number of employees
	Alter the range of the annual turnover of company
	(Before) What technologies to WBSS does your company constitute? (After) What technologies does your company use for WBSS?
	Who developed the WBSS that your company is currently using? (Before) □ Our company only □ Another company □ A third party provider (After) □ In house □ Outsourcing □ Package
	Alter some sentences and wording in all of the impact factors on WBSS diffusion

New Items	How many positions are there between you and the chief executive officer? □ Zero (You are CEO) □ Two □ Four □ Six □ One □ Three □ Five □ Seven
	What functional area do you belong to? (Please tick as many as appropriate) □ Logistics □ Service □ Procurement □ Manufacturing □ IT/IS □ Human Resource Management □ Marketing & Sales □ General Management □ Others (please write:)
	How long have you been involved in Web-based shopping?
	What is your highest educational level? □ A Level (High School) □ HND (2 Year College) □ 3 Year College (University) □ Masters □ PhD □ Others (please write:)
	How many years has your company been involved in Web-based shopping?
	Does your company's WBSS provide comparative shopping functions of the product? □ Yes □ No
	How does your company deliver products sold on WBSS? □ Company Delivery □ Via the Network □ Outsourcing □ Special Delivery Company
	Input two payment mechanisms : □ Direct Debit □ Mobile Phone
	Input new technologies used for WBSS: Wireless technology, Mobility technology
	Cost saving by reducing the work force
	Reduce resources outside home country
	Enhance the reputation or prestige of the organisation
	Provide better products or services to customers
	Input new technology : wireless technology, mobility technology
	Improve information for customer management
	Enable the organisation to respond more quickly to change
	In usability factors, input following survey item: Our WBSS regularly checks the broken links of shopping sites.
	In security management factors, input following survey item: Our WBSS relies on public key encryption such as DES, RSA, SSL, and S-HTTP for Secure Web-based shopping.
Items Deleted	How many years has your company had a Web-based shopping system? (due to duplication)
	One of the factors of usability: Our WBSS offers customer enjoyment in Web-based shopping procedures (due to vague meaning).
	In the factors of global electronic markets and digital business, delete the following sentences: "compared to other industries".
Items Recom-Mended	Recommendation of research on customer attitude or customer activity
	Think over the range of respondents' annual salary
	Recommend Web-based questionnaire on the server of our department at LSE
	Focus on particular products such as digital business products

	Concentrate upon payment systems in more detail.
	Consider the following perspective when national analysis of WBSS diffusion is carried out: · Culture · Infrastructure · Education system · Shopping activity · Language · Government policy

As can be seen in Table 7-2, many survey items were altered, deleted and added. Through these first interviews with UK participants, much relevant information on WBSS was obtained from practical experts and recorded for further data analysis. In particular, some interviewees had looked over the research model and had given their opinions and comments on it. Some meaningful comments relevant for the research model of WBSS diffusion will be provided in section 7.2.6.

7.2.2 The Second Round of Interviews with the UK Participants

After the first round of interviews with the UK participants, a second round of interviews was conducted to enable practitioners to actually fill in the survey items and provide a final check on the wording and survey instrument construction. Furthermore, these second interviews were used to collect information related to the following major concerns: the specific situation of a company's WBSS; interviewees' expectations about Web-based shopping business – both in the present and in the future; further upgrade plans for their WBSS; some comments regarding key impact factors of WBSS diffusion and concerning a research model of WBSS diffusion; the critical success factors in relation to the diffusion of the company's WBSS as they saw them; and any additional recommendations they might have for this research as a whole.

In order to perform this second round of interviews, this research looked for participants who could review and provide useful comments by filling in the survey instrument itself. The enquiry letters were sent to respondents of the pilot survey (refer to section

7.3.1), asking which day was convenient for them to take part in an interview. Unfortunately, it was the Christmas and New Year period and many people were very busy or unavailable at the time. It was therefore not easy to arrange interviews but, in spite of this, interviews were carried out with seven participants. At that time, conversations with them were recorded on cassette tape lasting from about one hour to a maximum of two and half hours. The following Table 7-3 is a summary of this second round of interviews with the UK participants.

The interviewees were asked not only to check the wording and interpretation of questionnaire items, as before, but also to make comments on the research model and the key impact factors they perceived would influence WBSS diffusion, their Web-based shopping business, technical aspects of WBSS, special interests regarding Web-based shopping and so on. As can be seen from Table 7-3, the interviewees in this second round of interviews held very high positions, including four CEOs and one vice president. This reflects the level of interest in this research subject amongst UK business executives. The interviewees were chosen to represent a wide range of industries in order to see whether there were any differences. Industries varied from international firms, gift selling firms, a telecommunication company, a firm in the music business, a health equipment company, a tobacco plantation business and actual dot-coms which do not own shops. The age of the interviewees was evenly distributed from the mid 30s to 60 years of age. The views expressed helped to increase the content validity of the survey instrument and to verify a research model of WBSS diffusion (see section 7.2.6).

Table 7-3. Summary of Second Interviews for UK Participators

Name	Position	Company	Date	Comments
Fiona Osler	CEO	Getethical.com.	12 Dec. 2001	• Suggestion: * Multi-channel marketing strategy • Change a scale of questionnaire * Low and High ⇨ Strongly disagree, Strongly agree.

Ian Brogan	New Business Development Manager	Henry Butcher International	17 Dec. 2001	• Much improved from initial version • Recommend e-mail survey • Consider international legal regulation
Angus Clacher	CEO	Iwantoneofthose.com	20 Dec. 2001	• Specify the annual turnover * Between 1 million & 50 million ⇨ between 1 million & 5 million ⇨ between 5 million & 10 million ⇨ between 10 million & 25 million ⇨ between 25 million & 50 million * Between 100 million & 500 million ⇨ between 100 million & 250 million ⇨ between 250 million & 500 million • Identify the credit card as payment * Visa * Mastercard * Switch * AMEX *Delta * Other
Phil Platts	Director	Protec Health International	20 Dec. 2001	• Check the possibility of e-mail survey
Christopher Gurney	CEO	PlantationHouse.com	27 Dec. 2001	• Suggested a survey item * Special delivery company • Explain: digital business (Part II)
Adrian Burford	CEO	Musica.com	14 Jan. 2002	• Provide following information * Parallel system: 1. Alive system 2. Back-up system * Web-based business via mobile phone • Suggest the check of the invested cost for the WBSS before launch.
John Winchester	Vice President	Avaya UK	17 Jan. 2002	• Recommend the check of transaction number of WBSS per month • Consider people's attitudes between Western and Eastern • Check mobile business on WBSS

Conducting this second round of interviews provided a good opportunity to test the practicalities of conducting the main survey by e-mail and also the likelihood of people responding to the questionnaire. Futhermore, the time required to fill in the questionnaire was checked by respondents. It took on average 25 minutes to completely fill in the survey instrument. Finally, respondents were asked their opinions of the survey items, the wording, and their view of the major impact factors

related to WBSS diffusion. Generally, the participants demonstrated interest in this research project, and expressed their satisfaction with the items, format, wording and structure of the survey instrument, and research model, while providing some additional comments and suggestions (Table 7-3). The questionnaire was modified before each successive interview. The second round of interviews for the UK participants was stopped once the last respondent had no more recommendations for any significant changes.

The interviewees' opinions were thus reflected in the final version of the survey instrument, which is divided into two distinct parts. The first part elicits background information regarding the organisational and systemic aspects of WBSS. The second part contains the measurement items related to the research hypotheses, based on a five point Likert-type scale, ranging from "strongly agree" to "strongly disagree".

Through interviewing a number of participants and visiting their companies, this researcher become better informed about Web-based shopping and related business circles in London. This information would be useful in interpreting the survey data, once conducted. Among them, Musica.co.uk is of considerable interest, because in only three years its WBSS business has achieved an annual turnover of £5 million. Adrian Burford, CEO of Musica.co.uk said "we are breaking a mistaken notion that Web-based shopping business is difficult in the UK." In addition, another interesting interview was carried out with the CEO of Iwantoneofthose.com, which has achieved an annual turnover of £2 million in just two years since they launched their WBSS business. These dot-coms are just two examples of several successful Web-based shopping businesses in the UK. Furthermore, the vice president at Avaya UK, John Winchester, made some useful comments based on his wide knowledge and experience. He lived in Asia for ten years, including a stay in Korea for nine months. Thus, he knows the East very well. He pointed out that "peoples' attitude, legacy, political situation and bureaucracy sometimes hinders WBSS growth in Europe, as Asia is much more progressive." Regarding the

technological infrastructure, he said "Asia has an advantage because Europe has a legacy infrastructure that hinders growth." It seems that his opinion is similar to the report of IDC (Timmers, 2000, 7). These comments provided further impetus to the study in relation to a comparison being made between two countries in very different parts of the world. Thus, through these interviews, this phase of the study gained much practical background, thereby providing useful contextual information for the analysis of the survey data.

7.2.3 The Third Round Interviews with the UK Participants

The third set of interviews were carried out in order to collect specific information for WBSS diffusion for further data analysis. From time to time during the UK survey (refer to section 7.3.4), telephone interviews were carried out with six participants who indicated their willingness to participate. The interviewees were contacted to explain the survey items and were asked for questions pertaining to the circumstances surrounding their WBSS, the key impact factors on WBSS diffusion, their personal opinions regarding this research project, and so on, in brief interviews lasting between a quarter and half an hour. A summary of these additional interviews is shown in Table 7-4.

Among them, Ronan Gruenbaum, a dot-com Web director, mentioned that the survey questions were very pertinent to her business. Her company's WBSS is available in English, French, German, Italian and Spanish, and customers can find the largest music catalogue in Europe with over 420,000 different titles covering all possible styles (www.discoweb.com). She indicated that this kind of multi-language WBSS promotes WBSS diffusion. In addition, Steve Root, managing director of joketown.com expressed interest in this project, indicated that with so many potential systems in existence, this research was akin to "opening a Pandora's box."

Table 7-4. List of Third Interviews for UK Participators

Name	Position	Company	Date
Ronan Gruenbaum	Web Director	Discoweb.com	10 April 2002
Carolyn Prentice	Customer Service Director	Flowershop.com	11 April 2002
Peter Calvert	IT Manager	Livenet.com	12 April 2002
Steve Root	Managing Director	Softwareworld.com	16 April 2002
Andrea Allison	Marketing Director	Joketowm.com	18 April 2002
Paul Cartmell	Managing Director	Musicshop.com	19 April 2002

To sum up, Table 7-5 provide a summary of interviews conducted during the data collecting procedure in the UK.

Table 7-5. Summary of Interviews for UK Participators

Interview / Process	Interview Type		Total No. of Interviews
	Face-to-Face	Telephone	
First Interviews	16	-	28
Second Interviews	6	-	
Third Interviews	-	6	

A total of 28 interviews was therefore carried out as part of the data gathering procedure in the UK. Among them 6 were telephone-based interviews, while 22 were face-to-face interviews. Furthermore, the interview data collected at this stage will be added to the discussion of the survey results to provide qualitative contextual information to aid interpretation of the data.

7.2.4 Initial Interviews with the Korean Participants

The aim of the first round of interviews with the Korean participants was to revise a preliminary Korean version of the questionnaire, which was initially translated from the final version of the English survey instrument, and to verify a research model of WBSS. Table 7-6 presents a summary of this first round of interviews for the Korean participants.

Table 7-6. Summary of First Interviews for Korean Participators

Name	Position	Organisation	Date of Interview
Hunbang Shin	PhD Student in Social Policy	LSE	12 February 2002
Joohan Ryoo	PhD Student in Management	LSE	14 February 2002
Youngchan Kim	Lecturer, PhD in Management	University of London	17 February 2002
Minjung Kim	System Manager	IBM in UK	19 February 2002
Jooik Kim	Managing Director	KT Information Technology Ltd. in UK	20 February 2002
Inchul Yu	S/W Development Manager	SAMSUNG Electronics Co. in UK	28 February 2002
Hyowon Kim	Planning Director	Interhouse.com in Korea	1 March 2002
Jingwoo Nam	Managing Director	Cnetia.com in Korea	4 March 2002
Heejin Lee	Lecturer, PhD in IS	Brunel University in UK	10 March 2002

The interviews were not meant to take on a conventional interview format (question and answer), but rather a dialogue about Web-based shopping business, special concerns of Internet business and electronic commerce and participants' general views on this research. The meetings lasted between one and two hours, and were also recorded on cassette tape.

The participants were asked to make the necessary changes in items that were ambiguous, and to freely mark the instrument, cover letter and instruction wherever there was a lack of clarity. That is, each participant checked and provided feedback

regarding the ambiguity of survey items, construction faults and ease of understanding, and provided some comments on the research model of WBSS diffusion. The questionnaire was then revised where appropriate. In addition, the revised questionnaires were actually tested with two executives of dot-com companies in Korea to check the feasibility of an e-mail survey. The first round of interviews for the Korean participants stopped when there were no further comments from the participants. The final version of the Korean questionnaire is presented in the Appendix 4. Some useful information in terms of honing the research model for the Korean context was also gained through interviewing practical experts and will be illustrated in section 7.2.6.

7.2.5 The Second Round of Interviews with the Korean Participants

The second interviews were executed in order to collect specific information for WBSS diffusion for further analysis. While collecting quantitative survey data for Korea via e-mail, eighteen interviews were conducted. Thirteen of these were telephone-based interviews with people who had indicated their willingness during the pilot survey (ref. section 7.3.2). The other five were face-to-face interviews with Korean businessmen, all of whom are involved in Web-based shopping businesses in the UK. Table 7-7 provides a list of these interviewees.

Table 7-7. Korean Participants in the Second Round of Interviews

Name	Position	Company Characteristics	Date	Interview
Jengsu Lee	CEO	Softvision.com in Korea	22 March 2002	Telephone
Gapsung Ryo	CEO	Sangpae.com in Korea	23 March 2002	Telephone
Jaemyeng Park	Managing Director	Dvdtitle.com in Korea	23 March 2002	Telephone
Junsoo Park	Web Master	Omimart.com in Korea	25 March 2002	Telephone
Gijae Han	CEO	Hiphoper.com in Korea	25 March 2002	Telephone
Chehwan Choi	IT Director	Fashion dot.com in Korea	26 March 2002	Telephone

Jaesung Jo	CEO	Adm.com in Korea	26 March 2002	Telephone
Seunghak Shin	IT Manager	Fineav.com in Korea	27 March 2002	Telephone
Hangu Lee	CS Director	Sungdo.com in Korea	27 March 2002	Telephone
Leesun Kim	Managing Director	Littlecity.com in Korea	28 March 2002	Telephone
Ilhwan Kim	CIO	In2di.com in Korea	28 March 2002	Telephone
Wongi Hong	CS Manager	Naeumcom.com in Korea	29 March 2002	Telephone
Sangmin Kim	Planning Director	Iocto.com in Korea	30 March 2002	Telephone
Youngchang Koh	Deputy M. D.	SAMSUNG TELECOMS Ltd. in UK	2 April 2002	Face-to-face
Manyong Choi	CEO	Nightneat Limited in UK	3 April 2002	Face-to-face
Donghoon Lee	Service Manager	Fleet-shipping.com in UK	4 April 2002	Face-to-face
Taejun Cha	Managing Director	COM-PLUS Ltd. in UK	5 April 2002	Face-to-face
Daniel Yoon	Managing Director	GNTEC Ltd. in UK	6 April 2002	Face-to-face

Firstly, telephone-based interviews were carried out with thirteen participants who had agreed in the pilot survey to be interviewed. Each lasted around thirty minutes and was held between midnight and early morning. This is because Korea is nine hours ahead of UK time. During the interviews, it was confirmed that all the questions and items in the questionnaire had been clearly understood by the respondents. Also, they were specifically asked about their Web-based shopping businesses, their comments and opinions on this research, and what they considered to be the crucial factors as regards the diffusion of their WBSS.

Secondly, face-to-face interviews were held with five Korean businessmen who are involved in Web-based shopping businesses, telecommunication companies and computer hardware and software companies in the UK. The reason for the face-to-face interviews with Korean businessmen in the UK is that this provides a good opportunity to find out more information on WBSS diffusion from those who have experience of living in both countries. However, their opinions will be classified as Korean rather than British. During these interviews, some interesting comments and information for further data analysis

were gained. For example, some interviewees made comments on payment methods: e.g. Korean WBSS mainly accept Korean credit cards as a payment method. This means that, although they accept familiar foreign credit cards such as Visa and Mastercard for payment, some Korean WBSS do not accept such credit cards as Switch, Delta and American Express, as would be the case in the UK. Thus, the necessity to pay particular attention to payment methods when comparing the UK and Korean experience was recognized. During these interviews, each participant's permission to recontact them later in the data analysis phase was obtained.

Table 7-8 provides a summary of the interviews undertaken as part of the Korean data gathering process. A total of twenty-five interviews were conducted: seven face-to-face interviews were conducted in the initial round of interviews. Eighteen interviews were conducted in the second round: five face-to-face interviews and thirteen telephone interviews.

Table 7-8. Summary of Interviews with the Korean Participants

Interview / Phase	Interview Type		Total No. of Interviews
	Face-to-Face	Telephone	
First Interview	7	-	25
Second Interview	5	13	

7.2.6 Verifying the Research Model of WBSS Diffusion

In this section, the research model of WBSS diffusion developed in chapter 6 (ref. Figure 6-2) is verified by applying the interview data. During the interview process, the majority of interviewees generally held the view that the research model seemed to be well organized with appropriate variables positively associated with the diffusion of

WBSS in corporated in it. On the whole, reaction was positive, with comments such as "good", "it seems to work", "very interesting", "well organized", "it looks fine", "I totally agree with this model", and so on. There were no significant differences of opinion on the research model between the two countries' interviewees. It is reasonable to assume that the model is generally applicable for the two contexts. For example, a Korean interviewee, the manging director of a dot-com, commented:

> I would say it looks like a nice research model, which seems to have quite an interesting variables related to WBSS diffusion. ... It seems to be well structured.

A similar view was expressed by the British CEO of a dot-com:

> This model seems to cover all the classic market, organisational, technological, and external factors, with all their strengths.

On the basis of the interview data in both countries, it appears that this kind of positive reaction is because the research model includes several domains of Web-based shopping business such as markets, customer service, organisation, Internet technology, and information systems aspects. The majority of interviewees thought that the variables of the research model were likely to be closely related to WBSS diffusion. Therefore, since the majority of respondents expressed positive viewpoints, this section attempts to verify the research model on the basis of the comments made.

7.2.6.1 Global Electronic Markets

While a marketplace was previously a space customers physically visited, the Internet-based global electronic market has no physical representation and no direct contact between buyers and sellers, regardless of their location (Chaffey, et al., 2000; Nour and

Fadlalla, 2000). In line with this, a comment was made by an interviewee of a dot-com in Korea:

> I think that the Internet has completely opened up the global marketplace for shopping elsewhere and getting better value for money for products customers are buying. The more people go online, the better, because the Internet enables everybody a chance to show what their businesses do. It's much easier and much more simple to market than the traditional method of marketing.

In relation to global electronic markets, a more detailed point was made by the managing director of a dot-com in the UK:

> Recently, Web-based shopping business has become a global phenomenon, so that we are carefully navigating new opportunities for international e-business. For example, our company considered other European countries as major markets for e-business, and therefore tried to support multi-language access by customers on our WBSS.

For highly competitive and dynamic global electronic markets, Korean companies have similar aims, with Sasa.com as one example. Sasa.com is the specialized WBSS for selling cosmetics in Korean, English and Chinese (www.sasa.com). Thus, based on WBSS, organisations can connect with customers globally, while customers can also access global businesses. This kind of multi-language function supporting WBSS seems likely to have the positive impact of global electronic markets on WBSS diffusion.

7.2.6.2 Digital Business

There is a growing desire to understand electronic commerce and to utilize Internet technology for new business such as digital business (Kalakota and Robinson, 1999; Korper and Ellis, 2000; Timmers, 2000). Digital business products include software,

DVD, music, movies, drama, electronic games, information, images, books, news and so on. These digital business products can be easily stored, transmitted, processed, and transformed over the Internet, as pointed out by a Korean interviewee, the managing director of a dot-com:

> The era of digital business didn't die with the dot.coms' collapse. Digital business provides a very good opportunity to be a global seller for companies, because it costs the supplier almost nothing, so firms can sell global customers digital products at a specially discounted download price. However, indeed, the opportunity and peril of the digital business continues to unfold. Generally speaking, digital business is a major example of the Internet business.

It appears that digital business products can be copied and reused at very low cost to meet customer demands for instant delivery. Therefore, traditional success factors related to the physical product business seem to be not the major elements in digital business on WBSS, as expressed by a British interviewee, the managing director of an IT/telecommunication company:

> Digital business has a massive influence on WBSS diffusion, which is a really good thing, but also on the other hand it has a massive influence on pirating. In the old days if you had a medium, for instance a DVD, which you buy, not everybody could actually transfer that and pirate it around. Now, everything is based on computer, it's just a data file, and people can just give it to their friends and completely distribute it. On the selling side, it's brilliant. You haven't got any of the fulfilment, you haven't got any of the packaging or anything like that, it can be all automated.

As stated in the above comment, with the growing reliance of the Internet business on WBSS, many dot-com companies are trying to drive efficient and cost-effective new business models – digital business. On the basis of the interview data in both countries, it would appear that digital business plays a crucial role in the shaping process of WBSS.

7.2.6.3 Market Dynamism

It has been seen that the market place is no longer restricted to individual national markets, or limited by national boundaries, and whilst the import and export of goods and services has been a feature of trade for centuries, this trend has accelerated with the arrival of e-business. Regarding current market dynamism within the Web-based shopping environment, an interviewee who is the CEO at a dot-com in the UK provided the following viewpoint:

> The Internet is a tool, it's not a gold mine, it's not a pot of gold, but that law of business just went out the window. And so huge amounts of money were invested, a huge amount of technology was invested, and there were far too many people who were pressured into thinking about the Internet business, and didn't know how to go about it, so they employed this or that consultant. These consultants were a bit like cowboys in the Wild West, they were rubbing their hands together with glee, and they would just quote the most ridiculous prices. And because people did not look behind what was actually involved they gave them money. Really and truly, I think these days there is necessarily a much more level-headed approach to Web-based shopping business.

As an enabler of new business, WBSS have an advantage in accepting changes in customer preferences, a global range of market information and competitor situations. In terms of market dynamism, a Korean interviewee, the managing director of a dot-com, expressed this view quite explicitly:

> The dynamics of the marketplace are continuously changing. It has settled down more now since the dot-com phase of two or three years ago. Market dynamism is very good for WBSS diffusion. It is closely related because I think companies should market themselves more on the Internet, and because it's much easier for the client. Clients can buy and can do whatever they want in their own time, privately, in front of a computer. So a company has to integrate its market on the basis of WBSS, because the clients, who want to buy a product at their house or office online, are increasing every year.

It appears that as a global marketing medium, WBSS could enable organisations to respond rapidly to customers' preferences, competitors' actions and dynamic market

conditions. Thus, it would appear that market dynamism is closely associated with the WBSS diffusion.

7.2.6.4 Customer Segmentation

Customer segmentation, as considered in this study, is defined as including knowledge of target customers, customers' characteristics, customers' Web-based shopping activities and customers' preferences. In connection with this, an interesting comment was made by a planning director of a dot-com in Korea:

> Customer segmentation analysis has positively affected marketing efforts in numerous ways, ranging from mass media to Internet business. It has proven invaluable to better understand our customers, their demographics and their buying habits. That is, instead of devising one campaign for thousands of disparate customers, our company breaks those into smaller demographic segments and tailors its campaigns to each of those segments. We are therefore stimulated to have a new perspective to provide better products and services to customers.

It seems that since maintaining customers is the key to any business success in the current global competitive environment, customer segmentation is a vital step towards this and is likely to lie at the heart of e-business to maximize long term profitability. A point made by the marketing director of a dot-com in the UK was aposite in this regard:

> We can see where clients have been on our WBSS, we can track customers through a site, and we can track groups of clients. For example, if customers are interested in that particular book, after that we need to hit them with a new target, another book written by the same guy. It's just on their click profile, through click stream analysis through the site, profiled and we keep targetting them. It's not so much about demographics and the usual ABC groups, it's just, we want to know where they have been on our WBSS, and in what they are interested.

There is growing emphasis on customer segmentation that focuses on a specific target customer. Based on the above interview data, it is observed that WBSS enable organisations to look at customer buying patterns and channel preferences, and to gather specific information about a customer's purchasing behaviour. Thus, it would appear that the diffusion of WBSS is influenced by the customer segmentation.

7.2.6.5 Interactivity

Interactivity allows for two-way communication between businesses and customers online on a global scale (Laudon and Laudon, 2000). In line with this, an interesting viewpoint was expressed by a Korean interviewee, the systems manager of an IT/ telecommunications company:

> Of course interactivity is important because that's how it works, instead of using the voice to interact with people. For example, as companies would do a cyber shop on WBSS, they are having to interact with customers via the Internet. Thus, as well as being informative, WBSS have to make it easy for clients to find and order products online. So, it seems that the interactive feature of Internet technology is an important element of WBSS diffusion.

Accordingly, WBSS can offer organisations the chance to engage in interactive activities and to gain instant responses to their customers and businesses. In relation to this, a more detailed comment was provided by one of the British interviewees from an international company:

> You can see interactivity on WBSS with order forms. For example, when clients fill out a form in the world and then the seller receives a form via the Internet. So it's all about getting people involved and getting them buying a product online, as convenient as possible.

As can be seen from the above interview data, WBSS can enable organisations to interact with customers making purchases, and to gain information, supporting business-to-customer (B-to-C) and business-to-business (B-to-B) interactivity. Therefore, Internet technology can create interactive applications that can be customized for multiple purposes and audiences. Based on this, it would appear that the perceived interactivity of Internet technology is positively related to the diffusion of WBSS.

7.2.6.6 Connectivity

The global connectivity of Internet technology provides WBSS with links directly to customers, business partners and suppliers (Kalakota and Whinston, 1996; Laudon and Laudon, 2000). In relation to connectivity, a Korean interviewee, the IT director of a dot-com, emphasised this point:

> Compared with the previous EDI, the connectivity of the Internet technology these days is outstanding. For example, we can interface with customers or companies or public organisations without any support of the system and technology. This kind of advanced connectivity of Internet technologies is likely to promote the diffusion process of WBSS.

It would seem therefore that the global connectivity of Internet technology has become a major driving force, since organisations are adopting WBSS in order to be able to participate in global electronic markets. In terms of connectivity, a practical comment was provided by the managing director of a UK dot-com:

> Connectivity is very important on WBSS, and the major characteristic of the Internet technology is that it makes it easily transact business transactions. For example, a website written for Internet Explorer should work on Navigator. They should do – if sometimes they don't, it's because the web design company or the web development company has not done their job properly.

As mentioned by the interviewees in both countries, the global connectivity of Internet technology offers organisations new communication and co-ordination mechanisms across customers and businesses, providing them with immediate savings in long-distance telecommunications. Therefore, it appears that Internet connectivity is having a profound impact on WBSS diffusion. On this basis, it would seem that the extent of WBSS diffusion is affected by the perceived high connectivity of Internet technology.

7.2.6.7 Feasibility

Feasibility is the degree to which a proposed technology can be implemented with existing hardware, software and technical resources (Laudon and Laudon, 2000; 348). That is, an organisation explores technical feasibility in order to determine whether a perceived technology is achievable, given the organisation's resources, capabilities and constraints. In relation to feasibility, there was an interesting comment provided by a Korean interviewee, the managing director of an IT/telecommunication company:

> The Internet technology has been considerably upgraded, making it possible for different types of systems and technology to connect. So the feasibility of the Internet technology is not an important matter at all. We can easily improve WBSS if we want to, because there is little problem in feasibility and also, the price of technology is relatively low, as compared with previous information technology.

On the basis of this, it seems that Internet technology is incorporated well with the existing network infrastructure, hardware platforms and technical resources, so in turn it facilitates further adoption and implementation of WBSS. This point was clearly explained by a solution manager of an IT/telecommunication company in the UK:

> I think feasibility is a lot easier than people perceive. But when you're talking to a corporate who has the IT strategy, there are always issues about feasibility, implementation, roll out strategies. ... Feasibility really varies with size and type

> of project you're doing. Personally, I think the issue related to feasibility, of talking to different platforms, talking to different systems, is all there – it can be done. It will just cost you money depending on what system you've got and what you want to talk to.

It may therefore reasonably be observed that the high feasibility of Internet technologies may facilitate the adoption process of Internet technologies in terms of WBSS implementation. Consequently, it would appear that higher feasibility of Internet technology facilitates the process of WBSS diffusion.

7.2.6.8 Trialability

Trialability is the degree to which a new technology may be tested on a trial basis (Rogers, 1995). Generally, it seems that if an organisation is designing a WBSS for its e-business, it should be at least tested and trialled. With respect to trialability, an interesting comment was presented by the Korean managing director of an IT/telecommunication company:

> There are many trial versions of WBSS which can check the possibility and opportunity of the Web-based shopping business. Therefore, it is an increasing trend for organisations to induce the WBSS of the trial version with little risk and low cost in the early stage of the business and then to discard this trial version site in favour of the full-scale WBSS.

As a Korean interviewee pointed out, likely trialled versions of WBSS seem to influence WBSS diffusion. Thus, in the words of the CEO of a dot-com in the UK:

> When we adopt a new Internet technology, we test it on different computers and different platforms. It's very important because our WBSS have to look the same all over on different platforms, because clients use different computers, different resolutions, different screens, and different monitors. So, we have to check it on many different platforms to make sure it looks the same on every platform.

It would therefore appear that the high testability of Internet technologies is likely to lead to relatively easy upgrades: from simple Web-site to sophisticated WBSS enabling global Internet business. Therefore, as regards the discussion so far, it would appear that the high trialability of Internet technology provides the impetus to the ready diffusion of WBSS applications.

7.2.6.9 E-business Planning

It will be recalled that e-business is not merely an IT function, but also a critical element of an organisation's core e-business (Korper and Ellis, 2000; 235). As organisations establish e-business planning, they should think about all aspects of e-business such as e-business models, new business processes and strategies, new kinds of system architecture, further upgrades of systems, customer segmentation and market focus, supply chain management and the like. The importance of e-business planning was noted by the UK CEO of a dot-com:

> After many dot-coms collapsed, the first lesson is that technology can't save a bad business plan. We are reminded that technology is a tool to deliver excellent products and services at a good price. Therefore, good e-business planning is likely to facilitate greater numbers of e-businesses on WBSS.

On the basis of this, e-business planning seems to play an important part in the process of WBSS diffusion of an organisation. In line with this, the planning director of a dot-com in Korea mentioned that:

> In my view, e-business planning is very important, because it enables our company to use our business resources efficiently and effectively. For example, we usually do our business planning to consider such issues as who are the target customers, what is the best way of satisfying them, what kind of Internet technology is suitable for our business, and how to achieve our business goal.

As pointed out by the interviewees in both countries, to establish successful e-business planning, organisations should carefully consider customer aspects, new ways of doing business, and new technology trends. It would therefore appear that e-business planning encourages the diffusion of WBSS.

7.2.6.10 Risk Management

Web-based shopping tends to expose enterprises to the risks associated with unfamiliarity caused by new forms of business transaction. There are some serious risks that organisations take on when they transmit data across the Internet: interception by a third party, forgery and modification (Loshin, 1995), and the like. Few believe that legislation alone will solve such risk management issues. This is because technology is but one component of this problem. The issues related to risk management were highlighted by a Korean interviewee, the system manager of an IT/ telecommunication company:

> In terms of risk management, companies will have to go into all that, of course. They will have to create an environment that is secure for their clients to buy on-line, for sure.

On this basis, it seems that if organisations fail to manage risks adequately, they could be confronted by situations that could undermine their success. Thus, one of the UK interviewees, the CEO of a dot-com, explained that:

> There are various risks relevant to the Web-based shopping to be protected and prevented. We need to design risk management systems that protect customer privacy before they ask for it.

It seems therefore that there is a likelihood of well-known dot-coms suffering damage to their reputation due to the inadequacy of their risk management. Therefore, it appears that the risk management issue has to be carefully considered in contemporary Web-based shopping circumstances to achieve business objectives. Consequently, it would appear that careful consideration of risk management issues positively affects the extent of WBSS diffusion.

7.2.6.11 Customer Service Quality

WBSS are directly connected with global customers via the Internet. Thus, the survival of WBSS seems to depend on whether the customers continuously accesses their sites, because WBSS do not work in isolation from customers. The importance of customer service quality was pointed out by one of the Korean interviewees, the customer service manager of a dot-com in Korea:

> In my view, the customer service quality is really important. Therefore, our company periodically asks the special investigation agency to examine the service quality, the customer satisfaction and usability of our WBSS and our company's image. This data is important to us in building up very strong customer relations and running customer-oriented WBSS more efficiently.

The significance of the customer service quality was also mentioned by the marketing manager of a dot-com in the UK:

> As in all selling, it's probably the most important thing. Customer loyalty is the name of the game, isn't it. For example, if a company treats the customers very well, they'll come back because they'll remember and recommend the business.

Customer service quality therefore seems to be related to WBSS diffusion in both countries. This means that having a high level of customer service quality promotes

customer satisfaction in turn, so the level of satisfaction experienced by customers would influence WBSS diffusion. It may be concluded, as a result that customer service quality is one of the key impact factors for WBSS diffusion.

7.2.6.12 Knowledge Intensity

The success of an organisation depends on its ability to gather, produce, maintain and disseminate knowledge of products, services and information (Laudon and Laudon, 2000; 107). To extend our understanding of the relationship between WBSS and knowledge intensity, an interviewee who was a partner at Arthur Andersen in the UK stressed the following point:

> There have been masses of money spent on the Internet with various different business types, and millions and millions of pounds have been spent on lots of dot-com companies. However, many of these companies are collapsing. Though there are various approaches in order to survive in Internet business fields, one crucial option is that companies have to access and keep the most up-to-date information possible for markets, customers and competitors.

The positive relationship between knowledge intensity and WBSS was stressed by one of the Korean interviewees, the planning director of a dot-com:

> I think that a company has to know its product and market, if it wishes its WBSS to be successful. For example, even if we have the best WBSS in the world selling something, it would fail if there is no market. So, customer knowledge and market knowledges come well before the WBSS.

The relationship between knowledge intensity and WBSS seems to be regarded as common ground for organisational growth and WBSS diffusion. This means that e-businesses, in particular Web-based shopping business, would require new kinds of knowledge for their markets and customers in terms of e-commerce and digital

economy. Thus, it would appear that the extent of the diffusion of WBSS is influenced by the degree of organisational knowledge intensity in relation to its customers, markets and competitors.

7.2.6.13 Usability of WBSS

According to Manning (1999), an effective design and development of Web-based shopping sites can help satisfy and retain customers. A greater awareness of WBSS usability was emphasised by one interviewee who is the managing director of a dot-com in Korea:

> Designers of WBSS should realize that if the customer cannot accomplish his goals, the designer cannot accomplish his. Thus, the degree of the usability would have a direct influence on the continuous accessibility by customers to its WBSS. For example, even though some WBSS are similar, according to the extent of their search function and of their visual appeal, the degree of access by the customer could be different. It is a crucial matter how convenient we make WBSS for customers, and in turn it will affect WBSS diffusion.

On the basis of this, organisations attempt to focus on making it relatively easy for the customers to continually visit their WBSS sites. In connection with this, the contrast between good usability and bad usability was explained by one of the British interviewees, a dot-com CEO, as follows:

> Usability should be a very important factor, so it should be as easy as possible. I think the usability of our WBSS – being able to update it, change it, or interrogate it – is important. ... There is also bad usability. For example, something not fitting on your screen, hard to find, no explanations of how to get to places, wondering how you got here or how you get back, poor layout, poor graphics, and poor feel of the site.

On the basis of the above comments, it would appear that if organisations want their WBSS to be continually accessed by customers, they should reflect the nature of customer characteristics, customer requests and customer preferences in making their WBSS user-friendly, prioritizing the customers' needs. In conclusion, it would appear that the diffusion of WBSS is positively influenced by the degree of usability of WBSS.

7.2.6.14 Security Management

According to Oliveira et al. (1999), security has been, and remains, the number one issue for the further advancement of e-commerce. In line with this, many interviewees in both countries insisted that network and systems security are key in Web-based shopping. The important role of security management was pointed out by one of the interviewees of an IT/telecommunication company in the UK:

> It is usual to see that many companies are making investments to ensure that their IT teams are ready to secure their systems and network infrastructures. For example, we have many forms of security. Among them, a firewall is like a lock on a door. Hundreds of WBSS are out there that tell you exactly how to get around a firewall. So, it is not enough to detect an intrusion, we must be able to prevent and block it. So, security management would be one of the important factors in terms of WBSS diffusion.

As mentioned already, the majority of interviewees hold the view that one of the most important isuues confronting WBSS concerns safeguarding against potential threats such as computer virus, hacker, cracker, and abuse. However, the actual level of security management seems to depends on the degree of cost of secure systems, as pointed out by one of the Korean interviewees, the system manager of an IT/telecommunication company:

> Security management is important. Having a secure site puts the consumer's mind at rest. There are different levels of security management – people logging

> in need a user name and password, and maybe other things. It all depends on how much budget you have and how big a risk it is. It's also up to how much the company wants to invest in their systems.

On the basis of above comments, security management seems to be an area requiring constant supervision and management to provide stable systems and infrastructure for Web-based shopping with global customers and businesses. To sum up, it would appear that the security management is thus closely associated with the WBSS diffusion.

7.2.6.15 Network Infrastructure

An important component of a network infrastructure is the hardware and software used to share high-speed connections. The network infrastructure of an organisation is composed of routes, gateways, CORBA, firewalls, leased lines, ISDN, LAN, WAN, Intranet and extranet (De and Mathew, 1999; Timmers, 2000). In terms of network infrastructure, the following point was made by an interviewee in a UK IT/ telecommunication company:

> A network infrastructure makes it possible to create more interesting and worthwhile WBSS applications, allowing fast connections, greater bandwidth and valuable information. The only negative aspect in instituting a network infrastructure for WBSS is that it tends to require considerable investment. Sometimes this cost may be significant or even a barrier, especially if small-medium enterprises are faced with financial difficulty. In any case, the network infrastructure is closely related to WBSS usability and performance, and the security management.

Regarding the network infrastructure, a similar viewpoint was provided by a Korean interviewee, the system manager of an IT/telecommunication company:

> The level of network infrastructure depends on how much money the company pays to have a fully integrated system. It's how much it's worth paying to have

> that facility, so it's basically the same concept as security management – the more money they throw at it, the better the systems. The network infrastructure is considered to be important in any case.

On this basis, it appears that network infrastructure seems to play an increasingly important role in global Web-based shopping. This is because a solid network infrastructure can enable organisations to make the most effective use of WBSS applications and to accommodate customer access and stable business transactions, with appropriate protection from hacking and cyber attacks. By doing so, Web-based shopping businesses can deliver a high qualitative experience for customers visiting their WBSS. It would appear therefore that the extent of the network infrastructure is closely related to the diffusion of WBSS.

7.2.6.16 Internet Technology Adaptability

Internet technologies are used on various types of WBSS applications and network infrastructures for a variety of strategic and business purposes, increasing the flow and value of information between businesses and customers (Lazzaro, 1994; Evans, 1999; Korper and Ellis, 2000; Cline and Girou, 2000; Perkowitz and Etzioni, 2000). In relation to this, the CEO of a dot-com in the UK expressed the following view:

> Currrent Internet technology areas are fast changing, incorporating a variety of areas of technical expertise. The latest Internet technologies are used by many advanced WBSS applications to gain competitive advantage in the context of the Internet business. For example, we are very excited about mobile business on WBSS and the positive benefits it will provide customers and businesses. It seems to me that the Internet technology adaptability is associated with the diffusion of WBSS.

Whilst managing and disseminating critical business transactions, recently introduced Internet technology is enabling innovative new business models and expanding global

electronic market territories. In relation to this, a somewhat cautious comment was made by a Korean interviewee, the managing director of an IT/telecommunication company:

> When new Internet technology comes along, you have to look at it, you have to see what the user groups are saying about it, because every bit of technology will have its fans that will write lots of information about the pros and the cons. After that, you need to evaluate it for the application of your Internet business.

Since Internet technology enables an organisation to became a global marketer on WBSS, it seems to play an important role in the shaping process of WBSS diffusion. It would appear therefore that the extent of WBSS diffusion is affected by the degree of Internet technology adaptability of an organisation.

7.2.6.17 Concluding Remarks

In this section, the research model developed in chapter 6 was verified on the basis of interview data gathered in both the UK and Korea. During the interview process, the majority of interviewees in both countries held the view that all of these variables seem to be significant for the diffusion of WBSS. A few people expressed their concerns such as customer shopping preferences, regulation issues, and payment systems, according to different interests and different backgrounds regarding Web-based shopping. Since this dissertation is a pioneer study within the research agenda – WBSS diffusion – as well as a starting point for further on-going research relevant to Web-based shopping and electronic commerce, this research has attempted to focus on more general issues such as internal and external factors as well as ICT-related and non-ICT-related factors influencing WBSS diffusion rather than a specific research topic, i.e what kinds of customer preferences are related to WBSS difusion. Thus, it is hoped that if further studies focus on a specific research subject such as customer preferences, regulation

issues or payment systems within Web-based shopping research agenda, it will be worthwhile to use this research as a base in accumulating further theoretical and academic foundations.

To sum up, in the interview procedure, the qualitative data gathered from the interviews at the LSE and from participant organisations was used to establish the validity of the research instrument and to improve the questions and format of survey items before sending out the survey. Furthermore, the research model of WBSS diffusion was verified as a reasonable basis for further research as a result of the interviews conducted in both countries. Consequently, it was observed that all research variables seem to be closely associated to the shaping process of WBSS diffusion. However, the research model (ref. Figure 6-2) verified in this section will be tested for its explanatory power in specific Web-based shopping circumstances, in particular in the UK and Korea, in the following chapter. Before turning to chapter 8, however, a brief introduction is provided with regard to the procedures adopted in conducting the survey phase of the research.

7.3 Survey Procedure

This section of the dissertation is concerned with the survey procedure adopted to gather quantitative data to test the research model of WBSS diffusion verified from the interview phase. At this stage, the following question required resolution: What sort of data collection method is most effective for this research project? In order to resolve this point, various research methods for the survey were considered: a postal survey, telephone survey, e-mail survey and a survey based on the interview. In coming to a conclusion, the following factors were considered: cost, time, and feasibility, given the cultural context of Korea. E-mail was chosen as the most suitable survey method in view of its ability to reach a large number of companies and to enable their convenient response in both the UK and Korea.

To obtain e-mail addresses for the survey, several Internet search engines were investigated, such as Yahoo.co.uk, Yahoo.co.kr, Altavista.co.uk, Lycos.co.uk, Ask.co.uk and MSN.co.uk. Among these, Yahoo.co.uk and Yahoo.co.kr provided most categories of Web-based shopping sites in the UK and Korea. Further detail of the survey procedure in the UK and Korea is provided as follows.

7.3.1 Pilot Survey for the UK

Given the pioneering nature of this study, finding available respondents was not easy because business related to Web-based shopping is still growing. In relation to this, there are some interesting questions: What kinds of companies are using WBSS? What are their characteristics? Would they be interested in this research project? Would they respond to the survey? What kinds of opinions do they have regarding this research? How many people will respond to the survey? Because of these concerns it was decided to carry out a pilot survey to improve the response rate to the actual survey and to check the feasibility of using e-mail for the actual survey.

In deciding how to choose the respondents for the pilot survey, a number of issues were considered. First, the sample needed to be broad enough to allow for generalization of the results. Second, while Yahoo.co.uk (www.yahoo.co.uk) contains about 17,000 Web-based shopping sites, many of them are simple Web sites. Therefore, dot-coms that were actually using WBSS were selected, according to the following two criteria: (1) whether the Web site enables products to be bought and/or sold, and provides information and services – all major characteristics of WBSS; (2) whether the Web site has a mechanism for payment, such as credit card, direct debit, cheque, bank transfer, electronic cash and so on. These two conditions are key characteristics of WBSS, as compared to simple Web sites (ref. chapter 2).

For UK dot-coms that satisfied the above two major criteria, enquiry letters were sent to 2,663 companies between 16 November 2001 and 21 January 2002. The response rate to the e-mail pilot survey in UK was about 7.4%: 2,663 letters sent, 196 responses received. Amongst the latter, many indicated that they would support this research further by participating in interviews, by filling in the survey questionnaire, or by doing both.

Although the respondents did not give specific information to build up a potential profile, the pilot survey had demonstrated the feasibility of this research project notwithstanding the low response rate. Many respondents, who are in positions of authority, indicated interest in this research project, thus giving increased confidence that the study could obtain reliable, quality data for further analysis.

7.3.2 Pilot Survey for Korea

From 22 January 2002 to 13 March 2002, enquiry letters (see appendix 7) were sent to 6,012 companies that were selected from 23,962 Web-based shopping sites on Yahoo.co.kr. 207 positive responses were received, giving a response rate of about 3.4%. This response rate was low as compared with the response rate in the UK (7.4%). Why was this?

To answer this, letters were sent to non-respondents. However, 6,012 enquiry letters had already been deleted due to the limited storage size of the e-mail system, so that it proved difficult to analyze non-responses. Instead of trying to do so quantitatively, the reasons causing the low response rate were analyzed, according to automatically returned e-mails, some response letters to our enquiry, personal knowledge from

previous research experience in Korea and so on. Four major reasons emerged and are summarized in Table 7-9.

Table 7-9. Reason for Low Response Rate in Korea

No.	Reason for Low-Response Rate
1	• Not familiar with the name of LSE in Korean Business Field
2	• Do not run business or not under the supervision of a person in charge
3	• Company policy
4	• Thought of as junk e-mails

Firstly, the reputation of the institution carrying out the survey seems to affect the response rate. That is, if a respondent does not recognize or trust the survey institution, the response rate will be lower, because the respondent tends to assume that the research institution is unreliable. According to previous experience in Korea, Korean business circles are not so familiar with the name of LSE, despite its standing as one of the best social science institutions in UK, if not the world. Therefore, it would appear that this unfamiliarity with the survey institution could affect the low rate of response to this survey.

Second, many e-mails were returned automatically. One can infer that this means that the addressees do not run actual businesses or they are not under the supervision of a person in charge of WBSS. Third, a number of respondents said that they could not be involved in this research project due to company policy, in much the same way as a number of the UK companies had responded.

Finally, anybody can easily access Web-based shopping sites throughout the world and can send e-mails via the Internet. Thus, many firms are confronting problems caused by the volume of unwelcome junk e-mail. Thus, it would appear that some non-

respondents categorized the e-mail about this research as junk e-mail. On the basis of this analysis, it seems that any one of the above, or a combination of them could have affected the low response rate of the pilot survey in Korea.

To sum up, although the pilot survey in the UK and Korea was monotonous, troublesome and time-consuming work, it provided a good opportunity to observe and compare many kinds of Web-based shopping sites. In the process of comparing Web sites and WBSS, and finding e-mail addresses to contact participators, a means of comparing WBSS in the UK and Korea was also provided.

7.3.3 Actual Survey for Korea

As mentioned earlier, when the methods for gathering data were considered, it was decided to try data collection using e-mail, rather than postal surveys. This was partly due to the practicalities involved but also because the research subject is related to the Internet, characterized by an incredible diversity of users and information. It seemed that this data collection method would have the advantage of overcoming limitations of time and cost. Since the pilot surveys for the UK and Korea demonstrated the feasibility of this approach, it was decided to proceed, since a large number of companies could be contacted in this way.

With the intervention of the Easter holiday in the UK and since there is no such holiday in Korea, it was decided to deal with the data collection process in Korea first. After the pilot survey was terminated in early March 2002, a number of preparations were made for the actual survey: e.g., making a checklist for survey responses, building a data directory in H: space at the LSE, and deleting old e-mail letters. Once preparations were complete, questionnaires were sent to the 207 Korean participants via e-mail, i.e., those who had

previously notified their availability at the time of the pilot survey. It required about five hours to send the survey instrument to all the participants in Korea. 82 marked questionnaires were received in the first week (representing a 39 percent response rate).

To obtain a greater response, additional questionnaires were sent to the remaining participants at the beginning of the second, third and fourth weeks, accompanied by a letter reminding participants of their earlier positive reaction to the pilot. When a marked questionnaire was received from a respondent in Korea via e-mail, the respondent's name, e-mail address and response date were recorded on the check list, and the questionnaire files were then saved from e-mail to the H: space.

As a result of the follow up letters, a total of 155 questionnaires were received from Korean respondents. Among these, 6 questionnaires were unusable because the respondents failed to mark all the survey items, only checking the initial part A of the questionnaire. One questionnaire was not fit for use because the file received was corrupt. Thus, a total of 148 questionnaires were usable, representing a 71.5 percent response rate, as shown in Table 7-10.

Table 7-10. Summary of Actual Survey for Korea

Survey Place	Number of participants	Number of Usable Responses	Percent
Korea	207	148	71.5 %

7.3.4 Actual Survey for the UK

After 2 April 2002, the questionnaire accompanied by the cover letter was e-mailed to 196 participants in UK, who, in the pilot survey, had notified their willingness to participate in the actual survey. In the cover letter, it was acknowledged that they might

be busy or still on holiday; it therefore asked them to fill in the questionnaire when they were free. One week later, 78 marked questionnaires were received, representing a response rate of 39 percent. To increase the response rate, a reminder letter was also sent at the beginning of four subsequent weeks after the questionnaires were initially e-mailed out.

However, at that time there was concern about the low response rate in the UK survey for several reasons. There was a long lapse of time, about three months, after the pilot survey was conducted, so that many participants might have lost their initial enthusiasm for the survey. In addition, as expected, some people mentioned that they were currently on Easter holiday and that they would only be able to complete the questionnaire upon their return. In addition, some questionnaires were not accepted by the receivers' WBSS and were automatically returned, despite the fact that they had indicated that they could participate. Some respondents also indicated that they could not participate in the survey due to company security, heavy work-load at the time or not being qualified to complete the survey.

To increase the response rate, it was decided to send an additional enquiry letter by e-mail to the 376 dot-com companies that were selected from lycos.co.uk, which contained about 20,000 Web-based shopping sites. Through this process, 21 marked questionnaires were received, yielding a response rate of just 5.6 percent. As a result of these efforts, a total of 152 usable questionnaires was received for final analysis. Table 7-11 shows a summary of respondents to the survey in the UK.

In summary, while somewhat disappointing, given the specialized and pioneering nature of the research, the sample size in each country was considered sufficient for the investigative purposes of the phenomenon of WBSS diffusion. This is because "we can be 95 per cent confident that if we had a random sample of 100 cases the population estimate would be within ± 10 per cent of the percentages we find in the sample" (De Vaus, 2001; 189). This research received about 150 marked questionnaires from each country so that amount was reasonable for the multivariate analysis aspect of this research.

Table 7-11. Summary of Actual Survey for UK

<table>
<tr><td rowspan="2">Sending Questionnaires</td><td colspan="3">Number of Useable Responses</td><td rowspan="2">Percent</td><td rowspan="2">Total Useable Questionnaire</td></tr>
<tr><td>By e-mail</td><td>By post</td><td>Sum</td></tr>
<tr><td rowspan="2">196</td><td rowspan="2">122</td><td rowspan="2">9</td><td rowspan="2">131</td><td rowspan="2">66.8 %</td><td rowspan="4">152</td></tr>
<tr><td>Additional Enquiry Letters</td><td colspan="3">Number of Useable Responses</td><td>Percent</td></tr>
<tr><td>376</td><td colspan="3">21</td><td>5.6 %</td></tr>
</table>

7.3.5 Reasons for Non-Responses

In this section, reasons for non-responses are examined, based on non-respondents' opinions given in the final response letters. When final reminder letters were sent out in both countries, also enclosed were survey items which could check the reason for non-response. In the final letter, it was mentioned "if you finally decide that you cannot participate in this research project, please inform us of your reasons and tick as many items as appropriate". Table 7-12 provides a summary of the reasons given for non-response.

Table 7-12. Non-Response Reasons in UK and Korea Survey

Non-Response Reasons	UK		Korea	
	Frequency	Percent	Frequency	Percent
Company security	4	10.3	3	9.1
Heavy work load	7	17.9	6	18.2
Run a small Web-based business	6	15.4	7	21.2
Not appropriate person for marking the questionnaire	5	12.8	5	15.1
Having a holiday or out of work	8	20.5	3	9.1
Currently changing and upgrading WBSS	4	10.3	4	12.1
Questionnaire too long	2	5.1	3	9.1
Other	3	7.7	2	6.1
Total	39	100.0	33	100.0

As can be seen from Table 7-12, "heavy work load" (17.9% and 18.2%), "run a small Web-based business" (15.4% and 21.2%), and "not appropriate person for marking the questionnaire" (12.8 % and 15.1%) were similarly represented as major reasons for the non-responses in both the UK and Korean surveys. For most of the other non-response reasons given, the proportions for each were roughly alike in both countries, except for one: having a holiday or out of work (20.5% in UK and 9.1% in Korea). The Easter holiday in the UK is likely to account for this reason being higher as compared to the Korean survey.

The detailed explanations for each reason are introduced, according to the comments received from non-respondents in the UK and Korea. First, for company security, some respondents sent partially-completed questionnaires due to the confidential nature of some information requested in the survey.

The second non-response reason was heavy work load. Regarding this, one of the non-respondents referred to it in his letter stating that "30 minutes may not sound a long time, but we are absolutely rammed with work at the moment, because my professional time is billed at £200 per hour".

Thirdly, some non-respondents were unable to complete the questionnaire because they have small Web-based shopping sites maintained by a third party.

Fourth, some respondents indicated in the e-mail that they were not the appropriate person to respond, but suggested other contact names and e-mail addresses. In addition, one respondent mentioned that they are a small but fast-growing company selling soft toys through the Internet, using a package which they bought from a Web-based shopping systems provider. They received technical support from them, and were therefore not an appropriate company to respond to the survey.

Fifth, regarding the non-response reason of being on a holiday or out of work, a respondent in the UK wrote back, "you have picked the worst time for the survey, because many people are not working during the Easter holidays." Thus, many potential respondents were out of the office and were not available to respond to the survey.

Sixth, some were in the process of changing their WBSS to provide a better online service. In this connection, this study also received an interesting e-mail reporting that the company had closed its systems due to a virus attack.

Seventh, some non-respondents in both countries stated that the questionnaire was too long, and that they regarded the survey as tiresome.

Finally, as regards other reasons, one non-respondent said that they would not be able to help with the survey, because they were not a normal kind of Web-based shopping

company (www.bumperbrain.com). They were an e-commerce software development company, and their business is to supply software to Web site developers to enable Web-based shopping systems. Since they are not a typical Web-based shopping service, the survey would probably not be appropriate for them even though they thought it sounded interesting.

Thus, it appears that the reasons given for non-response were all plausible and roughly similar in the two countries, and did not give cause for concern in terms of the credibility of the survey.

7.3.6 Non-Response Bias Tests

The responses from 152 organisations in the UK and 148 organisations in Korea were used for further analysis. However, in order to ensure the validity of the analysis results, non-response bias was tested for. There are two methods of testing for non-response bias (Oppenheim, 1992; 34): first, comparing respondents with non-respondents on the original sampling list (in terms of total number of employees and total sales), and second, by comparing early respondents with late respondents. The first is more concerned with ascertaining directly the representativeness of the responses received, whilst the second method attempts to measure non-response bias based on the presumption that 'late' responders are reasonable 'surrogates' of non-respondents (Wallace and Mellor, 1988). According to Wallace and Mellor (1988; 134), "respondents (and particularly early respondents) tend to be favourably disposed towards the objectives of the survey, while non-respondents and late responders may be those who are more likely to feel that they will be inadequate at supplying the information requested, or withdrawn, overburdened or inundated with many questionnaires or feel that they can be judged by the responses." On the basis of this

notion, this study conducted a non-response bias test based on the second method, because it appears that the first method makes it difficult to gain actual company information such as turnover and employee numbers from non-respondents on the sampling list at this stage. In relation to the second method of testing for non-response bias, Firth (1978; 60) compared the mean responses of the first 20 returned questionnaires with the last 20 returned questionnaires.

According to Firth's methods (1978) for testing non-response bias, this research divided the questionnaires into two groups based on the date of the questionnaires, returned by respondents from both countries, i.e., the early 20 returned questionnaires versus the last 20 returned questionnaires. After that, a t-test was applied to examine the differences between the early responding and the late responding organisations for two variables: total number of employees and turnover.

Table 7-13. Non-Response Bias Test in the UK Data.

Responding Information	Early Response Mean (S.D)	Late Response Mean (S.D)	Sig. (p)	Difference
Employee Number	2.70 (2.29)	2.05 (2.28)	.327	No
Turnover	4.05 (2.16)	3.10 (2.46)	.161	No

Table 7-14. Non-Response Bias Test in the Korean Data.

Responding Information	Early Response Mean (S.D)	Late Response Mean (S.D)	Sig. (p)	Difference
Employee Number	2.40 (2.11)	2.00 (1.21)	.670	No
Turnover	3.85 (2.51)	2.95 (1.28)	.258	No

As can be seen in Table 7-13 and 7-14, no significant differences were found between the early responding and later-responding companies in the UK and Korea. On this basis, it is reasonable to argue that this lack of non-response bias implies that the results from the sample in both countries can be generalized to the larger population.

Furthermore, during the UK survey process, an additional 376 enquiry letters (ref. Table 7-9) were sent to overcome poor response rates, from which 21 additional marked questionnaires were received. However, since the returned 21 additional questionnaires were not representative of the original sample drawn, a self-selection bias could be possible. Thus, this study attempted to examine the self-selection bias for the 21 response questionnaires, as compared to the early 20 returned questionnaires. As can be seen from Table 7-15, there are no significant differences between the early responses and the 21 additional responses in the UK data. Based on this evidence, it appears that the additional 21 questionnaires did not affect the generalisability of the research findings.

Table 7-15. Response Bias Test in the UK Data.

Responding Information	Early Response Mean (S.D)	21 Responses Mean (S.D)	Sig. (p)	Difference
Employee Number	2.70 (2.29)	2.15 (1.18)	.330	No
Turnover	4.05 (2.16)	3.05 (1.50)	.133	No

7.4 Summary

This chapter has discussed the data collection procedures adopted, including interviews and the survey for the UK and Korean samples. Though it was not an easy process, this procedure enabled the initial draft version of the questionnaire to be re-shaped into a

final, viable survey instrument, verifying a research model of WBSS diffusion based on the interviews in both countries.

In addition, this research conducted non-response bias tests for both countries' data in terms of two group responses: early respondents and later respondents. Moreover, the second response bias test was conducted in relation to the early responses and the additional 21 responses received from the results of the supplementary 376 enquiry letters. As a consequence of these processes, it appears that the research results derived from the survey can be "generalizable" since there were no significant differences between each group of samples (Oppenheim, 1992; Firth, 1978; Wallace and Mellor, 1988), as also pointed out by Lee and Baskerville (2001; 1):

> We use the adjective "generalizable" to describe research findings that can be transferred to and remain valid in a setting outside the original research setting (e.g., the particular sample in a statistical study) where they were established; the verb "generalize" to refer to the actions by which researchers attempt to achieve generalizable results (e.g., to generalize from a sample to a population); the gerund "generalizing" to name the process by which researchers generalize (e.g., the process of generalizing from a sample to a population); and the noun "generalization" to refer to the successful product of an attempt to generalize (e.g., a statistical generalization).

Based on the theoretical notion offered by Lee and Baskerville (2001; 1), this research attempts to "generalize" the research model of WBSS diffusion in two quite different Web-based shopping circumstances in the following chapter 8, and then to provide a "generalization"of research findings in chapter 9.

In conclusion, dual data collection processes – qualitative interviews and quantitative survey for both countries – were worthwhile because sufficient quantitative data and meaningful qualitative and contextual information were collected as a result. More detailed analysis and interpretation of these data are discussed in the next chapter.

Chapter 8. Data Analysis and Findings

8.1 Introduction

The major findings arising from the survey research and interviews are described in this chapter, which consists of eight sections as follows. Section 8.2 reports the organisational characteristics of the responding sample in order to provide background information on organisational aspects of the respondent companies from both countries: the UK and Korea. The third section examines the systemic characteristics of the sample to explore the information provided by the respondents concerning their WBSS. The fourth section presents the results of reliability and validity analysis applied to the variables measured. The fifth section presents the results of the correlation analysis of the variables, undertaken to examine the linear relationships among variables for further multi-variate analysis. The sixth section provides results from the regression analysis to test the hypotheses. The findings associated with the research hypotheses are summarized in this section. Section 8.7 deals with a discussion of the research findings related to the key impact factors of WBSS diffusion, based on data derived from the interviews. The final section synthesizes the research findings to illustrate major characteristics of WBSS diffusion between the UK and Korea.

8.2 Respondent Profile of Organisational Aspects

This section discusses the profiles provided by the respondents concerning organisational features. An attempt is made to assess the current state concerning organisational aspects related to companies with WBSS in the two countries, i.e. the respondent profiles are characterized by each respondent's position and functional area, respondents' seniority

and educational level, industry distribution, product categories, product delivery forms, number of employees, annual turnover, etc.

8.2.1 Respondents' Position

Table 8-1 provides summary information regarding the job position of the respondents. As can be seen, a large proportion of responses came from the level of director and above, including CEO and managing director (75% of UK responses; 66% of Korean responses). In addition, about 25% of the respondents in both countries indicated that they are at the manager level (e.g., general, marketing and IT). This distribution seems to satisfy the goal of obtaining responses from the people who are most likely to have an understanding of Web-based shopping business and systems. It also adds confidence concerning the quality of data given the high levels of executives responding.

Table 8-1. Distribution of Respondents' Position

Position	UK		Korea	
	Frequency	Percent	Frequency	Percent
CEO	49	32.2	48	32.4
Managing Director	59	38.8	41	27.7
IT Director	6	3.9	9	6.1
General Manager	20	13.2	25	16.9
IT Manager	18	11.8	14	9.5
Webmaster			7	4.7
Other			4	2.7
Total	152	100.0	148	100.0

8.2.2 Respondents' Seniority

Table 8-2 summarizes information about the respondents' seniority, in terms of the number of positions that exist between them and the CEO. As regards the respondents' position, the level of respondents' seniority can be illustrated in terms of organisational

hierarchy. The majority of respondents (86.2% in UK and 80.4% in Korea) were at seniority level zero (i.e., they are the CEO) and one. This indicates the high standing of respondents, as well as their level of authority in relation to Web-based shopping business.

Table 8-2. Distribution of Respondents' Seniority

Seniority*	UK		Korea	
	Frequency	Percent	Frequency	Percent
Zero	94	61.9	81	54.7
One	37	24.3	38	25.7
Two	14	9.2	16	20.3
Three	7	4.6	10	10.1
Four			3	2.0
Total	152	100.0	148	100.0

* Number of managerial levels between CEO and respondent

8.2.3 Respondents' Functional Area

Table 8-3 shows the distribution of the functional area that respondents belong to in their company. At the time of the actual survey, respondents were asked to tick as many appropriate areas as they belonged to, so that the total frequency checked was greater than the total number of respondents. As shown in Table 8-3, respondents belonged to a variety of functional areas such as logistics, manufacturing, marketing/sales, customer service, information systems, general management, procurement and human resource management. Among them, general management (21.3% and 24.3%), marketing & sales (21.1% and 23.4%) and IT/IS (17.5% and 19.3%) were reasonably well represented in both the UK and Korean surveys respectively. It may be inferred that these three areas are crucial to Web-based shopping business in the organisations sampled. For the most part, the proportions for each area were roughly equivalent in both countries. The lower proportions of manufacturing in both countries is likely to be caused by manufacturing being less well matched with the research subject – Web-based shopping systems.

Table 8-3. Distribution of Respondents' Functional Area

Functional Area	UK		Korea	
	Frequency	Percent	Frequency	Percent
Logistics	37	8.2	21	6.2
Manufacturing	15	3.3	10	3.0
Marketing & Sales	95	21.1	79	23.4
Customer Service	58	12.9	32	9.5
IT/IS	79	17.5	65	19.3
General Management	96	21.3	82	24.3
Procurement	39	8.6	24	7.1
HRM	25	5.5	20	5.9
Others	7	1.6	4	1.2
Total	451	100.0	337	100.0

8.2.4 Respondents' Length of Involvement

The respondents' length of involvement in Web-based shopping is summarized in Table 8-4.

Table 8-4. Distribution of Respondents' Length of Involvement

Involvement Length	UK		Korea	
	Frequency	Percent	Frequency	Percent
Less than 1 year	4	2.6	8	5.4
Between 1 & 2 years	33	21.7	29	19.6
Between 2.1 & 3 years	53	34.9	75	50.7
Between 3.1 & 4 years	32	21.1	16	10.8
Between 4.1 & 5 years	23	15.1	15	10.1
More than 5.1 years	7	4.6	5	3.4
Total	152	100.0	148	100.0

As regards the length of respondents' involvement in Web-based shopping, it is clear that Web-based shopping business is a relatively recent phenomenon. For example, 95% of the UK respondents and 96.6% of the Korean respondents had had less than five years'

experience. In addition, it would appear that in the range 3.1 to 5 years, the proportion of Korean respondents was lower than that of their UK counterparts (40.8% in the UK and 24.3% in Korea). However, Korean respondents showed somewhat higher proportions for the length of involvement between 2.1 and 3 years than their UK counterparts (34.9% in the UK and 50.7% in Korea). This result is probably associated with the Korean financial crisis that occurred in December 1997. After the financial crisis, during 1998 and 1999, the Korean government gave free education relating to information technology and systems – especially Internet technology – for all jobless people who wanted it, in an attempt to alleviate the rapid increase of unemployment. This particular situation in Korea may have had an effect on the higher proportions in the length of involvement in WBSS between two and three years.

8.2.5 Respondents' Education Level

Table 8-5 illustrates the distribution of respondents' highest education level.

Table 8-5. Distribution of Respondents' Education Level

Education Level	UK		Korea	
	Frequency	Percent	Frequency	Percent
A Level (High School)	22	14.5	12	8.1
HND (2 Year College)	12	7.9	11	7.4
University (Bachelor)	87	57.2	97	65.5
Masters	25	16.4	28	18.9
PhD	1	0.7		
Others	5	3.3		
Total	152	100.0	148	100.0

Overall, the respondents belonged to a highly educated group. Analysis of educational background indicated that almost all the respondents were educated above the level of a Bachelor's degree (74.3% in UK and 84.4% in Korea). Most degrees were at the

Bachelors (57.2% and 65.5%) or Masters level (16.4% and 18.9%). Five others in the UK included diploma, private certificate, FCA, none, and no response. In summary, respondents were generally highly educated and therefore, could reasonably be expected to understand the research subject and respond to the multifarious survey items.

8.2.6 Firms' Duration of Involvement

The relative duration of involvement in Web-based shopping business is provided in Table 8-6.

Table 8-6. Distribution of Firms' Duration of Involvement

Company Duration	UK		Korea	
	Frequency	Percent	Frequency	Percent
Less than 1 year	11	7.2	10	6.8
Between 1 & 2 years	37	24.3	29	19.6
Between 2.1 & 3 years	51	33.6	84	56.8
Between 3.1 & 4 years	27	17.8	12	8.1
Between 4.1 & 5 years	20	13.2	11	7.4
More than 5.1 years	6	3.9	2	1.4
Total	152	100.0	148	100.0

In both countries, the great majority of respondents (96.1% in the UK and 98.6% in Korea) showed that their organisation had had less than five years' Web-based shopping business experience. This demonstrates that Web-based shopping is a relatively new phenomenon. As regards the company duration relevant to Web-based shopping, we can see that as many as 57% of the Korean respondents have been involved between 2.1 and 3 years. As explained in the above section, this seems to be due to the influence of the Korean financial crisis, as at that time the Korean government encouraged Internet business, especially dot-coms, developing the nation's broadband network to provide high-speed Internet connections. Through the influence of this encouragement, many dot-

coms were formed in Korea (around 1998 or 1999). As a result, the number of Korean Internet users reached 21 million, which was almost half of the total population in Korea as of March 2001 (Korea Ministry of Information and Communication, 2001).

8.2.7 Industry Representation

The distribution of major industrial sectors in which responding organisations operate can be seen in Table 8-7.

Table 8-7. Distribution of Responding Firm's Industry[2]

Industry Area	UK		Korea	
	Frequency	Percent	Frequency	Percent
Agriculture	4	2.6	3	2.0
Banking/Finance	9	5.9	5	3.4
Construction & Design	3	2.0	1	0.7
Education & Publishing	4	2.6	5	3.4
Entertainment & Tourism	8	5.3	4	2.7
Health & Social Work	2	1.3	2	1.4
Hotels & Restaurants	3	2.0	2	1.4
IT & Telecommunication	18	11.8	39	26.4
Manufacturing	6	3.9	7	4.7
Public Administration	2	1.3	5	3.4
Social & Personal Service	4	2.6	7	4.7
Utilities	3	2.0	1	0.7
Wholesale & Retail	86	56.6	67	45.3
Total	152	100.0	148	100.0

About 70% of the sample consists of wholesale & retail (56.6% in the UK and 45.3% in Korea) and IT & telecommunications (11.8% and 26.4%). This domination is reflective of

[2] There were no significant differences between the distribution of responding firm's industry in the UK and Korea, according to the 2-tailed t-test at 0.05 level.

the nature of the research subject. According to Elliot and Fowell (2000), the majority of merchandise sold over the Web involves clothing, music, tickets, software, books, gifts/flowers, groceries, PC hardware and travel. These kinds of products may seem more suited for WBSS business. Therefore, as shown in the survey results, the type of products sold is likely to significantly affect the industrial sector that can enable organisations to carry out Web-based shopping. On the basis of this evidence, it is reasonable to suggest that the major industry categories involved in Web-based shopping are wholesale/retail and IT/telecommunications. In particular, the IT/telecommunication industry has become one of the major driving forces of the economy in Korea. For the minority industry sectors, the proportions for each category were roughly equivalent in each country.

8.2.8 Product Category

Table 8-8 summarizes the distribution of responding firms' product categories. As can be seen, the top five categories of products sold on WBSS in both countries is as follows:

UK	Korea
1. gifts/tickets (12.2%)	1. music/videos/DVDs (10.3%)
2. music/videos/DVDs (10.4%)	2. clothing/fashion (9.1%)
3. home/garden (9.5%)	3. computer hardware/ software (7.9%)
4. toy/baby/children (8.9%)	4. toy/baby/children (7.6)
5. food/drink (8.0%)	5. home/garden (6.5%)

Overall, these product types are not different from previous studies (Krantz, 1998; Kare-Silver, 1998; Elliot and Fowell, 2000; Elliot, 2002). For other product categories, the proportions for each product category were roughly equivalent in both countries, with clothing/fashion and gifts/tickets being the major exceptions. Cultural factors might affect the lower percentage of gifts/tickets category in the Korean context, as compared to Britain. This is because Korean people still have a strong preference for shopping for gifts

in physical shops in order to check their quality, colour, contents, etc. This result corresponds with a recent survey which indicated that only 2.6% of gifts and tickets were purchased by customers among various items sold on WBSS in Korea (Korea Ministry of Information Communication, 2002). On the other hand, the higher clothing manufacturing base in Korea is the likely cause of the clothing/fashion category being proportionately more highly represented as compared to the UK.

Table 8-8. Distribution of Product Category

Product Category	UK			Korea		
	Frequency	Percent	Rank	Frequency	Percent	Rank
Automotive	2	0.6	21	11	3.2	15
Book	13	3.9	11	13	3.8	13
Clothing & Fashion	15	4.5	9	31	9.1	2
Computing (Software&Hardware)	21	6.3	7	27	7.9	3
Computer Games	6	1.8	18	9	2.6	18
Electronic Equipment	9	2.7	14	16	4.7	10
Flowers	14	4.2	10	16	4.7	10
Food & Drink	27	8.0	5	17	5.0	8
Gifts & Tickets	41	12.2	1	18	5.3	7
Health & Pharmacy	23	6.8	6	15	4.4	12
Home & Garden	32	9.5	3	22	6.5	5
Information	8	2.4	17	7	2.1	19
Music & Videos & DVDs	35	10.4	2	35	10.3	1
Office Supplies	8	2.4	17	15	4.4	12
Services	8	2.4	17	12	3.5	14
Sex Equipment	2	0.6	21	3	0.9	21
Sport & Leisure	17	5.1	8	21	6.2	6
Toy & Baby & Children	30	8.9	4	26	7.6	4
Travel & Transportation	11	3.3	12	10	2.9	17
Grocery & Department	4	1.2	19	7	2.0	20
Others	10	3.0	13	10	2.9	17
Total	336	100.0	21	341	100.0	21

8.2.9 Product Type

The type of product sold is one of the distinguishing features of WBSS. Here, product type is divided into the single product type and multiple product type. Firstly, the single product type includes the product of a single industry such as a book, a CD, software, flowers, etc., as well as unified group image products such as sports equipment, baby clothes, cars, and the like. Secondly, the multiple product type includes more than two industrial products, as well as the product that is not unified into a group image, such as grocery. On the basis of the above definition, the distribution of product type selling on WBSS is summarized in Table 8-9. As can be seen from the table, there is a majority of single product types in both countries (74.3% in the UK and 65.5% in Korea). The higher IT/ telecommunication industry in Korea is the likely cause for the percentage of multiple products being proportionately higher than in the UK. This means that many IT/telecommunication companies in Korea run their own WBSS for Web-based shopping business. In that case, their WBSS include several kinds of malls, which sell diverse products.

Table 8-9. Distribution of Product Type

Product Type	UK		Korea	
	Frequency	Percent	Frequency	Percent
Single Product	113	74.3	97	65.5
Multiple Product	39	25.7	51	34.5
Total	152	100.0	148	100.0

8.2.10 Responsibility for the Sales Product

As a marketing channel, WBSS have a two-way responsibility for the sale of products. One is direct responsibility (ie. directly responsible for the guarantee of quality and delivery of the products). The other is indirect responsibility (ie. indirectly responsible

for the guarantee of quality and delivery of the products). The distribution of direct versus indirect responsibility for products sold on WBSS is summarized in Table 8-10.

For the majority of sales in either country, the company has direct responsibility for the products sold on WBSS: 80.9% in the UK and 66.9% in Korea. The proportion of indirect responsibility represented in both surveys was just 19.1% in the UK and 33.1% in Korea. The greater incidence of IT/telecommunication-based industry in Korea is the likely cause of indirect responsibility being proportionately higher than in the UK. The reason for this is the same as for the multiple product type, already explained in section 8.1.9.

Table 8-10. Distribution of Responsibility for the Product

Responsibility	UK		Korea	
	Frequency	Percent	Frequency	Percent
Direct Responsibility	123	80.9	99	66.9
Indirect Responsibility	29	19.1	49	33.1
Total	152	100.0	148	100.0

8.2.11 Product Delivery

Table 8-11 summarizes the distribution of delivery of products sold in responding firms. As can be seen, the majority of the respondents (45.4% in the UK and 67.6% in Korea) delivered products using a special delivery company such as Parcel Force, Interlink, Consignia, etc. – all of which are examples of a special delivery service in UK. In addition, a minority of organisations (36.2% and 18.9% respectively) have started utilising outsourcing as many Web-based shopping businesses have established joint ventures or partnerships in back office areas. Lower trust in outsourcing, as mentioned by Lee and Kim (1997; 205), is the likely cause for it being less represented in Korea. The

proportions of other product delivery methods, such as via the Internet or the company itself, were roughly equivalent in both countries.

Table 8-11. Distribution of Product Delivery

Product Delivery	UK		Korea	
	Frequency	Percent	Frequency	Percent
Company Delivery	24	15.8	18	12.2
Outsourcing	55	36.2	28	18.9
Via the Internet	4	2.6	2	1.4
Special Company	69	45.4	100	67.6
Total	152	100.0	148	100.0

8.2.12 Total Number of Employees

Table 8-12 summarizes the total number of employees in responding firms.

Table 8-12. Total Number of Employees

Number of Employees	UK			Korea		
	Frequency	Percent	Remark	Frequency	Percent	Remark
Less than 10	39	25.7	Small 54.6%	34	23.0	Small 55.4%
Between 10 & 50	23	15.1		27	18.2	
Between 51 & 100	21	13.8		20	13.5	
Between 101 & 250	16	10.5	Medium 20.4%	19	12.8	Medium 24.3%
Between 251 & 500	15	9.9		17	11.5	
Between 501 & 1,000	11	7.2	Large 25.0%	12	8.1	Large 20.3%
Between 1,001 & 3,000	9	5.9		7	4.7	
Between 3,001 & 5,000	7	4.6		5	3.4	
Between 5,001 & 10,000	4	2.6		3	2.0	
Between 10,001 & 30,000	4	2.6		2	1.4	
More than 30,000	3	2.0		1	0.7	
Total	152	100.0	100.0	148	100.0	100.0

From the Table, it can be seen that firm size, in terms of employee numbers, was well distributed into three classes: small-sized firms (54.6% in the UK and 55.4% in Korea),

medium-sized companies (20.4% and 24.3%), and large-sized enterprises (25.0% and 20.3%). The research subject of Web-based shopping itself is likely to be the cause for the somewhat higher representation of small-sized firms in either country. The reason for this is that most economies have a high percentage of small-sized firms. Their chances of surviving and prospering will be dependent on their flexibility and ability to cope with the challenges of a dynamic market. These characteristics of small-sized firms could be strongly supported by WBSS as an enabler of new business, such as digital business, cyber auction market, cyber department store, cyber shop, cyber shopping malls, cyber intermediary and so on. On the other hand, a somewhat higher percentage of medium-sized companies in Korea, as compared to Britain, was probably affected by the following industry categories: clothing, computing, IT/telecommunication, retail etc., as shown in Table 8-7. Finally, in terms of large enterprises, the proportion of British respondents was larger than their Korean counterparts. To summarise, the sample seems to provide a reasonably representative spectrum of small, medium and large organisations in the two different national contexts: the UK and Korea.

8.2.13 Annual Turnover

Table 8-13 summarizes the annual turnover of responding companies. Annual turnovers of 25.6% in UK and 20.9% in Korea were over £25.1 million. These firms can be categorized as large-sized enterprises. 43 firms (28.3%) in the UK and 46 firms (31.1%) in Korea are in the medium range of over £500,000 but under £25 million. We can classify these firms as medium-sized companies. The proportion of small-sized companies with annual turnover under £500,000 was 46.1% in the UK and 48% in Korea. In summary, the size distribution in terms of annual turnover seems to satisfy the generalizing criteria regarding firm size in both countries, though the proportion of small-sized firms was somewhat higher overall.

Table 8-13. Annual Turnover

Annual Turnover (£)	UK		Korea	
	Frequency	Percent	Frequency	Percent
Less than 15 thousand	8	5.3	10	6.8
15 – 250 thousand	32	21.1	33	22.3
250.1 – 500 thousand	30	19.7	28	18.9
500.1 thousand – 2.5 million	23	15.1	25	16.9
2.51 – 25 million	20	13.2	21	14.2
25.1 – 150 million	18	11.8	16	10.8
150.1 – 500 million	14	9.2	11	7.4
More than 500.1 million	7	4.6	4	2.7
Total	152	100.0	148	100.0

This section has presented the respondent profile of organisational aspects: i.e. respondents' position, seniority, functional area, education level, industry representation, product category, product type, total number of employees, annual turnover et cetera. Based on this background information of the respondents and their organisations, the following section examines WBSS in more detail.

8.3 WBSS Aspects

This section attempts to examine the characteristics of respondents' WBSS in both countries, in terms of systems sources and related features. It discusses the number of employees in the IT department, the team or department advocating WBSS, investment costs of WBSS development, the customers of WBSS, mobile phone access, comparative shopping functions, payment methods, type of credit card used, technology catalogues, potential benefits of WBSS and the key diffusion strategy adopted.

8.3.1 Employee Numbers in the IT/IS Department

The distribution of the number of employees in IT/IS departments is summarized in Table 8-14. As can be seen from the Table, nearly 43% of the British and 22% of the Korean respondents have one employee or less in the IS department. Furthermore, we can see that IS department employee numbers of between 2 and 50 are proportionately higher in Korea than in the UK (53.3% in the UK and 74.2% in Korea). The following may provide an explanation for the above result. When the pilot survey and interviews were carried out in the UK and Korea, it became apparent that management of WBSS was somewhat different in these countries. Many organisations in the UK handed over WBSS management to Web-based shopping system providers, or third party or specialist IT/IS companies, usually in the form of outsourcing. However, as mentioned earlier, only a few Korean companies consign systems management to a third party IS company, so that the Korean organisation generally takes charge of their WBSS with their own IT staff. Therefore, this different approach to WBSS management seems to have affected the proportions of employee numbers in the IS departments in the two countries. Ouside this range, the proportion of employee numbers in the IS department was roughly equivalent in both countries.

Table 8-14. Distribution of Employee Numbers in IT/IS Department

Employee No.	UK		Korea	
	Frequency	Percent	Frequency	Percent
Between 0 & 1	65	42.8	33	22.3
Between 2 & 4	35	23.0	52	35.1
Between 5 & 10	22	14.5	30	20.2
Between 11 & 20	16	10.5	19	12.8
Between 21 & 50	8	5.3	9	6.1
Between 51 & 100	4	2.6	3	2.0
More than 100	2	1.3	2	1.4
Total	152	100.0	148	100.0

8.3.2 Advocate of WBSS Development

The distribution of those who are advocates for WBSS development is summarized in Table 8-15. In both countries, the major advocate for developing WBSS is the CEO, (45.2% in the UK and 52.7% in Korea) demonstrating top level support. The next most frequent advocate is the marketing/sales department (24.3% in the UK and 17.0% in Korea). In addition, in 12.4% of British and 11.2% of Korean organisations, WBSS development was led by the information systems departments. Strategy/planning (7.1% in the UK and 5.9% in Korea) and customer service (5.7% in the UK and 8.5% in Korea) were in a minority. Based on these findings, it seems reasonable to say that the five most likely advocates for WBSS development in both countries are in order: the CEO, marketing/sales, information systems, strategy/planning and customer service. We can see that the common characteristics of these departments are closely related to Web-based shopping concerns.

Table 8-15. Distribution of Advocates for WBSS Development

Advocates	UK		Korea	
	Frequency	Percent	Frequency	Percent
CEO	95	45.2	99	52.7
Marketing / Sales	51	24.3	32	17.0
Information Systems	26	12.4	21	11.2
Strategy / Planning	15	7.1	16	8.5
Customer Service	12	5.7	11	5.9
Other	11	5.2	9	4.8
Total	210	100.0	188	100.0

8.3.3 Duration of WBSS Development

For the purposes of this research, duration of WBSS development means the length of time organisations took to develop their WBSS. The range of duration of WBSS

development is summarized in Table 8-16. It seems that the majority of respondents (75.7% in the UK and 79.7% in Korea) have a duration of less than one year. The duration between one and two years was 20.4% in the UK and 15.5% in Korea. Finally, 4.0% of British and 4.7% of Korean respondents were in the range of over 2 but not exceeding 3 years. In summary, according to the findings so far, it would appear that most WBSS in both countries have taken less than two years' development time.

Table 8-16. Distribution of Duration of WBSS Development

Duration	UK		Korea	
	Frequency	Percent	Frequency	Percent
Less than 1 year	115	75.7	118	79.7
Between 1 & 2 years	31	20.4	23	15.5
Between 2 & 3 years	6	4.0	7	4.7
Total	152	100.0	148	100.0

8.3.4 Investment Costs of WBSS Development

The relative investment costs of WBSS development is summarized in Table 8-17. The observation here is that the investment costs in 55.9% of WBSS in the UK, and 52.7% of WBSS in Korea, were less than £15,000. This range of WBSS in terms of investment cost can be identified as relatively small. Another 23% in the UK, and 29% in Korea, invested between £15,001 and £50,000, which is here termed a medium-range size of WBSS. Among these, it seems that IT/telecommunications companies, which developed their WBSS for Web-based shopping business, led to a higher proportion between £30,001 and £50,000 in Korea, as compared to the UK. In addition, the investment costs of 32 firms (21.1%) in the UK and 26 firms (17.6%) in Korea was £50,001 and above. These categories of WBSS can be classified as large in size. In summary, it seems that the distribution of investment costs of WBSS development in both countries was roughly similar to the distribution of annual turnover. This is because the development of the

sophisticated WBSS and network infrastructure tends to require considerable investment. According to this observation, it is reasonable to say that the size of WBSS seems to be proportional to company size, in relation to both the annual turnover and the investment cost of WBSS development .

Table 8-17. Distribution of Investment Cost of WBSS Development

Investment Cost (£)	UK		Korea	
	Frequency	Percent	Frequency	Percent
Less than 5 thousand	56	36.8	51	34.5
5 – 15 thousand	29	19.1	27	18.2
15.1 – 30 thousand	23	15.1	15	10.1
30.1 – 50 thousand	12	7.9	28	18.9
50.1 – 150 thousand	9	5.9	10	6.8
150.1 – 300 thousand	5	3.3	5	3.4
300.1– 500 thousand	6	3.9	4	2.7
500.1 thousand – 1 million	7	4.6	4	2.7
More than 1 million	5	3.3	3	2.0
Total	152	100.0	148	100.0

8.3.5 Customers of WBSS

There are two different types of customers relevant to Web-based shopping business. The most commonly discussed type is business-to-customer (B-to-C), in which Web-based shopping businesses attempts to reach individual consumers (Elliot, 2002). The other type is business-to-business (B-to-B), in which businesses focus on selling to other businesses (Timmers, 2000). The distribution of customers of WBSS in the two countries is summarized in Table 8-18.

About sixty percent of respondents in each country focused on business-to-customer (B-to-C). Another 16 firms (10.5%) in the UK and 7 firms (4.7%) in Korea were within the

B-to-B category. From the lower proportion of B-to-B in Korea, as compared to the UK, it would appear that B-to-B models such as e-distributors, B-to-B service providers, auction makers, and infomediaries are still at the growing stage in Korea. Finally, 30.3% (UK) and 30.8% (Korea) of respondents carried out their Web-based shopping business for both categories – businesses and individual consumers.

Table 8-18. Distribution of Customers of WBSS

Customers	UK		Korea	
	Frequency	Percent	Frequency	Percent
Business (B-to-B)	16	10.5	7	4.7
Individuals (B-to-C)	90	59.2	91	61.5
Both	46	30.3	50	33.8
Total	152	100.0	148	100.0

8.3.6 Mobile Phone Access

Table 8-19 summarizes company intentions as regards providing mobile phone access. Table 8-20 also provides a summary of the distribution of execution time for mobile phone access when this service is offered.

Table 8-19. Distribution of Mobile Phone Access

Mobile Phone Access	UK		Korea	
	Frequency	Percent	Frequency	Percent
Yes	80	52.6	85	57.4
No	72	47.4	63	42.6
Total	152	100.0	148	100.0

As can be seen, 52.6% of the British and 57.4% of the Korean respondents intend to provide mobile phone access within two years. This was a lower proportion than initially expected, given that the rapid and accelerating move towards the use of mobile

phones has enabled organisations to connect with customers more flexibly than when relying on land lines, for instance. Furthermore, this also has the potential to provide better customer service and to expand a market share for a global electronic market, accompanied by radical changes in business process and system management aspects, which can offer wireless connection and advanced integration with WBSS.

Table 8-20. Distribution of Execution Time for Mobile Phone Access

Execution Time	UK		Korea	
	Frequency	Percent	Frequency	Percent
Now	11	13.8	9	10.6
Within 3 months	14	17.5	11	12.9
Within 6 months	17	21.2	13	15.3
Within one year	20	25.0	37	43.5
Within 18 months	5	6.3	7	8.2
Within two years	13	16.3	8	9.4
Total	80	100.0	85	100.0

As regards the execution time of mobile phone access, the majority of the respondents in both countries indicated that their company plans to offer mobile phone access within one year (77.5% in the UK and 82.3% in Korea). On the basis of this, it is reasonable to predict that mobile Web-based shopping based on wireless communication, such as the transaction of business messages using mobile phones, will quickly expand within one year in both countries, especially as wireless access of WBSS could provide new opportunities for global Web-based shopping business.

8.3.7 Comparative Shopping Functions

Table 8-21 summarizes the distribution of comparative shopping functions of selling products in responding firms. Comparative shopping means that the customer is able to

search the product family to compare price, size, colour, etc. This is an important function relevant to the level of sophistication of WBSS in terms of customer service. For the customer who looks for a specific product to buy on WBSS, online comparative shopping will provide an invaluable service, and information that sellers or retailers at a physical store cannot provide. The proportion of comparative shopping functions in both surveys was roughly similar: 66.4% in the UK and 62.2% in Korea. Regarding the significance of comparative shopping functions, a UK interviewee who is a customer service director at a dot-com, noted that "even the most impressively designed WBSS will do no good if it does not show up comparative shopping functions on the first page."

Table 8-21. Distribution of Comparative Shopping Functions

Comparative Shopping	UK		Korea	
	Frequency	Percent	Frequency	Percent
Yes	101	66.4	92	62.2
No	51	33.6	56	37.8
Total	152	100.0	148	100.0

8.3.8 Payment Methods on WBSS

Payment methods on WBSS are important to the process of Web-based shopping in both the B-to-C and B-to-B arenas. This section will review existing payment methods on WBSS and identify the distribution of generic payment methods in both countries. The distribution of payment methods used on WBSS is summarized in Table 8-22.

As can be seen, credit cards are the most widely accepted methods of payment on WBSS in both countries: 96.1% in the UK and 95.3% in Korea. It seems that this high proportion of credit card usage is because customers can easily make both small and large purchases instantly, can reduce the risk associated with carrying cash, and can reject purchases

under certain circumstances (Kalakota and Whinston, 1996; Korper and Ellis, 2000; Chaudhury and Kuilboer, 2002). However, there were some gaps in certain payment methods, as can be seen when the proportions for each country are compared.

Table 8-22. Distribution of Payment Methods on WBSS

Payment Methods	UK		Korea	
	Frequency	Percent	Frequency	Percent
Credit Card	146	96.1	141	95.3
Direct Debit	70	46.1	20	13.5
Personal Cheque	74	48.7	8	5.4
Bank Transfer	21	13.8	124	83.8
Electronic Cash	10	6.6	12	8.1
Electronic Cheque	2	1.3	3	2.0
Smart Cards	11	7.2	7	4.7
Mobile Phone	10	6.6	6	4.1
Others	9	5.9	5	3.4
Divide	152	-	148	-

First, personal cheques were highly represented in the UK (48.7%) whilst low in Korea (5.4%). This is due to a culture that prefers cash to cheque payments in Korea. In addition, about 46% of the UK WBSS used direct debit as one of the major payment methods, while the proportion of direct debit in Korean WBSS was low, at 13.5%. This is because Korean people prefer using credit cards, which function in a manner similar to direct debit, and are readily issued by banks in Korea.

The second most common form of payment on WBSS in Korea was bank transfers, where funds are transferred directly, via a signed draft from a customer's cheque account, to a merchant. The proportion of bank transfers was very different in each country: 13.8% in the UK and 83.8% in Korea. This is because Korean people believe that the bank transfer method is safe, due to the bank's guarantee of the funds being transferred. It is therefore a

payment method that is widely used in Korea. For other payment methods, the proportions were roughly similar in both countries. Finally, the usage of new payment methods such as electronic cash, electronic cheques and smart cards was roughly equivalent in both countries.

Summarising this section, we saw that while certain features are quite similar in the two countries, cultural factors significantly affected some of the payment methods related to Web-based shopping business in Korea as compared to the UK. That is, cultural factors are important in shaping customer behavior, perceptions and requirements, as regards the diffusion of WBSS. Therefore, it should be recognized as a significant and major issue in research of Web-based shopping business and systems.

8.3.9 Types of Credit Card

As can be seen, the credit card is the most popular among various payment mechanisms on WBSS. A question arises: If WBSS use credit cards as the preferred payment method, what kinds of credit card do WBSS accept? To answer this question, the distribution of credit card types is summarized in Table 8-23.

Table 8-23. Distribution of Credit Card Type

Credit Card Type	UK		Korea	
	Frequency	Percent	Frequency	Percent
Visa	148	97.4	141	95.2
Master	147	96.7	136	91.9
Switch	126	82.9	14	9.5
American Express	62	40.8	63	42.6
Delta	118	77.6	21	14.2
Others	25	16.4	31	20.9
Divide	152	-	148	-

As anticipated, Visa and Mastercard are most frequently used, representing over 90% of respondents in both countries. In addition, the proportions of other credit cards were roughly equivalent in either country, with Switch and Delta being major exceptions. The lower reputations of Switch and Delta credit cards in Korea arises from them being less represented in Korea, as compared to Britain.

8.3.10 WBSS Technology

The distribution of technology used in WBSS is summarized in Table 8-24.

Table 8-24. Distribution of WBSS Technology

Technology Catalog	UK			Korea		
	Frequency	Percent	Rank	Frequency	Percent	Rank
LAN	82	53.9	4	76	51.4	4
WAN	28	18.4	9	12	8.1	10
ISDN	60	39.5	7	20	13.5	9
Intranet	45	29.6	8	39	26.4	7
Extranet	27	17.8	10	29	19.6	8
Firewalls	117	76.9	2	97	65.5	2
Web Server	143	94.1	1	139	93.9	1
Search Engine	87	57.2	3	85	57.4	3
Security	76	50.0	5	72	48.6	5
Certification System	70	46.1	6	61	41.2	6
Virtual Reality	2	1.3	14	2	1.4	14
Wireless Technology	3	2.0	13	3	2.0	12
Mobile Phone	10	6.6	11	8	5.4	11
Others	3	2.0	13	2	1.4	14
Divide	152	-	-	148	-	-

As can be seen in both countries, the top five technology categories were roughly equivalent: 1. Web server (94.1% in the UK and 93.9% in Korea), 2. Firewalls (76.9% and 65.5%), 3. Search engine (57.2% and 57.4%), 4. LAN (53.9% and 51.4%), 5. Security (50.0% and 48.6%). On the basis of these findings, it is reasonable to suggest that in both countries these five technologies are seen as major elements of Web-based shopping systems. Furthermore, the proportions of other technology categories were roughly similar in both countries, with two exceptions: ISDN and WAN.

An Integrated Service Digital Network (ISDN) is a digital service that runs over the public switch telephone network and on existing copper cables. As can be seen in Table 8-24, ISDN features less in Korea while it is somewhat popular in UK. This is because, in Korea, the optical transmission network, which is a 155 Mbps - 40 Gbps Backbone Network, links 144 cities, counties and towns across the nation and offers high-speed Internet access. Furthermore, the completion of the ATM network now enables carriers to offer high-quality data services as well. According to the nation's highest broadband network infrastructure, it is less necessary to adopt ISDN in Korea.

On the other hand, WAN connects local area networks of a company and its suppliers. Recently, WAN has been replaced by extranet in Korea. Extranets are formed when a company permits outsiders to access their internal TCP/IP network using the Internet. Therefore, the extranet's substitution effect for WAN would be the likely cause of being less represented in Korea than in the UK.

This section focused on the 14 technical components of Web-based shopping systems. It would appear likely that the distribution of the majority of technologies closely related to the WBSS is almost equivalent in the two countries except for two technical components: ISDN and WAN. To summarise, WBSS based on these technological infrastructures provides global business transactions to cross cultural and national boundaries. However, there appear to be some cultural issues that will affect adoption patterns.

8.3.11 Perceived Benefits of WBSS

What benefits do companies seek from their Web-based shopping systems? To answer this question, a comparison is provided in Table 8-25 between British and Korean opinion concerning the potential benefits of WBSS.

Table 8-25. Perceived Benefits of WBSS

Perceived Benefit of WBSS	UK		Korea	
	Mean	Rank	Mean	Rank
• Reduce transaction costs	3.87	8	3.80	9
• Increase the networkability with other organisations	3.45	15	3.70	14
• Improve customer relationships	3.91	6	3.78	10
• Improve security management and privacy	3.12	17	3.28	17
• Enable competitiveness or create strategic advantage	3.89	7	3.73	12
• Enable easier access to information related to the customer and market	3.92	5	4.12	2
• Provide new products or services to customers	4.19	1	4.18	1
• Align well with organisational goals	3.59	13	3.76	11
• Enable the organisation to create new business	4.18	2	4.09	3
• Establish useful links with other organisations	3.58	14	3.54	15
• Enable the organisation to catch up with competitors	3.02	18	3.17	19
• Save money by avoiding the need to increase the work force	3.34	16	3.36	16
• Cost saving by reducing the work force	2.43	19	3.22	18
• Improve the way the organisation conducts business	3.74	11	3.89	7
• Enhance employee productivity or business efficiency	3.68	12	3.70	14
• Provide better products or services to customers	3.80	10	4.03	5
• Enable organisations to respond more quickly to change	4.03	3	3.84	8
• Improve information for customer management	3.82	9	4.08	4
• Enhance the reputation or prestige of the organisation	4.01	4	4.01	6

As can be seen from Table 8-25, some interesting results emerge. For example, the five major benefits of WBSS in both countries appear to relate to the following matters. First, the top benefit was equally ranked by respondents from both countries as being "WBSS provides new products or services to the customer." The result is of no surprise given the underlying rationale of WBSS. The second top benefit in the UK, ranked third in Korea, was that "WBSS enable the organisation to create new business." This also reflects one of the perceived advantages of WBSS. The third top item in the UK, but only eighth in Korea, was that "WBSS enable organisations to respond more quickly to change." Fourth, "WBSS enhance the reputation or prestige of the organisation." This was ranked sixth in Korea. It seems that this line of reasoning might be supported by small-medium companies with typically limited resources and financial capability, and lower IS capability than larger companies. However, SMEs can deliver information and advertise their products and services to global customers cheaply and efficiently on WBSS – something which would be out of their reach using traditional means. The fifth perceived benefit of WBSS in the UK is that "WBSS enable easier access to information related to the customer and market", a benefit ranked second in Korea. This seems to reflect the point that, as an enabler of new business, WBSS have distinguishing advantages in reflecting changes in customer preferences and providing global market information.

For the other benefits of WBSS, though the rank of each item was different in the two countries, the mean values were roughly similar in either country, except for one – "cost savings by reducing the work force." This was a major exception, with the benefit being ranked much higher in Korea. The likely cause of this difference is the higher IT/telecommunication industry base in Korea, as compared to the UK. As mentioned in a previous section, many IT/telecommunications companies in Korea are carrying out Web-based shopping business based on their WBSS. In that case, the company needs fewer additional workers related to the development and maintenance of WBSS. On the other

hand, in the UK, if a company does not have IT/IS experts relating to the Internet technology, then it needs additional technical support from third party IS expertise in the form of outsourcing.

Finally, the major reasons given by respondents from both countries for undertaking WBSS appear to relate more to matters of efficiency and effectiveness than to competitiveness. Recently, the objective of new ICT adoption by organisations appears to be moving away from notions of competitive advantage to survival. This is because the new ICT innovation diffusion process is very rapid, so the gap between initial early adopters and later adopters is not so great (just a few months). Therefore, many firms undertake WBSS as drivers of efficiency or effectiveness in their business. This is probably because WBSS are meant to increase efficiency due to reduced transaction and search costs. This means that lower search costs may possibly also lead to Web-based shopping customers being more sensitive to price changes. By reducing transaction and search costs, WBSS might effectively shift power from merchants to customers and make it harder for a company to maintain higher prices. Therefore, consideration of the perceived benefits of WBSS might help companies use their WBSS more effectively and efficiently. In order to maximize this, we would expect these perceived benefits to be linked to the companies' business strategies in line with their intentions regarding the continual diffusion of their WBSS.

8.3.12 Key Diffusion Strategies for WBSS Diffusion

In spite of the benefits of WBSS, however, many Internet business ventures will fail due to lack of technological understanding and poor business planning (Load, 2000; 40). Actually, around early 2000, various kinds of dot-com companies have disappeared from the Internet business world (Howcroft, 2001; Rifkin and Kurtzman, 2002; Pinker et al., 2002). According to Porter (2001; 78), "dot-coms must pursue their own

distinctive strategies, rather than emulate one another or the positioning of established companies". A key diffusion strategy (Galliers, 1999) is a strategic option, which can trigger the continuous diffusion of WBSS in electronic commerce circumstances. According to Hamel (2001), continuous improvement and radical innovation are not in any way mutually exclusive, but "radical innovation is more likely to create large amounts of new wealth than continuous improvement". Thus, "radical innovation and incrementalism must go hand in hand" (ibid.; 150). Based on this notion, this study regards a key diffusion strategy as the key to the continuous improvement of WBSS in companies.

Thus, this research also seeks to answer the following specific question: what is the most important strategy to gain continuous growth and diffusion of WBSS? This question is a sub-objective and does not replace the main research objective outlined earlier in the thesis. The responses to this question are summarized in Table 8-26, based on Wiseman's (1985) five strategic options: differentiation, cost, innovation, growth and alliance strategy.

Table 8-26. Key Diffusion Strategies[3]

Critical Strategy	UK			Korea		
	Frequency	Percent	Rank	Frequency	Percent	Rank
Differentiation	50	32.9	1	62	41.9	1
Cost	28	18.4	3	35	23.6	2
Innovation	25	16.4	4	15	10.1	4
Growth	42	27.6	2	33	22.3	3
Alliance	7	4.6	5	3	2.0	5
Total	152	100.0	-	148	100.0	-

[3] There were significant differences between the key diffusion strategies in the UK and Korea, according to the 2-tailed t-test at the 0.05 level.

Firstly, a differentiation strategy makes a distinction between product and service in comparison to the competition. Secondly, a cost strategy is a competitive advantage that is achieved through an increase in a competitor's costs, or a decrease in one's own costs. Thirdly, an innovation strategy is the act that improves or enhances the product or the service. Next, a growth strategy is achieved through product variety, the expansion of marketing areas and increased sales. Finally, an alliance strategy gains competitive advantage through the joining together of firms, inter-organisational agreement and joint investments.

The highest priority strategy reported was differentiation (32.9% in the UK and 41.9% in Korea). Customers have different needs and different purchasing wishes, patterns and circumstances. Thus, when focusing on a differentiation strategy, a company may attempt to provide a distinctive product and/or service to customers. The second most common strategy in the UK was reported as growth strategy, ranked third in Korea. The difference in the proportion of growth strategy was small: 27.6% in the UK and 22.3% in Korea. Cost was the third most common strategy in the UK but was ranked second in Korea (18.4% in the UK and 23.6% in Korea).

British Web-based shopping businesses seem to seek firstly, growth, and secondly, appropriate profit, providing a good product at the right price. However, their Korean counterparts attempt to pursue firstly, small profits and quick returns by providing lower cost products than their competitors, and secondly, chasing growth.

On the other hand, an innovation strategy was ranked fourth, with some gap between the UK and Korea: 16.4% in the UK and 10.1% in Korea. An alliance strategy ranked last in both countries (4.6% in the UK and 2.0% in Korea). Thus, we can conclude that organisations in both countries tend to focus on differentiation, growth and cost rather than on innovation or an alliance strategy.

8.4 Reliability and Validity Tests

Before drawing any conclusions from any data set, two critical questions should be asked, "Are the data reliable?" and "Are they valid?" Reliability and validity are two key concepts that are used when making judgments about the quality of the data collected (Moser and Kalton, 2001). The core topic in the assessment of reliability is whether the indicator consistently comes up with the same measurement, while the key concern of assessments of validity is whether appropriate concepts are being measured (Black, 1999; Bryman, 2000; Moser and Kalton, 2001). In other words, reliability refers to the stability or consistency of a measure. It is concerned with whether repeated applications of the measure under similar conditions yield consistent results (Bryman, 2000). On the other hand, validity is related to what the measurement instrument is in fact measuring. It is concerned with whether a variable measures what it is intended to measure (Bohrnstedt and Knoke, 1994). Thus, to evaluate the quality of measurements before any further analysis of the data is attempted, this section aims to address the issues of reliability and validity.

8.4.1 Reliability Tests

According to Churchill (1979), reliability should be the first measure in assessing the quality of the instrument. Reliability refers to the stability or consistency of measurement. Instruments used in the social sciences are generally considered reliable if they produce similar results, regardless of who administers them, and regardless of which forms are used (Black, 1999). The stability of the measure is concerned with whether repeated applications of the measure under similar conditions yield consistent results. Therefore, reliability assessment is essentially a matter of checking for consistency over time when the same measurements are repeated, or over slightly

different but equivalent measures, when more than one item is used (Bryman, 2000; Moser and Kalton, 2001).

Reliablity may be measured in several different ways: 1) the internal consistency method, associated with Cronbach's alpha coefficients; 2) the split-half method; and 3) the parallel-form method (Oppenheim, 1992, 160). Among them, one procedure which produces a popular reliability coefficient in social science research is Cronbach's alpha (Cronbach, 1951; Nunnally, 1967; Churchill, 1979; Oppenheim, 1992). Cronbach's alpha is designed as a measure of internal consistency; that is, all items within the instrument measure the same thing. Cronbach's alpha involves computing the average of the correlations among the responses to all possible pairs of item (Cronbach, 1951).

In general terms, a low Cronbach's alpha value would indicate that the sample of items is a poor representation of the underlying latent variable, whereas a high value is an indication that the items are internally related in the expected manner (Bryman, 2000; Balnaves et al., 2001). In social science research, Nunnally (1967) recommends that a value of Cronbach Alpha of 0.5 to 0.6 suffices for exploratory research.

The reliability of the 16 independent variables and three dependent variables of the research model was tested using SPSS, a well-known statistical package. The results are summarized in Table 8-27. As can be seen from Table 8-27, the coefficient alpha values of all the constructs, measured using multiple questionnaire items, are over 0.60, which satisfies the internal consistency of the instrument in both countries, with a coefficient of over 0.80 being indicated for many of the variables. This high reliability in both countries seems to have been increased by the twice-administered pilot test of the survey instruments, demonstrating the value of pilot studies (see section 7.2). As a result, all of the measures were used for further analysis.

Table 8-27. Reliability Tests of Research Variables

Factors	Variables	Survey Items	Cronbach's Alpha	
			UK	Korea
Global Electronic Market	-Global Electronic Markets	4	.8591	.9108
	-Digital Business	4	.8721	.9545
	-Market Dynamism	5	.8129	.8870
	-Customer Segmentation	4	.8080	.8231
External Technical Factors	-Interactivity	6	.7887	.9408
	-Connectivity	5	.6558	.8251
	-Feasibility	4	.7648	.7799
	-Trialability	3	.8480	.9139
Internal Organisation Factors	-E-business Planning	5	.8985	.8873
	-Risk Management	5	.7936	.8288
	-Customer Service Quality	6	.7751	.8470
	-Knowledge Intensity	8	.7645	.8813
Internal System Factors	-Usability of WBSS	5	.8059	.8158
	-Security Management	5	.8241	.8770
	-Network Infrastructure	4	.8636	.6758
	-Internet Technology Adaptability	5	.8790	.9023
Dependent Variable	-Extent of WBSS Access by Customer	3	.8213	.8702
	-Extent of Internal Usage on the WBSS	3	.9284	.8348
	-Extent of Integration of WBSS Application	3	.7923	.8085

8.4.2 Construct Validity Tests

Construct validity is probably the most important form of validity from a scientific research point of view (Gilbert, 2001). In general terms, validity asks the question, "does the measurement actually measure what it is trying to measure?" In other words, this question is related to whether the measure truly reflects what the concept is meant to mean. "The degree to which both the independent and dependent variables accurately

reflect or measure the constructs of interest is known as the construct validity of the research" (Judd et al., 1991; 28).

Thus, a measuring instrument is valid to the extent that it measures what it purports to measure. The assessment of construct validity involves the systematic examination of the instrument to determine whether it covers a representative sample of the domain to be measured (Balnaves et al., 2001). Thus, one of the most convincing evidences of construct validity is the correspondence of results when a concept is measured in different ways (Churchill, 1979).

A powerful method of testing for construct validity is factor analysis (Kerlinger, 1973), which may enable us to find out what are the main underlying dimensions of a set of variables. That is, factor analysis is a powerful method of construct validation and an effective means of exploring or confirming the factor structure of the scales (Kerlinger, 1973; Oppenheim, 1992). Generally, individual factor analysis is used to confirm the factor structure of scales, while joint factor analysis is used to explore the factors' structure (Black, 1999; George and Mallery, 1999). In this research, individual factor analysis, rather than joint factor analysis, is conducted for each variable, because the object of this study is not to explore the underlying structure of the variables.

If items for the variables load into a single factor with loadings greater than 0.5, the construct validity is confirmed. If they load into more than one factor with strong loading values (> 0.5), then additional factors may be analyzed for the solution of the problem. In addition, using the common-sense criteria for extracting factors with an eigen value greater than 1, and with a factor loading greater than 0.5 (Kinnear and Gray, 1999; George and Mallery, 1999), the following clauses discuss construct validity within four independent variables and one dependent variable. Four independent

variables consist of external market factors, external technical factors, internal organisation factors and internal system factors. In addition, the dependent variables are composed of the extent of WBSS access by customer, the extent of internal usage and the extent of integration of the WBSS application, as already explained in the previous section.

8.4.2.1 Construct Validity: External Market Factors

External market factors include four variables: global electronic market, digital business, market dynamism and customer segmentation. All of these were measured using multiple items in both the countries. The results of testing for construct validity for external market factors are summarized in Table 8-28.

Table 8-28. Results of Factor Analysis on External Market Factors

Measurement Items	Global Electronic Markets		Digital Business		Market Dynamism		Customer Segmentation	
	UK	Korea	UK	Korea	UK	Korea	UK	Korea
Global-1	.894	.879						
Global-2	.870	.913						
Global-3	.808	.902						
Global-4	.777	.867						
Digital-1			.765	.911				
Digital-2			.838	.939				
Digital-3			.875	.959				
Digital-4			.928	.943				
Dynamic-1					.672	.763		
Dynamic-2					.772	.839		
Dynamic-3					.897	.868		
Dynamic-4					.856	.886		
Dynamic-5					.573	.803		
Customer-1							.708	.722
Customer-2							.885	.789
Customer-3							.864	.881
Customer-4							.749	.856
Eigen Values	2.812	3.172	2.916	3.521	2.914	3.471	2.592	2.654
% of Variance	70.306	79.312	72.889	88.013	58.289	69.417	65.788	66.342

As can be seen from Table 8-28, the results show that the four factor solutions were valid, providing strong construct validity of the four variables. This is because all factor loadings were above 0.5, and all variances explained were also over a minimum 58 percent in both countries. Therefore, the four variables were considered to be important in the analysis. Among the four factors, the digital business factor was equally loaded as the highest in either country, demonstrating a single factor solution with 88% of the variance explained by the factor solution in Korea. Thus, according to the results of the factor analysis, it can be argued that the external market factors have higher construct validity.

8.4.2.2 Construct Validity: External Technical Factors

Four variables fall into this category. These are interactivity, connectivity, feasibility and trialability. All of these were measured using multi-item scales in both countries. Table 8-29 shows the results of an individual factor analysis for external technical factors.

As can be seen from Table 8-29, the anatomy of the four variables demonstrates evidence of their construct validity, with a minimum of over 67% of the variance explained by a single factor solution, and with a high factor loading of over 0.5 in both countries. However, one item, feasibility-4 of the feasibility variable set (i.e., "our organisation perceives that Web site development is a simple process"), shows low factor loadings (.412 and .461) as well as low correlations (.2697 and .3740). This suggests that it is not integral to the core construct. It was therefore decided to drop this item from further analysis in both countries. As a result of dropping the feasibility-4 item, the total variance explained by the single factors solution was increased from 65.281 to 83.307 in the UK and from 61.688 to 70.990 in Korea, resulting in greater factor loading values of the remaining three items.

Table 8-29. Results of Factor Analysis on External Technical Variables

Measurement Items	Interactivity		Connectivity		Feasibility		Trialability	
	UK	Korea	UK	Korea	UK	Korea	UK	Korea
Interac-1	.682	.717						
Interac-2	.695	.916						
Interac-3	.576	.891						
Interac-4	.735	.928						
Interac-5	.832	.935						
Interac-6	.675	.909						
Connec-1			.810	.816				
Connec-2			.895	.846				
Connec-3			.811	.789				
Connec-4			.863	.669				
Connec-5			.826	.678				
Feasibility-1					.928	.767		
Feasibility-2					.904	.884		
Feasibility-3					.906	.872		
Feasibility-4					.412	.461		
Trialability-1							.879	.957
Trialability-2							.858	.944
Trialability-3							.892	.871
Eigen Values	3.968	4.709	3.305	3.983	2.499	2.130	2.305	2.567
% of Variance	67.429	78.486	77.405	87.105	83.307	70.990	76.831	85.571

8.4.2.3 Construct Validity: Internal Organisational Factors

Internal organisational factors include e-business planning, risk management, customer service quality and knowledge intensity. All of them were measured on multi-item scales. Table 8-30 summarizes the anatomy of construct validity for the internal organisational factors in both countries.

As can be seen from Table 8-30, three factors – e-business planning, risk management, and customer service quality – show evidence of their construct validity, with a factor loading over 0.5, and with the explained variance of over 60% in both countries.

However, the knowledge intensity factor set posed a problem. This is because the rotated factor solution contains three factors in the UK and two factors in Korea, with eigen values greater than 1, while the first of these factors explains about 39% of the variance in the UK and 40% of the variance in Korea. One option to resolve this problem was based on the following explanation: the sharp drop in eigen values from the first factor to the second suggests a one-factor solution (Cattell, 1966). According to this, all the items in the knowledge intensity variable were therefore aggregated to give a measure of knowledge intensity factors.

Table 8-30. Results of Factor Analysis on Internal Organisational Factors

Measurement Items	E-Planning		Risk M'		Service Q'		Knowledge Intensity				
	UK	Korea	UK	Korea	UK	Korea	UK			Korea	
Plan-1	.876	.856									
Plan-2	.875	.888									
Plan-3	.874	.847									
Plan-4	.841	.771									
Plan-5	.750	.790									
Risk-1			.748	.756							
Risk-2			.861	.764							
Risk-3			.841	.875							
Risk-4			.710	.755							
Risk-5			.544	.724							
Service-1					.883	.895					
Service-2					.863	.710					
Service-3					.832	.938					
Service-4					.599	.780					
Service-5					.877	.739					
Service-6					.650	.528					
Knowle-1							.871			.819	
Knowle-3							.866			.873	
Knowle-4							.769			.712	
Knowle-2								.762			.588
Knowle-5								.802			.786
Knowle-6								.574			.810
Knowle-7									.894		.584
Knowle-8									.912		.775
Eigen Values	3.565	3.459	2.808	3.01	3.574	3.419	3.12	1.55	1.29	3.40	1.64
%of Variance	71.30	69.18	56.16	60.26	60.67	60.31	3895	1439	1294	40.10	16.73

8.4.2.4 Construct Validity: Internal System Factors

Internal system factors deal with usability of WBSS, security management, network infrastructure and Internet technology adaptability. All of them were measured using multi-item scales. Table 8-31 exhibits the results of the construct validity test conducted for internal system factors in both countries.

Table 8-31. Results of Factor Analysis on Internal System Factors

Measurement Items	Usability of WBSS		Security Management		Network Infrastructure		Adaptability	
	UK	Korea	UK	Korea	UK	Korea	UK	Korea
Usability-1	.936	.804						
Usability-2	.880	.803						
Usability-3	.892	.798						
Usability-4	.847	.716						
Usability-5	.715	.704						
Security-1			.799	.831				
Security-2			.803	.892				
Security-3			.874	.885				
Security-4			.800	.849				
Security-5			.595	.647				
Network-1					.851	.541		
Network-2					.852	.947		
Network-3					.899	.877		
Network-4					.764	.755		
Adaptability-1							.844	.877
Adaptability-2							.937	.871
Adaptability-3							.783	.843
Adaptability-4							.913	.875
Adaptability-5							.627	.789
Eigen Values	3.460	2.939	3.040	3.410	2.843	2.639	3.428	3.627
% of Variance	69.095	58.774	60.804	68.202	71.085	70.098	68.555	72.549

As can be seen from Table 8-31, testing construct validity was carried out for all of the multiple-items within the set of internal system factors. According to the results, the

construct validity of internal system factors was confirmed. This is because all the items used demonstrate a single factor solution, with the variance explained over a minimum of 58%, and with the high loading values at over 0.6 in both countries. Therefore, on the basis of this reasonable construct validity observed, all items were used for further analysis.

8.4.2.5 Construct Validity: Dependent Variables

Dependent variables related to the extent of WBSS access by customer, the extent of internal usage of the WBSS and the extent of integration of WBSS applications. All of these were measured using multi-item scales in both countries. The results of an individual factor analysis for dependent variables are summarized in Table 8-32.

Table 8-32. Results of Factor Analysis on Dependent Variables

Measurement Items	WBSS Access		Internal Usage		Integration of WBSS	
	UK	Korea	UK	Korea	UK	Korea
Access-1	.902	.900				
Access-2	.911	.905				
Access-3	.786	.884				
Usage-1			.940	.900		
Usage-2			.960	.873		
Usage-3			.906	.826		
Integra-1					.857	.877
Integra-2					.797	.780
Integra-3					.866	.889
Eigen Values	2.277	2.412	2.626	2.255	2.120	2.169
% of Variance	75.907	80.415	87.544	75.178	70.654	72.310

From the above analysis, it can be claimed that all items of 3 dependent variables were valid in both countries (see Table 8-32). This is because factor loadings of all variables were very high (>.780), and the percentage of variance explained in a single factor

solution was over 70% for all variables. This provides strong evidence of high construct validity. The variables related to the extent of internal usage of the WBSS were loaded highest, followed by the extent of WBSS access by customer, and the extent of integration of WBSS application.

In summary, according to the above test for construct validity for all the research variables, it can be claimed that the research instrument had high construct validity, because all constructs in the instrument have been successfully measured by the specific items.

8.5 Correlation Analysis

One of the crucial conditions in multivariate statistical analysis is that the independent variables are not linearly correlated. The term multicollinearity is used to indicate the presence of linear relationships among variables. That is, multicollinearity is the condition where the variables are very highly correlated (Kinnear and Gray, 1999; Field, 2002). Therefore, multicollinearity effects can affect the interpretation of individual variables in multivariate analysis. For example, if serious linear relationships are detected among predictor variables, interpretation of results from multivariate analysis can be biased (Koutsoyiannis, 1977; Lind et al., 2002; Field, 2002).

Thus, problems with multicollinearity occur when correlations among independent variables are high. According to Johnston (1984), bias begins to creep in at correlations above 0.5 and becomes exponentially magnified at above 0.7. Increased bias is marginal between correlations of 0.5 and 0.7, and only becomes serious at correlations of 0.8 and above.

To draw unbiased results from multivariate analysis, all the dependent variables that were shown as valid and reliable in previous sections were adopted to investigate correlation and multicollinearity. A correlation analysis is used to measure the strength of the inter-relationship between two or more variables (De Vaus, 2001; Francis, 2001; Field, 2002; Lind et al., 2002; Lucey, 2002; Curwin and Slater, 2002). If the correlation is zero, then the two variables are completely uncorrelated. On the other hand, a correlation of 1 means perfectly correlated (Francis, 2001; Field, 2002; Lind et al., 2002; Lucey, 2002; Curwin and Slater, 2002). The matrix of correlation analysis is shown in Table 8-33 for the UK data and in Table 8-34 for the Korean data. The upper numbers represent correlation coefficients and the lower numbers show the level of significance. When the correlation between all independent variables was evaluated, it was shown that multicolinearity does not exist among independent variables. Though there is not a serious correlation above 0.7 in both countries, some of the correlations (> 0.5) are interesting and are discussed below.

8.5.1 Correlations in the UK Data

In Table 8-33, we found that the correlation coefficient between risk management and security management is 0.578 ($p < 0.001$). In order to extract the factor structure of these two variables, a factor analysis was run using ten items consisting of these two variables: each variable has five items. Two factors were extracted from the ten items. However, one item (security-5) in security management was grouped with the risk management factors. This was problematic as it affected the correlation coefficient between risk management variable and security management variable. Thus, it was decided to drop the security-5 item within the security management set of variables from further multivariate analysis. From this correlation, it could be inferred that organisations dealing with higher risk management tend to foster the provision of stable security management for WBSS.

Table 8-33. Correlation Matrix of Independent Variables in the UK Data

Var	Mar	Dig	Dyn	Seg	Int	Con	Fea	Tri	Pla	Ris	Ser	Kno	Usa	Sec	Net	Ada
Mar	1.00	.284	.343	.313	.044	.127	.027	.228	.204	.191	-.096	-.052	.212	.194	.252	.313
	0.00	.000	.000	.000	.589	.120	.737	.005	.012	.019	.240	.521	.009	.017	.002	.000
Dig		1.00	.099	.107	.098	.072	.014	.255	.101	.133	-.108	-.011	.106	.086	.120	.282
		0.00	.225	.189	.230	.378	.863	.002	.214	.103	.184	.897	.194	.294	.140	.000
Dyn			1.00	.263	.255	.070	.019	.218	.308	.343	.016	.118	.278	.297	.208	.366
			0.00	.001	.002	.388	.818	.007	.000	.000	.846	.146	.001	.000	.010	.000
Seg				1.00	.099	.133	.073	.384	.366	.332	.162	.412	.355	.339	.249	.379
				0.00	.226	.103	.370	.000	.000	.000	.047	.000	.000	.000	.002	.000
Int					1.00	.152	.134	.052	.250	.071	.041	.197	.083	.248	-.008	.180
					0.00	.061	.100	.524	.002	.385	.618	.015	.308	.002	.918	.027
Con						1.00	.285	.176	.138	.029	-.004	-.009	.017	.174	-.185	.139
						0.00	.000	.030	.091	.725	.961	.911	.833	.032	.023	.088
Fea							1.00	.085	.331	.105	.293	.085	.172	.227	.031	.013
							0.00	.300	.000	.197	.000	.298	.034	.005	.701	.872
Tri								1.00	.248	.137	-.013	.277	.078	.060	.072	.253
								0.00	.002	.092	.875	.001	.341	.465	.377	.002
Pla									1.00	.372	.321	.537	.355	.372	.365	.390
									0.00	.000	.000	.000	.000	.000	.000	.000
Ris										1.00	.322	.420	.378	.578	.294	.418
										0.00	.000	.000	.000	.000	.000	.001
Ser											1.00	.296	.456	.481	-.020	.193
											0.00	.000	.000	.000	.803	.017
Kno												1.00	.417	.416	.248	.463
												0.00	.000	.000	.002	.000
Usa													1.00	.403	.258	.563
													0.00	.000	.001	.000
Sec														1.00	.320	.457
														0.00	.000	.002
Net															1.00	.350
															0.00	.000
Adt																1.00
																0.00

Second, the correlation coefficient between the usability of WBSS and Internet technology adaptability was 0.563 ($p < 0.001$). Factor analysis was also carried out to find some interrelationship between the two variables. However, no significance between the two variables was found, because the two factors were clearly extracted. An explanation might be that organisations that have high Internet technology adaptability also tend to have high usability of WBSS. This is because high Internet technology adaptability of an organisation will affect the degree of WBSS usability of that organisation. In addition, the high usability of WBSS is necessary to understand the features of various Internet technologies for adoption and implementation. Thus, it seems that both WBSS usability and the Internet technology adatability are closely related to the WBSS diffusion.

Finally, the correlations between e-business planning and knowledge intensity should be discussed (correlation = 0.537). To understand the interrelationship of these two variables more clearly, factor analysis was also carried out. E-business planning variables show one factor solution while knowledge intensity variables were extracted to three factors, which was not problematic, as previously indicated in a validity test. According to the statistical analysis, we can see that the high knowledge intensity organisations, if they conduct e-business, will establish good e-business planning processes, or may influence the degree of e-business planning. As a result, it appears that high knowledge intensity provides an essential foundation for creating solid e-business planning of organisations.

8.5.2 Correlations in the Korean Data

As shown in Table 8-34, none of the variables has a coefficient higher than 0.60. Thus, further multivariate analysis of the research model does not suffer from the muticollonearity problem. The correlation coefficient in the Korean data was similarly

Table 8-34. Correlation Matrix of Independent Variables in the Korean Data

Var	Mar	Dig	Dyn	Seg	Int	Con	Fea	Tri	Pla	Ris	Ser	Kno	Usa	Sec	Net	Ada
Mar	1.00	.344	.367	.325	.282	.314	.309	.229	.291	.159	.379	.319	.282	.235	.064	.375
	0.00	.000	.000	.000	.001	.000	.000	.005	.000	.053	.000	.000	.000	.005	.441	.000
Dig		1.00	.472	.212	.308	.350	.131	.335	.077	.182	.111	.315	.249	.139	.214	.300
		0.00	.000	.010	.000	.000	.112	.000	.352	.027	.180	.000	.002	.093	.009	.000
Dyn			1.00	.355	.323	.222	.200	.260	.240	.247	.366	.390	.394	.312	.101	.386
			0.00	.000	.000	.007	.015	.001	.003	.002	.000	.000	.000	.000	.223	.000
Seg				1.00	.372	.316	.229	.313	.349	.322	.400	.375	.320	.386	.277	.355
				0.00	.000	.002	.005	.000	.000	.000	.000	.000	.000	.000	.001	.000
Int					1.00	.392	.228	.354	.373	.420	.422	.340	.586	.361	.165	.341
					0.00	.000	.005	.000	.002	.000	.000	.000	.000	.000	.045	.000
Con						1.00	.479	.430	.247	.183	.327	.414	.363	.343	.259	.321
						0.00	.000	.000	.003	.026	.000	.000	.000	.000	.001	.000
Fea							1.00	.366	.187	.037	.311	.283	.309	.303	.034	.149
							0.00	.000	.023	.653	.000	.000	.000	.000	.680	.070
Tri								1.00	.312	.277	.337	.304	.364	.316	.091	.379
								0.00	.000	.001	.000	.000	.001	.000	.270	.000
Pla									1.00	.407	.334	.542	.357	.365	.364	.383
									0.00	.000	.000	.000	.000	.000	.000	.000
Ris										1.00	.393	.344	.397	.565	.380	.440
										0.00	.002	.010	.000	.000	.000	.000
Ser											1.00	.343	.372	.446	.223	.311
											0.00	.000	.000	.000	.007	.000
Kno												1.00	.435	.375	.332	.365
												0.00	.000	.002	.000	.000
Usa													1.00	.565	.329	.544
													0.00	.000	.000	.000
Sec														1.00	.381	.435
														0.00	.000	.000
Net															1.00	.375
															0.00	.000
Adt																1.00
																0.00

distributed as compared to the UK data: i.e., risk management and security management (correlation = 0.565), usability of WBSS and Internet technology adaptability (correlation = 0.544) and e-business planning and knowledge intensity (correlation = 0.542). All three have already been discussed in the previous section. In addition, although serious correlations above 0.6 did not exist, some of the correlations (> 0.5) are discussed as follows.

The correlation coefficient between interactivity and usability of WBSS was 0.586 ($p < 0.001$), which reflects the characteristics of Internet technology. This is because Internet technology significantly affects the diffusion of Web-based shopping systems and electronic commerce. Thus, we can see that the high interactivity of Internet technologies will influence the extent of WBSS usability. In addition, the high usability of WBSS will be partially based on the extent of Internet technology interactivity. However, this research will examine whether the perceived high interactivity of Internet technologies would influence the extent of WBSS diffusion in the following section.

Another interesting correlation was between security management and usability of WBSS, exhibiting correlations of 0.565 ($p < 0.001$). It seems that security management is one of the crucial aspects of WBSS diffusion. According to Gupta et al. (1998), security management is related to systems protection from computer hackers or viruses and message security, such as encryption or digital signatures. It also includes security management on customer privacy or customer data. Thus, it appears that high usability of WBSS is affected by solid security infrastructure. On this basis, it would be interesting to investigate whether the WBSS diffusion is related to the WBSS usability and security management issues.

In summary, the magnitude of correlations of all variables is relatively low in both countries, and therefore should not cause a muticollonearity problem for the

multivariate statistical analysis. However, it is necessary to carry out careful interpretation of the findings in different national contexts.

8.6 Analysis of Research Hypotheses

As can be seen from the analysis of the data set of the sample, it appears that the diffusion of WBSS is not a monocausal phenomenon, which is affected by a single factor. This means that many factors are likely to be interrelated with WBSS diffusion. Therefore, according to the large data set collected from the UK and Korea, multivariate statistical analysis is adopted. There are various kinds of multivariate analysis, such as multiple regression analysis, cluster analysis, principal component analysis, path analysis, discriminant analysis (Francis, 2001; Curwin and Slater, 2002; Lucey, 2002; Field, 2002; Lind et al., 2002; Robertson and McCloskey, 2002). Among these, multiple regression analysis is adopted to evaluate the relationship between independent variables and WBSS diffusion. This is because multiple regression analysis can provide the most important factors as well as less important or insignificant determinants in relation to WBSS diffusion, since this is more powerful and more versatile than non-parametric methods (Oppenheim, 1992; Field, 2002; Lind et al., 2002; Robertson and McCloskey, 2002). Moreover, multiple regression analysis enables us to say how much impact each additional unit of the independent variables will have on the dependent variable (Kinnear and Gray, 1999; Field, 2002; Curwin and Slater, 2002; Lind et al., 2002). To identify to what extent each variable affects the extent of WBSS diffusion, sixteen independent variables were input for three kinds of dependent factors: the extent of WBSS access, the extent of internal usage of WBSS and the extent of integration of WBSS application. At that time, this research will determine the direction of the relationship between each independent variable and WBSS diffusion based on the value (positive or negative) of the regression coefficients (Lind et al., 2002; Field, 2002; Lucey, 2002; Curwin and Slater, 2002).

In relation to the criteria of significance in multivariate statistical analysis, "there is no one level of significance that is applied to all tests. A decision is made to use the 0.01 level, the 0.05 level, the 0.10 level, or any other level between 0 and 1. The researcher must decide on the level of significance before formulating a decision rule" (Lind et al., 2002; 338). According to George and Mallery (1999; 84), "social scientists have generally accepted that if the p-value is less than 0.05, then the result is considered statistically significant. ... Another frequently observed convention is that when a significance level falls between 0.05 and 0.10, the result is considered marginally significant." On the basis of this definition, in the following multiple regression analysis, this research will accept that if the p-value is less than 0.05, then the result is considered satistically significant (Kinnear and Gray, 1999; George and Mallery, 1999; Lucey, 2002; Field, 2002; Lind et al., 2002; Robertson and McCloskey, 2002). This is because the smaller the p value the greater confidence the resewarcher has that his findings are valid (Lind et al., 2002; Lucey, 2002; Field, 2002; Robertson and McCloskey, 2002).

8.6.1 Key Impact Factors Influencing the Extent of WBSS Access

To investigate key impact factors influencing the extent of WBSS access by customer, sixteen independent variables were input for one dependent variable – the extent of WBSS access. The results of the multiple regression analysis for the UK data are summarized in Table 8-35.

As can be seen in Table 8-35, the R-square amounted to 0.507, which means that about 51% of variation in the dependent variables was explained by the independent variables. Among sixteen independent variables, six variables were found to have a significant association with the dependent variables, indicating that the regression coefficient was positive. Among seven independent variables, the extent of global electronic market and feasibility has a strong positive relationship with the extent of WBSS access by the

customer ($p < 0.01$). In addition, the extent of WBSS access by the customer would be affected by the market dynamism, security management, network infrastructure and adaptability of new Internet technology at $p < 0.05$. In summary, it can be seen that the variables affecting WBSS access in the UK are closely related to the characteristics of Internet technologies that comprise WBSS: feasibility, security management, network infrastructure and Internet technology adaptability. This means that the extent of WBSS access by customer is affected by a solid network infrastructure, systems security, fitable systems architecture, and high Internet technology adatability.

Table 8-35. Regression Analysis for the the UK Data: Extent of WBSS Access

Dependent Variable	Independent Variables	Regression Coefficients	T value	Sig. of t	R-Square	F Value	Sig. of F
Extent of WBSS Access	Global Electronic Market	.246	2.851	.005*	.507	8.684	.000
	Market Dynamism	.153	2.014	.046**			
	Feasibility	.261	3.422	.001*			
	Security Management	.260	2.529	.013**			
	Network Infrastructure	.164	2.168	.032**			
	Internet Technology Adaptability	.207	2.062	.041**			

*: Significance level at < 0.01 **: Significance level at < 0.05

Secondly, multiple regression was run using all independent variables for the Korean data. Table 8-36 provides summary details relating to the results of regression analysis for the Korean Data.

Table 8-36. Regression Analysis for the Korean Data: Extent of WBSS Access

Dependent Variable	Independent Variables	Regression Coefficients	T value	Sig. of t	R-Square	F Value	Sig. of F
Extent of WBSS Access	Digital Business	.178	2.193	.030**	.550	9.989	.000
	Customer Service Quality	.305	2.539	.012**			
	Security Management	.223	2.202	.029**			
	Network Infrastructure	.396	4.509	.000*			

*: Significance level at < 0.01 **: Significance level at < 0.05

The overall function was strongly supported, with an R-square of 55.0%, which was significant at 0.00 (see Table 8-36). Four hypotheses had significant results, indicating that the regression coefficient was positive. The strongest support variable was for the extent of network infrastructure as a predictor affecting the extent of WBSS access by customer at $p < 0.01$. WBSS based on a strong network infrastructure have been accepted by more customers. In addition, the hypotheses related to digital business, customer service quality and security management were also statistically significant to the extent of WBSS access, at $p < 0.05$.

8.6.2 Key Impact Factors Influencing the Extent of Internal Usage of WBSS

The multiple regression was run to examine key impact factors affecting the extent of internal usage of WBSS. Table 8-37 summarizes the findings of the multiple regression analysis for the UK between a dependent variable – the extent of internal usage of WBSS and sixteen independent variables.

Table 8-37. Regression Analysis for the UK Data: Extent of Internal Usage of WBSS

Dependent Variable	Independent Variables	Regression Coefficients	T value	Sig. of t	R-Square	F Value	Sig. of F
Extent of Internal Usage WBSS	Digital Business	.154	2.342	.021**	.533	9.622	.000
	Market Dynamism	.141	1.964	.050**			
	E-business Planning	.339	3.323	.001*			
	Risk Management	.223	2.548	.012**			
	Network Infrastructure	.288	4.103	.000*			

*: Significance level at < 0.01 **: Significance level at < 0.05

As shown in Table 8-37, the results of the multiple regression analyses are encouraging, with an R-square value of 0.533 ($p = 0.000$). In concrete terms, the results indicate that e-business planning and network infrastructure were strongly related to the extent of

internal usage of WBSS ($p < 0.01$), indicating that the regression coefficient was positive. It could be inferred that WBSS with a solid network infrastructure and elaborated e-business planning tend to facilitate the extent of internal usage of WBSS. In addition, the extent of digital business, market dynamism and risk management also had positively a significant influence on the extent of internal usage of WBSS, at $p < 0.05$.

For the Korean data, multiple regression was also run. The results of the multiple regression analysis for the Korean data are summarized in Table 8-38.

Table 8-38. Regression Analysis for the Korean Data: Extent of Internal Usage of WBSS

Dependent Variable	Independent Variables	Regression Coefficients	T value	Sig. of t	R-Square	F Value	Sig. of F
Extent of Internal Usage of WBSS	Market Dynamism	.248	2.872	.005*	.617	13.206	.000
	Customer Segmentation	.201	2.192	.031**			
	Connectivity	.209	2.001	.047**			
	Feasibility	.295	4.292	.000*			
	Trialability	.251	2.796	.006*			
	E-business Planning	.280	2.959	.004*			
	Knowledge Intensity	.473	3.955	.000*			
	Network Infrastructure	.198	2.455	.015**			

*: Significance level at < 0.01 **: Significance level at < 0.05

The results have a high R-square value (0.617), which is a strong indication of the explanatory power of the predictor variables. As can be seen from Table 8-38, the extent of market dynamism, feasibility, trialability, e-business planning and knowledge intensity is strongly related ($p < 0.01$) to the extent of internal usage of WBSS, indicating that the regression coefficient was positive. Thus, we can see that the extent of internal usage of WBSS tends to be affected by the degree of knowledge intensity and e-business planning within Korean organisations. Another three predictor variables

– customer segmentation, connectivity and network infrastructure – have a positive relationship with the extent of internal usage of WBSS ($p < 0.05$).

8.6.3 Key Impact Factors Influencing the Extent of Integration of WBSS Application

The final multivariate analysis focuses on the relationship between the extent of integration of WBSS application and sixteen independent variables. Multiple regression analysis was also used to test these relationships. The results for the UK data are illustrated in Table 8-39.

Table 8-39. Regression Analysis for the UK Data: Extent of Integration of WBSS Applications

Dependent Variable	Independent Variables	Regression Coefficients	T value	Sig. of t	R-Square	F Value	Sig. of F
Extent of Integration of WBSS Application	Digital Business	.117	1.933	.047**	.606	12.979	.000
	Market Dynamism	.136	2.059	.041**			
	Trialability	.182	2.662	.009*			
	E-business Planning	.193	2.048	.042**			
	Internet Technology Adaptability	.267	3.050	.003*			

*: Significance level at < 0.01 **: Significance level at < 0.05

As can be seen from Table 8-39, the model has an R-square value of about 61% and is significant at $p = 0.000$. The extent of trialability and Internet technology adaptability has a strong positive relationship with a dependent variable – the extent of integration of WBSS application ($p < 0.01$), indicating the regression coefficient is positive. In other words, the perceived high trialability and organisational adaptability of Internet technology tends to influence the extent of WBSS diffusion. In addition, the extent of digital business, market dynamism and e-business planning is also positively related to the extent of integration of WBSS application ($p < 0.05$).

Moreover, multiple regression between sixteen independent variables and a dependent variable – the integration of WBSS application – was run for the Korean data. The results are presented in Table 8-40.

Table 8-40. Regression Analysis for the Korean Data: Extent of Integration of WBSS Applications

Dependent Variable	Independent Variables	Regression Coefficients	T value	Sig. of t	R-Square	F Value	Sig. of F
Extent of Integration of WBSS Application	Digital Business	.155	2.203	.029**	.662	16.003	.000
	Connectivity	.298	3.034	.003*			
	Feasibility	.227	3.520	.001*			
	E-business Planning	.310	3.484	.001*			
	Customer Service Quality	.447	4.295	.000*			
	Knowledge Intensity	.267	2.372	.019**			
	Usability of WBSS	.249	2.621	.010*			
	Network Infrastructure	.336	4.418	.000*			

*: Significance level at < 0.01 **: Significance level at < 0.05

The overall model has a strong R-square value of 66.2%, which is significant at 0.00. Eight hypotheses were supported, indicating that the regression coefficient was positive. The strongest positive support was for the extent of network infrastructure, customer service quality, feasibility, connectivity, e-business planning and usability, as predictors affecting the extent of WBSS diffusion ($p < 0.01$). It would therefore appear that the extent of integration of WBSS applications tends to be facilitated by WBSS with high customer service quality, solid network infrastructure, elaborated e-business planning, excellent usability of WBSS and the higher perceived feasibility and connectivity of the Internet technology. Finally, the digital business and knowledge intensity variables are also positively related ($p < 0.05$) to the extent of integration of WBSS applications.

Based on the findings from the multivariate analysis on the survey data, several variables were found to have a positive association with the diffusion of WBSS in the two national contexts. The following section summarizes the results of the statistical tests for the research hypotheses.

8.6.4 Discussion of Results

The results concerning the acceptance of hypotheses relating to all the independent variables on the diffusion of WBSS are summarized in Table 8-41. That is, major results arising from the survey data in both countries are illustrated with respect to each of the hypotheses.

Table 8-41. Summary of Hypotheses Analysis

Research Variables	Extent of WBSS Access		Extent of Internal Usage		Extent of Integration		Hypotheses Acceptance	
	UK	Korea	UK	Korea	UK	Korea	UK	Korea
External Market Factors								
Global Electronic Markets	.005*						O	X
Digital Business		.030**	.021**		.047**	.029**	O	O
Market Dynamism	.046**		.050**	.005*	.041**		O	O
Customer Segmentation				.031**			X	O
External Technical Factors								
Interactivity							X	X
Connectivity				.047**		.003*	X	O
Feasibility	.001*			.000**		.001*	O	O
Trialability				.006*	.009*		O	O
Internal Organisation Factors								
E-business Planning			.001*	.004*	.042**	.001*	O	O
Risk Management			.012**				O	X
Customer Service Quality		.012**				.000*	X	O
Knowledge Intensity				.000*		.019**	X	O
Internal System Factors								
Usability of WBSS						.010*	X	O
Security Management	.013**	.029**					O	O
Network Infrastructure	.032**	.000*	.000*	.015**		.000*	O	O
Internet Technology Adaptability	.041**				.003*		O	X

*: Significance level at < 0.01 **: Significance level at < 0.05

O: Accepted X: Rejected

As can be seen from Table 8-41, a number of relationships between the sixteen independent variables and three dependent variables have been summarized. It appears that application of three kinds of dependent variables in this study allows the delineation of individual effects of the independent variables as a facilitator of WBSS diffusion in the two national contexts. In Table 8-41, "accepted" implies that more than one dependent factor are statistically significant, whilst "rejected" means that the three dependent factors are not statistically significant. The following attempts to discuss the results of the analysis of hypotheses regarding the relationship between the sixteen independent variables and WBSS diffusion.

As mentioned earlier, qualitative and quantitative methods can be used effectively in the same research subject (Glaser and Strauss, 1967; Jick, 1979; Kaplan and Duchon, 1988; Strauss and Corbin, 1990; Lee, 1991; Creswell, 1994; Gable, 1994; Goles and Hirschheim, 2000; Bryman, 2000; Mingers, 2001). However, how can qualitative and quantitative data be combined? To answer this question, according to Strauss and Corbin (1990; 18-19), "one might use qualitative data to illustrate or clarify quantitatively derived findings." In addition, "the research findings of surveys will become more meaningful when interpreted in the light of qualitative information" (Jick, 1979; 606), because "qualitative data are apt to be superior to quantitative data in density of information, vividness and clarity of meaning" (Weiss, 1968; 344-345).

Furthermore, a consequence of the exploratory nature of research with regard to WBSS diffusion is the absence of prior empirical research to discuss the research results arising from the survey phase. As such, the qualitative data derived from the interviews are therefore used to provide meaningful interpretations of the research results arising from the survey data. That is, this study will discuss the research findings, according to the crucial points that were made by interviewees regarding key impact factors on WBSS

diffusion. Thus, this research attempts to discuss the research findings from both the quantitative survey and qualitative interview data, in terms of the relationship between key impact factors and WBSS diffusion.

8.6.4.1 Global Electronic Markets

According to Laudon and Laudon (2000; 23), "an electronic market is an information system that links together many buyers and sellers to exchange products, services, information and payments. Through computers and networks, these systems function like electronic middlemen, with lowered costs for typical marketplace transactions such as establishing prices, ordering purchase and sale transactions digitally." Therefore, global electronic markets bring about new forms of digital economy, new relationships and partnerships, and new scope and efficiency for markets, removing the temporal and geographic limitations in global Web-based shopping circumstances (Grover et al., 1999; Chircu and Kauffman, 2000; Nour and Fadlalla, 2000; Timmers, 2000). Regarding the characteristics of global electronic markets, the global electronic markets variable was found to be one of the major factors of WBSS diffusion in the British context only. In line with this, an interesting comment was made by an interviewee who was a partner at Arthur Andersen in the UK:

> I think global electronic markets based on WBSS are a great chance for SMEs especially, but they need caution. It does not provide an immediate recipe for success to join the global electronic marketplace. Therefore, SMEs have to focus on their product offering by differentiating through a niche focus, strong brand identity, quality, delivery or whatever.

A similar comment was also provided by one of the Korean interviewees from an IT/telecommunication company, as follows:

> SMEs have main product items which they usually produce. It is good to make

special WBSS for selling their main product items. Through the special WBSS, they can show their unique image to customers. At this time, they had better pursue not diversification but specialization to acquire competitive advantage.

As the volume of e-business continues to grow, it would seem that WBSS can enable organisations, in particular SMEs, to provide new opportunities as a global marketer. That is, the fundamental opportunity offered by WBSS is for SMEs to gain direct access to customers and business, without the attendant costs associated with the physical distribution channels such as intermediaries (ref. section 5.3), and in turn this kind of characteristic of WBSS would be positively related to the shaping process of WBSS.

However, the hypothesis concerning the global electronic markets variable was not supported in the Korean context. In line with this, during the pilot survey procedure comparing various kinds of WBSS in both countries, it appears that Korean WBSS are likely to focus mainly on the Korean language basis, while some British WBSS tend to be accessible in other European languages, such as French, German, Italian, and Spanish for their European clients. That is, it seems that the Korean WBSS tends to be limited in supporting multi-language function for their global customers, as compared to the UK. The limited support of multi-language function would account for the global electronic markets variable failing to emerge as a key impact factor of WBSS diffusion in the Korean context.

To sum up, it is reasonable to argue from the evidence obtained from the interview data that global electronic markets, driven by the emergence of new Internet technologies, would provide considerable new opportunities for businesses, in particular SMEs, being able to obtain unprecedented access by global customers and to sell a wider range of products and services at low costs. Hence, the global electronic markets, emerging as an important factor for the WBSS diffusion in the UK context, would be continuously expanded in global e-business environments.

8.6.4.2 Digital Business

Internet technology has the potential to revolutionize the way in which organisations conduct business in the digital economy (Tapscott, 1995; Hammond, 1996; Barua et al., 2000; Ba et al., 2002). Dynamic digital business provides market-based forms of value creation and value delivery to match demand and supply quickly and efficiently, as mentioned by Timmers (2000). That is, digital business enables exciting new possibilities to increase the economic dynamics such as buyer or seller coalitions, dynamic product and service bundling, and fuzzy market, since physical products are restricted because they are always based to some extent on a standard product, and because they must be shipped and delivered (Timmers, 2000; Greenstein, 2002). In this study, digital business was found to be one of the most important facilitators of WBSS diffusion in each country. In this connection, a Korean interviewee, the managing director of a dot-com, illustrated the past, present, and future of digital business:

> Many dot-coms in Korea had a hard time to gain profit through digital business two or three years ago. Now it has much improved, because they receive a fee for the information previously provided freely, so that they are making a profit for selling digital products such as the online game, movie, DVD, drama or music, by receiving an hourly rental fee. In my view, digital business on WBSS will play an important role in the diffusion process of global e-business.

Similarly, more detailed significance of digital business among various domains of electronic commerce was demonstrated by one of the interviewees in the UK, representing a dot-com company:

> Our music selling business on WBSS is breaking traditional marketing concepts as well as the mistaken notion that Web-based shopping business is difficult in the UK, because our company has achieved an annual turnover of £5 million in the three years since we launched our business on WBSS.

It would seem that as regards the current activity involving the creation, assembly, and distribution of digital products, a key WBSS opportunity is digital business, due to its advantage of electronic transmission in very low transaction costs at any time. The downloading of digital business products has become routine in recent years. For example, most software is promoted with a demonstration version that allows potential buyers to test the digital product prior to purchase. Based on the discussion so far, in summary, it can be observed that digital business is playing a crucial role in the shaping process of WBSS facilitating global electronic commerce.

8.6.4.3 Market Dynamism

Electronic commerce leads to global market dynamism, increased customization, and a higher degree of networked business relationships (Strader and Shaw, 1997; Timmers, 2000). Therefore, traditional markets and marketing concepts are radically changing, driven by e-business companies who successfully rise to the challenge (Feeny, 2001; Peppers and Rogers, 2002). In this study, market dynamism has emerged as being an important factor for the WBSS diffusion in both countries. It would appear that this is a result of the reflection of WBSS's characteristics, as mentioned by the IT director of a dot-com in Korea:

> One of the major characteristics of WBSS is its capability for dual communication directly with customers. So we can receive the customer demand or preference based on WBSS in a very much shorter time than before. For example when a product is newly displayed on our WBSS, many customers' enquiries are made in just a few hours.

That is, WBSS can fundamentally change the channels through which businesses and customers extend their relationships and interactions beyond the boundaries of the

regional organisation into the global electronic markets, along with the capability to communicate digital business transactions on WBSS. On this basis, it would seem that WBSS can provide an ideal means for the collection and sharing of information from and about global markets and customers, since organisations are required to be flexible and to be quickly adapted to environmental change. Therefore, organisations that recognize the relative importance of market and customer information are more likely to develop sophisticated WBSS. This is because, in a dynamic market, the most successful organisations would be those that best judge market conditions and adapt to changing conditions accordingly. To sum up, we can regard WBSS as a dynamic source of information as well as a global marketing medium that is able to reach many clients. Thus, the preceding discussion demonstrates that dynamic market conditions would appear to strongly encourage the diffusion of WBSS.

8.6.4.4 Customer Segmentation

Since customer segmentation is grouping customers in useful ways for purposes of determining products and services to sell them, it can serve to focus attention on specific sets of customers to understand and address their common preferences, needs and identities (Kare-Silver, 1998; Peppers and Rogers, 2002). The customer segmentation variable was found to be one of the key impact factors only in the Korean context. The result was somewhat surprising in that it did not appear to affect WBSS diffusion in the British context. According to Galliers and Wiggins (2002), 30% of households are connected to the Internet in the UK, and 50% of users are less than 35 years of age. Although this volume of Internet usage is higher than in many other European countries, it is still lower than in Korea. As mentioned in a previous section,

the number of Korean Internet users has reached 29 million, 67% of the total population as of October 2002 (Schofield, 2002). It would appear that the growing Internet user base in the UK is the likely cause for the customer segmentation variable being unaffected by the diffusion of WBSS. In relation to this point, there was an interesting comment presented by a customer service director of a dot-com in the UK:

> Our dot-com has not yet concretized the specific target customer. However, we are going to examine the customer segmentation once we have expanded our customer base to include a wider range of business within the UK.

It would appear obvious that organisations cannot hope to meet the needs of all kinds of customers, given limited marketing resources, manpower, and their product characteristics sold on WBSS. Thus, without knowing their target customer, organisations may be expending limited resources and energy on less important clients that have limited effects on WBSS diffusion. Hence, we can regard customer segmentation as one of the best ways to reach appropriate target customers, and in turn to facilitate the successful WBSS diffusion. Furthermore, it would seem that effective customer segmentation might be possible when substantive data on market, customers and competitors are combined with cool-headed judgment. In summary, on the basis of this discussion so far, it is reasonable to argue that Korean organisations that recognize the relative importance of Web-based shopping business are more likely to concentrate on customers.

8.6.4.5 Interactivity

"Interactivity allows an online merchant to engage a consumer in ways similar to a face-to-face experience, but on a much more massive, global scale" (Laudon and Laudon,

2000, 11-12). Internet technology helps organisations to build a strong asset in customer orientation in terms of interactivity such as customer feedback and customer self-service facilities, according to Timmers (2000, 24). That is, its interactive features can help reach larger groups of potential customers (Peppers and Rogers, 2002). However, perceived interactivity of Internet technology had no relationship to the diffusion of WBSS in either of the countries studied, i.e. the hypothesis relating perceived interactivity of Internet technology to the extent of WBSS diffusion was not supported for either country. In line with the interactivity of Internet technology, the Korean managing director of an IT/telecommunication company expressed the following view:

> As regards the relationship between company and customer, interactivity seems to influence the diffusion of WBSS. However, besides Internet technology, other telecommunication technologies such as telephone and fax have played an interactive role, so that it seems that the interactivity is not a characteristic unique to Internet technology.

In addition to this, a very similar viewpoint was illustrated by a British interviewee, a solution manager of IBM:

> In my view, the perceived interactivity of Internet technology seems to be a universal concept. For example, everyone can use an electronic bulletin board on WBSS. But the board is one of the important functions on WBSS. In fact, this kind of technical characteristic existed before Internet, in the terms of fax, telephone and EDI.

According to the survey data and the above comment, it would appear that the interactivity of Internet technology is perceived by respondents as one of the common online services such as the telephone or fax rather than as one of the particular technical characteristics of Internet technology. Therefore, it seems that this kind of view would affect the research result, and did not influence the diffusion of WBSS.

8.6.4.6 Connectivity

It is claimed that Internet technology allows organisations to overcome many of the physical constraints that often prevent them from doing business (Nath et al., 1998; Riggins, 1999). For example, time and space, the two age-old limitations of human beings, can today be overcome more easily than ever before through information and communication technologies (Nath et al., 1998; Nour and Fadlalla, 2000). The connectivity of Internet technology enables organisations to connect back-end systems to front-end customers and businesses (Korper and Ellis, 2000). That is, the connectivity of Internet technology offers all the advantages of a direct electronic link to businesses and global clients. Thus, the organisation begins to have e-business functionality when its WBSS faces outward, by having connectivity with customers or other businesses. Regarding this characteristic of connectivity, the hypothesis that perceived connectivity of Internet technology facilitates the diffusion of WBSS was positively supported in the Korean context only, though there is an increasing body of evidence that Internet connectivity is having a profound impact on the Internet business diffusion. In relation to this, there is somewhat negative comment concerning the connectivity of the Internet, as pointed out by the CEO of a dot-com in the UK:

> In terms of connectivity, one of the other problems that this brings in is broadband and ADSL which we work on ... Funnily enough, on Monday our actual router went up – I don't know what happened to it, it was a BT connection and something happened to BT – and our router just went crazy and our Internet was down. So we had to go onto dial-up connection in order to circumvent the network and the router, and we were dismayed because everything took so long, because we were so used to ADSL. ... Thus, customers and businesses would be more fortunate if they were in a better connection via stable broadband links.

Based on the above comment, it would appear that WBSS diffusion in the UK may be affected by the Internet access in terms of connectivity. As reviewed earlier in the

Internet broadband access (ref. section 2.3), the UK has shown the lowest penetration of broadband access among the G7 countries (see Figure 2-2). There is a growing body of insistence that the Internet broadband access plays a significant role in the shaping process of the Internet business, quickly accessing streaming audio and video files by the Internet users (e.g., Kalakota and Whinston, 1996; OECD, 2001; Banks, 2001; Rayport and Jaworski, 2001). It seems that a lower penetration of broadband in the UK would affect the research result that the connectivity had no relationship to WBSS diffusion in the British context. Nonetheless, on the basis of evidence derived from qualitative literature and quantitative data in Korea, it appears that the perceived connectivity of Internet technology would be one of the major technical characteristics facilitating WBSS diffusion.

8.6.4.7 Feasibility

According to Timmers (2000, 34), "the feasibility of implementation of the architecture of any business model depends very much on the state of the art of the technology." The extent of perceived feasibility of Internet technology was found to be a major facilitator in the diffusion of WBSS in either country. In relation to implementation feasibility, the managing director of a dot-com in the UK touched on the following point:

> Before we started our WBSS we did the whole thing of looking at the whole Web-based shopping and testing. We did various dummy sites and we got people looking at the site and the navigation to check how easy it was to buy, what sort of things they would buy; looking at the images and the descriptions, and we worked through the whole thing. ... Because we constantly put new things on, and every time one puts something new, you have to market test, and not only market test, you have to technically test, which is extremely important. So, when we consider new Internet technology, we have spent lots of time checking its feasibility before adopting it.

According to Laudon and Laudon (2000, 348), technical feasibility is also accompanied by economic and operational feasibility, given the organisation's resources and constraints. In terms of three major areas of feasibility such as technical, economic, and operational, a Korean interviewee, who is the IT director of a dot-com company, expressed this view more explicitly:

> Money was not continuously being spent on our WBSS facility and technology, because technology costs tend to be less than the costs of customer acquisition and fulfillment, the marketing, and the service, in this case, accounting for just 30 to 40 percent of the total investment required.

Based on such comments, it would seem that the operational feasibility related to managerial and organisational issues might be more important than the technical, when WBSS are implemented in organisations. To sum up, with regard to the discussion based on interview data, it would appear that the higher feasibility of the Internet technology could trigger the development of a sophisticated WBSS.

8.6.4.8 Trialability

As was seen from the survey results, trialability was found to be one of the major determinants of WBSS diffusion in both countries. Organisations judge the value of Internet technology in terms of whether the investment is effective or beneficial before deciding on an appropriate investment. This result is coincident with the previous research findings of Karahanna et al. (1999), who focused on Window technology. In relation to this, a more detailed comment was provided by a British interviewee, the CEO of a dot-com in the UK:

> When we started our dot-com on WBSS, firstly we tested our WBSS and that was a free market test process where we didn't market, we didn't advertise, we kept it very low key, just to make sure our systems actually worked. So it was

> testing the shopping mechanisms, the catalogue, the ordering, the payment, and then we officially launched our WBSS. So it's very much a constant process as well. After that, when our WBSS started, various different problems cropped up, so you constantly have to look at technology and make technological changes all the way through.

Actually, Tesco.com spent 5 years testing their WBSS at ten different shops before their official launch in May 2000 (Howcroft, 2001). In connection with this, a Korean interviewee, who is the IT director at a dot-com, suggested the following :

> No WBSS emerges full blown and perfect first time, so it is a good idea to test the applicability and availability of Internet technologies, and then gradually aim towards 'mission-critical' systems.

Arising from such comments, it appears that knowledge of Internet technology may not be enough to be successful in Web-based shopping businesses. Organisations therefore have to use this knowledge and be prepared to adapt as circumstances demand, carrying out tests on new Internet technology, towards mission-oriented WBSS. In summary, it is reasonable to argue that trialability is a powerful prerequisite for facilitating the further diffusion of WBSS and for fulfilling the various needs of global clients.

8.6.4.9 E-business Planning

In early 2000, as the dot-coms bubble burst, it became increasingly clear that the e-business on the Internet has required as much good e-business planning as new Internet technology (Gulati and Garino, 2000; Porter, 2001; Pinker et al., 2002). As was seen from the survey results, the e-business planning variable was accepted in both countries as one of the crucial factors for WBSS diffusion. Respondents indicated that e-business planning significantly influenced the extent of internal usage of WBSS and the extent of integration of WBSS applications in both countries. A Korean interviewee, a deputy

managing director of SAMSUNG Telecoms Ltd., explained the e-business planning of his company:

> In the case of e-business planning, we make plans monthly, quarterly and yearly, comparing and evaluating the system upgrade plan, the new Internet technology adaptation plan and further strategy based on the vision of our company.

As an increasing number of e-businesses expand their marketing territory into global electronic markets, Internet technologies are overturning the old rules about competition and strategy, according to e.g., Werbach (2000), Feeny (2001), and Porter (2001). In line with this, an interesting opinion on e-business planning was given in the following terms by an interviewee in a UK IT/telecommunications company:

> Without establishing careful e-business planning for adopting Internet technology, any adaptation of Internet technologies could be as much a problem as a benefit. Thus, effective e-business planning is much more necessary to reach business goals in the contemporary dynamic e-business environment.

This point has also been made in recent research highlighting the significance of e-business planning in the context of electronic commerce (e.g., Schunter et al., 1998; Papazoglou and Tsalgatidou, 1999; Corbitt, 2000; Werbach, 2000; Porter, 2001; Rifkin and Kurtzman, 2002). For better understanding of e-business planning more practically, the CEO of a dot-com in the UK introduced her company's multichannel retailing strategy:

> We are now carrying out what's called multi channel retailing, so that is a) we have our WBSS, but b) we have our WAP wireless technology offering products and services through mobile phones. Thirdly we are offering off-line catalogues, and the fourth thing is the growth of homeshopping via CATV being used for connection to the Internet, and finally there is the physical shop. It's called multi channel retailing.

A lesson that might be learnt from the dot-coms' boom and deflation id that successful Web-based shopping businesses need to start with solid e-business planning. It would appear that the survey results and the discussion based on the interview data strongly support the hypothesis that e-business planning influences the diffusion of WBSS in both the national contexts. Therefore, it seems reasonable to argue that e-business planning is a crucial issue for WBSS diffusion, having significant impact on the shaping process of global Web-based shopping business and e-commerce.

8.6.4.10 Risk Management

Somewhat unexpectedly, the risk management variable was only accepted in the UK context. As we saw, it failed to emerge as a predictor of the extent of WBSS access by customers, the extent of internal usage, and the extent of integration of WBSS applications in the Korean context. One of the Korean interviewees explained this as follows:

> I don't think all dot-coms are going to build risk protection systems if there is no incentive for profit, because it needs a heavy investment of money.

It seems that this kind of view relating to risk management led to quite different results in the two countries. However, organisations need to monitor the risk in any place where customers intend to do business, because issues related to the financial risk and product category risk have become important in any Web-based shopping. Therefore, any organisations that engage in Web-based shopping business or deal with business transactions across organisational borders should undertake a comprehensive review of risk management matters, so that they will be able to arrive at a critical mass of customers accessing their WBSS in the global digital economy.

Without effective risk management, organisations cannot make secure shopping circumstances for clients transacting in global markets. In conclusion, regarding the findings arising from survey and interview data, it could be argued that the risk management issues should be considered important for contemporary Web-based shopping. This is because risk management will amplify the ability of Web-based shopping businesses to provide reliable digital business transactions to customers and businesses, which in turn should lead to significant access by global clients.

8.6.4.11 Customer Service Quality

According to Gates (1999), customer service will become the primary value-added function in every Internet business. The survey results suggested that the customer service quality variable affects the extent of WBSS access by customers and the extent of integration of WBSS applications in the Korean context only. This result seems to indicate that companies that want people to access WBSS more frequently attempt to offer high quality customer service. Recent research has also stressed the importance of customer service quality in the contexts of Internet retailing (Elliot and Fowell, 2000) and the Web-sites design (Liu et al., 2000). However, this result was not replicated in the UK context. That is, this variable did not appear to influence WBSS diffusion in Britain. There may be several reasons for this. As mentioned earlier in the section on customer segmentation, it seems that UK Web-based shopping businesses do not place such a high value on customers and customer services as is the case in Korea. In relation to this matter, one of the British interviewees, a dot-com CEO, expressed the following view:

> The function of customer service is not to spend a lot of time communicating these issues to customers, but rather to give them the functional service automatically.

On the basis of this, it would seem that UK Web-based shopping businesses appear to place more emphasis on risk management than customer service or customer segmentation. This may be because, should they neglect their liability for risk issues, it is likely to hurt their reputation. In contrast, Korean Web-based shopping businesses seem to value such issues as customer segmentation and customer service. In conclusion, it could be argued that the significance of customer service quality might be increased more and more within Web-based shopping circumstances, because this seems to be a critical success factor for any WBSS.

8.6.4.12 Knowledge Intensity

As can be seen from the survey, knowledge intensity was found to be one of the important facilitators of WBSS diffusion in the Korean context only. The relationship between knowledge intensity and WBSS was strongly emphasized by a Korean interviewee, the managing director of an IT/ telecommunication company, as follows:

> Depending on the degree of the understanding and knowledge about WBSS and electronic commerce by the company, the system's levels might be different. For example, if companies have little knowledge of Web-based shopping business and systems, they develop a simple WBSS such as a simple Web site and then there is little skill in operating and managing systems. On the other hand, if companies have solid knowledge about Web-based shopping and electronic commerce after doing market research and customer analysis, they deal with a stable operation and management on their sophisticated WBSS.

As mentioned earlier, WBSS can play a major role in collecting and keeping information on markets, customers, businesses and even competitors, globally. Thus, it would appear that WBSS as new digital marketing medium can provide new opportunities for becoming high knowledge intensive organisations, particularly in terms of markets, customers and businesses. On this basis, this research attempted to

increase the practical understanding of the relationship between WBSS and knowledge intensity. As suggested by the CEO of a dot-com in the UK:

> Our company is now preparing to sell knowledge to people who are seeking expert knowledge. We will be selling all kinds of knowledge such as IT, service, education, construction, architecture, design and so on. In order to carry this out successfully, we are now collecting a pool of experts for all areas. In particular, our major customer will be businesses, actively seeking several kinds of expert knowledge.

Based on the discussion so far, it would seem that, as we are in the age of the digital economy, WBSS seem to play an important role in reorganizing the structure of organisational knowledge intensity from old knowledge related to the industrial age to new knowledge relevant to e-commerce, such as global electronic markets, customers, digital business, e-business planning, and the like. Despite this feature of WBSS, however, it appears that a growing body of Web-based shopping businesses in the UK tends to be somewhat limited in the knowledge intensity relevant to the markets, customers, and competitors, so in turn the knowledge intensity variable bore no relationship with the WBSS diffusion in the British context.

In conclusion, on the basis of the discussion so far, it may reasonably be argued that the diffusion of WBSS is facilitated by the degree of knowledge intensity of the organisation, because organisations that have greater knowledge of their clients, markets and competitors tend to develop more highly sophisticated WBSS.

8.6.4.13 Usability of WBSS

The usability variable was found to be one of the key impact factors of WBSS diffusion in the Korean context only. According to this research result, the major factors affecting the usability of a successful WBSS seem closely related to the following issues: careful

design and development of organized hyperlinks, efficient contents management, customized search functions and higher bandwidth connection. In relation to this, the following comments were made by the Korean managing director of a dot-com:

> Among the usability of WBSS, contents management is most important. So, to effectively manage the usability of WBSS, most of the Web-based shopping businesses hire a webmaster. The core of the contents management is how much information it contains and how rapidly the contents change. So, the usability of WBSS might be more effective in the case, not of the design of the engineer, but of the design of the artist who learned the technology and skill.

Accordingly, it would appear that organisations that recognize the relative importance of usability of WBSS are likely to manage their WBSS by the artist rather than the engineer. This is often a neglected aspect in establishing successful WBSS. More practically, one British interviewee, the managing director of a dot-com, suggested the following point:

> WBSS should be quite easy to use. But if WBSS just make it too easy to use, they don't give customers useful information any more. Ideally, customers want good usability as well as plenty of information. So, the best approach is how to provide both of these to customers.

On the basis of the discussion so far, it seems that the UK WBSS tend to lack a customer-oriented view, because the customer segmentation, customer service quality, and usability variables have not been found in this empirical research to be a key impact factor of WBSS diffusion in the British context. However, usability has become a crucial issue, as argued by previous researchers (e.g., Liu et al., 2000; Smith et al., 2002), as more and more organisations set up various kinds of WBSS. It may be said in this connection that usability is part of a strategic component of overall business planning, as argued by Manning (1999). This is because, for example, when customers visit a WBSS, they compare it with what they are used to. If there are no different or improved features, customers will lose no time moving on to another site. In conclusion,

it could be argued that Web-based shopping businesses should attempt to improve the usability of WBSS, fairly frequently, to promote accessibility and ease of use for customers, because usability appears to be one of the crucial forces facilitating WBSS diffusion.

8.6.4.14 Security Management

Security management was found to be an important infrastructural element to stimulate the diffusion of WBSS in both countries. As mentioned earlier, WBSS are regarded as a new marketing medium enabling organisations to reach a large number of global customers. In order to successfully translate digital business transactions, WBSS need to provide secure management functions for external communication networks and internal systems. However, though there appears to be sufficient security management technology – e.g., firewall, digital certification, and encryption – for secure Web-based shopping transactions between organisation and client, it is estimated that there are increasingly frequent attacks by hackers, viruses and Trojans. In addition, technological impediments also exist in the security technologies. In relation to this, one of the Korean interviewees pointed out the issues related to security management as follows:

> If a special hacker has a mind to attack any WBSS he can enter any system. Therefore, though we need to prepare for technical aspects, in particular it is necessary that we should be carefully concerned about legal, social and ethical issues, which can block cyber crime or violation.

It would appear that Web-based shopping businesses around the world are recognizing the necessity to secure their WBSS from cyber crimes. Therefore, it is clear that the growing complexity of WBSS seems to require a comprehensive and detailed review of security management and procedures. However, as mentioned by an interviewee, though security management from the technical aspect is continually important, it is

also important to consider the security issues related to the legal, social and ethical aspects. In conclusion, on the basis of empirical evidence of this research, it might be argued that security management issues relevant to the legal, social, ethical and technical play a crucial role in underpinning the diffusion of WBSS in global e-business contexts.

8.6.4.15 Network Infrastructure

According to Timmers (2000), although e-commerce architecture is rapidly developing, the major essential functionality is a high-capacity network infrastructure, which integrates not only with existing back-end systems, but also with front-end clients (Korper and Ellis, 2000). In this study, network infrastructure was found to be one of the most crucial determinants of WBSS diffusion in both countries. This finding coincides with the opinion of Laudon and Laudon (2000), that organisations with a strong network infrastructure can easily extend their business boundaries to the global marketplace. A similar point was raised by a Korean interviewee in an IT/telecommunication company, who mentioned:

> WBSS themselves require considerable scale. For example, the server on WBSS is connected with another, and in addition WBSS consists of current operating systems, back-up systems and back-end systems. These systems should be connected with the customers and company via the Internet or another network infrastructure. That is, we can see that if any company has a very weak network infrastructure or none at all, the company may hold very simple WBSS or merely a Web-site.

Based on this, we can see that future upgrades of WBSS are more likely to succeed if a sound network infrastructure is in place. Forrester Research identified telecommunication network infrastructure issues as the main impediment to Internet business growth (Timmers, 2000, 171). This is because it is crucial to accomplish

secure, reliable, agile, and global digital transactions for satisfying global customers' requirements.

Furthermore, the network infrastructure aims at providing customers with a better service relevant to Web-based shopping, leading to greater use of WBSS. This would increase the number of transactions handled through Web-based shopping by global clients. In summary, it would appear that the extent of network infrastructure of an organisation is closely connected with the extent of WBSS diffusion. On the basis of the discussion so far, therefore it seems reasonable to argue that the network infrastructure can thus be seen as a vital catalyst for facilitating greater diffusion of WBSS.

8.6.4.16 Internet Technology Adaptability

According to Greenstein (2002; 160), "adaptability matters a great deal in the period after the commercialization of the Internet technology. For example, some firms specialize in making electronic commerce easy to use, while others seek to push the technical frontier." In this regard, the Internet technology adaptability variable was found to be one factor of the impact of WBSS diffusion in the UK only. Though Internet technology adaptability is of major importance, however, Internet technology adaptation does not happen on its own, but comes from one of several groups: end-users within an organisation, professional technical staff within or outside an organisation, or third-party vendors outside the organisation, as argued by some researchers such as Kalakota and Robinson (1999), and Greenstein (2002), for example. Among several issues related to Internet technology adaptation, it seems that the most important issue is the customer, as suggested by the managing director of a UK dot-com:

> In some cases, the customers might become inconvenienced if the company rapidly applies new Internet technology to WBSS, because when the company adopts new Internet technology quickly, the customers cannot use it on their computer. Even though the company makes its WBSS upgrade, not all the customers can use it. For example, there's an assumption that everybody has high-speed connections, big screens, and the capacity to see Flash. However, a lot of people don't, they're still working on computers that are five, six, seven, even ten years old. And some of them still have modem c onnections that are even below 56K, so they don't want these kinds of things. These things really put people off when they shop.

On the basis of this discussion, we can see that when organisations adapt new Internet technology, they should consider customer aspects in advance and maintain a customer-oriented view. This point was quite explicitly expressed by an interviewee in a Korea IT/telecommunication company, as follows:

> When we make WBSS, the most important factor is customer oriented development. For example, one customer may want to interface with Windows 95, another customer with Windows 98, and another with Windows 2000. How do the companies make the system standard? Of course, the standard should be Windows 95, because we should consider every last customer.

Based on the above Korean interview data and the research results so far – in particular customer segmentation, customer service quality, and usability – it seems that the Korean WBSS tend to focus on a customer-oriented view, so this kind of perspective seems to affect the result that the Internet technology adaptability was not a significant factor related to the WBSS diffusion in the Korean context. This is because, as can be seen from the above Korean interview data, it appears that the Web-based shopping businesses in Korea tend not to be in a hurry to adopt the latest Internet technology, because they are likely to consider every last customer, while at the same time, however, keeping abreast of the trend of the new Internet technologies. To back up this statement, evidence can be seen of the technical level of current Korean WBSS such as mobile phone access (ref. section 8.3.6), comparative shopping functions (ref. section 8.3.7), and WBSS technology distribution (ref. section 8.3.10). As compared with the UK, it

appears that the Korean Web-based shopping businesses tend to concentrate their attention on customer orientation far more, whilst simultaneously having an understanding of the newest trends in new Internet technology. In relation to this, a Korean interviewee, the managing director of an IT/telecommunication company pointed out:

> In my view, a company would be very naive if it developed a new system using new technology straightaway. It would just end up probably going over budget, but you just have to look at it as a company. Everything has its pros and cons. If you need new technology to be used, if the market dictates it has to be used, then by that stage it's pretty stable and it's fine, it can be used. So you have to evaluate everything such as market, customer, technology, and business goal.

Therefore, it would appear that the adaptability of the Internet technology would be different for each organisation facing different kinds of customers and conducting different kinds of business. For example, "Flash" graphics may be enticing for some customers, but more often they slow them down, especially for those with dial-up connections to the Internet. In conclusion, it is reasonable to argue that one of the major factors affecting WBSS diffusion is not technology itself, but a harmonious view considering both the customer, the market, and the technical application.

To sum up, this section has provided a discussion on the significant findings from this research based on quantitative data extracted from the survey phase as well as qualitative data obtained from interviews. Though some variables failed to show a relationship with WBSS diffusion in one or the other country due to differences in national culture, national ICT infrastructure and so on, other variables were found to have a significant association with the diffusion of WBSS in both. Based on these findings, more detailed implications of WBSS diffusion are considered in the chapter that follows.

8.7 Summary

The research model essentially comprised five parts: four groups of independent variables and one class of dependent variable. Multivariate analysis was used to test the individual hypotheses predicting the relationship between individual variables and WBSS diffusion. In addition, the findings from the survey have been discussed in the context of evidence gleaned from the interviews that were also conducted. The following summarizes the key impact factors arising from the analysis of both the quantitative and the qualitative data.

For Britain, Figure 8-1 illustrates a simplified model, which represents a synthesis of the significant results discussed in the previous sections. The four groups of factors provide a basis for future research on WBSS diffusion. In summary, four classes of factors as a major facilitator of WBSS diffusion in the UK context include:

- External market factors including global electronic market, digital business, and market dynamism variables appear to be facilitators influencing the diffusion of WBSS.

- External technical factors – feasibility and trialability – appear closely related to the diffusion of WBSS.

- Internal organisation factors such as e-business planning and risk management appear to be strong determinants of WBSS diffusion.

- Security management, network infrastructure and Internet technology adaptability in internal system factors appear to be important predictors of WBSS diffusion in the UK context, in addition.

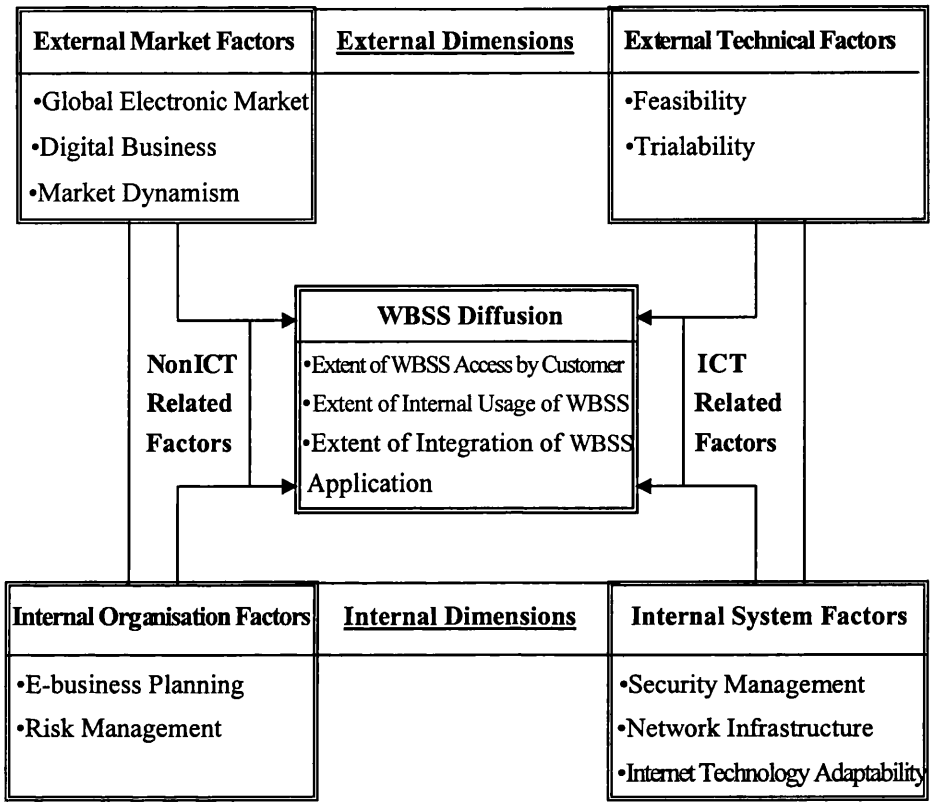

Figure 8-1. Synthesis Model of WBSS Diffusion in the UK Context

On the other hand, Figure 8-2 summarizes the research findings arising from the Korean data. The four groups of factors as a major facilitator of WBSS diffusion are:

- External market factors such as digital business, market dynamism, and customer segmentation were significantly related to the extent of WBSS diffusion.

- The connectivity, feasibility and trialability variables as external technical factors had a positive relationship with dependent variables.

- Internal organisation factors included e-business planning, customer service quality and knowledge intensity variables as facilitators of the diffusion of WBSS.

- The internal systems factors such as usability, security management, and network infrastructure were associated with the extent of WBSS diffusion.

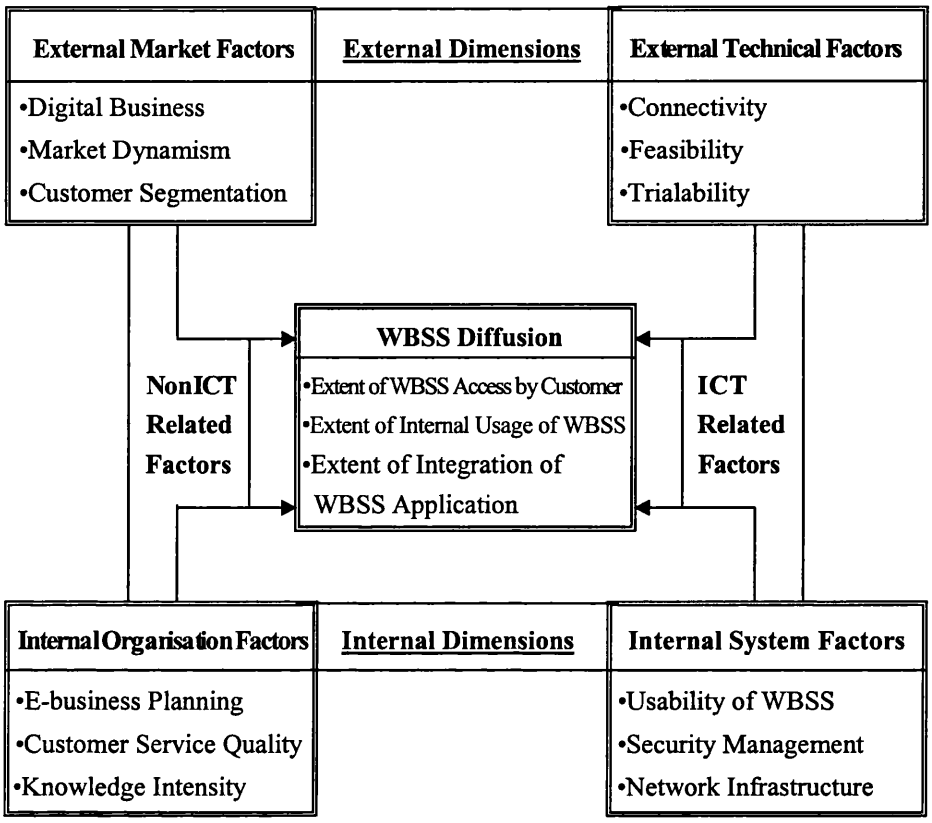

Figure 8-2. Synthesis Model of WBSS Diffusion in the Korean Context

On the basis of the research findings arising from empirical analysis of both the quantitative and qualitative data, the WBSS diffusion model of this research seems to explain the phenomenon of WBSS diffusion in two particular national contexts reasonably well. Though there were some different variables such as global electronic markets, customer segmentation, risk management, customer service quality, knowledge intensity, connectivity, usability, and Internet technology adaptability in one country as opposed to the other, the other variables were roughly similar to the relationship between their impact and the extent of WBSS diffusion in both countries. However, there appear to be different characteristics between the influencing powers of each variable as regards the diffusion of WBSS in different national contexts. A more detailed account of the influencing power of each variable for WBSS diffusion will therefore be discussed in the next chapter.

According to the research findings so far, it appears therefore that there are some differences and some similarities between the UK and Korea's WBSS diffusion. Key points of WBSS diffusion in two different national contexts are summarized in Table 8-42.

Table 8-42. Key Points of WBSS Diffusion in the UK and Korea

WBSS Diffusion		Characteristics
UK & Korea	Differences	• Impacts of Different National Cultures -Customer Segmentation -Customer Service Quality -Risk Management -Payment Methods
	Similarities	• Impacts of ICT related Factors -WBSS Technology Distribution -Feasibility -Trialability -Security Management -Network Infrastructure

First, as can be seen in Figure 8-1 and 8-2, there are different factors motivating WBSS diffusion in the two countries: i.e., customer segmentation, customer service quality and risk management. It seems that these results would be influenced by different national cultures in some way. That is, in the UK context, the factors related to customer service quality and customer segmentation did not affect WBSS diffusion to any great extent, while the risk management factor was significantly associated with the extent of WBSS diffusion. In contrast, in the Korean context, the risk management factor did not have a great impact on the diffusion of WBSS, while customer segmentation and customer service quality factors were important facilitators of WBSS diffusion. It seems that British Web-based shopping businesses exert a great deal of energy on risk management as a point of business reputation, placing a lower priority on the practical aspects of

customer service or customer segmentation. In contrast, Korean WBSS firms seem to focus on issues such as customer service and customer segmentation much more. In addition, another example can be seen of cultural impacts on WBSS diffusion, i.e., among payment methods on WBSS. In this respect, the use made of personal cheques and bank transfers is very different amongst UK and Korean respondents (cf. Table 8-22). This is because national characteristics and contexts seem to play a significant role in WBSS diffusion, related to customer preference, perceptions and behaviour. However, despite this difference there was also considerable similarity, as has been seen.

Secondly, there appear to be similarities in the ICT-related factors affecting WBSS diffusion between the UK and Korea. That is, WBSS diffusion in both countries was influenced by the similar ICT-related factors: feasibility, trialability, network infrastructure, and security management. Furthermore, as can be seen from Table 8-24, the major technologies used in WBSS were almost exactly equivalent in both countries. On the basis of this evidence, it can be assumed that ICT related factors are a similar force facilitating WBSS diffusion in both the UK and Korea. This reflects the fact that new ICTs such as Internet technologies are key drivers in the rapidly shaping process of global e-commerce, in particular Web-based shopping business, and also that the gap related to early adopters and later adopters of new ICT is very close among countries that are advanced in the adoption of new ICTs.

These findings tend to support the premise that the research model of WBSS diffusion developed as part of this research is useful in explaining the phenomenon of WBSS diffusion (or electronic commerce diffusion generally for that matter), across the two different countries. In addition, this cross-national analysis sheds light on the issues between different national cultures and WBSS diffusion both in terms of ICT-related

factors and non-ICT related factors. As a consequence of the research findings so far, the diffusion of WBSS is seen as a series of shaping processes being influenced by different cultural issues and similar ICT-related factors in global Web-based shopping circumstances. This finding may prove helpful to researchers and practitioners in improving their knowledge of the relationship between cultural impacts and ICT diffusion in global Web-based shopping business and electronic commerce generally. In the next section, the wider implications of these findings are examined.

Chapter 9. Implications on WBSS Diffusion

9.1 Introduction

This research has examined several dimensions of the phenomenon of WBSS diffusion, based on the data derived from the quantitative surveys and qualitative interviews undertaken in both countries. A number of implications emerge on both the theoretical and practical fronts, and these are the subject of this chapter.

The following section deals with the theoretical implications regarding WBSS diffusion. In section 9.3, the practical implications for further WBSS diffusion in both countries are provided.

9.2 Theoretical Implications

9.2.1 Introduction

A research model of WBSS diffusion has been derived from the literature review relevant to the ICT innovation diffusion research, and the model has been tested using the empirical data collected from the UK and Korea. In this section, an attempt is made to address the theoretical implications of the research, comparing the research findings reported on earlier with those of previous ICT innovation diffusion studies.

9.2.2 Theoretical Implications of Research Results

As mentioned earlier, this research has considered the major research question posed from a theory building and a theory testing perspective. That is, based on a conceptual research framework derived from a set of observations of previous ICT diffusion studies (ref. Figure 3-1), a research model of WBSS diffusion (ref. Figure 6-2) has been developed. In turn, the research model of WBSS diffusion has been used as a basis for empirical research in two quite different national contexts. This has enabled an assessment of its explanatory power.

In order to do this, first, both qualitative and quantitative data were collected to test the model (chapter 7). Then, the data collected were analyzed to see how much support there was for the conceptual hypotheses associated with the research model (chapter 8). That is, a number of relationships between key impact factors and WBSS diffusion were examined, based on the data obtained from the quantitative survey and the qualitative interviews. Arising from this, and in this section, the thesis proposes a diffusion model for WBSS that extends the theoretical contribution yet further. This WBSS diffusion model is illustrated in Figure 9-1.

As can be seen from Figure 9-1, the model seems to explain the phenomenon of WBSS diffusion in the UK and Korean contexts reasonably well. The WBSS diffusion model addresses both internal and external factors as well as ICT and non ICT-related issues, and has helped in analyzing and explaining the global shaping process of WBSS diffusion. Its strength lies in its balance (i.e., as compared to one that focuses on a single business perspective or technological viewpoint).

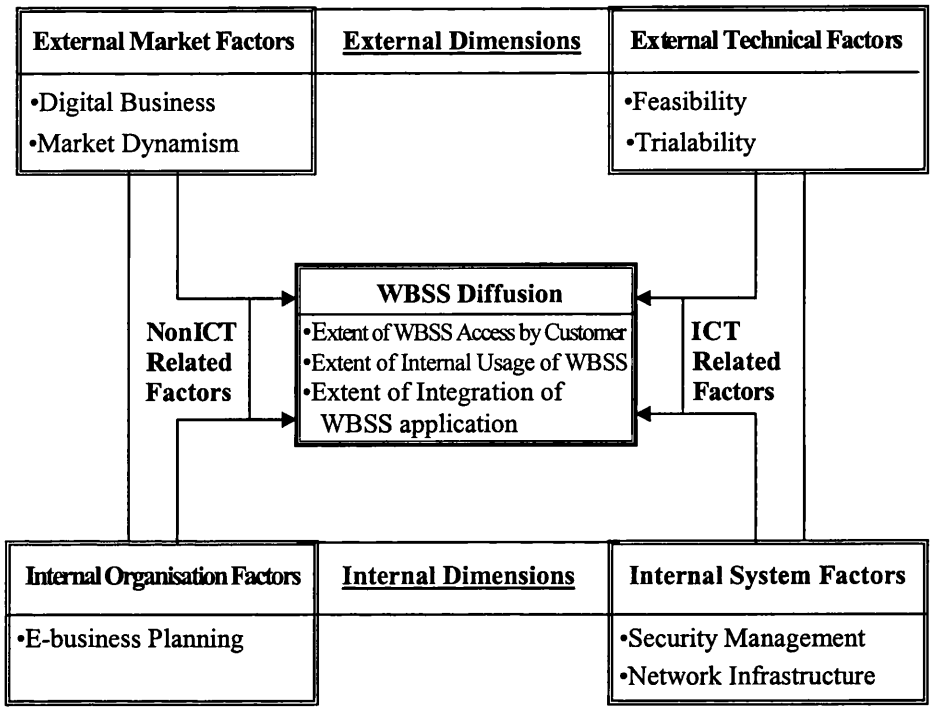

Figure 9-1. A WBSS Diffusion Model

To assist in drawing further theoretical implications from the model, two categories – ICT-related factors and non ICT-related factors – are first of all discussed in the context of previous ICT innovation diffusion studies. These factors are summarized in Table 9-1. In detail, the variables identified from the previous ICT diffusion studies are classified into ICT-related factors and non-ICT related factors. Next, these two groups of factors are divided into four categories, according to whether these variables originate within or outside an organisation: i.e., 1) internal factors related to ICT (shown as Internal System factors in Figure 9-1); 2) external factors related to ICT (External Technical); 3) internal factors not related to ICT (Internal Organisation); 4) external factors not related to ICT (External Market).

As can be seen in Table 9-1, most previous ICT innovation diffusion research focused on non ICT-related issues, with much less concern for ICT-related factors. This prior research incorporated very familiar variables, such as relative advantage, compatibility, and costs (e.g., Standing and Vasudavan, 2000; Shao, 1999; Sheng et al., 1998; Belassi

and Fadlalla, 1998; Kremar & Lucas, 1991; Brancheau and Wetherbe, 1990; Liang, 1986).

Table 9-1. Comparing ICT Related and Non-ICT Related Factors

ICT Innovation Diffusion Studies	ICT Related Factors		Non ICT-Related Factors	
	Internal System	**External Technical**	**Internal Organisation**	**External Market**
WBSS Diffusion Model (2002)	•Security management •Network Infrastructure	•Feasibility •Trialability	•E-business Planning	•Digital business •Market dynamism
Standing and Vasudavan (2000)		•Vendor support	•Top management support	•Customer support •Effective consultants
Shao (1999)			•Communication channels •Organisation size	•Effect of mass-media communication
Sheng et al. (1998)		•Compatibility	•Internal support •Resource intensity	•Competitive pressure •Customer support •Benefits of telemedicine
Belassi and Fadlalla (1998)			•Corporate strategy •Corporate culture	•Organisation culture •Management style
Premkumar et al. (1994)		•Relative advantage •Compatibility •Costs		
Grover & Teng (1992)	•Extent of online processing		•Organisation size •Size of IS department •Degree of centralization •End-user computing	
Kremar & Lucas (1991)	•Building on infrastructure		•Cost justification •Size an opportunity •Need for sponsor	•Marketing the application •Customer-oriented view
Brancheau and Wetherbe (1990)			•Education •Opinion •Leadership •Media exposure •Internal communication	
Liang (1986)	•Quality of system		•Motivation •User attitude •Representation format	
Zmud (1982)		•Compatibility	•Vested interests	

However, ICT-related factors are recognized as one of the crucial elements in successfully establishing WBSS and electronic commerce architecture, as argued by several researchers (e.g. Kalakota and Whinston, 1996; Laudon and Laudon, 2000; Barua et al., 2000; Korper and Ellis, 2000; Load, 2000; Arlitt et al., 2001; Porter, 2001; Looney and Chatterjee, 2002). Their significance is also demonstrated by the research findings. That is, considering the WBSS diffusion model, this study has verified several new ICT-related factors, i.e. feasibility, trialability, security management, and network infrastructure. As such, it can be argued that taking a more balanced view regarding ICT-related factors and non ICT-related issues in ICT diffusion research is likely to be more productive than taking a less balanced perspective.

Furthermore, as can be seen from Table 9-1, most previous researchers have not classified ICT-related factors as a distinct category in their research models, so that previous ICT diffusion studies merged ICT-related factors into environmental, organisational, or ICT innovation categories (e.g., Premkumar et al., 1994; Grover and Teng, 1992; Kremar and Lucas, 1991; Liang, 1986). However, it would seem appropriate to make ICT-related factors distinct from other groups of factors, because they play a crucial role in relation to WBSS and electronic commerce architecture, as mentioned previously by various researchers (e.g. Kalakota and Whinston, 1996; Laudon and Laudon, 2000; Barua et al., 2000; Korper and Ellis, 2000; Load, 2000; Arlitt et al., 2001; Porter, 2001; Looney and Chatterjee, 2002). On the basis of this, it can be argued that particular attention could usefully paid to ICT-related factors in further electronic commerce and ICT diffusion research.

Secondly, the variables verified by the previous ICT diffusion studies can be arranged in terms of issues related to the internal and external factors, as shown in Table 9-2. To make the distinction clear, the internal and external factors are also divided into four categories, depending on whether the factors of these two groups are related to the ICT:

i.e., 1) internal system factors; 2) internal organisation factors; 3) external technical factors; 4) external market factors.

Table 9-2. Comparing Internal and External Factors

ICT Innovation Diffusion Studies	Internal Factors		External Factors	
	Internal System	**Internal Organisation**	**External Technical**	**External Market**
WBSS Diffusion Model (2002)	•Security management •Network Infrastructure	•E-business Planning	•Feasibility •Trialability	•Digital business •Market dynamism
Standing and Vasudavan (2000)		•Top management support	•Vendor support	•Customer support •Effective consultants
Shao (1999)		•Communication channels •Organisation size		•Effect of mass-media communication
Sheng et al. (1998)		•Internal support •Resource intensity	•Compatibility	•Competitive pressure •Customer support •Benefits of telemedicine
Belassi and Fadlalla (1998)		•Corporate strategy •Corporate culture		•Organisation culture •Management style
Premkumar et al. (1994)			•Relative advantage •Compatibility •Costs	
Grover & Teng (1992)	•Extent of online processing	•Organisation size •Size of IS department •Degree of centralization •End-user computing		
Kremar and Lucas (1991)	•Building on infrastructure	•Cost justification •Size an opportunity •Need for sponsor		•Marketing the application •Customer-oriented view
Brancheau and Wetherbe (1990)		•Education •Opinion •Leadership •Media exposure •Internal communication		
Liang (1986)	•Quality of system	•Motivation •User attitude •Representation format		
Zmud (1982)		•Vested interests	•Compatibility	

As can be seen from Table 9-2, previous ICT diffusion research usually dealt with organisational factors (e.g., Grover & Teng, 1992; Brancheau and Wetherbe, 1990; Liang, 1986; Zmud, 1982). However, from around the middle of the 1990s, there has been growing interest concerning external market factors (e.g., Standing and Vasudavan, 2000; Shao, 1999; Sheng et al., 1998; Belassi and and Fadlalla, 1998). In regard to this, Timmers (2000; 132) argues that "the effective introduction of electronic commerce for external relationships is likely to have profound implications for the internal business organisation." It was observed that the WBSS diffusion model attested to the significance of external market variables as a driver of WBSS diffusion. In particular, this research has identified two new external market variables as significant factors influencing WBSS diffusion: digital business, and market dynamism. On the basis of this finding, it is reasonable to argue that the significance of external market factors in Web-based shopping and electronic commerce research might usefully attract special attention on the part of IS researchers in the future.

Thirdly, the findings have been used to interpret the implications on four classes of key impact factors in the UK and Korea. To investigate these, this research has classified key impact factors into four principle groups: internal factors, external factors, ICT-oriented factors and non-ICT oriented factors, as can be seen in Table 9-3. Here, internal factors include internal organisational factors and internal system factors, while external factors consist of external market factors and external technical factors.

In addition, ICT-oriented factors are made up of internal system factors and external technical factors. Non ICT-oriented factors are composed of internal organisational factors and external market factors. Arising from this classification, a comparison model of key impact factors is proposed in Table 9-3 and will serve as a backdrop for further research relating to ICT innovation diffusion, and electronic commerce more generally.

Table 9-3. Comparing Key Impact Factors

Four Classes Factors	Key Impact Factors	
	UK	Korea
Internal Factors	•E-business Planning •Risk Management •Security Management •Network Infrastructure •Internet Technology Adaptability	•E-business Planning •Customer Service Quality •Knowledge Intensity •Usability •Security Management •Network Infrastructure
External Factors	•Global Electronic Markets •Digital Business •Market Dynamism •Feasibility •Trialability	•Digital Business •Market Dynamism •Customer Segmentation •Connectivity •Feasibility •Trialability
ICT-Oriented Factors	•Security Management •Network Infrastructure •Internet Technology Adaptability •Feasibility •Trialability	•Usability •Security Management •Network Infrastructure •Connectivity •Feasibility •Trialability
Non ICT-Oriented Factors	•Global Electronic Markets •Digital Business •Market Dynamism •E-business Planning •Risk Management	•Digital Business •Market Dynamism •Customer Segmentation •E-business Planning •Customer Service Quality •Knowledge Intensity

Key Impact Factors		
Common Factors in UK & Korea	UK Specific	Korea Specific
•E-business Planning •Security Management •Network Infrastructure	•Risk Management •Internet Technology Adaptability	•Customer Service Quality •Knowledge Intensity •Usability
•Digital Business •Market Dynamism •Feasibility •Trialability	•Global Electronic Markets	•Customer Segmentation •Connectivity
•Security Management •Network Infrastructure •Feasibility •Trialability	•Internet Technology Adaptability	•Usability •Connectivity
•Digital Business •Market Dynamism •E-business Planning	•Global Electronic Markets •Risk Management	•Customer Segmentation •Customer Service Quality •Knowledge Intensity

As can be seen from Table 9-3, there are seven common factors positively influencing WBSS diffusion in the UK and Korea: e-business planning, security management, network infrastructure, digital business, market dynamism, feasibility, and trialability. It would appear that the common factors are roughly equally distributed among internal and external factors, as well as ICT-oriented factors and non ICT-oriented factors. More detailed discussion of the common factors is as follows.

First, among the internal common factors in the UK and Korea, e-business planning is identified as an internal non-ICT factor positively affecting WBSS diffusion. The

significance of e-business planning has been evident in both countries' findings. This is because e-business on WBSS is not simply a technology-based business application but an organisational core element including both business and the technical aspects: e.g., new e-business model, new business goal, new business process, new systems architechture, and new plan of Internet technology adoption. On the basis of this discussion, it would appear that WBSS diffusion is significantly enhanced by an organisation's careful approach to e-business planning.

Second, security management has been classified as an internal ICT-oriented factor that is positively associated with the shaping process of Web-based shopping business. As anticipated, security management has been shown to be a crucial foundation for facilitating the diffusion of WBSS in both countries. Since Web-based shopping business needs to have secure applications related to business transactions, it has been observed that security management is a crucial area requiring constant supervision and upgrading provide a stable business basis for WBSS as a global marketing medium.

Third, as an internal ICT-oriented factor that is positively related to the shaping process of WBSS, network infrastructure has been found to be one of the most crucial determinants of WBSS diffusion in both countries. Since Web-based shopping transactions take place between businesses and customers, and businesses and businesses, the network infrastructure enables organisations to interconnect with existing back-end systems and front-end clients. Therefore, based on this discussion so far, it appears that the significance of network infrastructure would be continuously increased in global Web-based shopping circumstances.

Fourth, as one of the external non-ICT factors, it has been observed that digital business has shown to have a positive impact on the diffusion of WBSS in both countries. With regard to the advantage of electronic transmission of digital products, it seems that digital business on WBSS enables organisations to reach global clients at any time. On

the basis of this discussion, it would appear that as enabler of new e-business, digital business is a crucial facilitator of WBSS diffusion in contemporary e-commerce settings.

Fifth, it has been showed that market dynamism positively facilitates the diffusion of WBSS in both countries, as one of the external non-ICT factors. As a global market medium, WBSS enable organisations to provide the channels for businesses and clients in dynamic electronic markets, along with the digital business transactions. On the basis of this discussion, it appears that dynamic global markets have continuous positive effects on WBSS diffusion.

Sixth, feasibility has been found to be one of the external ICT-oriented factors that positively facilitate WBSS diffusion in both countries. This result indicates that higher feasibility of Internet technologies would be more easily implemented with existing hardware, software, and technical resources in both countries. Based on the discussion so far, it appears that the higher feasibility of Internet technologies facilitates the shaping process of a sophisticated WBSS development.

Seventh, trialability has been identified as an external ICT-oriented factor that positively influences WBSS diffusion in each country. This suggests that before adopting new Internet technology, it is an important prerequisite to test its availablity, effectiveness, usability and benefit. On the basis of the discussion, the higher trialability of Internet technology seems to trigger the shaping process of WBSS diffusion in global electronic commerce.

To sum up, among the internal common factors in the UK and Korea, e-business planning is identified as an internal non-ICT factor positively affecting WBSS diffusion, whilst security management and network infrastructure have been classified as internal ICT-oriented factors that are positively associated with the shaping process of WBSS. It would appear that WBSS diffusion in the UK and Korea is positively influenced by the

organisations having sophisticated e-business planning and a solid network and security infrastructure.

With regard to the external common factors, digital business and market dynamism serve as external non-ICT factors that positively affect the diffusion of WBSS, while feasibility and trialability are external ICT-oriented factors that positively promote WBSS diffusion. It seems that high trialablity and feasibility of Internet technologies facilitate the diffusion of both British and Korean Web-based shopping business, in particular digital business, in the dynamic market environment.

In terms of ICT-oriented factors, WBSS diffusion in the UK and Korea is commonly influenced by an organisation's secure systems and network infrastructure as internal factors, as well as high feasibility and trialability of Internet technologies as external factors.

Among the non ICT-oriented factors, digital business is classified into the common internal non ICT-oriented factors in the UK and Korea, whilst in addition there are external non ICT-oriented factors such as market dynamism and e-business planning at work. It would appear that British and Korean digital businesses based on clear e-business planning are likely to advance the shaping process of WBSS in contemporary dynamic market contexts.

However, it seems that there are some differences with regard to specific factors that impact the diffusion of WBSS in the UK and Korean contexts. First, among the internal factors, Korean organisations involved in Web-based shopping tend to focus on a customer-oriented view (e.g., customer service quality, usability factors, and knowledge about customers and markets), whilst UK Web-based shopping businesses are more likely to concentrate on risk management. This difference is similar in terms of external factors. That is, global electronic markets factor has emerged as a key impact factor for

WBSS diffusion in the UK, while customer segmentation has been found to be one of the key impact factors in Korea.

Furthermore, among ICT-oriented and non ICT-oriented factors, a number of factors (e.g., usability, customer segmentation, customer service quality, and knowledge about customers and markets) have been found to be major facilitators for WBSS diffusion in the Korean context only. On the basis of this finding, it appears that Korean WBSS are likely to centre on a more customer-oriented perspective while the UK Web-based shopping businesses tend to invest their resource and capability into risk management, Internet technology adaptation and global electronic markets. As mentioned in an earlier chapter, it would appear that this difference is caused, in part at least, by the different national cultures and the national network infrastructures of the two countries.

In conclusion, based on a wide-ranging discussion of the research results so far, the key impact factors can be taxonomically identified by empirical evidence in both countries. That is, a conceptual research framework developed in chapter 3 (see Figure 3-1) was verified for further research as a result of the empirical data conducted in both countries, as depicted in Figure 9-2.

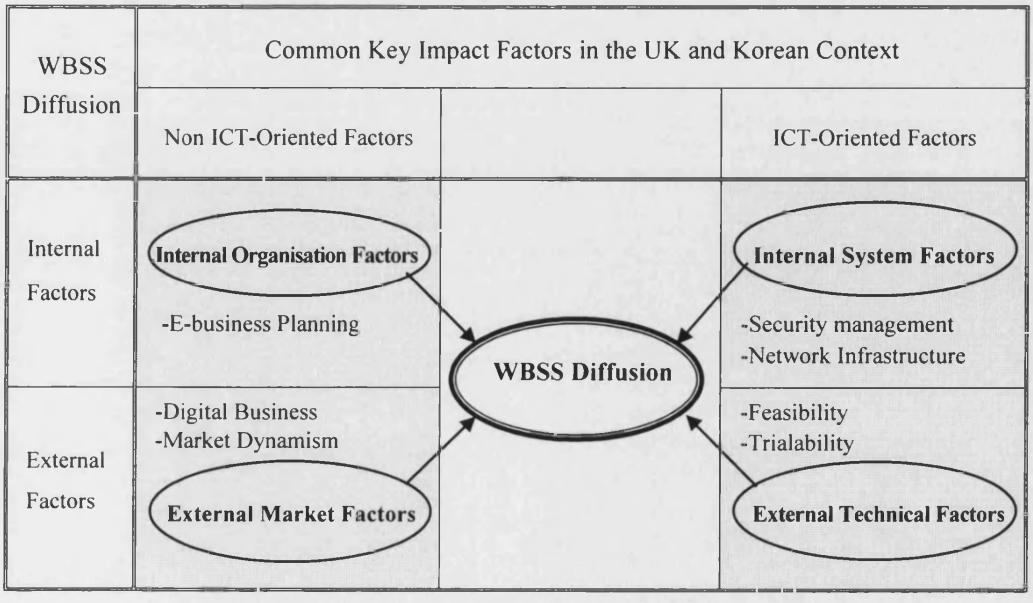

Figure 9-2. Key Impact Factors of WBSS Diffusion

According to the common key impact factors verified by empirical examination in the two countries, WBSS diffusion in the UK and Korea appears to be influenced by four groups of key impact factors: internal organisation factors, internal system factors, external market factors, and external technical factors. It would appear that the four categories of key impact factors are regarded as crucial facilitators for WBSS diffusion in contemporary Web-based shopping circumstances. This may imply that the diffusion of WBSS seems to be influenced by a set of factors in a global Web-based shopping fashion. On the basis of this discussion so far, it can be argued that the diffusion of WBSS can be seen as a global shaping process influenced by internal organisation and internal system factors, as well as external market and external technical factors.

9.2.3 Concluding Remarks

In this section, an attempt has been made to explore the theoretical implications of the research findings derived from the empirical results presented in chapter 8, highlighting the crucial points and linking back to the literature on the topic. This is achieved in particular by comparing the research findings with previous ICT diffusion studies.

To recap, the factors related to previous ICT innovation diffusion studies were classified into ICT-related factors and non ICT-related factors. The analysis showed that previous ICT innovation diffusion research hardly considered the ICT-related factors or, rather, such studies generally focused on very common innovation diffusion factors such as compatibility, relative advantage, and complexity. However, the prominent and crucial role of ICT-related factors in e-commerce architectures and the digital economy has been emphasised by several researchers (e.g., Kalakota and Whinston, 1996; Laudon and Laudon, 2000; Barua et al., 2000; Korper and Ellis, 2000; Load, 2000; OECD, 2000; Arlitt et al., 2001; Porter, 2001; Howcroft, 2001; Brynjolfsson and Kahin, 2002; Hudson, 2002; Looney and Chatterjee, 2002). On the basis of this discussion and the empirical

evidence derived from the WBSS diffusion model described in Figure 9-1, the dissertation highlights the significance of a balanced view considering both ICT-related factors and non ICT-related factors within the contemporary Web-based shopping and electronic commerce research agenda. This is because each factor seems to have a significant impact on new ICT diffusion settings.

In addition, according to the comparison of key impact factors, this study has identified the four groups of key impact factors that appear to influence WBSS diffusion: internal organisation factors, internal system factors, external market factors, and external technical factors. WBSS diffusion in the UK and Korea can be seen as a global shaping process affected by both organisation and market issues as well as external technical and internal system factors, interacting in a global and dynamic Web-based shopping setting. The WBSS diffusion model and the comparison model of key impact factors arising from this research could thus provide a launch pad for further studies of WBSS and electronic commerce, and for research on new ICT innovation diffusion.

9.3 Practical Implications

In the 21st century, the UK and Korea are encountering further challenges posed by economic, legal, social, political, and technical issues. In particular, the digital economy based on Internet technologies is now a new driving force of economic growth and social change. This section aims to serve as a guideline for establishing a more solid basis to encourage Web-based shopping business and e-commerce in both countries. With this objective, practical implications concerning the further diffusion of WBSS in both countries are made, arising from the research results obtained thus far.

First, in the UK context, the diffusion of WBSS was found to be roughly equally influenced by internal organisation and internal system factors, as well as external

market and external technical factors. In this context, a comment made by the vice president at Avaya UK is aposite:

> The UK government has aimed for electronic commerce by 2005, the desire for everyone to be online. The UK government has recently instigated an initiative to make sure all of its councils and all of its government and local authorities are online, in a very short period of time. There's a whole project for it. It means a lot more councils are making efforts to be online. As part of that, there'll be extranet facilities, procurement facilities etc.

However, the CEO of a dot-com saw the UK situation somewhat differently to the formal UK Government stance:

> I think it's going to be like a beach. There'll be thousands of people swimming in the shallows, a couple of great big boats stuck in dry dock, never getting out to sea, and a couple of medium sized fishermen bringing in stuff, and a whole heap of other people on the wreck. I think that's the current UK situation on the Internet business.

Although the UK showed a well-balanced diffusion of WBSS, further diffusion in the UK seems to depend on the extent of investment to increase both network capacity and the speed of data transmission – two requirements highlighted by British businessmen in interviews. Both are important to ensure greater usability of the Internet in the UK. A more detailed account was provided by one interviewee, the CEO of dot-com in the UK:

> Most people in the UK are still on dial up connections and it costs money, and it's not easy. Dial up connections are not very quick, pages take much longer to download. Web-based shopping is a much more laborious experience than if you're on an ADSL connection where your page is loading instantly, where your transaction is happening instantly. Also where you are paying a monthly subscription or whatever, it happens to be and you can stay on as long as you want. So you don't have in the back of your mind that worries about, 'how much is this costing me in terms of my dial up?' and you don't have the frustration of pages loading slowly and things like that. I think if we move to more broadband access a lot more people will start to shop online and it will become a very viable alternative for Web-based shopping business.

It is believed that 30% of British households being connected to the Internet via a narrowband connection poses a major impediment to the Internet business (ref. section 2-3). As previously explained, among the G7 countries, the UK has the lowest penetration of broadband access (OECD, 2001). Moreover, London keeps absorbing a large amount of business, leaving other regions bereft of fibre links. In relation to this situation, a CEO of a dot-com company noted that:

> Once you get out of London, for example, Scotland or Wales, just 10 or 20 users are there to use the broadband network on the one line. So the installation cost of broadband network is relatively expensive and users are a burden for the cost. Outside of London, people can usually chat, listen to music or do Web-based shopping occasionally on the base of a modem. You can also meet some companies that are really seeing e-commerce. In addition, there are many districts in which a telephone wire was installed long years a go. So there are many communication jams. The users are dissatisfied what with the old and worn network infrastructure and the high cost for telecommunication. These factors are the main hindrances in the diffusion of Internet business in the UK.

The UK is confronted with this difficulty of prioritising the development of clusters of capacity, allowing for many regional "black holes" to be filled. As regards these circumstances, fibre optic cable seems to be the technology most likely to be able to meet current and anticipated bandwidth requirements. However, to build such links, considerable investment is likely to be required. In addition, it appears that the extent of broadband network infrastructure in the UK might also be affected by the degree of cultural sensitiveness. The following interesting comment provided by a British interviewee, the vice president at Avaya UK, who lived in Asia for ten years, is in line with this:

> When I left the UK they were talking about Terminal 5 at Heathrow; ten years later when I came back they were still talking, talking, talking. In Hong Kong, Singapore and Korea (the new Incheon Airport) in ten years they've built three new airports. It's a difference of cultural sensitiveness.

To summarize, Internet-based global electronic commerce could provide the UK with a real opportunity, but in order to achieve this, however, a broadband network infrastructure throughout the UK area would appear necessary.

On the other hand, a view of the current Korean Internet business circumstances was provided by a Korean Interviewee, a deputy managing director of SAMSUNG Telecoms Ltd.:

> In Korea, 60% of the people use the Internet now, so it is possible to support the broadband network in any place. At the same time, 300 or 400 homes can use the broadband network of 1GB capacity on the one line, so that the installation and use of broadband network is relatively inexpensive. Hence, when we develop WBSS, we can adopt and apply graphics, virtual reality and many kinds of new Internet technologies. Thus, it is universal for users to do online game, to watch drama, or movies online and to do Web-based shopping on the base of the broadband network.

More recently, in line with the above opinion, Scofield (2002) provides a contrast between the two countries:

> Korea has shown the world what the broadband future looks like. Comparisons with the UK are embarrassing. Some 67% of Korean households now have broadband, while the UK figure is about 4%.

This comment is coincident with the OECD report (2001) in that Korea has the highest broadband penetration among all members of the OECD countries. In relation to this, a British interviewee, who lectures at the University of London and who lived in Hong Kong for ten years, visiting Korea several times, emphasized the following point:

> While actually Korea has a fantastic network infrastructure, Korea will be at the center of attention in the Internet business in Asia, depending on how much more efficient it is to use this kind of broadband network infrastructure.

Since Korea has the highest rate of broadband access, Korean organisations seem to concern themselves more with non-technical matters such as legal, social, and economic issues raised by the rapid spread of Internet usage. In relation to this, an interesting comment was provided by the CEO of Korean a dot-com:

> One of the problems is that the people who are setting up a lot of dot-coms didn't have business experience. They are coming from a technical background on the whole and are straight out of university. So, there are no people to say, 'well hold on a minute': this isn't how business actually works in the real world. So, because of the lack of experience a huge amount of borrowing went on, the result of that is, a lot of dot-com companies have gone out of business.

This example was already presented in the previous examination of hypotheses for the Korean data. At that time, the risk management variable did not show any significance in relation to WBSS diffusion. Though this research regards risk management as a broad concept related to financial and regulation issues, it could be carefully considered in Web-based shopping business and electronic commerce more generally. It seems that Korean organisations involved in Web-based shopping would do well to concentrate more on external issues and non ICT-oriented factors such as risk management. In relation to this, a Korean interviewee, who is a deputy managing director of Samsung Telecoms Ltd., made the following point:

> On the base of broadband network infrastructure of a high level, we need to make all the necessary preparations for setting up the new global economy such as a free trade zone among Korea, China and Japan. That is, we must be prepared for the new global market of East Asia in the face of electronic commerce, in particular economic, social and legal issues.

As regards the above interview data and reflections, it appears that attention could usefully be paid to legal, social, and economic issues in developing Web-based shopping business in Korea. As a result, we would propose some practical concluding suggestions to promote WBSS diffusion and e-commerce generally in the Korea context, based on the findings from this research.

Korea has invested enormous money and time in promoting its IT industry and establishing its broadband network infrastructure. However, while the broadband network infrastructure is regarded as being in the lead among the OECD member nations, the consideration of legal, social and economical issues has lagged somewhat up to now. Therefore, to secure balanced and substantial growth of Web-based shopping businesses and electronic commerce, it is recommended that Korea should give careful consideration to the following issues.

First, consideration might usefully be given to the regulatory environment, for example, in relation to cyber crime, digital signatures, indiscreet advertising on the Internet. The employment of international specialists to advise on issues related to e-commerce and global digital economy might also be considered.

Second, it might be concluded that Koreans tend not to understand the rapidly growing IT industry in particular and digital economy in general particularly well. That is, they tend to assume it is for all the very heart of future business. However, it would appear that a more level-headed approach might be required. A television campaign or documentary, for example, might be useful means of informing people about the realities of e-business and digital economy, enabling them to more readily recognize the possible dangers of over-high expectations.

Third, given that electronic commerce in Korea tends to centre on business to customer (B-to-C), greate emphasis might be paid to the more high value e-commerce – business to business (B-to-B).

It might be said that Korea is standing on the brink of a historical moment with the advent of the global digital economy. The future of Korea in the 21st century will depend on how to handle this new vision and meet the associated challenges. A

mission-oriented, balanced approach to the legal, social, economic and technical issues would therefore appear to be required.

9.4 Summary

This chapter has discussed the implications of the research findings derived from the quantitative survey and qualitative interviews, on their discussions.

Theoretical implications were highlighted by comparing major aspects of the WBSS diffusion model with previous ICT diffusion studies. On the basis of this, the thesis might claim that the WBSS diffusion model and the comparison model of key impact factors could provide a launch pad for further studies of WBSS and electronic commerce, and a theoretical background for new research relating to ICT innovation diffusion.

Practical suggestions were provided for both countries with a view to promoting e-commerce on the one hand and to establishing a solid base for the digital economy on the other.

In conclusion, it is hoped that the theoretical and practical implications identified from this research might prove useful not only in providing a synthesis of research related to the WBSS phenomenon, but also in encouraging a more thorough understanding of WBSS diffusion.

Chapter 10. Contributions, Limitations, and Further Research

10.1 Introduction

This has been a very interesting intellectual journey that has taken the researcher across academic and business fields, in the context of both a Western country and a Far Eastern nation. While Web-based shopping business and global digital economy is considered to be an important development, there has actually only been a limited amount of empirical research concerning the diffusion of WBSS per se. In particular, this thesis has addressed the following questions: What are WBSS? What kinds of factors influence WBSS diffusion? What are the characteristics of WBSS diffusion in different national contexts? In addressing these questions, this research has attempted to trace key impact factors affecting WBSS diffusion by analyzing the results of surveys and interviews in both the UK and Korea. The research findings have provided insights into the multifarious nature of WBSS diffusion.

The final chapter of this thesis is therefore concerned with how the findings of this study extend our knowledge about the diffusion of WBSS in different national contexts. The findings reported on in previous chapters lead to interesting conclusions related to the contributions of this research, its limitations and further research into WBSS diffusion. The following section describes the theoretical, methodological and practical contributions of this study. Section three focuses on the limitations of this research. The final section concludes the thesis by addressing the challenges and opportunities for further research in this area of study.

10.2 Contributions of the Study

This study has attempted to provide a better understanding of WBSS diffusion. It has shown that WBSS are becoming the global marketing media for buying and selling goods, services and information, as enablers of new business models, new business processes and new systems architecture. The key impact factors influencing the diffusion of WBSS in the UK and Korea have been examined, and the four groups of key impact factors of WBSS diffusion have been identified. With reference to this, more detailed contributions are given below, dealing first with the theoretical contributions of this research.

10.2.1 Theoretical Contributions

In the first place, most ICT diffusion research focuses on a single context such as the West or the East. However, such research clearly has limitations in explaining the global phenomenon of the diffusion of electronic commerce, the Internet, and WBSS. As mentioned earlier, WBSS are a new global phenomenon that have impacts on the economy, society, politics, culture, organisations, consumer behaviour and ICT infrastructure. In light of this, this study has investigated the diffusion of WBSS in two quite different national contexts: the UK and Korea, with regard to internal and external issues, as well as ICT and non-ICT oriented-factors. Thus, it might reasonably be claimed that this dual contextual approach has been useful in enabling understanding and interpreting the multifarious nature of WBSS diffusion.

In addition, this study has proposed a research model for WBSS diffusion in two different national contexts. Based on a wide-ranging review of the literature, the research variables have been grouped into four categories: external market factors, external technical factors, internal organisation factors, and internal system factors. As

mentioned in the previous chapter, the WBSS diffusion model has originality in that it is a balanced model that incorporates internal and external factors, as well as ICT and non ICT-related issues. It also includes novel variables that have not been empirically considered in previous information systems (IS) research but which have been seen to be significant in explaining WBSS diffusion: e.g., global electronic markets, digital business, market dynamism, customer segmentation, connectivity, feasibility, e-business planning, risk management, knowledge intensity, security management, network infrastructure and Internet technology adaptability. By applying the research model of WBSS diffusion in the two different national contexts, it was observed that the WBSS diffusion model described in this research has explained the phenomenon of WBSS diffusion in the UK and Korean contexts reasonably well. Thus, the WBSS diffusion model (ref. Figure 9-1) might provide some theoretical underpinning to further research on ICT diffusion and electronic commerce.

On the basis of the comparison between the major findings arising from the application of the WBSS diffusion model and previous ICT diffusion studies, this dissertation has highlighted the significance of ICT-related factors and market-oriented issues within a further research agenda on ICT innovation diffusion and e-commerce.

Furthermore, not only is this study the first empirical research examining the key impact factors of WBSS diffusion in the two national contexts, but also the results identify four categories of key impact factors facilitating WBSS diffusion. Based on the comparison model of key impact factors (ref. Table 9-3), this research has identified the four groups of factors that influence WBSS diffusion. That is, applying the key impact factors derived from empirical survey data, it would appear that diffusion of WBSS in the UK and Korea may be seen as dynamic, complex and interactive processes being influenced by four sets of key impact factors: internal organisation and internal system factors, as

well as external market and external technical factors. As such, the comparison model of key impact factors provides a launch pad for further studies of WBSS and electronic commerce, and for research on new ICT innovation diffusion.

10.2.2 Methodological Contributions

As discussed previously, one of the objectives of this research was to construct a theoretical background that could generally explain the phenomenon of WBSS diffusion. To achieve this, a solid methodological approach was an essential precondition. Although researchers have previously used triangulation (Denzin, 1978; Jick, 1979) in Information Systems research, there is little evidence of this approach in diffusion research regarding the Internet and electronic commerce, especially in different national contexts. As mentioned earlier, to explain more clearly the global phenomenon of WBSS diffusion and to provide generalized findings, this study has carried out empirical research based on a combination of qualitative and quantitative research approaches. That is, first, in the theory building phase, a conceptual research framework (ref. Figure 3-1) and a research model of WBSS diffusion (ref. Figure 6-2) were derived from the literature review and verified by interviews. The second was the theory testing phase, which attempted to rigorously test the explanatory power of the research model in different national contexts, on the basis of quantitative survey and qualitative interviews. It is apparently one of the first studies to perform a multidimensional analysis of WBSS diffusion in different national contexts, based on this kind of triangulation.

In addition, according to the literature review relevant to the identification of research variables, this study has developed multiple measurement items for three dependent and thirteen independent variables. As demonstrated by the analysis of reliability and

construct validity of the measuring instrument, these multiple constructs have shown high reliability and construct validity, and have provided an adequate means of measuring the factors related to WBSS diffusion. Thus, it would appear that the multiple survey items developed in this study could be used for further research on ICT diffusion and e-commerce.

10.2.3 Practical Contributions

Business is moving rapidly into the Internet age as certainly as it moved into the global digital economy (OECD, 2000; Howcroft, 2001; Brynjolfsson and Kahin, 2002; Hudson, 2002). No longer can organisations depend on traditional information systems (Korper and Ellis, 2000). According to Load (2000), however, 75% of all e-commerce ventures will fail, due to a lack of technological understanding and poor business planning. We had already seen this situation in early 2000, as many dot-com companies vanished from the Internet business area.

A lesson to be learnt from this might be that academic circles might reasonably be expected to provide some theoretical background and guidance to society in better understanding such new social phenomena. This research aims to do just that by providing specific guidelines for practitioners in relation to various aspects of WBSS. For example, it presents guidance concerning the most appropriate approach to the adoption and utilization of WBSS: e.g., how organisations can better utilize their WBSS and what kinds of factors should be considered to diffuse WBSS. More specific practical contributions are given as follows.

This research has presented a classification model of WBSS, a research model of WBSS diffusion, and comparison model of key impact factors. It may therefore provide some help to organisations in establishing effective planning and management for more

rapidly spreading Web-based shopping business within and across national boundaries.

Finally, this research serves as a guide for evaluating an organisation's strategic options in successfully adopting WBSS. Without knowing key impact factors, organisations may be expending limited resources and energy on less important elements that have limited contributions to the successful diffusion of WBSS.

10.3 Limitations of the Study

Notwithstanding the above contributions that can be claimed for this research, there are clearly a number of limitations to the approach adopted.

First, although this study examined the phenomenon of WBSS diffusion based on the research model of WBSS diffusion, derived from an extensive literature review and verified by interviews, it cannot hope to cover all factors and social contexts related to WBSS diffusion.

In addition, this study compared the different characteristics of WBSS diffusion in the UK and Korea. This cannot by any means claim to be representative of WBSS diffusion in all Western and Eastern countries. However, it is a meaningful study to examine the relationship of WBSS diffusion between two such different national contexts, and may be considered, at leas, as a starting point.

Finally, the results of this research represent something of a snapshot only at the moment that the research was undertaken. No trend data are presented, other than from the mouths of those interviewed. It might therefore prove insightful for international comparative research on WBSS diffusion to be executed, on the back of this research,

every two years or so. This would help to provide greater insight into trends in the diffusion of WBSS and electronic commerce in different national contexts.

10.4 Further Research

This study has attempted to provide a platform for researchers to undertake meaningful research related to the WBSS diffusion in the future. It provides a first step in building a research model for a specific type of new ICT diffusion. In expanding the boundaries of existing knowledge, a number of research agendas can be suggested for the future as follows.

First, focusing on the WBSS diffusion model proposed in this thesis, further research might attempt to address fundamental variables that are not verified in this study. For instance, further investigation would be facilitated by the consideration of specific research subjects, such as customer preferences relevant to Web-based shopping. This is because the growth of Web-based shopping business might be affected by the extent of a customer's accessibility for any type of WBSS.

Second, while a focus of this study was on the analysis of factors related to WBSS diffusion, further research would be fruitful if it examined the process of WBSS diffusion through longitudinal study. A process-based approach would provide additional insight into the hows and whys of certain processes relevant to WBSS diffusion. For instance, how does e-business planning facilitate the shaping process of Web-based shopping business or e-commerce?

Third, while this study focused on Web-based shopping businesses in general, i.e., business-to-customer and business-to-business, further research could usefully

concentrate on one particular type of Web-based shopping business, such as intermediary-sales or Web-based auction business, both of which are becoming increasingly prominent. That is, since this study provided a snapshot only of the phenomenon of WBSS diffusion, it would be valuable if further research focuses on a particular Web-based shopping business to investigate specific diffusion patterns in much greater depth.

Finally, the theoretical and practical findings presented by this research have given new insights into the diffusion of WBSS and electronic commerce, by linking a theoretical model and the empirical findings of this thesis. On a more general note for further research, and as an extension of this study, it would be worthwhile to try to utilize the various research models and the findings presented herein, and revalidate them within a broader electronic commerce and ICT diffusion research context.

10.5 Concluding Remarks

This dissertation has attempted to review the major conclusions that can be drawn from the research. It has noted that, while the topic is seen to be a newly important issue facing the Internet business, there has actually been only a limited amount of empirical evidence available in terms of understanding WBSS diffusion. This thesis has intended to explore this untrodden path by analyzing the results of quantitative surveys and qualitative interviews undertaken in the United Kingdom and Korea.

This dissertation was designed to investigate the key impact factors influencing the diffusion of WBSS in two different national contexts: the UK and Korea, and to examine whether there are any major characteristics of WBSS diffusion in Web-based shopping circumstances. As a consequence of this research, it is reasonable to argue that

the diffusion of WBSS is seen as a series of shaping processes being influenced by different national cultural issues and similar ICT-related factors in global Web-based shopping contexts.

In addition, the significance has been emphasized of taking a balanced view considering both ICT-related factors and non-ICT related factors in contemporary Web-based shopping research settings. Each factor appeared to have a significant impact on WBSS diffusion. Therefore, an attempt was made to explore major characteristics of WBSS diffusion – both ICT-related factors and non-ICT related factors – in order to highlight the significance of both aspects within the ICT diffusion research agenda.

Furthermore, in the dissertation, an attempt has been made to identify the key impact factors influencing the shaping process of contemporary WBSS in the UK and Korean contexts. By a comprehensive review of research findings arising from empirical survey data, it is reasonable to argue that the WBSS diffusion in the UK and Korea has been driven by both internal organisation and internal system factors, as well as external market and external technical factors within a contemporary global digital economy.

In conclusion, this research has attempted to provide a more systematic understanding of the phenomenon of WBSS diffusion, opening up what is considered to be an interesting new research agenda. In particular, it is hoped that this dissertation will mark the starting point in on-going research towards many unresolved issues in Web-based shopping and will serve as a catalyst for triggering new research agendas relevant to ICT innovation diffusion and electronic commerce.

Appendix 1. Initial UK Version of the Survey Instrument

Dear Sir/Madam,

Web-Based Shopping Systems (WBSS) are diffusing very rapidly across national boundaries. The WBSS means an Internet-based shopping system for selling and buying products, information, and services. Though the diffusion of the WBSS is gradually being recognized as one of the most important issues of electronic commerce to be addressed, the research on WBSS is just beginning. To provide meaningful guidance for designing and planning the new opportunity of Internet business to society, the London School of Economics and Political Science (LSE) is researching "*The Diffusion of Web-Based Shopping Systems*".

To gain useful information for this project, we need your assistance. We have enclosed a carefully designed instrument to investigate the diffusion of WBSS. Please keep in mind that your response is very valuable to the study. Please return your completed questionnaire in the enclosed postage-paid envelope as promptly as possible.

Please be assured that the information you provide will be kept strictly confidential. I do hope you will be willing to help with this important piece of research. Your voluntary participation in this project is greatly appreciated, and your assistance will provide significant insights into the multifarious nature of WBSS diffusion.

Yours Sincerely,

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Instructions

This questionnaire is about your company's status of Web-Based Shopping Systems (WBSS). WBSS mean Internet-based shopping systems for selling and buying products, information, and services. The information provided will be treated in the strictest confidence and will be used only for academic research.

1. If your company is currently using such a Web-based shopping system for customers, please answer all parts of this questionnaire.

2. If your company is not using any type of Web-based shopping system for customers, you need respond only to Part I.

Part I. General Questions

1-1. Organisational Aspects

Please indicate your job title or position ( )

How old is your company? ( ) Years

How would you best describe your major industry? (Please tick one of the following)

( ) Banking, Finance, Insurance
( ) IT & Communication
( ) Art & Design
( ) Manufacturing
( ) Transport & Storage
( ) Construction, Agriculture
( ) Retailing & Wholesale
( ) Entertainment (Theatre, Hotel, Recreation, etc.)
( ) Business Service (Travel, Consulting, Legal, Estate, etc.)
( ) Social Services (Health Care, Education, Govt., etc.)
( ) Utilities (Electricity, Gas, Water, Heating, etc.)
( ) Others (Please write:)

The total number of employees in your company is

( ) Less than 50
( ) Between 50 & 100
( ) Between 100 & 500
( ) Between 500 & 1,000
( ) Between 1,000 & 2,000
( ) Between 2,000 & 5,000
( ) Between 5,000 & 10,000
( ) Between 10,000 & 50,000
( ) More than 50,000

The annual turnover of your company is (in pounds)

( ) less than 100 thousand
( ) 100 thousand to < 1 million
( ) 1 million to < 5 million
( ) 5 million to < 20 million
( ) 20 million to < 50 million
( ) 50 million to < 100 million
( ) 100 million to < 250 million
( ) 250 million to < 500 million
( ) 500 million to < 1 billion
( ) 1 billion to < 20 billion
( ) 20 billion to < 50 billion
( ) 50 billion or more

1-2. Systemic Aspect of WBSS

The total number of employees in the IS department is ( )

Are your Web-based shopping system's customers: ( ) Business ( ) Individuals or ( ) Both

How many years has your company had a Web-based shopping systems? ( ) Years

What department or group has been the strongest advocate of Web-based shopping systems?

( ) Accounting ( ) Finance ( ) Strategy/Planning
( ) Marketing/Sales ( ) Customer Service ( ) Logistics
( ) Information Systems ( ) Purchasing/Material ( ) None
( ) Other - Please specify ( )

Who developed the WBSS that your company is currently using?

( ) Our company only ( ) Another company ( ) A third party provider

What kinds of payment does your company use on WBSS? (Please tick as many as appropriate)

( ) Credit Card ( ) Electronic Cash ( ) Electronic Check
( ) Electronic Wallet ( ) Smart Cards ( ) Others

What technologies for WBSS does your company constitute? (Please tick as many as appropriate)

( ) LAN ( ) WAN ( ) ISDN
( ) Intranet ( ) Extranet ( ) Firewalls
( ) Web Server ( ) Search Engine ( ) Agent Technology
( ) Security Infrastructure ( ) Certification System ( ) Virtual Reality
( ) Customer Relationship Management System ( ) Payment Mechanism

Which products does your company sell on WBSS? (Please note as many as appropriate)
( )

What is your major strategy to gain competitive advantage of your WBSS?

- *Differentiation* is making a distinction between product and service in comparison to their competitor.
- *Cost* is achieved through an increase in competitor's cost, or decrease in one's own cost.
- *Innovation* is the act that renovates the product or the service.
- *Growth* is achieved through product variety, the expansion of marketing areas, and the increase of dealt quantities.
- *Alliance* is achieved through the joining of inter-firms, the agreement of inter-organisation, and joint investment.

( ) Differentiation ( ) Cost ( ) Innovation ( ) Growth ( ) Alliance

Some potential benefits of WBSS are listed below. Please indicate the extent to which your company has realized the proposed benefit.

• Reduce transaction costs	1	2	3	4	5
• Increase the flexibility of networkability	1	2	3	4	5
• Improve customer relationship	1	2	3	4	5
• Provide security and privacy	1	2	3	4	5
• Gaining competitive advantage	1	2	3	4	5
• Enable easier access to information related to the customer and market	1	2	3	4	5
• Provide new products or services to customers	1	2	3	4	5
• Align well with company goals	1	2	3	4	5
• Enable the organisation to create new business	1	2	3	4	5
• Establish useful linkages with other organisations	1	2	3	4	5
• Enable our organisation to catch up with competitors	1	2	3	4	5
• Save money by avoiding the need to increase the work force	1	2	3	4	5
• Change the way the organisation conducts business	1	2	3	4	5
• Enhance employee productivity or business efficiency	1	2	3	4	5

Part II – Impact Factors on WBSS Diffusion

The following statements describe your company's aspects related to the diffusion of Web-based shopping systems. Please indicate the extent to which you agree or disagree with each statement by circling the appropriate response. Response choices for all questions are *1: Strongly Disagree (SD); 2: Disagree (DA); 3: Neutral; 4: Agree (AG) and 5: Strongly Agree (SA).*

II-1. External Market Factors

Global Electronic Markets	SD ← DA←Neutral→AG → SA				
It is is quick to expand the size of electronic commerce generally within our industry, as compared to other industries.	1	2	3	4	5
It is is quick to expand Internet commerce with other firms within our industry, as compared to other industries.	1	2	3	4	5
It is is quick to expand Web-based shopping with customers within our industry, as compared to other industries.	1	2	3	4	5
It is is quick to expand WBSS application within our industry, as compared to other industries.	1	2	3	4	5
Digital Business	SD ← DA←Neutral→AG → SA				
The transaction of digital business within our industry is diffusion as compared with other industries.	1	2	3	4	5
The quantity of digital business products within our industry is increasing as compared with other industries.	1	2	3	4	5
The amount of digital business trade within our industry is growing as compared with other industries.	1	2	3	4	5
Firms doing digital business within our industry are expanding as compared with other industries.	1	2	3	4	5
Market Dynamism	SD ← DA←Neutral→AG → SA				
Competitors' products quickly change in the industry which our company belongs to.	1	2	3	4	5
Customer's preferences for product features quickly change in the industry which our company belongs to.	1	2	3	4	5
Competitors' selling strategies quickly change in the industry which our company belongs to.	1	2	3	4	5
Competitors' advertising strategies quickly change in the industry which our company belongs to.	1	2	3	4	5
The price customers expect to pay quickly change in the industry which our company belongs to.	1	2	3	4	5
Customer Segmentation	SD ← DA←Neutral→AG → SA				
Our company focuses on detailed target customers in the global electronic market.	1	2	3	4	5
Our company is aware of the characteristics of target customers in the global electronic market.	1	2	3	4	5
Our company understands Web-based shopping activities of targeted customers in the global electronic market.	1	2	3	4	5
Our company understands customers' expectations of Web-based shopping in the global electronic market.	1	2	3	4	5

II-2. External Technical Factors					
Interactivity	SD ←	DA←	Neutral→	AG →	SA
Our company perceives that Internet technology enhances the richness of customer relationships online.	1	2	3	4	5
Our company perceives that Internet technology enables our organisation to provide a better customer service online.	1	2	3	4	5
Our company perceives that Internet technology allows our organisation to entice customers to participate in the e-business experience.	1	2	3	4	5
Our company perceives that the Web site is a good technology to interact with global customer online.	1	2	3	4	5
Our company perceives that the Web site will increase interactivity with customers online.	1	2	3	4	5
Our company perceives that the Web site allows our organisation to reach new customers online.	1	2	3	4	5
Connectivity	SD ←	DA←	Neutral→	AG →	SA
Our company perceives that Internet technology will promote connectivity to communicate with different hardware and software platforms.	1	2	3	4	5
Our company perceives that Internet technology will increase new communication and co-ordination mechanisms, both across organisations and customers.	1	2	3	4	5
Our company perceives that Internet technology will provide our organisation with links to suppliers and business partners.	1	2	3	4	5
Our company perceives that our Web site is connected to one another without any intervention.	1	2	3	4	5
Our company perceives that our Web site is connected to any information systems without any intervention.	1	2	3	4	5
Feasibility	SD ←	DA←	Neutral→	AG →	SA
Our company perceives that our Web site could be easily implemented with the existing hardware environment.	1	2	3	4	5
Our company perceives that our Web site could be easily implemented with the existing software environment.	1	2	3	4	5
Our company perceives that our Web site could be easily implemented with the existing technical resources.	1	2	3	4	5
Our organisation perceives that our Web site development is a simple process.	1	2	3	4	5
Trialability	SD ←	DA←	Neutral→	AG →	SA
Before deciding on whether or not to adopt WBSS, our organisation would be able to use a Web site on a trial basis.	1	2	3	4	5
Before deciding on whether or not to adopt WBSS, our organisation would be able to properly try out the Web site to check the possibility of Internet business.	1	2	3	4	5
The Web site is good to see what it can do for Internet business on a trial basis.	1	2	3	4	5

III-3. Internal Organisation Factors

E-business Planning	SD ←	DA←	Neutral→	AG →	SA
Our company has an e-business plan for theWBSS.	1	2	3	4	5
Our company devises a plan of new Internet business.	1	2	3	4	5
Our company works out a strategic plan to successfully establish e-business projects.	1	2	3	4	5
Our company formulates an information systems plan for new Internet system adoption.	1	2	3	4	5
Our company designs a development plan of Internet systems such as in-house or outsourcing.	1	2	3	4	5
Our company establishes a further upgrading plan of WBSS.	1	2	3	4	5

Risk Management	SD ←	DA←	Neutral→	AG →	SA
Our company provides authentication and secure mechanisms for payment on WBSS.	1	2	3	4	5
Our company establishes a plan to cope with financial risks such as credit card fraud.	1	2	3	4	5
Our company prevents intentional or accidental fraud related to Web-based shopping.	1	2	3	4	5
Our company has a special organisation dealing with the risk relevant to the selling of the product, information or service.	1	2	3	4	5
Our company provides the quality guarantee for all sales products.	1	2	3	4	5

Customer Service Quality	SD ←	DA←	Neutral→	AG →	SA
Our organisation provides a quick response to customers.	1	2	3	4	5
Our organisation provides assurance to solve customers' problems related to Web-based shopping.	1	2	3	4	5
Our organisation has sympathy with customers' problems related to Web-based shopping.	1	2	3	4	5
Our organisation provides follow-up services for customers.	1	2	3	4	5
Our organisation provides an e-mail message offering thanks and asking about the experience of products purchased.	1	2	3	4	5
Our organisation keeps the customers information confidential.	1	2	3	4	5

Knowledge Intensity	SD ←	DA←	Neutral→	AG →	SA
Our knowledge of customer needs is thorough.	1	2	3	4	5
We regularly process and analyze customer information.	1	2	3	4	5
We fully understand our customers' needs and wants.	1	2	3	4	5
Our company continuously collects and learns market trends and changes.	1	2	3	4	5
We regularly use research procedures, e.g. personal interviews, focus groups and surveys, to gather market information.	1	2	3	4	5
Our company has a high level of market knowledge related to Internet business.	1	2	3	4	5
Our company regularly collects and analyzes information about our competitors.	1	2	3	4	5
Our knowledge of our competitors' strengths and weaknesses is thorough.	1	2	3	4	5

II-4. Internal System Factors

Usability of WBSS	SD ← DA←Neutral→AG → SA				
Our WBSS provide well-organized hyperlinks.	1	2	3	4	5
Our WBSS manage content in an efficient way.	1	2	3	4	5
Our WBSS provide customized search functions.	1	2	3	4	5
Our WBSS regularly check for broken links of Web-based shopping sites.	1	2	3	4	5
Our WBSS provide a customized help function.	1	2	3	4	5
Security Management	SD ← DA←Neutral→AG → SA				
Our WBSS provides security management on customer privacy or customer data.	1	2	3	4	5
Our WBSS carries out security management on message security such as encryption or digital signatures.	1	2	3	4	5
Our WBSS deals with security management on general regulation for computer hackers, intruders or viruses.	1	2	3	4	5
Our WBSS has firewalls to shield vulnerable areas from some form of danger.	1	2	3	4	5
Our WBSS provides secure credit card transactions such as secure electronic traction (SET).	1	2	3	4	5
Network Infrastructure	SD ← DA←Neutral→AG → SA				
Our WBSS interconnects with LAN (local area network) or Intranet.	1	2	3	4	5
Our WBSS connects with WAN (wide area network) or Extranet.	1	2	3	4	5
Our WBSS has routers or gateways such as network ware.	1	2	3	4	5
Our WBSS consists of technology such as CORBA (common object request brokered architecture) that mediate transactions between our organisation and outside clients.	1	2	3	4	5
Internet Technology Adaptability	SD ← DA←Neutral→AG → SA				
Our organisation is aware of recent Internet technology such as agent technology, cyber cash, virtual reality and so on.	1	2	3	4	5
Our organisation has an understanding of the newest trends of Internet technologies.	1	2	3	4	5
Our organisation has an adoption plan of new Internet technology.	1	2	3	4	5
Our organisation generally keeps abreast of the latest Internet technology.	1	2	3	4	5
Our company has a tradition of being the first to try new Internet technology.	1	2	3	4	5

II-5. Dependent Variables

Extent of WBSS Access by Customer	SD ← DA←Neutral→AG → SA				
The WBSS is frequently used by customers.	1	2	3	4	5
The number of transactions related to Web-based shopping on our WBSS is growing.	1	2	3	4	5
Services provided by our WBSS are extensively used by the customer.	1	2	3	4	5

Extent of Internal Usage of the WBSS	SD ← DA←Neutral→AG → SA				
Internal staff in our company use the WBSS for communication in their work.	1	2	3	4	5
The WBSS has encouraged sharing of information within our company.	1	2	3	4	5
Our company has experienced an enhancement in communication after using the WBSS.	1	2	3	4	5

Extent of Integration of WBSS Application	SD ← DA←Neutral→AG → SA				
Our WBSS is intergrating with various other systems, such as payment system, search engines, security systems, Intranet systems and extranet systems.	1	2	3	4	5
The level of our WBSS application is high compared with competitors in our industry.	1	2	3	4	5
Our WBSS is highly coupled with other application systems such as supply chain management systems, customer relationship management systems or Internet banking systems.	1	2	3	4	5

Researchers sometimes miss subtleties of business reality by imposing particular perspectives on the phenomenon being studied. In order to minimize such an occurrence, please provide *three of the most critical impact factors* that you believe are necessary to make a Web-based shopping system successful.

Factor # 1 (_____)
Factor # 2 (_____)
Factor # 3 (_____)

Thank you very much for participating in this survey!

If you would like to receive results from the survey, please enclose your name, address, e-mail address or attach your business card.

Name :
Address :
E-mail :

Please return this questionnaire in the enclosed postpaid envelope or mail To:

Professor Robert Galliers
Department of Information Systems
London School of Economics
Houghton Street
London WC2A 2AE

Appendix 2. Final UK Version of the Survey Instrument

Mr. First _Name M. Last_Name
Title
Company Name
Address

Dear Mr. Last_Name:

Web-Based Shopping Systems (WBSS) are diffusing very rapidly across national boundaries. WBSS means an Internet-based shopping system for selling and buying products, information, and services. Though the diffusion of WBSS is gradually being recognized as one of the most important issues of electronic commerce to be addressed, research into WBSS is just beginning. In an effort to provide meaningful guidance in relation to the new opportunities brought about by Internet business to society and in economic circles, the London School of Economics and Political Science (LSE) is undertaking a research project, "*The Diffusion of Web-Based Shopping Systems in Different National Contexts*".

To gain useful information for this project, we need your assistance. We have enclosed a carefully designed instrument to investigate the diffusion of WBSS. Please keep in mind that your response is very valuable to the study. Please return your completed questionnaire by e-mail as promptly as possible.

Please be assured that the information you provide will be kept strictly confidential. We do hope you will be willing to help with this important research. As soon as the project is completed, we will send the summary of results to the participators who have actually filled in the questionnaire. These results will be useful as a guideline in establishing a new vision and growth strategy to gain competitive advantage of your company's WBSS. Your participation in this project is greatly appreciated, and your assistance will provide significant insights into the multifarious nature of WBSS diffusion.

Yours sincerely,

A Project Conducted by London School of Economics & Political Science
Information Systems Department
Houghton Street, London, WC2A 2AR
Project Director, Professor Robert Galliers
Project Coordinator, Dr. Changsu Kim
If you have any further questions about our research, feel free to contact me by e-mail or telephone:
E-mail: c.kim@lse.ac.uk or Tel. 020-8949-1758.

Instructions

This questionnaire is about the status of your company's Web-Based Shopping Systems (WBSS). WBSS are defined as Internet-based shopping systems for selling and buying products, information and services. The information provided will be treated in the strictest confidence and will be used only for academic research.

1. If your company is currently using such a Web-based shopping system, please answer all parts of this questionnaire.
2. If your company is not using any type of Web-based shopping system, you need only respond to the items related to your company in Part I-1.

Part I. General Questions

I-1. Organisational Aspects

Please indicate your job title or position: (Please write:)

How many positions are there between you and the chief executive officer?

☐ Zero (Yourself are CEO) ☐ Two ☐ Four ☐ Six
☐ One ☐ Three ☐ Five ☐ Seven

What functional area do you belong to ? (Please tick as many as appropriate)

☐ Logistics ☐ Service ☐ Procurement
☐ Manufacturing ☐ IT/IS ☐ Human Resource Management
☐ Marketing & Sales ☐ General Management ☐ Others (Please write:)

How long have you been involved in Web-based shopping?

☐ Less than 1 year ☐ Between 2.1 & 3 years ☐ Between 4.1 & 5 years
☐ Between 1 & 2 years ☐ Between 3.1 & 4 years ☐ More than 5 years

What is your highest educational level?

☐ A Level (High School) ☐ 3 Year College or University ☐ PhD
☐ HND (2 Year College) ☐ Masters ☐ Others (Please write:)

How many years has your company been involved in Web-based shopping?

☐ Less than 1 year ☐ Between 2.1 & 3 years ☐ Between 4.1 & 5 years
☐ Between 1 & 2 years ☐ Between 3.1 & 4 years ☐ More than 5 years (Please write: years)

How would you best describe your major industry? (Please tick one of the following)

☐ Agriculture, Hunting and Forestry
☐ Fishing
☐ Mining & Quarrying
☐ Manufacturing
☐ Electricity, Gas and Water Supply
☐ Construction
☐ Wholesale & Retail
☐ Hotels and Restaurants
☐ IT and Telecommunication
☐ Transport, Storage & Communication
☐ Banking/Finance
☐ Real Estate, Renting & Business
☐ Public Administration & Defence
☐ Education
☐ Health and Social Work
☐ Social & Personal Services
☐ Private Households With Employees

What are the main categories of products your company sells on WBSS? (Please tick as many as appropriate)

☐ Automotive (Car, Motors & Bicycles)	☐ Food & Drink	☐ Services
☐ Books	☐ Gifts & Tickets & Gadgets	☐ Sex Equipment
☐ Clothing & Fashion	☐ Health & Pharmacy	☐ Sport & Leisure
☐ Computing (Software&Hardware)	☐ Home & Garden	☐ Toy & Baby & Children
☐ Computer Games	☐ Information	☐ Travel & Transportation
☐ Electronic Equipment	☐ Music & Videos & DVDs	☐ Grocery & Department
☐ Flowers	☐ Office Supplies	☐ Others (Please write:)

Does your company's WBSS provide comparative shopping functions of selling products? i.e can the customer search by product family? ☐ Yes ☐ No

How does your company deliver products sold on WBSS?

☐ Company Delivery	☐ Via the Internet
☐ Outsourcing	☐ Special Delivery Company (Please write:)

Is your company considering WBSS conducted via customers'mobile phone or mobile business technology? ☐ Yes ☐ No

If yes, when would your company offer this service (mobile business)?

☐ Now	☐ Within 6 months	☐ Within 18 months
☐ Within 3 months	☐ Within one year	☐ Within two years

The total number of employees in your company is

☐ Less than 10	☐ Between 101 & 250	☐ Between 3,001 & 5,000
☐ Between 10 & 25	☐ Between 251 & 500	☐ Between 5,001 & 10,000
☐ Between 26 & 50	☐ Between 501 & 1,000	☐ Between 10,001 & 30,000
☐ Between 51 & 100	☐ Between 1,001 & 3,000	☐ More than 30,001

The annual turnover of your company is (in pounds)

☐ less than 15 thousand	☐ 500.1 thousand – 2.5 million	☐ 50.1 - 150 million
☐ 15 - 50 thousand	☐ 2.51 - 5 million	☐ 150.1 - 200 million
☐ 50.1 - 250 thousand	☐ 5.1 - 25 million	☐ 200.1 - 500 millon
☐ 250.1 - 500 thousand	☐ 25.1 – 50 million	☐ 500.1 million or more

I-2. Systemic Aspects

The total number of employees in the IT/IS department is:

What department or group has been the strongest advocate of Web-based shopping systems?

- ☐ Accounting
- ☐ Customer Service
- ☐ Chief Executive Office (CEO)
- ☐ Finance
- ☐ Logistics
- ☐ Other (Please write):
- ☐ Strategy/Planning
- ☐ Information Systems
- ☐ None
- ☐ Marketing/Sales
- ☐ Purchasing&Material

Who developed the WBSS that your company is currently using?

- ☐ In house
- ☐ Outsourcing
- ☐ Package

How long did it take from the development plan to launch?

- ☐ Less than 1 year
- ☐ Between 2.1 & 3 years
- ☐ Between 4.1 & 5 years
- ☐ Between 1 & 2 years
- ☐ Between 3.1 & 4 years
- ☐ More than 5.1 years (Please write: years)

How much was invested in WBSS – which your company is currently using – before launch? (in pounds)

- ☐ less than 5 thousand
- ☐ 30.1 - 50 thousand
- ☐ 300.1 - 500 thousand
- ☐ 5 -15 thousand
- ☐ 50.1 - 150 thousand
- ☐ 500.1 thousand to 1 million
- ☐ 15.1 - 30 thousand
- ☐ 150.1 - 300 thousand
- ☐ 1 millon or more

Are your Web-based shopping systems' customers: ☐ Business ☐ Individuals ☐ Both

What kinds of payment does your company accept on WBSS? (Please tick as many as appropriate)

- ☐ Credit Card
- ☐ Bank Transfer
- ☐ Smart Cards
- ☐ Direct Debit
- ☐ Electronic Cash
- ☐ Mobile Phone
- ☐ Personal Cheque
- ☐ Electronic Cheque
- ☐ Others (Please write):

If your WBSS use credit card as payment method, what kinds of credit card does your company accept? (Please tick as many as appropriate)

- ☐ Visa
- ☐ Switch
- ☐ Delta
- ☐ Master
- ☐ American Express
- ☐ Others (Please write):

What technologies does your company use for WBSS? (Please tick as many as appropriate)

- ☐ LAN
- ☐ Firewalls
- ☐ Certification System
- ☐ WAN
- ☐ Web Server
- ☐ Virtual Reality
- ☐ ISDN
- ☐ Search Engine
- ☐ Wireless Technology
- ☐ Intranet
- ☐ Agent Technology
- ☐ Mobile Business Technology
- ☐ Extranet
- ☐ Security Infrastructure
- ☐ Others (Please write):

What kinds of product type does your company sell on WBSS?

(Ref.) Simple Product Type : the product of a single industry such as a book, a CD, and software, flowers, etc. as well as unified group image products such as sports equipment, baby clothes and car sales, etc.

Multiple Product Type : more than two industrial products as well as products that are not unified into a group image.

☐ Simple Product Type ☐ Multiple Product Type ☐ Others (Please write):

What responsibility for a guarantee of delivery and quality for the sales products on WBSS does your company have?

☐ Direct Responsibility ☐ Indirect Responsibility ☐ Others (Please write):

What do you think is the most important strategy to gain competitive advantage for your WBSS?

(Tick one box only)

- *Differentiation* is making a distinction between your product or service and your competitor's.
- *Cost* is achieved through decreasing your cost of products or services.
- *Innovation* is the act that renovates the product or the service.
- *Growth* is achieved through product variety, the expansion of marketing areas, and increased sales.
- *Alliance* is achieved through the joining with other firms, the agreement of inter-organisation, and joint investment.

☐ Differentiation ☐ Cost ☐ Innovation ☐ Growth ☐ Alliance

Some potential benefits of WBSS are listed below. Please indicate the extent to which your company has realized the proposed benefit.	Strongly Disagree				Strongly Agree
• Reduce transaction costs	1	2	3	4	5
• Increase the networkability with other organisations	1	2	3	4	5
• Improve customer relationships	1	2	3	4	5
• Improve security management and privacy	1	2	3	4	5
• Enable competitiveness or create strategic advantage	1	2	3	4	5
• Enable easier access to information related to the customer and market	1	2	3	4	5
• Provide new products or services to customers	1	2	3	4	5
• Align well with organisational goals	1	2	3	4	5
• Enable the organisation to create new business	1	2	3	4	5
• Establish useful links with other organisations	1	2	3	4	5
• Enable our organisation to catch up with competitors	1	2	3	4	5
• Save money by avoiding the need to increase the work force	1	2	3	4	5
• Cost saving by reducing the work force	1	2	3	4	5
• Improve the way our organisation conducts business	1	2	3	4	5
• Enhance employee productivity or business efficiency	1	2	3	4	5
• Provide better products or services for customers	1	2	3	4	5
• Enable our organisation to respond more quickly to change	1	2	3	4	5
• Improve information for customer management	1	2	3	4	5
• Enhance the reputation or prestige of our organisation	1	2	3	4	5

Part II – Impact Factors on WBSS Diffusion

The following statements describe your company aspects related to the diffusion of Web-based shopping systems. Please indicate the extent to which you agree or disagree with each statement by circling the appropriate response. Response choices for all questions are *1 : Strongly Disagree (SD); 2: Disagree (DA); 3: Neutral; 4: Agree (AG) and 5: Strongly Agree (SA).*

II-1. External Market Factors

Global Electronic Markets	SD ← DA←Neutral→AG → SA				
The amount of electronic commerce within our industry is quickly expanding, as compared to other industries.	1	2	3	4	5
Internet commerce with other firms within our industry is quickly expanding, as compared to other industries.	1	2	3	4	5
Web-based shopping by customers within our industry is quickly expanding, as compared to other industries.	1	2	3	4	5
The number of WBSS applications within our industry is quickly expanding, as compared to other industries.	1	2	3	4	5

Digital Business – Digital Business Products: information, images, software, books, movies etc.	SD ← DA←Neutral→AG → SA				
Digital business transactions are diffusing within our industry.	1	2	3	4	5
The quantity of digital business products is increasing within our industry.	1	2	3	4	5
The amount of digital business trade is growing within our industry.	1	2	3	4	5
Firms doing digital business are expanding within our industry.	1	2	3	4	5

Market Dynamism	SD ← DA←Neutral→AG → SA				
Competitors' products quickly change within our industry.	1	2	3	4	5
Customers' preferences for product features quickly change within our industry.	1	2	3	4	5
Competitors' selling strategies quickly change within our industry.	1	2	3	4	5
Competitors' advertising strategies quickly change within our industry.	1	2	3	4	5
The price customers expect to pay quickly changes within our industry.	1	2	3	4	5

Customer Segmentation	SD ← DA←Neutral→AG → SA				
Our company focuses on specific targeted customers in the global electronic market.	1	2	3	4	5
Our company is aware of the characteristics of target customers in the global electronic market.	1	2	3	4	5
Our company understands Web-based shopping activities of targeted customers in the global electronic market.	1	2	3	4	5
Our company understands customers' expectations of Web-based shopping in the global electronic market.	1	2	3	4	5

II-2. External Technical Factors

Interactivity	SD ← DA←Neutral→AG → SA				
Our company perceives that Internet technology enhances the richness of customer relationships online.	1	2	3	4	5
Our company perceives that Internet technology enables our organisation to provide a better customer service online.	1	2	3	4	5
Our company perceives that Internet technology allows our organisation to entice customers to participate in the e-business experience.	1	2	3	4	5
Our company perceives that a Web site is good technology for interactivity with global customer online.	1	2	3	4	5
Our company perceives that a Web site will increase interactivity with customers online.	1	2	3	4	5
Our company perceives that a Web site allows our organisation to reach new customers online.	1	2	3	4	5

Connectivity	SD ← DA←Neutral→AG → SA				
Our company perceives that Internet technology will improve connectivity between different hardware and software platforms.	1	2	3	4	5
Our company perceives that Internet technology will provide new co-ordination mechanisms both across organisations and customers.	1	2	3	4	5
Our company perceives that Internet technology will provide our organisation with links to customers, suppliers or business partners.	1	2	3	4	5
Our company perceives that our Web site can be easily connected to other Websites without any technical mediation.	1	2	3	4	5
Our company perceives that our Web site can be easily connected to any information systems without any technical mediation.	1	2	3	4	5

Feasibility	SD ← DA←Neutral→AG → SA				
Our company perceives that a Web site could be easily implemented with the existing hardware environment.	1	2	3	4	5
Our company perceives that a Web site could be easily implemented with the existing software environment.	1	2	3	4	5
Our company perceives that a Web site could be easily implemented with the existing technical resources.	1	2	3	4	5
Our organisation perceives that a Web site development is a simple process.	1	2	3	4	5

Trialability	SD ← DA←Neutral→AG → SA				
Before deciding on whether or not to adopt WBSS, our organisation perceives that the Web site could be tested on a trial basis of Internet business.	1	2	3	4	5
Before deciding on whether or not to adopt WBSS, our organisation would be able to properly try the Web site to check the possibility of Web-based shopping.	1	2	3	4	5
Our organisation perceives that the Web site is a good way to see what it can do for electronic commerce on a trial basis.	1	2	3	4	5

II-3. Internal Organisation Factors

E-business Planning	SD ← DA←Neutral→AG → SA				
Our company works out a strategic plan to successfully establish e-business projects.	1	2	3	4	5
Our company has an e-business plan for Web-based shopping.	1	2	3	4	5
Our company devises planning for new Internet business.	1	2	3	4	5
Our company formulates information systems planning for the adoption of a new Internet system.	1	2	3	4	5
Our company establishes a further upgrading plan for WBSS.	1	2	3	4	5

Risk Management	SD ← DA←Neutral→AG → SA				
Our company provides authentication and secure mechanisms for our Web-based shopping system.	1	2	3	4	5
Our company has established a plan to cope with various financial risks such as credit card fraud or false transactions.	1	2	3	4	5
Our company prevents legal risks such as intentional or accidental fraud related to Web-based shopping.	1	2	3	4	5
Our company has a special team dealing with the risk relevant to the selling of the product, information or service.	1	2	3	4	5
Our company provides the brand guarantee for sales products on WBSS.	1	2	3	4	5

Customer Service Quality	SD ← DA←Neutral→AG → SA				
Our organisation provides a quick response to customers' inquiries.	1	2	3	4	5
Our organisation provides an assurance to solve customers' problems related to Web-based shopping.	1	2	3	4	5
Our organisation deals quickly with customers' problems related to Web-based shopping.	1	2	3	4	5
Our organisation provides follow-up services to customers.	1	2	3	4	5
Our organisation provides an e-mail message offering thanks and asking about the experience of products purchased.	1	2	3	4	5
Our organisation keeps the customer's information confidential.	1	2	3	4	5

Knowledge Intensity	SD ← DA←Neutral→AG → SA				
Our knowledge of customers' needs is thorough.	1	2	3	4	5
We regularly process and analyze customer information.	1	2	3	4	5
We fully understand our customers' needs and wants.	1	2	3	4	5
Our company continuously studies market trends and changes.	1	2	3	4	5
We regularly use research procedures, e.g. personal interviews, focus Groups and surveys to gather market information.	1	2	3	4	5
Our company has a high level of knowledge related to Internet business.	1	2	3	4	5
Our company regularly collects and analyzes information about our competitors.	1	2	3	4	5
Our knowledge of our competitors' strengths and weaknesses is thorough.	1	2	3	4	5

II-4. Internal System Factors

Usability of WBSS	SD ← DA←Neutral→AG → SA				
Our WBSS provide well-organized hyperlinks.	1	2	3	4	5
Our WBSS manage content in an efficient way.	1	2	3	4	5
Our WBSS provide customized search functions.	1	2	3	4	5
Our WBSS regularly check for broken links of Web-based shopping sites.	1	2	3	4	5
Our WBSS provide a customized help function.	1	2	3	4	5

Security Management	SD ← DA←Neutral→AG → SA				
Our WBSS provides security management on customer privacy or customer data.	1	2	3	4	5
Our WBSS carries out security management on message security such as encryption or digital signatures.	1	2	3	4	5
Our WBSS deals with security management on general regulation for computer hackers, intruders or viruses.	1	2	3	4	5
Our WBSS has firewalls to shield vulnerable areas from some form of danger.	1	2	3	4	5
Our WBSS provides secure credit card transactions such as secure electronic traction (SET).	1	2	3	4	5

Network Infrastructure	SD ← DA←Neutral→AG → SA				
Our WBSS interconnects with LAN (local area network) or Intranet.	1	2	3	4	5
Our WBSS connects with WAN (wide area network) or Extranet.	1	2	3	4	5
Our WBSS has routers or gateways as network-ware.	1	2	3	4	5
Our WBSS consists of network infrastructure such as CORBA (common object request brokered architecture) that mediate transactions between our company and outside clients.	1	2	3	4	5

Internet Technology Adatability	SD ← DA←Neutral→AG → SA				
Our organisation is aware of recent Internet technologies such as agent technology, cyber cash, virtual reality and so on.	1	2	3	4	5
Our organisation has an understanding of the newest trends in new Internet technologies.	1	2	3	4	5
Our organisation has an adoption plan for new Internet technologies.	1	2	3	4	5
Our organisation generally keeps abreast of the latest Internet technologies.	1	2	3	4	5
Our company has a tradition of being the first to try new Internet technologies.	1	2	3	4	5

II-5. Dependent Variables

Extent of WBSS Access by Customer	SD ← DA←Neutral→AG → SA				
The WBSS is frequently used by customers.	1	2	3	4	5
The number of transactions related to Web-based shopping on our WBSS is growing.	1	2	3	4	5
Service functions provided by our WBSS are frequently used by the customer.	1	2	3	4	5

Extent of Internal Usage on the WBSS	SD ← DA←Neutral→AG → SA				
Internal staff in our company use WBSS for communication in their work.	1	2	3	4	5
The WBSS has encouraged the sharing of information within our company.	1	2	3	4	5
Communication in our company has been enhanced since WBSS was introduced.	1	2	3	4	5

Extent of Integration of WBSS Application	SD ← DA←Neutral→AG → SA				
Our WBSS are integrating with various other systems such as payment systems, search engines, security systems, Intranet systems and extranet systems.	1	2	3	4	5
The sophistication of the level of our WBSS application is high compared with competitors in our industry.	1	2	3	4	5
Our WBSS are highly coupled with other application systems such as supply chain management systems, customer relationship management systems or Internet banking systems.	1	2	3	4	5

Researchers sometimes miss subtleties of business reality by imposing particular perspectives on the phenomenon being studied. In order to minimize such an occurrence, please provide *three of the most critical impact factors* that you believe are necessary to make a Web-based shopping system successful.

Factor # 1 (_____)

Factor # 2 (_____)

Factor # 3 (_____)

If you would like to receive results from the survey, please enclose your name, address, e-mail address or attach your business card.

Name :

Address :

E-mail :

Please return this questionnaire by e-mail or post.

To:

Dr. Changsu Kim

Department of Information Systems

London School of Economics

Houghton Street

London WC2A 2AE

E-mail address: *c.kim@lse.ac.uk*

Thank you very much for participating in this survey!

Appendix 3. Initial Korean Version of the Survey Instrument

연구설문지

성　　명:
직　　위:
회 사 명:
주　　소:

인터넷쇼핑 담당자님 귀하

인터넷을 통한 웹기반 쇼핑시스템(Web-Based Shopping Systems: WBSS)이 국가간 경계를 가로질러 급속히 확산되고 있습니다. 본 연구에서 웹기반 쇼핑시스템(WBS)은 "제품이나 정보, 그리고 서비스를 인터넷에 기반하여 사고 팔 수 있게 지원하는 쇼핑시스템"을 의미합니다. 전자상거래 (Electronic Commerce)에 관련된 여러 이슈들 (Issues) 가운데 WBSS 가 중요하게 고려되어야 될 이슈 중의 하나로 인식되고 있지만, WBSS에 대한 학계에서의 연구는 아직 초기 단계에 있습니다. 이에 영국의 런던대학교내의 런던정경대 (LSE: London School of Economics and Politics, University of London) 에서는 산업계에서 필요로 하는 인터넷 비즈니스에 관련된 실질적이고 유용한 정보와 지침을 제공하기 위하여 웹기반 쇼핑시스템(WBSS)의 확산 (Diffusion)에 관한 한국과 영국의 국제 비교연구를 수행하고 있습니다.

본 연구프로젝트의 유용한 정보를 획득하기 위하여, 저의 연구팀들은 여러분들의 연구참여를 필요로 하고 있습니다. 여기에 저희 연구진들이 개발한 연구설문지를 첨부합니다. 여러분들의 연구참여는 본 연구를 더욱 가치있게 만들 것입니다. 작성을 완료하신 설문지는 전자메일(e-mail)을 이용하여 가능한 빨리 발송해 주시면 감사하겠습니다.

여러분들이 제공하는 정보는 연구목적 이외에는 이용되지 않을 것이며, 엄격히 비밀을 준수할 것입니다. 향후 본 연구가 완료되었을 때, 본 연구에 참여하신 분들에 한정하여 연구결과 요약본을 귀하에게 발송할 것입니다. 본 연구의 결과는 귀사 인터넷 쇼핑몰의 경쟁우위 확보를 위한 비전정립과 발전전략을 수립하는데 있어 중요한 지침으로 활용 될 수 있을 것입니다.

여러분의 연구참여에 대하여 진심으로 감사드립니다. 귀사의 무궁한 발전과 건승을 기원합니다.

연구책임자: 정보시스템박사 Professor Robert Galliers
연구관리자: 경영학박사 Dr. Changsu Kim
University of London
London School of Economics & Political Science (참고 Web site: www.lse.ac.uk)
Houghton Street
London WC2A 2 AR
본 연구에 관련되어 문의사항이 있어시면 아래로 연락주시면 성실히 답변해 드리겠습니다.
E-mail: c.kim@lse.ac.uk Tel. 44-20-8949-1758.

참고사항

본 설문지를 작성하실 때에 귀사의 웹기반 쇼핑시스템 (WBSS)의 현재 상태에 근거하여 답변해 주시기 바랍니다. 본 연구에서 웹기반 쇼핑시스템(WBS)은 "제품이나 정보, 그리고 서비스를 인터넷에 기반하여 사고 팔 수 있게 지원하는 쇼핑시스템"을 의미합니다. 본 설문지를 작성하기 이전에 다음을 참조하여 주시기 바랍니다.

1. 만약 여러분 기업이 현재 웹기반 쇼핑시스템을 운영하고 있으면, 본 설문지의 모든 항목들에 대하여 답변해 주십시요.
2. 만약 여러분 기업이 현재 웹기반 쇼핑시스템을 운영하고 있지 않으면 설문지 Part I-1 에 있는 항목에 대하여 답변해 주십시요.

Part I. 일반적인 질문 항목

I-1. 조직적인 측면

귀하의 직위나 직책을 기입해 주십시요 : (직위/직책:)

귀하와 최고경영자 (CEO) 사이에 몇단계의 결재를 요하는 직위가 있습니까?

□ 0 (귀하 자신이 CEO) □ 2 □ 4 □ 6
□ 1 □ 3 □ 5 □ 7

귀하는 기업내에서 어떤 분야에 소속되어 있습니까? (해당되는 항목에 가능한 많이 표시해 주십시요)

□ 물류 □ 서비스 □ 조달
□ 생산 □ IT/정보시스템 □ 인적자원관리
□ 판매 / 마케팅 □ 관리 □ 기타 (기입요망:)

귀하는 웹기반 쇼핑에 관련된 업무에 얼마동안 참여 하셨습니까?

□ 1 년 이하 □ 2 - 3 년 사이 □ 4 - 5 년 사이
□ 1 - 2 년 사이 □ 3 - 4 년 사이 □ 5 년 이상 (기입요망: 년간)

귀하의 최종학력은 무엇입니까?

□ 고등학교 □ 대학교 □ 박사
□ 전문대학 □ 석사 □ 기타 (기입요망:)

귀사(기업)가 웹기반 쇼핑 비즈니스에 참여하신지는 얼마정도 되었습니까?

□ 1 년 이하 □ 2 - 3 년 사이 □ 4 - 5 년 사이
□ 1 - 2 년 사이 □ 3 - 4 년 사이 □ 5 년 이상 (기입요망: 년간)

귀사는 다음중 어느 산업군에 소속되어 있습니까? (다음 항목중에서 하나를 선택하십시요)

□ 농업, 임업
□ 수산업
□ 광업
□ 공업
□ 전기/가스/수도 공급업
□ 건설/건축
□ 도/소매업
□ 호텔/식당
□ IT/정보통신업
□ 수송/저장업
□ 금융업
□ 부동산업
□ 공공기관
□ 교육
□ 건강/사회사업
□ 사회/개인서비스
□ 소규모 개인 비즈니스 (SOHO)

귀사가 WBSS에 기반하여 판매하는 주요 제품의 범주는 어느 것입니까? (해당되는 항목에 가능한 많이 표시해 주십시요)

□ 자동차/오토바이/자전거	□ 음식/음료/잡화	□ 서비스
□ 책	□ 선물/티켓/도구	□ 섹스용품
□ 옷/패션	□ 건강/제약	□ 스포츠/레져
□ 컴퓨터관련 (Software&Hardware)	□ 가정용품	□ 장난감/어린이/유아용품
□ 컴퓨터게임	□ 정보(Information)	□ 여행/수송
□ 전기제품/장비	□ 음악/비디오/DVDs	□ 백화점
□ 꽃	□ 사무용품/기기	□ 기타 (기입요망:)

귀사의 웹기반 쇼핑시스템은 비교쇼핑 기능을 지원합니까? (고객들이 제품의 특성이나 가격등에 의거하여 구매할 제품군을 검색할 수 있는 기능) □ 예 □ 아니오

귀사는 웹기반 쇼핑시스템에 기반하여 판매된 제품을 어떻게 배달합니까?

□ 귀사 자체 배달 조직	□ 컴퓨터 네트웍/ 인터넷에 기반
□ 아웃소싱	□ 전문 배달 회사 (기입요망:)

귀사 웹기반 쇼핑시스템은 고객의 무선전화기 (mobile phone) 에 의하여 접속되는 서비스를 고려하고 있습니까? □ 예 □ 아니오

위의 질문에서 만약 예라고 표시하였다면, 귀사는 언제 이와같은 모빌서비스 (mobile business)를 제공할 계획입니까?

□ 현재	□ 6개월 이내	□ 1년 6개월
□ 3개월 이내	□ 1년 이내	□ 2년 이내

귀사의 전체 종업원수는 몇 명입니까?

□ 10명 미만	□ 100 – 250 명	□ 3,000 - 5,000 명
□ 10 - 25 명	□ 250 - 500 명	□ 5,000 - 10,000 명
□ 25 - 50 명	□ 500 - 1,000 명	□ 10,000 - 30,000 명
□ 50 - 100 명	□ 1,000 - 3,000 명	□ 30,000 명 이상

귀사의 가장 최근의 년간 총매출액은 얼마입니까? (년/원화 기준)

□ 3000 만원 미만	□ 10 억원- 50 억원	□ 1000 억원- 3000 억원
□ 3000 만원 - 1 억원	□ 50 억원- 100 억원	□ 3000 억원- 6000 억원
□ 1 억원 - 5 억원	□ 100 억원 - 500 억원	□ 6000 억원- 1 조원
□ 5 억원 – 10 억원	□ 500 억원- 1000 억원	□ 1 조원 이상

II-2. 시스템측면

귀사의 정보시스템부서의 전체 인원은 몇 명입니까? 명

귀사 웹기반 쇼핑시스템의 구축에 대하여 어떤 부서/팀에서 강력하게 주장하였습니까?

□ 회계 □ 고객 서비스 □ 최고경영자 (CEO)
□ 재무 □ 물류 □ 기타(기입요망:)
□ 기획/전략 □ 정보시스템 □ 해당없슴
□ 마케팅/판매 □ 구매/조달

귀사의 웹기반 쇼핑시스템은 누가 개발 했습니까?

□ 자체개발 □ 아웃소싱 □ 패키지

귀사 웹기반 쇼핑시스템의 계획부터 실제 개발 까지 얼마정도의 기간이 소요되었습니까?

□ 1 년 미만 □ 2 - 3 년 □ 4 - 5 년
□ 1 - 2 년 □ 3 – 4 년 □ 5 년 이상 (기재요망: 년)

현재 운영하고 있는 귀사 웹기반 쇼핑시스템에 대하여 얼마정도의 개발비용을 투입하셨습니까?

□ 1 천만원 미만 □ 6 천만원 – 1 억원 □ 6 억원 – 10 억원
□ 1 – 3 천만원 □ 1 억원 – 3 억원 □ 10 억원- 20 억원
□ 3 – 6 천만원 □ 3 억원 – 6 억원 □ 20 억원 이상

귀사 웹기반 쇼핑시스템의 주요한 고객은? □ 기업 □ 소비자 □ 기업 +소비자

귀사 웹기반 쇼핑시스템의 월간 거래 트랜잭슨 (transactions) 은 얼마 정도입니까?

□ 3 백건 미만 □ 1 천건- 3 천건 □ 1 만건 – 3 만건
□ 3 백건 – 500 백건 □ 3 천건 - 5 천건 □ 3 만건 – 5 만건
□ 5 백건 – 1천건 □ 5 천건- 1만건 □ 5만건 이상

귀사의 웹기반 쇼핑시스템은 어떤 종류의 지불(payment)을 사용합니까? (해당되는 모든 항목에 대하여 표시해 주십시요)

□ 신용카드 □ 은행이체 □ 스마트카드
□ 현금카드 □ 전자현금 □ 개인휴대폰 (Mobile Phone)
□ 개인수표 □ 전자수표 □ 기타 (기입요망:)

만약 귀사의 웹기반 쇼핑시스템이 신용카드를 지불수단으로 사용한다면, 어떤 종류의 신용카드를 수용(accept)합니까? (해당되는 모든 항목에 대하여 표시해 주십시요)

□ 비자 □ 스위치(Switch) □ 델타(Delta)
□ 마스터 □ 아멕스(American Express) □ 기타 (기입요망:)

귀사의 웹기반 쇼핑시스템은 어떤 종류의 기술을 사용하십니까? (해당되는 모든 항목에 대하여 표시해 주십시요)

□ 근거리통신망(LAN) □ 방화벽(Firewalls) □ 인증기술(Certification)
□ 원거리통신망(WAN) □ 웹서버(Web Server) □ 가상현실(Virtual Reality)
□ ISDN □ 탐색엔진(Search Engine) □ 무선기술(Wireless)
□ 인트라넷(Intranet) □ 에이전트기술(Agent Technology) □ 개인휴대전화기 (Mobile Phone)
□ 엑스트라넷(Extranet) □ 보안기술(Security) □ 기타 (기입요망:)

귀사의 웹기반 쇼핑시스템에 기반하여 판매되는 제품의 유형은 다음중 어느 것입니까?

(참고) 단일유형: 판매되는 제품이 꽃이나, 책, CD, SW와 같은 단일업종의 제품뿐만 아니라, 스포츠나 자동차 혹은 유아 관련 용품등과 같이 제품의 업종이 다소 상이한 제품들이 판매되는 경우에 하나의 통일된 이미지로 그룹화 할 수 있으면 단일제품.

다중유형: 판매되는 제품업종이 둘이상일 뿐만 아니라, 하나의 이미지로 통일화 시킬 수 없는 제품유형.

□ 단일유형 □ 다종유형 □ 기타 (기입요망:)

웹기반 쇼핑시스템에 기반하여 판매된 제품에 대한 물품전달과 품질에 대한 귀사의 책임정도는 다음중 어느 것입니까?

□ 직접책임 □ 간접책임 □ 기타 (기입요망:)

웹기반 쇼핑시스템의 경쟁우위 (competitive advantage)를 획득하기 위하여 귀사가 가장 중요하게 고려하는 전략은 무엇입니까? (다음 전략중에서 하나만 선택하십시요)

- 차별화전략: 경쟁사와 비교하여 제품이나 서비스에서 차이 부각시켜 경쟁우위를 확보하는 전략
- 원가전략: 제품이나 서비스의 가격절감을 통한 경쟁우위 확보전략
- 혁신전략: 제품이나 서비스의 혁신을 통한 경쟁우위 확보전략
- 성장전략: 제품의 다양성, 시장의 확장, 그리고 판매의 증가를 통한 경쟁우위 확보전략
- 연계전략: 다른 기업과의 연계나 투자, 조직간 협약을 통한 경쟁우위 확보전략

□ 차별화전략 □ 원가전략 □ 혁신전략 □ 성장전략 □ 연계전략

아래의 항목들은 웹기반 쇼핑시스템의 잠재적인 혜택들 입니다. 이 항목들에 대하여 귀사가 인식하는 혜택의 정도를 표시해 주십시요.

	강력히 비동의				강력히 동 의
• 거래비용 절감	1	2	3	4	5
• 다른 기업이나 조직들과 네트웍 능력 (networkability) 향상	1	2	3	4	5
• 고객관계 증진	1	2	3	4	5
• 보안관리 향상	1	2	3	4	5
• 경쟁우위 향상	1	2	3	4	5
• 고객과 시장 관련 정보의 용이한 접근 및 이용	1	2	3	4	5
• 고객에게 새로운 제품과 서비스 제공	1	2	3	4	5
• 조직목표와 좋은 연계	1	2	3	4	5
• 새로운 비즈니스를 창조하기 위한 조직의 수단	1	2	3	4	5
• 다른 기업들과 유용한 연계 형성	1	2	3	4	5
• 경쟁 기업들을 따라 잡기 위한 조직의 동인	1	2	3	4	5
• 노동력을 증가시키기 위한 요구의 상쇄로 인한 비용절감	1	2	3	4	5
• 노동력의 축소에 따른 비용절감	1	2	3	4	5
• 귀사의 비즈니스를 수행하는 방법의 향상	1	2	3	4	5
• 작업 생산성과 업무효율 증대	1	2	3	4	5
• 고객에게 보다 나은 제품과 서비스 제공	1	2	3	4	5
• 변화에 신속히 대응하기 위한 조직 지원	1	2	3	4	5
• 고객관리를 위한 정보 제공	1	2	3	4	5
• 귀사의 홍보와 대외이미지 향상	1	2	3	4	5

Part II – WBSS의 확산에 영향을 미치는 요인

아래의 질의들은 귀사 웹기반 쇼핑시스템의 확산에 관련된 내용들 입니다. 각각의 질의에 대하여 귀사의 입장에서 동의나 혹은 비동의 정도를 해당되는 번호에 표시해 주시기 바랍니다. 참고로 모든 질의에 대한 응답에 있어서 1: 강한 비동의(Strong Disagree) 2: 비동의 (Disagree) 3: 중립(Neutral) 4: 동의(Agree) 5: 강한 동의 (Strong Agree) 중에서 적절한 항목에 표시해 주시기 바랍니다.

II-1. 외부의 시장 요인

글로벌 전자시장	강한비동의←비동의←중 립→동 의→강한동의				
글로벌 전자시장은 당사가 소속된 산업의 전자상거래 규모를 빠르게 확장시키고 있다.	1	2	3	4	5
글로벌 전자시장은 당사의 인터넷 비즈니스를 빠르게 성장하게 한다.	1	2	3	4	5
글로벌 전자시장은 당사의 웹기반 쇼핑 사업의 확산에 영향을 미친다.	1	2	3	4	5
글로벌 전자시장은 당사의 웹기반 쇼핑시스템의 확장에 영향을 미친다.	1	2	3	4	5

디지털 비즈니스 – (참고)디지털 비즈니스 제품: 정보, 이미지, 소프트웨어, 음악, 영화, 책 등.	강한비동의←비동의←중 립→동 의→강한동의				
디지털 비즈니스에 관련된 거래가당사가 소속된 산업내에서확산되고 있다.	1	2	3	4	5
디지털 비즈니스 제품의 수량이당사가 소속된 산업내에서증가하고 있다.	1	2	3	4	5
디지털 비즈니스의 거래량이 당사가 소속된 산업내에서증가하고 있다.	1	2	3	4	5
디지털 비즈니스의 크기가 당사가 소속된 산업내에서확장되고 있다.	1	2	3	4	5

시장의 역동성	강한비동의←비동의←중 립→동 의→강한동의				
당사가 소속된 산업내에서 경쟁사들의 제품들이 신속히 변한다.	1	2	3	4	5
당사가 소속된 산업내에서 제품에 대한 고객들의 기호가 신속히 변한다.	1	2	3	4	5
당사가 소속된 산업내에서 경쟁사들의 판매전략이 신속히 변한다.	1	2	3	4	5
당사가 소속된 산업내에서 경쟁사들의 광고전략이 신속히 변한다.	1	2	3	4	5
당사가 소속된 산업내에서 고객이 지불하기 위해 예상되는 제품의 가격이 신속히 변한다.	1	2	3	4	5

고객구분	강한비동의←비동의←중 립→동 의→강한동의				
당사는 글로벌 전자시장에서 구체적인 목표고객에 집중하고 있다.	1	2	3	4	5
당사는 글로벌 전자시장에서 구체적인 목표고객의 특징들을 잘 인식하고 있다.	1	2	3	4	5
당사는 글로벌 전자시장에서 구체적인 목표고객들의 웹기반 쇼핑 행위들을 잘 인식하고 있다.	1	2	3	4	5
당사는 웹기반 쇼핑에 관련된 고객들의 기호를 잘 이해하고 있다.	1	2	3	4	5

II-2. 외부의 기술 요인

상호작용성 (Interactivity)	강한비동의←비동의←중 립→동 의→강한동의				
당사는 인터넷 기술(Internet Technology)이 고객과의 관계를 증진시킬 것으로 인식한다.	1	2	3	4	5
당사는 인터넷 기술(Internet Technology)이 고객에게 보다 나은 서비스를 온라인으로 제공할 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 인터넷 기술(Internet Technology)이전자상거래에 관련된 경험을 원하는 고객들을 유인할 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 웹사이트(Web site)가 글로벌 고객들과 온라인으로 상호작용(interactivity)하기 위한 좋은 기술이다 라고 인식한다.	1	2	3	4	5
당사는 웹사이트(Web site)가 고객들과 온라인으로 상호작용을 증진시키 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 웹사이트(Web site)가 새로운 고객들을 온라인으로 연계시킬 수 있을 것으로 인식한다.	1	2	3	4	5

접속성 (Connectivity)	강한비동의←비동의←중 립→동 의→강한동의				
당사는 인터넷 기술(Internet Technology)이 서로 다른 하드웨어와 소프트웨어 기기 사이의 접속성(connectivity)을 증진시킬 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 인터넷 기술(Internet Technology)이 조직과 고객 상호간의 새로운 협력 구조(mechanism)를 제공할 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 인터넷 기술(Internet Technology)이 공급자 (supplier)와 거래 파트너와의 연계를 증진시킬 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 웹사이트(Web site)가 별다른 기술적인 중개 없이도 다른 웹사이트와 쉽게 접속될 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 웹사이트(Web site)가 별다른 정보시스템의 중개 없이도 다른 웹사이트와 쉽게 접속될 수 있을 것으로 인식한다.	1	2	3	4	5

실행성 (Feasibility)	강한비동의←비동의←중 립→동 의→강한동의				
당사는 웹사이트(Web site)가 기존 하드웨어 환경과 쉽게 구현 (implement) 될 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 웹사이트(Web site)가 기존 소프웨어 환경과 쉽게 구현 (implement) 될 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 웹사이트(Web site)가 기존 기술적인 자원(resources)들과 쉽게 구현 (implement) 될 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 웹사이트(Web site) 개발이 간단한 과정인 것으로 인식한다.	1	2	3	4	5

실험성 (Trialability)	강한비동의←비동의←중 립→동 의→강한동의				
웹기반 쇼핑 시스템을 본격적으로 구현하기 이전에, 당사는 웹사이트(Web site)을 인터넷 비즈니스를 위한 시험적인 테스트로 이용할 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 웹 사이트(Web site)을 웹기반 쇼핑 시스템을 본격적으로 구현하기 위한 시험적인 테스트로 이용할 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 웹 사이트(Web site)가 시험적인 단계에서의 전자상거래 (electronic commerce) 가능성을 살펴볼 수 있는 좋은 방법이라고 인식하고 있다.	1	2	3	4	5

II-3. 내부의 조직 요인

전자상거래 계획 (E-business Planning)	강한비동의←비동의←중 립→동 의→강한동의				
당사는 성공적인 전자상거래 프로젝트를 수행하기 위하여 전략적인 계획을 수립했다.	1	2	3	4	5
당사는 인터넷 쇼핑몰을 위한 전자상거래 계획을 수립했다.	1	2	3	4	5
당사는 새로운 인터넷 비즈니스를 위한 계획을 입안했다.	1	2	3	4	5
당사는 새로운 인터넷시스템의 도입을 위한 정보시스템 계획을 수립했다.	1	2	3	4	5
당사는 웹기반 쇼핑시스템을 위한 향후 확장 계획을 수립했다.	1	2	3	4	5

위험관리 (Risk Management)	강한비동의←비동의←중 립→동 의→강한동의				
당사는 웹기반 쇼핑시스템을 위한 보안 및 인증관리 시스템을 운영한다.	1	2	3	4	5
당사는 허위거래나 신용카드 사기 등과 같은 금전적인 거래 위험들에 관한 대응계획을 수립했다.	1	2	3	4	5
당사는 웹기반 쇼핑에 관련된 법적인 위험들을 고려하고 있다.	1	2	3	4	5
당사는 웹기반 쇼핑에 관련된 위험을 관리할 별도의 팀이나 담당자를 두고 있다.	1	2	3	4	5
당사는 웹기반 쇼핑시스템에 근거하여 판매된 제품에 대하여 제품보증을 제공한다.	1	2	3	4	5

고객 서비스 품질 (Customer Service Quality)	강한비동의←비동의←중 립→동 의→강한동의				
당사는 고객들의 문의에 대하여 신속히 응답한다.	1	2	3	4	5
당사는 웹기반 쇼핑에 관련된 고객들의 문제를 해결하기 위하여 보증을 제공한다.	1	2	3	4	5
당사는 웹기반 쇼핑에 관련된 고객들의 문제를 신속히 처리한다.	1	2	3	4	5
당사는 고객을 만족시키기 위하여 다양한 서비스를 제공한다.	1	2	3	4	5
당사의 제품을 구입한 고객에 대하여 감사의 전자우편(e-mail)을 발송한다.	1	2	3	4	5
당사는 고객정보를 비밀스럽게 유지 및 관리한다.	1	2	3	4	5

지식 집약도 (Knowledge Intensity)	강한비동의←비동의←중 립→동 의→강한동의				
고객의 요구에 대한 당사의 지식은 충분히 마련되어 있다.	1	2	3	4	5
당사는 고객의 정보를 정규적으로 분석한다.	1	2	3	4	5
고객의 요구와 필요에 대하여 당사는 충분히 이해하고 있다.	1	2	3	4	5
당사는 시장의 경향과 변화에 대하여 계속적으로 조사한다.	1	2	3	4	5
당사는 정규적으로 시장정보를 수집하기 위하여 고객인터뷰나 서베이 등을 수행한다.	1	2	3	4	5
당사는 인터넷 비즈니스에 관련된 높은 수준의 지식을 가지고 있다.	1	2	3	4	5
당사는 정규적으로 경쟁 기업들에 대한 정보를 수집하고 분석한다.	1	2	3	4	5
경쟁기업의 강점과 약점에 관한 당사의 지식은 충분히 준비되어 있다.	1	2	3	4	5

II-4. Internal System Factors

시스템 유용성 (Usability of WBSS)	강한비동의←비동의← 중 립 → 동 의→강한동의				
당사의 웹기반 쇼핑시스템은 잘 연계된 하이퍼링커(hyperlinks)를 제공한다.	1	2	3	4	5
당사의 웹기반 쇼핑시스템은 콘텐츠(contents)를 효과적으로 관리한다.	1	2	3	4	5
당사의 웹기반 쇼핑시스템은 고객 지향적인 탐색기능(search function)을 제공한다.	1	2	3	4	5
당사의 웹기반 쇼핑시스템은 고객지향적인 도움기능(help function)을 제공한다.	1	2	3	4	5
당사의 웹기반 쇼핑시스템은 쇼핑사이트간의 파손된 연결(link)을 정규적으로 점검한다.	1	2	3	4	5

보안관리 (Security Management)	강한비동의←비동의← 중 립 → 동 의→강한동의				
당사의 웹기반 쇼핑시스템은 고객의 프라이버시에 관련된 보안관리를 수행하고 있다.	1	2	3	4	5
당사의 웹기반 정보시스템은 인증과 같은 메시지보안에 대하여 보안관리를 제공한다.	1	2	3	4	5
당사의 웹기반 정보시스템은 컴퓨터 해커, 침해 그리고 바이러스 등에 대한 보안관리를 유지하고 있다.	1	2	3	4	5
당사는 외부의 여러가지 위험으로부터 웹기반 쇼핑시스템을 보호하기 위하여 방화벽(firewalls)을 설치하고 있다	1	2	3	4	5
당사는 신용카드 거래에 따른 위험을 막기 위하여 SET 과 같은 보안 지불 프로토콜을 사용한다.	1	2	3	4	5

네트웤 인프라 스트럭처 (Network Infrastructure)	강한비동의←비동의← 중 립 → 동 의→강한동의				
당사의 웹기반 쇼핑시스템은 근거리통신망(LAN: local area network) 혹은 인트라넷 (Intranet)에 기반하고 있다.	1	2	3	4	5
당사의 웹기반 쇼핑시스템은 원거리통신망 (WAN: wide area network) 혹은 엑스트라넷 (Extranet)에 연계되어 있다.	1	2	3	4	5
당사의 웹기반 쇼핑시스템은 라우트 (router)나 게이트웨이(gateway) 등과 같은 네트웤 웨어(network ware) 로 구성되어 있다.	1	2	3	4	5
당사의 웹기반 쇼핑시스템은 외부의 고객이나 거래 기업들간의 거래를 중계시켜 줄 수 있는 CORBA (common object request brokered architecture) 와 같은 네트웤 인프라스트럭처에 기반한다.	1	2	3	4	5

인터넷 기술 적응성 (Internet Technology Adatability)	강한비동의←비동의← 중 립 → 동 의→강한동의				
당사는 에이전트 기술, 사이버 현금, 가상현실 등과 같은 최신의 인터넷 기술을 인식하고 있다.	1	2	3	4	5
당사는 새로운 인터넷 기술의 최근 경향을 이해하고 있다.	1	2	3	4	5
당사는 새로운 인터넷 기술의 도입에 관련된 계획을 가지고 있다.	1	2	3	4	5
당사는 최신 인터넷 기술의 흐름에 뒤떨어 지지 않도록 노력하고 있다.	1	2	3	4	5
당사는 새로운 인터넷 기술을 도입하는데 있어서 선구자적인 경향을 가지고 있다.	1	2	3	4	5

II-5. WBSS의 확산 정도

고객에 의한 WBSS의 액세스 정도	강한비동의←비동의←중 립→동 의→강한동의				
당사의 웹기반 쇼핑시스템은 고객에 의해서빈번하게 사용된다.	1	2	3	4	5
웹기반 쇼핑에 관련된 거래 (transaction)의 량이 증가하고 있다.	1	2	3	4	5
당사의 웹기반 쇼핑시스템에서 제공되는 서비스 기능들이 고객들에 의해서 자주 이용되고 있다.	1	2	3	4	5

WBSS 의 내부 사용 정도	강한비동의←비동의←중 립→동 의→강한동의				
당사내부의 조직원들은 작업상의 의사소통을 위하여 웹기반 쇼핑시스템을 이용한다.	1	2	3	4	5
당사의 웹 기반 쇼핑시스템은 내부의 정보교환과 공유를 촉진한다.	1	2	3	4	5
당사의 웹기반 쇼핑시스템이 도입된 이후 조직의 내부 의사소통 (communication)이향상되었다.	1	2	3	4	5

WBSS 응용시스템 간의 통합 정도	강한비동의←비동의←중 립→동 의→강한동의				
당사의 웹기반 쇼핑시스템은 지불시스템, 보안시스템, 탐색엔진 등과 같은 시스템으로 구성되어 있다.	1	2	3	4	5
당사 웹기반 쇼핑시스템의 정교함과 세련의 정도는 동일 업계내의 다른 경쟁기업과 비교하여 높은 수준이다.	1	2	3	4	5
당사의 웹기반 쇼핑시스템은 고객관리 시스템, 인터넷 뱅킹시스템, 그리고 물류 관리시스템 등과 같은 응용시스템들과 밀접하게 연계되어 있다.	1	2	3	4	5

연구자들은 때때로 연구할 현상에 대하여 특별한 관점을 부여하는 관계로 인해 비즈니스의 실질적인 부분을 간과하는 경우가 있습니다. 이러한 현상을 최소화하기 위하여, 귀하가 생각하여 웹기반 쇼핑시스템의 성공적인 확산에 영향을 미칠 수 있는 가장 중요한 세가지 요인을 아래에 기술해 주시기 바랍니다.

요 인 #1 (_____)

요 인 #2 (_____)

요 인 #3 (_____)

만약 귀하가 본 연구의 결과를 받아 보기를 원하면, 아래에 성명과 주소 그리고 전자우편 (e-mail) 주소를 기입해 주십시요.

성 명 :
주 소 :
전자우편 :

기입한 설문지를 가능한 신속히 아래의 전자우편(e-mail) 주소로 보내주시기 바랍니다.

김 창 수 귀 하
정보시스템 학과
런던대학교
Houghton Street
London WC2A 2AE
E-mail address: *c.kim@lse.ac.uk*

본 설문에 대한 귀하의 연구참여에 대하여 진심으로 감사드립니다!

Appendix 4. Final Korean Version of the Survey Instrument

연구설문지

성　　명:
직　　위:
회 사 명:
주　　소:

웹기반쇼핑시스템 담당자님 귀하

인터넷에 기반한 웹기반 쇼핑시스템(Web-Based Shopping Systems: WBSS)이 국가간 경계를 가로질러 급속히 확산되고 있습니다. 본 연구에서 웹기반 쇼핑시스템(WBS)은 "제품이나 정보, 그리고 서비스를 인터넷에 기반하여 사고 팔 수 있게 지원하는 쇼핑시스템"을 의미합니다. 전자상거래 (Electronic Commerce)에 관련된 여러 이슈들 (Issues) 가운데 WBSS 가 중요하게 고려되어야 될 이슈 중의 하나로 인식되고 있지만, WBSS에 대한 학계에서의 연구는 아직 초기 단계에 있습니다. 이에 영국 런던대학교내의 런던정경대 (LSE: London School of Economics and Politics, University of London) 에서는 산업계에서 필요로 하는 인터넷 비즈니스에 관련된 실질적이고 유용한 정보와 지침을 제공하기 위하여 웹기반 쇼핑시스템(WBSS)의 확산 (Diffusion)에 관한 한국과 영국의 국제 비교연구를 수행하고 있습니다.

본 연구프로젝트의 유용한 정보를 획득하기 위하여, 저의 연구팀들은 여러분들의 연구참여를 필요로 하고 있습니다. 여러분들의 연구참여는 본 연구를 더욱 가치있게 만들 것입니다. 여기에 저희 연구진들이 개발한 설문지를 첨부하오니 모든 항목에 대하여 기입하여 주시기 바랍니다. 작성을 완료하신 설문지는 전자메일(e-mail)을 이용하여 가능한 빨리 발송해 주시면 감사하겠습니다.

여러분들이 제공하는 정보는 연구목적 이외에는 이용되지 않을 것이며, 엄격히 비밀을 준수하게 될 것입니다. 향후 본 연구가 완료되었을 때, 설문에 참여하신 기업들에 한정하여 연구결과 요약본을 발송할 계획입니다. 본 연구의 결과는 귀사 웹기반 쇼핑시스템의 경쟁우위 확보를 위한 비전정립과 발전전략을 수립하는데 있어 중요한 지침으로 활용 될 수 있을 것입니다.

여러분의 연구참여에 대하여 진심으로 감사드립니다. 귀사의 무궁한 발전과 건승을 기원합니다.

연구책임자: 정보시스템박사 Professor Robert Galliers
연구관리자: 경영학박사 Dr. Changsu Kim
London School of Economics & Political Science (참고 Web site: www.lse.ac.uk)
University of London
Houghton Street
London WC2A 2 AR
본 연구에 관련된 문의사항이 있어시면 아래로 연략주시면 성실히 답변해 드리겠습니다.
E-mail: c.kim@lse.ac.uk Tel. 44-20-8949-1758.

참 고 사 항

본 설문지를 작성하실 때에 귀사의 웹기반 쇼핑시스템 (WBSS)의 현재 상태에 근거하여 답변해 주시기 바랍니다. 본 연구에서 웹기반 쇼핑시스템(WBS)은 "제품이나 정보, 그리고 서비스를 인터넷에 기반하여 사고 팔 수 있게 지원하는 쇼핑시스템"을 의미합니다. 본 설문지를 작성하기 이전에 다음을 참조하여 주시기 바랍니다.

1. 만약 여러분 기업이 현재 웹기반 쇼핑시스템을 운영하고 있으면, 본 설문지내의 모든 항목들에 대하여 답변해 주십시요.
2. 만약 여러분 기업이 현재 웹기반 쇼핑시스템을 운영하고 있지 않으면 설문지 Part I-1 내에 있는 항목에 대하여 답변해 주십시요.

Part I. 일반항목

I-1. 조직적인 측면

귀하의 직위나 직책을 기입해 주십시요 : (직위/직책:)

귀하와 최고경영자 (CEO) 사이에 몇단계의 결재를 요하는 직위가 있습니까?

□ 0 (귀하 자신이 CEO) □ 2 □ 4 □ 6
□ 1 □ 3 □ 5 □ 7

귀하는 기업내에서 어떤 분야에 소속되어 있습니까? (해당되는 항목에 가능한 많이 표시해 주십시요)

□ 물류 □ 서비스 □ 구매
□ 생산 □ IT/정보시스템 □ 인적자원관리
□ 판매 / 마케팅 □ 관리 □ 기타 (기입요망:)

귀하는 웹기반 쇼핑에 관련된 업무에 얼마동안 참여 하셨습니까?

□ 1 년 미만 □ 2.1 - 3 년 사이 □ 4.1 - 5 년 사이
□ 1 - 2 년 사이 □ 3.1 - 4 년 사이 □ 5.1 년 이상 (기입요망: 년간)

귀하의 최종학력은 무엇입니까?

□ 고등학교 □ 대학교 □ 박사
□ 전문대학 □ 석사 □ 기타 (기입요망:)

귀사(기업)가 웹기반 쇼핑 비즈니스에 참여하신지는 얼마정도 되었습니까?

□ 1 년 미만 □ 2.1 - 3 년 사이 □ 4.1 - 5 년 사이
□ 1 - 2 년 사이 □ 3.1 - 4 년 사이 □ 5.1 년 이상 (기입요망: 년간)

귀사는 다음중 어느 산업군에 소속되어 있습니까? (다음 항목중에서 하나를 선택하십시요)

□ 농업, 임업
□ 수산업
□ 광업
□ 공업
□ 전기/가스/수도 공급업
□ 건설/건축
□ 도/소매업
□ 호텔/식당
□ IT/정보통신업
□ 수송/저장업
□ 금융업
□ 부동산업
□ 공공기관
□ 교육
□ 건강/사회사업
□ 사회/개인서비스
□ 소규모 개인 비즈니스 (SOHO)

귀사가 WBSS에 기반하여 판매하는 주요 제품의 범주는 어느 것입니까? (해당되는 항목에 가능한 많이 표시해 주십시요)

□ 자동차/오토바이/자전거	□ 음식/음료/잡화	□ 서비스
□ 책	□ 선물/티켓/도구	□ 섹스용품
□ 옷/패션	□ 건강/제약	□ 스포츠/레져
□ 컴퓨터관련 (Software&Hardware)	□ 가정용품	□ 장난감/어린이/유아용품
□ 컴퓨터게임	□ 정보(Information)	□ 여행/배달
□ 전기제품/장비	□ 음악/비디오/DVDs	□ 백화점
□ 꽃	□ 사무용품/기기	□ 기타 (기입요망:)

귀사의 웹기반 쇼핑시스템은 비교쇼핑 기능을 지원합니까? (고객들이 여러 제품의 가격이나 특성을 비교 하여 구매할 제품군을 검색할 수 있는 기능) □ 예 □ 아니오

귀사는 웹기반 쇼핑시스템에 기반하여 판매된 제품을 어떻게 배달합니까?

□ 귀사 자체 배달 조직	□ 컴퓨터 네트웍/ 인터넷에 기반 (예. 소프트웨어 다운로드)
□ 아웃소싱	□ 전문 배달 회사 (기입요망:)

귀사 웹기반 쇼핑시스템은 고객의 무선전화기 (mobile phone) 에 의하여 접속되는 서비스를 고려하고 있습니까? □ 예 □ 아니오

위의 질문에서 만약 예라고 표시하였다면, 귀사는 언제 이와같은 모빌서비스 (mobile business)를 제공할 계획입니까?

□ 현재	□ 6개월 이내	□ 1년 6개월
□ 3개월 이내	□ 1년 이내	□ 2년 이내

귀사의 전체 종업원수는 몇 명입니까?

□ 10명 미만	□ 101 – 250 명	□ 3,001 - 5,000 명
□ 10 - 25 명	□ 251 - 500 명	□ 5,001 - 10,000 명
□ 26 - 50 명	□ 501 - 1,000 명	□ 10,001 - 30,000 명
□ 51 - 100 명	□ 1,001 - 3,000 명	□ 30,001 명 이상

귀사의 가장 최근의 년간 총매출액은 얼마입니까? (년/원화 기준)

□ 3000 만원 미만	□ 10.1 억원- 50 억원	□ 1000.1 억원- 3000 억원
□ 3000 만원 - 1 억원	□ 50.1 억원- 100 억원	□ 3000.1 억원- 6000 억원
□ 1.1 억원 - 5 억원	□ 100.1 억원 - 500 억원	□ 6000.1 억원- 1 조원
□ 5.1 억원 – 10 억원	□ 500.1 억원- 1000 억원	□ 1.1 조원 이상

I-2. 시스템측면

귀사의 정보시스템부서의 전체 인원은 몇 명입니까? 명

귀사가 웹기반 쇼핑시스템을 구현하는데 있어 어떤 부서/ 팀이 강력하게 주장하였습니까?

□ 회계 □ 고객 서비스 □ 최고경영자 (CEO)
□ 재무 □ 물류 □ 기타(기입요망:)
□ 기획/전략 □ 정보시스템 □ 해당없슴
□ 마케팅/판매 □ 구매/조달

귀사의 웹기반 쇼핑시스템은 누가 개발 했습니까?

□ 자체개발 □ 아웃소싱 □ 패키지 구입

귀사 웹기반 쇼핑시스템의 계획부터 실제 개발 까지 얼마정도의 기간이 소요되었습니까?

□ 1 년 미만 □ 2.1 - 3 년 □ 4.1 - 5 년
□ 1 - 2 년 □ 3.1 – 4 년 □ 5.1년 이상 (기재요망: 년)

현재 운영하고 있는 귀사 웹기반 쇼핑시스템에 대하여 얼마정도의 개발비용을 투입하셨습니까?

□ 1 천만원 미만 □ 6.1 천만원 – 1 억원 □ 6.1 억원 – 10 억원
□ 1 – 3 천만원 □ 1.1 억원 – 3 억원 □ 10.1 억원- 20 억원
□ 3.1 – 6 천만원 □ 3.1 억원 – 6 억원 □ 20.1 억원 이상

귀사 웹기반 쇼핑시스템의 주요한 고객은? □ 기업 □ 소비자 □ 기업 +소비자

귀사의 웹기반 쇼핑시스템은 어떤 종류의 지불수단(payment)을 사용합니까? (해당되는 모든 항목에 대하여 표시해 주십시요)

□ 신용카드 □ 은행이체 □ 스마트카드
□ 현금카드 □ 전자현금 □ 개인휴대폰 (Mobile Phone)
□ 개인수표 □ 전자수표 □ 기타 (기입요망:)

만약 귀사의 웹기반 쇼핑시스템이 신용카드를 지불수단으로 사용한다면, 어떤 신용카드를 수용(accept)하십니까? (해당되는 모든 항목에 대하여 표시해 주십시요)

□ 비자 □ 스위치(Switch) □ 델타(Delta)
□ 마스터 □ 아멕스(American Express) □ 기타 (기입요망:)

귀사의 웹기반 쇼핑시스템은 어떤 종류의 기술을 사용하십니까? (해당되는 모든 항목에 대하여 표시해 주십시요)

□ 근거리통신망(LAN) □ 방화벽(Firewalls) □ 인증기술(Certification)
□ 원거리통신망(WAN) □ 웹서버(Web Server) □ 가상현실(Virtual Reality)
□ ISDN □ 검색엔진(Search Engine) □ 무선기술(Wireless)
□ 인트라넷(Intranet) □ 에이전트기술(Agent Technology) □ 개인휴대전화기 (Mobile Phone)
□ 엑스트라넷(Extranet) □ 보안기술(Security) □ 기타 (기입요망:)

귀사의 웹기반 쇼핑시스템에 기반하여 판매되는 제품의 유형은 다음중 어느 것입니까?

(참고) 단일유형: 판매되는 제품이 꽃이나, 책, CD, SW와 같은 단일업종의 제품뿐만 아니라, 스포츠나 자동차 혹은 유아 관련 용품등과 같이 제품의 업종이 다소 상이한 제품들이 판매되는 경우에 하나의 통일된 이미지로 그룹화 할 수 있으면 단일제품.

다중유형: 판매되는 제품업종이 둘이상일 뿐만 아니라, 하나의 이미지로 통일화 시킬 수 없는 제품유형.

□ 단일유형 □ 다종유형 □ 기타 (기입요망:)

웹기반 쇼핑시스템에 기반하여 판매된 제품에 대한 물품전달과 품질보증에 대한 귀사의 책임정도는 다음중 어느 것입니까?

□ 직접책임 □ 간접책임 □ 기타 (기입요망:)

웹기반 쇼핑시스템의 경쟁우위 (competitive advantage)를 획득하기 위하여 귀사가 가장 중요하게 고려하는 전략은 무엇입니까? (다음 전략중에서 하나만 선택하십시요)

- 차별화전략: 경쟁사와 비교하여 제품이나 서비스에서 차이를 부각시켜 경쟁우위를 확보하는 전략
- 원가전략: 제품이나 서비스의 가격절감을 통한 경쟁우위 확보전략
- 혁신전략: 제품이나 서비스의 혁신을 통한 경쟁우위 확보전략
- 성장전략: 제품의 다양성, 시장의 확장, 그리고 판매의 증가를 통한 경쟁우위 확보전략
- 연계전략: 다른 기업과의 연계나 투자, 조직간 협약을 통한 경쟁우위 확보전략

□ 차별화전략 □ 원가전략 □ 혁신전략 □ 성장전략 □ 연계전략

아래의 항목들은 웹기반 쇼핑시스템의 잠재적인 혜택들 입니다. 이 항목들에 대하여 귀사가 인식하는 혜택의 정도를 표시해 주십시요.

	강한 비동의				강한 동의
• 거래비용 절감	1	2	3	4	5
• 다른 기업이나 조직들과 네트웍 능력 (networkability) 향상	1	2	3	4	5
• 고객관계 증진	1	2	3	4	5
• 보안관리 향상	1	2	3	4	5
• 경쟁우위 향상	1	2	3	4	5
• 고객과 시장 관련 정보의 용이한 접근 및 이용	1	2	3	4	5
• 고객에게 새로운 제품과 서비스 제공	1	2	3	4	5
• 기업목표나 방향과 조화로운 연계	1	2	3	4	5
• 새로운 비즈니스를 창조	1	2	3	4	5
• 다른 기업들과 유용한 연계 형성	1	2	3	4	5
• 경쟁 기업들을 따라 잡기 위한 조직의 동인	1	2	3	4	5
• 노동력 증대에 대한 필요성 감소에 따른 비용절감	1	2	3	4	5
• 노동력 축소에 따른 비용절감	1	2	3	4	5
• 비즈니스 수행 방법의 향상	1	2	3	4	5
• 작업 생산성과 업무효율 증대	1	2	3	4	5
• 고객에게 보다 나은 제품과 서비스 제공	1	2	3	4	5
• 변화에 신속히 대응하기 위한 조직 지원	1	2	3	4	5
• 고객관리를 위한 정보 제공	1	2	3	4	5
• 귀사의 홍보와 대외이미지 향상	1	2	3	4	5

Part II – WBSS의 확산에 영향을 미치는 요인

아래의 질의들은 귀사 웹기반 쇼핑시스템의 확산에 관련된 내용들 입니다. 각각의 질의에 대하여 귀사의 입장에서 동의나 혹은 비동의 정도를 해당되는 번호에 표시해 주시기 바랍니다. 참고로 모든 질의에 대한 응답에 있어서 1: 강한 비동의(Strong Disagree) 2: 비동의 (Disagree) 3: 중립(Neutral) 4: 동의(Agree) 5: 강한 동의 (Strong Agree) 중에서 적절한 항목에 표시해 주시기 바랍니다.

II-1. 외부의 시장 요인

글로벌 전자시장	강한비동의←비동의←중 립→동 의→강한동의				
글로벌 전자시장은 당사가 소속된 산업의 전자상거래 규모를 빠르게 확장시키고 있다.	1	2	3	4	5
글로벌 전자시장은 당사의 인터넷 비즈니스를 빠르게 성장하게 한다.	1	2	3	4	5
글로벌 전자시장은 당사의 웹기반 쇼핑 사업의 확산에 영향을 미친다.	1	2	3	4	5
글로벌 전자시장은 당사의 웹기반 쇼핑시스템의 확장에 영향을 미친다.	1	2	3	4	5

디지털 비즈니스 (참고)디지털 비즈니스 제품: 정보, 이미지, 소프트웨어, 음악, 영화, 책 등.	강한비동의←비동의←중 립→동 의→강한동의				
디지털 비즈니스에 관련된 거래가 당사가 소속된 산업내에서 확산되고 있다.	1	2	3	4	5
디지털 비즈니스 제품의 수가 당사가 소속된 산업내에서 증가하고 있다.	1	2	3	4	5
디지털 비즈니스의 거래량이 당사가 소속된 산업내에서 증가하고 있다.	1	2	3	4	5
디지털 비즈니스의 규모가 당사가 소속된 산업내에서확장되고 있다.	1	2	3	4	5

시장의 역동성	강한비동의←비동의←중 립→동 의→강한동의				
당사가 소속된 산업내에서 경쟁사들의 제품들이 신속히 변한다.	1	2	3	4	5
당사가 소속된 산업내에서 제품에 대한 고객들의 기호가 신속히 변한다.	1	2	3	4	5
당사가 소속된 산업내에서 경쟁사들의 판매전략이 신속히 변한다.	1	2	3	4	5
당사가 소속된 산업내에서 경쟁사들의 광고전략이 신속히 변한다.	1	2	3	4	5
당사가 소속된 산업내에서 고객이 지불하기 위해 예상되는 제품의 가격이 신속히 변한다.	1	2	3	4	5

고객 구분	강한비동의←비동의←중 립→동 의→강한동의				
당사는 글로벌 전자시장에서 특정 고객에 마케팅을 집중하고 있다.	1	2	3	4	5
당사는 글로벌 전자시장에서 특정 목표고객의 특징들을 잘 인식하고 있다.	1	2	3	4	5
당사는 글로벌 전자시장에서 특정한 목표고객들의 웹기반 쇼핑 행위들을 잘 인식하고 있다.	1	2	3	4	5
당사는 웹기반 쇼핑에 관련된 고객들의 기호를 잘 이해하고 있다.	1	2	3	4	5

II-2. 외부의 기술 요인

상호작용성 (Interactivity)	강한비동의←비동의←중 립→동 의→강한동의				
당사는 인터넷 기술(Internet Technology)이 고객과의 관계를 증진시킬 것으로 인식한다.	1	2	3	4	5
당사는 인터넷 기술(Internet Technology)이 고객에게 보다 나은 서비스를 온라인으로 제공할 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 인터넷 기술(Internet Technology)이보다 많은 고객들을 전자상거래에 참여시킬 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 웹사이트(Web site)가 글로벌 고객들과 온라인으로 상호작용(interactivity)하기 위한 좋은 기술이다 라고 인식한다.	1	2	3	4	5
당사는 웹사이트(Web site)가 온라인으로 고객들과의 상호작용을 증진시키 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 웹사이트(Web site)가 새로운 고객들을 온라인으로 연계(link) 시킬 수 있을 것으로 인식한다.	1	2	3	4	5

접속성 (Connectivity)	강한비동의←비동의←중 립→동 의→강한동의				
당사는 인터넷 기술(Internet Technology)이 서로 다른 하드웨어와 소프트웨어 기기 사이의 접속성(connectivity)을 증진시킬 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 인터넷 기술(Internet Technology)이 기업과 고객 상호간의 새로운 협력 구조(mechanism)를 제공할 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 인터넷 기술(Internet Technology)이 공급자 (supplier)와 거래 당사자간의 연계를 증진시킬 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 웹사이트(Web site)가 전문적인 기술적인 지원 없이도 다른 웹사이트와 쉽게 접속될 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 웹사이트(Web site)가 별도의 정보시스템 중개 없이도 다른 웹사이트와 쉽게 접속될 수 있을 것으로 인식한다.	1	2	3	4	5

실행성 (Feasibility)	강한비동의←비동의←중 립→동 의→강한동의				
당사는 웹사이트(Web site)가 기존 하드웨어 환경에서 쉽게 구현 (implement) 될 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 웹사이트(Web site)가 기존 소프웨어 환경에서 쉽게 구현 (implement) 될 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 웹사이트(Web site)가 기존 기술적인 자원(resources)들과 쉽게 구현 (implement) 될 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 웹사이트(Web site) 개발 과정이 간단 할 것으로 인식한다.	1	2	3	4	5

실험성 (Trialability)	강한비동의←비동의←중 립→동 의→강한동의				
웹기반 쇼핑 시스템을 본격적으로 구현하기 이전에, 당사는 인터넷 비즈니스를 위해 웹사이트(Web site)을 시험적인 테스트로 이용할 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 웹기반 쇼핑 시스템을 본격적으로 구현하기 위한 시험적인 테스트로 웹 사이트(Web site)을 이용할 수 있을 것으로 인식한다.	1	2	3	4	5
당사는 시험적인 단계에서의 전자상거래 (electronic commerce) 가능성을 살펴보는데 있어 웹 사이트(Web site)가 좋은 방법이라고 인식하고 있다.	1	2	3	4	5

II-3. 내부의 조직 요인

전자상거래 계획 (E-business Planning)	강한비동의←비동의← 중 립 → 동 의→강한동의				
당사는 성공적인 전자상거래 프로젝트를 수행하기 위하여 전략적인 계획을 수립했다.	1	2	3	4	5
당사는 인터넷 쇼핑몰을 위한 전자상거래 계획을 수립했다.	1	2	3	4	5
당사는 새로운 인터넷 비즈니스를 위한 계획을 입안했다.	1	2	3	4	5
당사는 새로운 인터넷시스템의 도입을 위한 정보시스템 계획을 수립했다.	1	2	3	4	5
당사는 웹기반 쇼핑시스템을 위한 향후 확장 계획을 수립했다.	1	2	3	4	5

위험관리 (Risk Management)	강한비동의←비동의← 중 립 → 동 의→강한동의				
당사는 웹기반 쇼핑시스템을 위한 보안 및 인증관리 시스템을 운영한다.	1	2	3	4	5
당사는 허위거래나 신용카드 사기 등과 같은 금전적인 거래 위험에 대응하기 위한 계획을 수립했다.	1	2	3	4	5
당사는 웹기반 쇼핑에 관련된 법적인 위험들을 고려하고 있다.	1	2	3	4	5
당사는 웹기반 쇼핑에 관련된 위험을 관리할 별도의 팀이나 담당자를 두고 있다.	1	2	3	4	5
당사는 웹기반 쇼핑시스템에 근거하여 판매된 제품에 대한 제품보증을 제공한다.	1	2	3	4	5

고객 서비스 품질 (Customer Service Quality)	강한비동의←비동의← 중 립 → 동 의→강한동의				
당사는 고객들의 문의에 대하여 신속히 응답한다.	1	2	3	4	5
당사는 웹기반 쇼핑에 관련된 고객들의 문제를 해결하기 위하여 보증을 제공한다.	1	2	3	4	5
당사는 웹기반 쇼핑에 관련된 고객들의 문제를 신속히 처리한다.	1	2	3	4	5
당사는 고객을 만족시키기 위하여 다양한 서비스를 제공한다.	1	2	3	4	5
당사의 제품을 구입한 고객에 대하여 감사의 전자우편(e-mail)을 발송한다.	1	2	3	4	5
당사는 고객정보의 보안관리에 철저를 기한다.	1	2	3	4	5

지식 집약도 (Knowledge Intensity)	강한비동의←비동의← 중 립 → 동 의→강한동의				
당사는 고객의 요구(need)에 대하여 충분한 정보와 지식을 가지고 있다.	1	2	3	4	5
당사는 고객의 정보를 정기적으로 분석한다.	1	2	3	4	5
당사는 고객의 요구와 필요를 충분히 이해하고 있다.	1	2	3	4	5
당사는 시장의 경향과 변화를 정기적으로 조사한다.	1	2	3	4	5
당사는 정기적으로 시장정보를 수집하기 위하여 고객인터뷰나 서베이 등을 수행한다.	1	2	3	4	5
당사는 인터넷 비즈니스에 관련된 높은 수준의 지식을 가지고 있다.	1	2	3	4	5
당사는 정기적으로 경쟁 기업들에 대한 정보를 수집하고 분석한다.	1	2	3	4	5
경쟁기업의 강점과 약점에 관한 당사의 지식은 충분하다.	1	2	3	4	5

II-4. 내부의 시스템 요인

시스템 유용성 (Usability of WBSS)	강한비동의←비동의←중 립→동 의→강한동의				
당사의 웹기반 쇼핑시스템은 잘 연계된 하이퍼링크(hyperlinks)를 제공한다.	1	2	3	4	5
당사의 웹기반 쇼핑시스템은 콘텐츠(contents)를 효과적으로 관리한다.	1	2	3	4	5
당사의 웹기반 쇼핑시스템은 고객 지향적인 검색기능(search function)을 제공한다.	1	2	3	4	5
당사의 웹기반 쇼핑시스템은 고객지향적인 도움기능(help function)을 제공한다.	1	2	3	4	5
당사의 웹기반 쇼핑시스템은 쇼핑사이트간의 연결상태(link)를 정기적으로 점검한다.	1	2	3	4	5

보안관리 (Security Management)	강한비동의←비동의←중 립→동 의→강한동의				
당사의 웹기반 쇼핑시스템은 고객의 프라이버시에 관련된 보안관리를 수행하고 있다.	1	2	3	4	5
당사의 웹기반 정보시스템은 인증과 같은 메시지보안에 대한 보안관리를 제공한다.	1	2	3	4	5
당사의 웹기반 정보시스템은 컴퓨터 해커나 침해 그리고 바이러스 등에 대한 보안관리를 유지하고 있다.	1	2	3	4	5
당사는 외부의 여러가지 위험으로부터 웹기반 쇼핑시스템을 보호하기 위한 방화벽(firewalls)을 설치하고 있다	1	2	3	4	5
당사는 신용카드 거래에 따른 위험을 막기 위한 SET 과 같은 보안 지불 프로토콜을 사용한다.	1	2	3	4	5

네트웍 인프라 스트럭쳐 (Network Infrastructure)	강한비동의←비동의←중 립→동 의→강한동의				
당사의 웹기반 쇼핑시스템은 근거리통신망(LAN: local area network) 혹은 인트라넷 (Intranet)에 기반하고 있다.	1	2	3	4	5
당사의 웹기반 쇼핑시스템은 원거리통신망 (WAN: wide area network) 혹은 엑스트라넷 (Extranet)에 연계되어 있다.	1	2	3	4	5
당사의 웹기반 쇼핑시스템은 라우트 (router)나 게이트웨이(gateway) 등과 같은 네트웍 웨어(network ware) 로 구성되어 있다.	1	2	3	4	5
당사의 웹기반 쇼핑시스템은 외부의 고객이나 거래 기업들간의 거래를 중계시켜 줄 수 있는 CORBA (common object request brokered architecture) 와 같은 네트웍 인프라스트럭쳐에 기반한다.	1	2	3	4	5

인터넷 기술 적응성 (Internet Technology Adatability)	강한비동의←비동의←중 립→동 의→강한동의				
당사는 에이전트 기술, 사이버 현금, 가상현실 등과 같은 최신의 인터넷 기술을 인식하고 있다.	1	2	3	4	5
당사는 새로운 인터넷 기술의 최근 경향을 이해하고 있다.	1	2	3	4	5
당사는 새로운 인터넷 기술의 도입을 위한 계획을 가지고 있다.	1	2	3	4	5
당사는 최신 인터넷 기술의 흐름에 뒤떨어 지지 않도록 노력하고 있다.	1	2	3	4	5
당사는 새로운 인터넷 기술을 도입하는데 있어서 선구자적인 경향을 가지고 있다.	1	2	3	4	5

II-5. WBSS의 확산 정도

고객에 의한 WBSS의 액세스 정도	강한비동의←비동의←중 립→동 의→강한동의				
당사의 웹기반 쇼핑시스템은 고객에 의해서자주 사용된다.	1	2	3	4	5
웹기반 쇼핑에 관련된 거래 (transaction)량이 증가하고 있다.	1	2	3	4	5
당사의 웹기반 쇼핑시스템에서 제공하는 서비스 기능들을 고객들이 자주 이용한다.	1	2	3	4	5

WBSS 의 내부 사용 정도	강한비동의←비동의←중 립→동 의→강한동의				
당사내부의 조직원들은 작업상의 의사소통을 위하여 웹기반 쇼핑시스템을 이용한다.	1	2	3	4	5
당사의 웹 기반 쇼핑시스템은 내부의 정보교환과 공유를 촉진한다.	1	2	3	4	5
당사의 웹기반 쇼핑시스템이 도입된 이후 조직의 내부 의사소통 (communication)이 향상되었다.	1	2	3	4	5

WBSS 응용시스템 간의 통합 정도	강한비동의←비동의←중 립→동 의→강한동의				
당사의 웹기반 쇼핑시스템은 지불시스템, 보안시스템, 검색엔진 등과 같은 시스템으로 구성되어 있다.	1	2	3	4	5
당사 웹기반 쇼핑시스템의 정교함의 정도는 동일 업계내의 다른 경쟁기업들과 비교하여 높은 수준이다.	1	2	3	4	5
당사의 웹기반 쇼핑시스템은 고객관리 시스템, 인터넷 뱅킹시스템, 그리고 물류 관리시스템 등과 같은 응용시스템들과 밀접하게 연계되어 있다.	1	2	3	4	5

연구자들은 때때로 연구할 현상에 대하여 특정한 관점을 갖기 때문에 연구대상의 본질적인 부분을 간과할 수가 있습니다. 이러한 현상을 최소화하기 위하여, 웹기반 쇼핑시스템의 성공적인 확산 에 영향을 미칠 수 있는 가장 중요한 세가지 요인을 귀하의 관점에서 아래에 기술해 주시기 바랍니다.

요 인 #1 (_____)
요 인 #2 (_____)
요 인 #3 (_____)

만약 귀하가 본 연구의 결과를 받아 보기를 원하신다면, 아래에 성명과 주소 그리고 전자메일 (e-mail) 주소를 기입해 주십시요.

성 명 :
주 소 :
전자우편 :

기입한 설문지를 가능한 신속히 아래의전자메일(E-mail) 주소로 보내주시면 감사하겠습니다.

김 창 수
정보시스템 학과
런던대학교
Houghton Street
London WC2A 2AE
E-mail address: c.kim@lse.ac.uk

본 설문에 대한 귀하의 연구참여에 대하여 진심으로 감사드립니다!

Appendix 5. Pilot Survey Letter for UK

Dear Sir/Madam,

The Web-Based Shopping Systems (WBSS) are diffusing very rapidly across national boundaries. The WBSS means an Internet-based shopping system for selling and buying products, information, and services. Though the diffusion of the WBSS is being recognized as one of the most important issues of electronic commerce to be addressed, the research on WBSS is just beginning. To provide meaningful guidance for promoting the new opportunity of Internet business to society and in economic circles, the London School of Economics and Political Science (LSE) is researching "*The Diffusion of Web-Based Shopping Systems in Different National Contexts.*"

To gain useful information for this project, we need your assistance. Please be assured that the information you provide will be kept strictly confidential. We do hope you will be willing to help with this important research project. Your voluntary participation in this project is greatly appreciated, and your assistance will provide significant insights into the multifarious nature of WBSS diffusion. Before we carry out the major research process, we are writing to enquire whether you would be willing to contribute to research concerned with the topic of the successful diffusion of WBSS. We thus would sincerely appreciate it if you could inform me of your company's availability for the following options.

Option A. Short interview of no more than 30 minutes to collect information of WBSS diffusion.
Option B. Response to the carefully designed survey questionnaire. This should take no longer than 30 minutes.

Based on the above two options, please indicate how your company could participate:

( ) Our company can assist with both options.
( ) Our company can assist with option A only.
( ) Our company can assist with option B only.
( ) Our company is unable to assist with either option.

As soon as the project is completed, we will send summary results to participators. These results will be useful as a guideline in establishing a new vision and growth strategy to gain competitive advantage for your company's WBSS. Thank you for your interest and time. We look forward to receiving good news from you.

Yours sincerely,

A Project Conducted by London School of Economics & Political Science (LSE)
Information Systems Department
Houghton Street, London, WC2A 2AR
Project Director, Professor Robert Galliers
Project Coordinator, Dr. Changsu Kim
If you have any further questions about it, feel free to contact me by e-mail or telephone:
E-mail: c.kim@lse.ac.uk or Tel. 020-8949-1758.

Appendix 6. Thank You Letter for UK

Dear first name,

Thank you very much for participating in our study on the diffusion of WBSS. We are very pleased with your response.

We are currently preparing the major research instrument. We will thus get in touch with you as soon as we are ready to research.

Thanks again for your assistance. You have been a great help!

Professor Bob Galliers
Project Director

Dr. Changsu Kim
Project Coordinator

Appendix 7. Pilot Survey Letter for Korea

웹기반 쇼핑시스템 담당자님 귀하

영국 런던대학교 (University of London)내의 런던정경대(LSE: London School of Economics & Political Science)에서는 전자상거래(Electronic Commerce)의 촉진과 진흥, 그리고 산업계에서 필요로 하는 실질적이고 유용한 지침을 제공하기 위하여 웹기반 쇼핑시스템의 확산 (Diffusion of Web-Based Shopping Systems)에 관한 한국과 영국의 국제 비교연구를 수행하고 있습니다. 본 연구에서 웹기반 쇼핑시스템 (Web-Based Shopping Systems: WBSS)은 "제품이나 정보, 그리고 서비스를 인터넷에 기반하여 사고 팔 수 있게 지원하는 쇼핑시스템"을 의미합니다. 웹기반 쇼핑시스템이 전자상거래에 관련된 여러 이슈(Issues)들 가운데 중요하게 고려되어야 될 이슈중의 하나로 인식되고 있지만 이에 대한 학계에서의 연구는 아직 초기단계에 있습니다.

본 연구 프로젝트의 성공적인 수행을 위하여 귀사의 참여를 필요로 하고 있습니다. 귀사가 제공하는 정보는 학문적인 연구 이외에는 이용되지 않을 것이며, 엄격히 비밀을 준수하게 될 것입니다. 귀사의 연구참여는 웹기반 쇼핑시스템의 성공적인 확산 전략과 정책을 수립하는데 있어 귀중한 자료로 활용될 것입니다. 한국과 영국의 웹기반 쇼핑시스템의 확산에 관한 국제 비교연구를 위하여 현재 영국측 자료를 수집하고 있습니다. 그리고 한국에 관련된 자료를 수집하기 위하여 귀사의 참여여부를 파악하고자 하오니 아래의 두가지 옵션에 근거하여 알려주시면 감사하겠습니다.

옵션 A. 웹기반 쇼핑시스템에 관련된 정보를 수집하기 위한 30 분 이내의 인터뷰.
옵션 B. 전자우편(E-mail)을 이용한 30 분 이내에 작성 가능한 설문지 (Questionnaire) 에 대한 응답.

본 연구 프로젝트에 대한 귀하의 참여여부를 아래의 항목에 표시한 다음 알려 주시면 감사하겠습니다. 본 연구에 참여하신 분들에 대하여 향후 본 연구의 결과를 전송해 드릴 것입니다. 본 연구의 결과는 귀사 웹기반 쇼핑시스템의 경쟁우위 확보를 위한 비전정립과 발전전략을 수립하는데 있어 중요한 지침으로 활용 될 수 있을 것입니다. 여러분들의 적극적인 참여를 부탁드립니다.

( ) 당사는 두가지 옵션을 모두 지원할 수 있다.
( ) 당사는 A 옵션만 지원할 수 있다.
( ) 당사는 B 옵션만 지원할 수 있다.
( ) 당사는 두가지 옵션을 모두 지원할 수 없다.

귀하와 귀사의 무궁한 발전과 건승을 기원합니다. 감사합니다.

연구책임자: 정보시스템 박사 Professor Robert Galliers
연구관리자: 경영학박사 Dr. Changsu Kim
London School of Economics & Political Science (참고 Web site: www.lse.ac.uk)
University of London
Houghton Street
London WC2A 2 AR
본 연구에 관련된 문의사항이 있어시면 아래로 연락주시면 성실히 답변해 드리겠습니다.
E-mail: c.kim@lse.ac.uk Tel. 44-20-8949-1758.

Appendix 8. Thank You Letter for Korea

웹기반 쇼핑시스템 담당자님 귀하,

한국과 영국의 웹기반 쇼핑시스템에 관련된 연구프로젝트에 귀하께서 참여 의사를 밝혀 주신것에 대하여 진심으로 감사드립니다.

저희 연구진들은 현재 한국에 관련된 실증적 자료수집을 위하여 연구설문지를 준비하고 있습니다. 저희가 준비가 완료되는 대로 귀하에게 설문지를 전송하여 드리겠습니다.

다시 한번 귀하의 연구 참여와 관심에 대하여 심심한 사의를 표합니다.
귀하와 귀사의 무궁한 발전과 건승을 기원합니다.

연구책임자 Professor Bob Galliers
연구관리자 Dr. Changsu Kim.

Appendix 9. Actual Survey Letter for UK

Dear Sir/Madam,

Thank you very much for participating in our research project on the diffusion of Web-Based Shopping Systems (WBSS). To provide meaningful guidance for promoting the new opportunity of Internet business to society and in economic circles, the London School of Economic and Political Science (LSE) is researching the phenomenon of "*The Diffusion of Web-Based Shopping Systems in Different National Contexts*."

Recently, we have developed and elaborated the major research instrument to measure the phenomenon of WBSS diffusion. Thus, we are sending you the final version of the survey questionnaire. Please fill out the enclosed questionnaire according to the actual status of your company's WBSS, as this will provide meaningful research results. However, if you are busy or you are still on holiday at the moment, please fill in the questionnaire when you are free. Please be assured that the information you provide will not be used other than in our research and will be kept strictly confidential. Please return your completed questionnaire by e-mail as promptly as possible. Please refer to the following option when you fill in the questionnaire:

*Indicate your selection by removing the appropriate box ([]) or number (eg.4) and replacing it with a cross (x)

eg.) [] One [] Two [] Three X Four [] Five

As soon as the project is completed, we will send a summary of results to participators who have filled in the questionnaire. These results will be useful as a guideline in establishing a new vision and growth strategy to gain competitive advantage for your company's WBSS. We sincerely appreciate your assistance and look forward to hearing from you.

Yours sincerely,

Dr. Changsu Kim.

Appendix 10. Reminder Letter for UK

Dear Sir/Madam,

Thank you very much for participating in our research project on the diffusion of Web-Based Shopping Systems (WBSS). Last week, we sent you an elaborated questionnaire to measure the phenomenon of WBSS diffusion. This letter is to remind you of the questionnaire we sent. If you have recently replied to us, please accept our thanks and apologies for having troubled you. However, if you haven't, please receive the questionnaire we enclose again and fill it out according to the actual status of your company's WBSS. Then, please return your completed questionnaire by e-mail as promptly as possible. Please be assured that the information you provide will not be used except in our research and will be kept strictly confidential. Please refer to the following option when you fill the questionnaire in:

*Indicate your selection by removing the appropriate box ([]) or number (eg.4) and replacing it with a cross (x)

eg.) [] One [] Two [] Three X Four [] Five

As soon as the project is completed, we will send a summary of results to participators who have filled in the questionnaire. These results will be useful as a guideline in establishing a new vision and growth strategy to gain competitive advantage for your company's WBSS, providing meaningful guidance for promoting the new opportunity of Internet business to society and in economic circles. We sincerely appreciate your assistance and look forward to hearing from you.

Yours sincerely,

Dr. Changsu Kim.

Appendix 11. Final Survey Letter for UK

Dear Sir/Madam,

Thank you for your attention in our research project on the diffusion of Web-Based Shopping Systems (WBSS). To provide meaningful guidance for promoting the new opportunity of Internet business to society and in economic circles, the London School of Economic and Political Science (LSE) is researching the phenomenon of "*The Diffusion of Web-Based Shopping Systems in Different National Contexts* ".

This letter is to ask your opinion of a questionnaire we attach. Please indicate the status of your participation among the following three conditions, as this will be helpful for further research processes and planning.

( ) 1. If you have already returned a marked questionnaire to us, please accept our thanks and check a cross (x) at ( ) in front of this sentence.

( ) 2. If you haven't until now, but would be willing to contribute to this research, please fill in the questionnaire attached, referring to the following guide and email it back to us:

- Indicate your selection by removing the appropriate box ([]) or number (eg.4) and replacing it with a cross (x)

eg.) [] One [] Two [] Three X Four [] Five

( ) 3. If you finally decide that you cannot participate in our research project, please inform me of the reasons ticking as many as appropriate:

( ) Company security
( ) Heavy work load
( ) Research project not helpful for our company
( ) Do not run Web-based shopping systems or run a small Web-based business
( ) Not appropriate person for marking the questionnaire
( ) On a holiday or out of work
( ) Currently changing and upgrading our WBSS
( ) Questionnaire too long
( ) Other (please write:)

As soon as the project is completed, we will send a summary of results to participators who have filled in the questionnaire. These results will be useful as a guideline in establishing a new vision and growth strategy to gain competitive advantage for your company's WBSS. I would sincerely appreciate it if you could forward this letter to me after checking the above options. We send our best wishes and look forward to hearing from you.

Yours sincerely,

Dr. Changsu Kim.

Appendix 12. Actual Survey Letter for Korea

웹기반 쇼핑시스템 담당자님 귀하

한국과 영국의 웹기반 쇼핑시스템에 관련된 연구 프로젝트에 귀하께서 참여 하신 것에 대하여 진심으로 감사 드립니다.

저희 연구진들은 영국측 자료수집을 하면서 한국측 자료수집을 위한 설문지 개발을 최근 완료하였습니다. 이에 웹 기반 쇼핑시스템의 확산에 관한 한국과 영국의 국제 비교연구를 위한 설문지를 발송하오니 접수하여 주시기 바랍니다. 부디 의미있고 유용한 연구결과를 도출할 수 있도록 귀사의 웹기반 쇼핑시스템에 대한 정확한 평가를 첨부하는 설문지의 모든 항목에 대하여 기입하여 주시기 바랍니다. 귀하께서 저희들에게 제공하는 정보는 본 연구이외에는 이용되지 않을 것이며, 엄격히 비밀을 준수하게 될 것입니다. 설문지를 작성하실 때 아래의 예를 참조하시기 바랍니다.

* 귀하께서 답변하고자 하는 해당번호나 기호 ([])를 x 로 교체해 주시기 바랍니다.

Ex) [] One [] Two [] Three x Four [] Five

작성을 완료하신 설문지는 전자메일(e-mail)을 이용하여 가능한 빨리 발송해 주시면 고맙겠습니다. 향후 설문지를 작성하여 저희들에게 보내주시는 응답자들에 한하여 본 연구의 결과를 전송해 드릴 것입니다. 본 연구의 결과는 귀사 웹기반 쇼핑시스템의 경쟁우위 확보를 위한 비전정립과 발전전략을 수립하는데 있어 중요한 지침으로 활용 될 수 있을 것입니다. 다시 한번 귀하의 연구 참여와 지원에 대하여 심심한 감사의 인사를 올립니다.

귀하와 귀사의 무궁한 발전과 건승을 기원합니다.

연구책임자 정보시스템박사 Professor Bob Galliers
연구관리자 경영학박사 Dr. Changsu Kim.

Appendix 13. Reminder Letter for Korea

웹기반 쇼핑시스템 담당자님 귀하,

한국과 영국의 웹기반 쇼핑시스템에 관련된 연구 프로젝트에 귀하께서 참여 하신 것에 대하여 진심으로 감사 드립니다. 지난주에 저희 연구진들은 본 연구 프로젝트에 관련된 설문지를 귀하에게 발송하였습니다.

지금 이 편지는 지난주에 발송했던 설문지에 대한 귀하의 관심을 제고하기 위한 것입니다. 만약 귀하께서 최근에 날인하신 설문지를 저희들에게 발송하셨다면 감사의 인사와 이 서신으로 인해 야기된 불편에 대하여 죄송스러운 마음을 전합니다. 그러나 만약 귀하께서 아직까지 설문지를 날인하시지 않으셨다면 저희가 재발송하는 설문지를 접수하시어서 가능한 빨리 작성하여 보내주시면 저희 연구에 많은 도움이 되겠습니다. 부디 의미있고 유용한 연구결과를 도출할 수 있도록 귀사의 웹 기반 쇼핑시스템에 대한 정확한 평가를 첨부하는 설문지의 모든 항목에 대하여 기 입하여 주시기 바랍니다. 귀하께서 저희들에게 제공하는 정보는 본 연구이외에는 이용되지 않을 것이며, 엄격히 비밀을 준수하게 될 것입니다. 설문지를 작성하실 때 아래의 예를 참조하시기 바랍니다.

* 귀하께서 답변하고자 하는 해당번호나 기호 ([])를 x 로 교체하여 주시기 바랍니다.

Ex) [] One [] Two [] Three x Four [] Five

작성을 완료하신 설문지는 전자메일(e-mail)을 이용하여 저희들에게 발송해 주시면 고맙겠습니다. 향후 설문지를 작성하여 저희들에게 보내주시는 응답자들에 한하여 본 연구의 결과를 전송해 드릴 것입니다. 본 연구의 결과는 귀사 웹기반 쇼핑시스템의 경쟁우위 확보를 위한 비전정립과 발전전략을 수립하는데 있어 중요한 지침으로 활용 될 수 있을 것입니다. 다시 한번 귀하의 연구 참여와 지원에 대하여 심심한 감사의 인사를 올립니다.

귀하와 귀사의 무궁한 발전과 건승을 기원합니다.

연구책임자 정보시스템박사 Professor Bob Galliers
연구관리자 경영학박사 Dr. Changsu Kim.

Appendix 14. Final Survey Letter for Korea

웹기반 쇼핑시스템 담당자님 귀하,

한국과 영국의 웹기반 쇼핑시스템에 관련된 연구 프로젝트에 귀하께서 참여하신 것 에 대하여 진심으로 감사 드립니다. 지난 몇주에 걸쳐 저희 연구진들은 본 연구 프로젝트에 관련된 설문지를 귀하에게 발송하였습니다.

지금 이 편지는 저희가 수행하고 있는 연구 프로젝트에 대한 귀하의 최종 참여를 수렴하기 위한 것입니다. 이를 위해 아래의 세가지 조건을 참고하여 본 연구에 대한 귀하의 의견을 알려주시면 향후 저희 연구에 많은 도움이 되겠습니다.

( ) 1. 만약 귀하께서 이미 날인하신 설문지를 저희에게 발송하셨다면 감사의 인사를 받아주시고, 번호 앞에 있는 괄호 ( ) 에 X 표시를 해주십시오.

( ) 2. 만약 귀하께서 현재까지 설문에 응하시지는 않았지만, 최종적으로 저희 연구에 참여하실 의향이 있어시면 아래의 설명을 참조하시어서 첨부하는 설문지에 날인한 다음 전자메일로 저희들에게 발송하여 주시면 고맙겠습니다.
* 귀하께서 답변하고자 하는 해당번호나 기호 ([])를 X 로 교체하여 주시기 바랍니다.
Ex) [] One [] Two [] Three X Four [] Five

( ) 3. 만약 귀하께서 저희 연구프로젝트에 최종적으로 참여하지 않기로 결정하셨다면, 그에 대한 이유를 아래의 항목에 체크해 주시면 감사하겠습니다. 이때 귀하의 연구 불참에 관련된 모든 사유를 아래에 표시해 주시기 바랍니다.
( ) 회사기밀 및 보안
( ) 과중한 업무
( ) 본 연구프로젝트가 귀사에 도움이 안됨
( ) 현재 귀사가 웹기반 쇼핑시스템을 운영하지 않거나 혹은 Web-site 수준
( ) 본 설문지를 날인하기에는 귀하가 적합한 담당자가 아님
( ) 현재 휴가기간이거나 혹은 부재중
( ) 최근 귀사의 웹기반 쇼핑시스템을 새롭게 개발 및 변경 중
( ) 본 설문이 매우 귀찮고 성가심
( ) 설문지가 너무 길고 지루함
( ) 기타 (기입요망:)

향후 설문지를 작성하여 저희들에게 보내주시는 응답자들에 한하여 본 연구의 결과를 전송하여 드릴 것입니다. 본 연구의 결과는 귀사 웹기반 쇼핑시스템의 경쟁우위 확보를 위한 비전정립과 발전전략을 수립하는데 있어 중요한 지침으로 활용 될 수 있을 것입니다. 연구참여에 대한 귀하의 최종의견을 전자메일(e-mail)을 이용하여 저희들에게 알려주시면 향후 저희 연구에 많은 도움이 될 것입니다. 다시 한번 본 연구에 대한 귀하의 관심과 지원에 대하여 심심한 감사의 인사를 올립니다.

귀하와 귀사의 무궁한 발전과 건승을 기원합니다.

런던대학교 연구 프로젝트 관리자 Dr. Changsu Kim.

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