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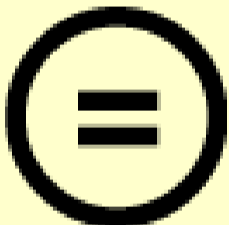
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**Relationship Quality and Customer Loyalty in Internet
Grocery Shopping in the UK**

by

Xiaoming (Lucy) Lu

A Doctoral Thesis

Submitted in partial fulfilment of the requirements for the award of
Doctor of Philosophy of the Loughborough University

October 2007

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Acknowledgements

During my PhD study, there are many people to whom I owe a great deal of thanks. First and foremost, I would like to express my gratitude to the Business School of Loughborough University for sponsoring my PhD studies. This thesis would not have been possible without their funding.

I am deeply indebted to both of my supervisors, Dr. Mohammed Rafiq and Dr. Heather Fulford, who have graciously given their time and expertise during these four years. Their encouragement, high standards and intellectual clarity throughout different phases of the research process made it a challenging but very rewarding experience.

I would also like to convey my hearty thanks for the valuable advice and research support provided by my panel members (in alphabetical order), Dr. Fiona Ellis-Chadwick (independent panel member), Prof. Jim Saker (3rd and 4th year Director of Research) and Mr. Gareth Smith (1st and 2nd year Director of Research)..

My sincere appreciation is also extended to Mr. Arvind Yadav, Ms. Barbara Gregory, Dr. Belinda Dewsnap, Ms. Cathryn Hart, Dr. Crispin Coombs, Ms. Grazyna Stachow, Dr. Harlina Suzana Jaafar, Dr. Kelvin Tay, Dr. Leonidas Anastasakis, Dr. Mahmut Sonmez, Mr. Paul Cantwell, Mr. Paul Taylor-West, Ms. Rebecca White and Ms. Sharon Watret for their detailed comments and suggestions for improving the analysis and data collections. Without their support, my progress would not have gone this far. I also greatly valued the assistance provided at all times by Ms. Tracey Preston, the Postgraduate Research Programmes Secretary.

Last, but certainly not least, thanks to my husband Wenchang and my daughter Lily for putting this all in perspective. Sorry it took me away from you so much. Finally, this thesis is a precious gift for my son, who will be born really soon. I can feel his kicks and know that he cannot wait to come out...

Abstract

Despite the growing body of literature on online loyalty issues, little research has been conducted on the link between relationship quality (RQ) and customer loyalty in the context of Internet grocery shopping. The existing literature on electronic retailing does not explain the differences in loyalty across product and service categories. As shopping for groceries is generally an activity repeated at regular time intervals, consumers' behaviours is likely to be very different when purchasing goods and services which are only needed occasionally. Due to the frequency of grocery purchase, a relationship is likely to be developed between customers and the retailer. Whilst perceived service quality and customer satisfaction have been recognised as antecedents of customer loyalty in previous studies, it is not understood whether RQ adds any additional effect over the traditional measure such as perceived service quality and customer satisfaction in determining loyalty in Internet grocery shopping. Therefore, this study attempts to address this research gap by incorporating a RQ perspective, as well as customer satisfaction and perceived service quality.

Building on an extensive literature review, RQ is conceptualised and examined for its theoretical applicability via an initial qualitative study, followed by a quantitative phase using structural equation modelling analysis with the data collected by an e-survey of 519 Internet grocery shoppers. The results show that RQ is positively associated with customer loyalty in Internet grocery shopping. Among the dimensions of RQ, relationship satisfaction has the strongest direct effect on the formation of customer loyalty. In addition, loyalty can be also developed through perceived relational investment and affective commitment. Moreover, it is found that perceived relational investment from the Internet grocery retailer indirectly influence customer loyalty. Contrary to expectation, trust plays a very unimportant role in developing customer loyalty in Internet grocery shopping. The finding also indicates that e-service quality has a significant effect on e-satisfaction in Internet grocery shopping. In order to see whether the multi-component RQ model can perform better than the global RQ model, a comparison is made between the aggregated and the disaggregated model of RQ. The results indicate that the disaggregated model performs much better than the aggregated one.

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Chapter 1

INTRODUCTION TO THE RESEARCH PROBLEM

1.0 Introduction

This chapter introduces the focus of this research and lays the theoretical foundation of the thesis. It reveals the motivation for conducting this study of relationship quality and customer loyalty in Internet grocery shopping. Section 1.1 presents an overview of the current state of the Internet grocery market in the UK. Next, problems in Internet grocery shopping and existing research gaps are discussed. Section 1.3 presents the research objectives and the research questions, highlighting the possible contributions this research could make. Section 1.4 provides the research strategy this study is going to use for analysing the data. Finally, section 1.5 gives a brief overview of the structure of the whole thesis.

1.1 Internet grocery shopping: an overview

With the rapid growth in electronic retailing (e-tailing), businesses are attempting to gain competitive advantages by using technology to interact with customers. Pollack (1999, p.18) points out that “this rapid rate of Internet adoption has resulted in an extraordinary pace of change in the marketing landscape and opened up a variety of opportunities for marketers”. The launch of Internet grocery shopping by traditional UK brick-and-mortar retailers over the last eight years has proven both advantageous to consumers and retailers. For the consumer, this means the ease and convenience of shopping via computer, and the ability to search for products, compare prices and arrange delivery, all usually at a time that is suitable for them. For retailers, on-line shopping provides easy access to customers and gives them the ability to offer a wide range of items on-line that consumers may not have the time to view in-store. In addition, retailers are able to develop their share of a fast

growing sector of the market. This important development allows retailers to look at Internet grocery shopping as an alternative format for specific shopping missions and needs of their customers (Tanskanen et al., 2002).

According to Mintel Report (2006) the UK Internet grocery market is estimated to be worth about £1.7 billion (1.6% of all food retail sales) and it is expected to grow as the number of households with high speed Internet connections increases. Clearly Internet grocery presents key growth opportunities and major challenges across the industry. At present, three major British supermarkets (Tesco, Sainsbury's and Asda) have incorporated the Internet into their businesses. So far Internet grocery firms come in two forms: pureplays, which are new business set up specifically to deliver groceries to the customer's door (such as Ocado.com), and traditional supermarkets exploiting a new sales channel (such as Tesco.com, Sainsbury's.co.uk, ASDA.com, Waitrose.com).

Tesco is the leading operator in the Internet grocery shopping market and claims to be able to reach 96% of the UK population –about as big as percentage as that covered by the store network. According to Mintel Report (2006), Tesco's on-line sales grew by over 28% in August 2006 compared to 2005. However, Tesco is now facing increasing competition from specialist warehouse operator Ocado, which is partly owned by the John Lewis Partnership, that also owns Waitrose. Delivering the Waitrose product range, Ocado's successful growth has paralleled the current growth of the Waitrose supermarket chain. With 15% of the Internet grocery market, Ocado now claims to have pushed Sainsbury's into third place (Mintel Report 2006). As the Internet grocery market continues to boom, the intense competition has encouraged companies such as Sainsbury's and ASDA to increase the coverage area of their delivery services, as well as the range of products available on-line.

In addition, changes to an individual's lifestyle may act as a trigger to start shopping on-line because it has now become more convenient approach. A higher proportion of British food shoppers have converted to the net than in any other country. Internet grocery shopping has posted rapid growth and is now used by nearly one in ten UK consumers (Mintel Report, 2007). Many customers are attracted to Internet

shopping because of the same value propositions commonly found in traditional retailing –such as convenience and pricing (Seiders and Berry, 2000). The convenience is often considered a unique selling point of e-tailing (Tanskanen et al., 2002). The customer profile for those regularly grocery shopping by Internet used to be the professional and affluent people, especially those with young families (Insight Research 2003). However, at present there are signs that the demographic profile is beginning to widen, especially as Internet penetration increases and buying groceries on-line becomes ever more common (Intel Report 2007).

Datamonitor (2001) believes that Internet grocery shopping “is set to become the largest business-to-consumer sector, given that expenditure on food, drink and household products, is still the most important element of consumer expenditure after housing costs”. Delaney-Klinger et al., (2003) claim that Internet grocery shopping is unlikely to ever represent a majority of grocer sales, but even a small portion of those sales can be quite significant due to the huge size of the overall market (i.e. Intel Report 2006 estimates sales by food retailers to be £106.5 billion excluding VAT).

1.2 Conceptual and empirical shortcoming of existing research

Although some of the UK’s leading supermarket chains are already established in on-line grocery sales, many companies are finding the Internet a tough nut to crack. It is an area in which companies are finding it hard to make a profit. Getting the formula right will ensure repeat business and a build-up of trust. Given the situation on the Internet where price competition can be very strong and switching retailers can be relatively easy, retailers have been forced to rethink how to win customers. Rafiq and Fulford (2005) claim that success for e-grocers in the on-line grocery market depends on their ability to retain their own loyal customers, and to attract customers from their competitors. As loyal customers always tend to buy more, are less price sensitive and willing to promote the firms, there is a need for these e-tailers to consider the transfer of traditional marketing from the off-line environment to an on-line context.

As the most successful Internet grocers in the UK continue to be the traditional retailers with high profiles and brands that are already familiar to consumers, it offers the opportunity for the retailer to nurture customer relationship in an on-line context through brand extension. Reichheld and Schefter (2000) point out that successful Internet retailers do not win the loyalty of customers through technological applications, but rather, through the process of consistently delivering a superior customer experience. Since shopping for groceries is assumed to be a purposeful activity repeated at regular time intervals (Raijas and Tuunainen, 2001), buying groceries on-line can be much more open to relationship-building, because of the frequency of the transaction and the amount that customers spend. In this sense, establishing and maintaining customers' relationships with on-line retailers is of paramount importance due to the close connection between customer loyalty and relationship quality. These insights have led researchers in the field to argue that too little is known of the nature and drivers of loyalty in Internet grocery shopping (Fullerton, 2005; Parasuraman et al., 2005).

To meet this challenge, academics and practitioners have begun to consider whether traditional relationship marketing theory can be successfully applied to the on-line environment. Wang et al., (2000) point out that the Web and its technologies could facilitate electronic retailing development in the business-to-consumer (B2C) retail market. The Web B2C market supports interactions between retailers and consumers that are limited in the traditional market by communication restrictions. Therefore, the Web, as an effective communication medium and distribution channel, has great potentials to facilitate the development of relationship marketing.

The concept of loyalty in the conventional retail environment has been well established in the marketing and management literature, the Web, however, raises new questions and opens new opportunities: it places the old rules in a new context. Although the Internet has become one of the most popular means of business communication and electronic retailing has come to be regarded as an essential part of the new economy, the potential of Internet shopping is far from being realized. There is a need to consider whether the basic processes of traditional marketing that will continue to be applicable in an electronic retailing context. The contemporary literature prescribes various strategies aimed at increasing the success of on-line

retailing. Some of these strategies include having viable business models, effective supply chain management, secure transactions, good Web site design, and quality order fulfillment and delivery (Santos, 2003; Singh, 2002; Zeithaml, 2000; Long and McMellon, 2004; Janda et al., 2002; Cai and Jun, 2003; Cox and Dale, 2001). More recently, e-tailing research has focused on identifying critical quality factors (e-service quality) that impact on-line retailing (Park and Kim, 2003; Yang, 2001; Keating et al., 2003). However, very few studies have addressed online loyalty in any depth, even though it is an increasingly important issue as online retailing continues to grow. From a sellers' perspective, customer loyalty has been recognized as a key path to profitability. Only during later transactions, when the cost of serving loyal customers falls, do relationships generate profits. Without a thorough understanding of the antecedents of e-loyalty, it is impossible to generate superior long-term profits from Web site.

Previous studies have extensively examined determinants of customer loyalty (Cunningham, 1956; Jacoby and Chestnut 1978; Tranberg and Hansen, 1986) and the most effective ways of building loyalty (Laforet and Saunders, 1994). According to these studies, the major drivers of loyalty are believed to be guided by the evaluation of service encounters such as customer satisfaction and perceived service quality (Garbarino and Johnson, 1999; Shamdasani and Balakrishnan, 2000). These "evaluative components" (Shamdasani and Balakrishnan 2000, p.401) are believed to reflect customers' knowledge and experiences with a particular firm and to guide their subsequent actions. However, Payne (2000) argues that in building customer loyalty it is also necessary to pay attention to relationship quality. Roberts et al., (2003) claim that service quality and customer satisfaction are essential, but only partial conditions in building customer loyalty. This is also in line with Crosby et al., (1990) who argue that service quality and customer satisfaction do not guarantee customer loyalty and it is impossible to achieve customer loyalty without considering relationship quality. Given a situation where the traditional "evaluative components" such as service quality and customer satisfaction still focus on discrete exchanges at a transactional level, it is not known if their interactions with the relationship quality would add any further explanation of customers' intentions in an ongoing of Internet grocery shopping relationship over or above the traditional transactional measures. There is wide agreement in the

literature of relationship marketing that the relationship quality between two parties is an important determinant of the permanence and intensity of the relationship and, therefore, of the success of building a loyal customer base (Heening-Thurau, 2000).

Although many researchers propose to examine relationship quality, little attempt has been made to identify its determinants in an online context. Apparently, there is a substantial gap between theory and practical application in establishing loyalty through relationship quality building in the service of Internet grocery shopping.

1.3 Objectives of the study

Based on the research gaps discussed in the last section, the purpose of this research is to develop a model of customer loyalty through relationship quality in Internet grocery shopping and examine the inter-relationships between service quality, customer satisfaction and the dimensions that make up relationship quality by considering loyalty as the critical behavioral outcome of consumers. This study aims to address the need to incorporate a relationship marketing perspective by integrating relational attributes, customer satisfaction and perceived service quality to determine customer loyalty in Internet grocery shopping, given the fact that previous research on relationship quality often emphasized the importance of the aforementioned dimensions. Specifically, this research proposes to address the following questions:

- Which dimensions make up relationship quality in Internet grocery shopping?
- What is the potential effect of each dimension of relationship quality upon loyalty in Internet grocery shopping and how do they interact with each other?
- What is the relationship between service quality, customer satisfaction and the dimensions of relationship quality?

- To what degree does the interaction of these dimensions-customer satisfaction, perceived service quality and relational attributes-influence loyalty-formation in Internet grocery shopping?

The attainment of these objectives is important for a number of reasons. First, as detailed in Section 1.1, research into Internet grocery shopping is still at its early stage, and grocery retailers have not yet developed a proper relational focus to their marketing efforts. Given the importance of relationship quality in the formation of customer loyalty, it is believed that an in-depth study into customer loyalty in Internet grocery shopping may reveal some insights into the existing models of loyalty and their application in the online environment and hence explain a significant amount of the success (or failure) of relationships between e-grocers and their customers. Second, this research offers an opportunity to conceptualise relationship marketing outcome (i.e.: customer loyalty) on a more concrete level when investigating possible managerially controlled antecedent variables like the quality of the relationship which consists of several components such as trust, commitment, relationship satisfaction and perceived relational investment *etc.*). Finally, this research raises the possibility of identifying the effects of various dimensions of relationship quality upon customer loyalty in Internet grocery shopping, as different aspect of relationship quality may not be of equal magnitude or even leads to the same direction.

1.4 Research Strategy

This research is integrative in nature and uses a multi-method research strategy (both quantitative and qualitative research are conducted) in the belief that “each of the various research strategies employed provides insights from a different perspective” (Gill and Johnson 1991, p.147). Qualitative analysis is undertaken in the form of focus groups (please Chapter 5). While quantitative research is in the form of an online survey distributed to individual respondents through a market research firm.

It is desirable that the results of this study be both theoretically and operationally relevant to the current state of Internet grocery shopping in the UK. For the empirical results, the data analysis technique Structural Equation Modelling (SEM) was employed. SEM is used to investigate any causal relationships among e-service quality, e-satisfaction, relationship quality and customer loyalty. SEM is particularly useful when one desires to simultaneously examine a series of dependence relationships and to identify possible structural relationships between constructs (Hair et al., 1998).

1.5 Organisation of the study

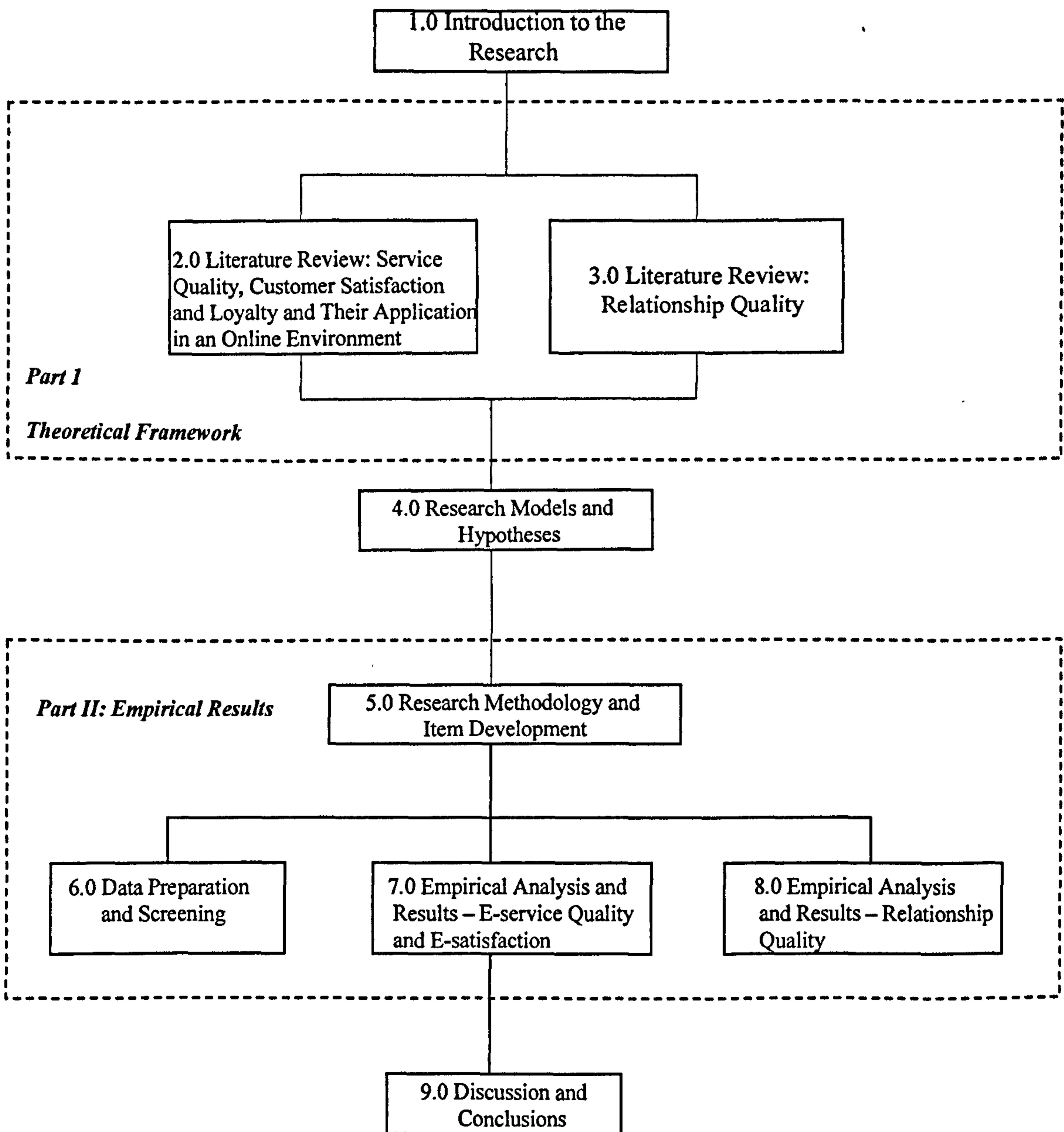
This thesis is organised into nine chapters. The first chapter provides an introduction to the research background and, the current research gaps in the field and establishes the objectives of the research. Chapters 2.0 and 3.0 contain a review of the literature regarding service quality; customer satisfaction; relationship quality (including relationship satisfaction, perceived relational investment, trust and commitment) and customer loyalty. Chapter 4.0 outlines the construct definitions underlying the proposed framework and the research hypotheses are provided. Chapter 5.0 describes the research methodology and the process of generating and testing the measurement items. Chapter 6.0 discusses the data screening and preparation for the online survey and provides a profile of the respondents' sample. Chapters 7.0 and 8.0 present the empirical results and analysis related to testing the hypotheses in both "the e-service and e-satisfaction" model and "the relationship quality and customer loyalty" model. Chapter 9.0 discusses the main result of the study and conclusions drawn from the research questions, highlights the significance of the research to theory and practice, points out its limitations and suggests some directions for future research. **Figure 1.1** below depicts the structure of the thesis.

1.6 Summary

This chapter starts with introducing the background and current development of Internet grocery shopping in the UK. It identifies the research problem and research questions, presents the justifications for conducting the research and outlines the

structure of this thesis. Based on these foundations, the thesis proceeds with a detailed description of the research.

Figure 1.1: Structure of the Thesis



Chapter 2

A REVIEW OF SERVICE QUALITY, CUSTOMER SATISFACTION AND LOYALTY AND THEIR APPLICATION IN AN ON-LINE ENVIRONMENT

2.0 Introduction

Despite the growing body of literature about on-line loyalty (Anderson and Srinivasan, 2003; Srinivasan et al., 2002; Harris and Goode, 2004 and Chiou, 2003), little research has been conducted on the link between relationship marketing and customer loyalty in the context of Internet grocery shopping. As shopping for groceries is generally an activity repeated at frequent and regular time intervals (Raijas and Tuunainen, 2001), a relationship is very likely to be established between customers and retailers.

Previous studies have extensively examined determinants of customer loyalty (Cunningham, 1956; Jacoby and Chestnut 1978; Tranberg and Hansen, 1986) and the most effective ways of building loyalty. According to these studies, the major drivers of loyalty are believed to be guided by the evaluation of service encounters such as perceived service quality and customer satisfaction (Garbarino and Johnson, 1999; Shamdasani and Balakrishnan, 2000). Rosen and Suprenant (1998) and Jones and Sasser (1995) point out that the most of the existing research on loyalty in services marketing literature focuses on the antecedents or characteristics of loyalty. Far less research has been done to examine the processes and consequences of forming loyalty.

Since customer loyalty has been considered as an important source of long-term business success (Rust and Zahorik, 1993), it is unlikely that customers are retained for long periods without a genuine relationship being present. This research intends

to emphasise the need to incorporate a relationship marketing perspective by integrating customer satisfaction and perceived service quality to determine customer loyalty in Internet grocery shopping. The purpose of this research is to develop a conceptual model of customer loyalty through relationship quality building.

This Chapter begins by reviewing the literature on customer loyalty, followed by a discussion of antecedents of loyalty-service quality and customer satisfaction. Following this the related literature about the application of traditional service quality, customer satisfaction and loyalty in an on-line environment is explained in detail.

2.1 Customer loyalty

As the current marketplace becomes more competitive, consumers tend to become more and more demanding. Gaining and holding a loyal customer base is a main challenge in such intense environment. According to Zeithaml et al., (1996) and Reichheld (1993) loyal customers tend to buy more, are willing to pay higher prices, and generate positive word of mouth, thus suggesting a strong link between loyalty and profitability. Reichheld and Sasser (1990) claim that when a company retains just 5 percent more of its customers, profits increase by 25 percent to 125 percent. The increased profit from loyalty comes from reduced marketing costs, increased sales and reduced operational costs (Berry, 1995). Wallace et al., (2004) point out that a small shift in customer retention rates can make a large difference for earnings, and this influence accelerates over time. Reichheld and Scheffer (2000) address that “building superior customer loyalty is no longer just one of many ways to boost profits, it is essential for survival today” (p.113). Therefore, building customer loyalty is vital to the success of any business, as enhancing customer loyalty is a critical defensive strategy for the service provider and denied to its competitors (Fornell, 1992; Jacoby and Chestnut 1978). In order to get an understanding of customer loyalty, a discussion about the development of customer loyalty is carried out in the following sections.

2.1.1 Theoretical framework for the development of customer loyalty

2.1.1.1 Behavioural loyalty

The first research on loyalty began with work by Copeland (1923) on sole brand loyalty, which was from behavioural perspective. From behaviourists' point of view a particular brand's purchase frequency (Brody and Cunningham, 1968) and purchase possibility (Farley, 1964) could be a means to measure brand loyalty. Sole brand loyalty can be seen as an extreme form of proportional loyalty where 100 per cent of preferences go to a brand. In Copeland's definition, he proposed that the higher the proportion allocated to a single brand, the higher would be the loyalty level of the consumer. The behavioural definition of loyalty is based on repeated purchases.

Examples of behavioural loyalty include continuing to purchase the product or services from the same supplier, increasing the scale and/or scope of the purchase (Yi, 1990). However, many researchers have questioned the adequacy of using behaviour as a measure of loyalty. Day (1969) criticise behavioural loyalty for a lack of a conceptual basis and Bass (1974) claims that stochastic components (i.e. randomness that can not be explained) occur in repeat purchasing patterns. For instance, a customer may buy a product from a shop because it has the most convenient location. When a new shop opens across the street, they switch because the new shop offers better value. Thus, repeat purchase does not always mean commitment. Critics of the behavioural loyalty definition point out that no explanation of the choices made by consumers is sought by this limited definition of loyalty. Behavioural measures simply estimate frequencies with no examination of the reasons for purchases or the factors that may influence choices (Dick and Basu, 1994).

2.1.1.2 Attitudinal loyalty

Later on, loyalty consequently evolved to include attitudinal measurement tools. (Foxall and Goldsmith, 1994; Jones and Sasser 1995; Mellens et al., 1996). It emphasises that feelings create an individual's overall attachment to a product or

services (Fournier and Yao, 1997). These feelings define the individual's degree of loyalty. To put it another way, attitudinal measures of loyalty incorporate consumer preferences and dispositions towards a product or services to determine levels of loyalty. However, this definition also has been recognised as insufficient to explain how and why loyalty is developed and modified. There are instances when a customer holds a favourable attitude toward a company, but he/she does not make any purchase from there. A customer could hold a product in high regard, recommends the product to others, but feels the product is too expensive for him/her to use on a regular basis. Therefore, many researchers (Tucker, 1964; Day, 1969; Jacoby and Chestnut 1978; Lutz and Winn, 1974; Snyder, 1984; Dick and Basu 1994; Assael, 1995 and Oliver, 1999) argue that using repeat purchasing or positive attitude as an indicator of loyalty could be invalid due to happenstance buying, preference for convenience or cost concerns. They then conclude that it would be unwise to infer loyalty solely from repeat purchase patterns or positive attitudes without further analysis.

Oliver (1997) points out that customers become loyal first in a cognitive sense, where loyalty is based merely on brand belief and not on brand experience. Then later, in an affective sense commitment has been developed. This commitment can have two main causes according to Amine (1998) that affective reasons such as attachment or emotional feelings towards the brand (affective commitment) or cognitive motives such as perceived risk or perceived benefits in performance among the competitive brands (calculative commitment). At this stage consumers' attitude will be much more difficult to dislodge because loyalty is now encoded in the consumer's mind as affect and not solely as cognition. However, Oliver (1997) claim that affective commitment may be the signal of the beginning of loyalty, it is not sufficient to guarantee true loyalty. It needs to be associated with an action loyalty. Under this condition, behaviour is guided by thought.

It is quite clear that Oliver's (1997) framework of loyalty formation extended behavioural and attitudinal loyalty by realizing both of these two measurements share synchronous strong bonds with loyalty, which is consistent with Day's (1969) work. Day (1969) argue that for loyalty to be true, it must be measured as a combination of attitudinal and behavioural dimensions.

2.1.1.3 Combination definition

Jacoby and Chestnut (1978, p.80) propose a two-dimensional conceptualisation of loyalty by combining both behavioural and attitudinal definitions. They argue that loyalty must be measured as a combination of attitudinal and behavioural dimensions. That is:

“(1) Biased (2) behavioural response (3) expressed over time (4) by some decision-making unit (5) with respect to one or more alternative brands out of a set of such brands, and (6) is a function of psychological (decision-making, evaluative) processes”.

Jacoby and Chestnut’s definition contains three dimensions of loyalty as discussed in the preceding sections. The behavioural component is defined by criteria 1, 2 and 3. The attitudinal component, criteria 4 and 5 are essentially a relational phenomenon towards one or more alternatives. The last criterion enables the consumer to develop a degree of commitment to the brand and, as has been described in the last section, it is precisely this level of commitment that provides the essential difference between repeat purchasing behaviour and loyalty (Jacoby and Kyner 1973).

Following Jacoby and Chestnut’s footsteps, Dick and Basu (1994) offer a definition, which is also a composite model combining relative attitude towards the brand and repeat patronage of the brand as the central variables of the loyalty. Dick and Basu (1994) use the product appraisal (relative attitude) as the attitudinal component for the development of a composite index of loyalty. High relative attitudes paired with a high repeat patronage result true loyalty, whereas the same patronage ratio together with a low relative attitude would define spurious loyalty.

However, Knox (2001), Knox and Walker (2003) argue that Dick and Basu's (1994) framework has offered a narrower view of loyalty defined by the attitudinal and behavioural responses. Knox (2001), Knox and Walker (2003) emphasise that in consumer markets customers’ purchase is on a portfolio basis rather than displaying single brand loyalty. Therefore, Jacoby and Chestnut's (1978) definition had been thought to be appropriate to explain customers’ sense of brand loyalty in grocery

shopping (Knox 2001; Knox and Walker 2003). However, this study realises that although grocery products, which are frequently selected from a wide choice of brands within categories, it is entirely plausible that there is a higher degree of sole brand loyalty towards a particular retail store compared with buying a portfolio of brands for specific grocery products (Thiele and Bennett, 2001). In this research it is expected that customers could do the majority of their shopping in the same store (excluding occasional purchases in other stores due to some incidences). Hence, it is felt that Dick and Basu's (1994) framework is particularly relevant to this research due to its simplicity and widespread academic use.

2.1.1.4 Theory of reasoned action

In addition, Belk (1974), Belk (1975); Blackwell et al., (1999); Fazio and Zanna (1981) propose that a strong attitude towards a product or service may only provide a weak prediction of whether or not the brand will be bought on the next purchase occasion because any number of factors may co-determine which brand is deemed to be desirable. Thus, Fishbein (1980) developed a theory of the relationship between attitude and behaviour (called theory of reasoned action: TRA), which asserted that attitude towards buying and subjective norm were the antecedents of performed behaviour. According to this view, one may hold a favourable attitude towards a product/service, but do not make any purchase because the purchase situation may be effected by product availability, promotions/deals, and the particular occasion or simply because of not being affordable. This study adopts the view that there may exist some situations where behaviour is simply not controlled by the individual's attitudes. It is felt that this situation reflects only a temporary choice that is likely to be converted into routine process when things are getting normal. Danaher et al (2003) further point out those occasional incidences happen more frequently in off-line than on-line environment. This is because consumers' behaviours are likely to be influenced by surroundings or promotions. As controlling all the situational factors is far beyond the scope of this research, this study intends to measure consumers' regular on-line purchase behaviour.

In general, "there is no unified field of theory for loyalty, nor can be assumed that the means of assessing loyalty in one set of circumstances is the same as in another

set” (Thiele and Bennett 2001, p.36). However, drawing from the literature a widely accepted conceptual definition of loyalty (Dick and Basu, 1994) includes both attitudinal and behavioural components, this study will adopt Dick and Basu's (1994) definition and applies it into on-line environment due to the lack of research in Internet grocery shopping. The following sections review the antecedents of customer loyalty from the existing literature.

2.2 Service Quality

Consumer decision making with respect to marketing organization is developed based on some global evaluations such as service quality, customer satisfaction etc. These global evaluations are believed to summarize consumers' knowledge and experiences with a particular firm and guide subsequent actions of the consumer (Garbarino and Johnson, 1999). Considerable research has focused on identifying the dimensions or components of service quality and satisfaction and the relationship between them (Parasuraman et al., 1985; 1988; 1991; 1993; Zeithaml et al., 1996; Brown et al., 1993; Cronin and Taylor, 1992; Teas, 1993).

Service quality is a concept that has aroused considerable interest and debate in the research literature mainly due to the difficulties in both defining and measuring it with no overall consensus (Parasuraman et al., 1985; Lewis and Mitchell, 1990; Asubonteng et al., 1996; Cronin and Taylor, 1992). There are a number of different definitions as to what is meant by service quality. Two main conceptualisations of service quality exist in the literature- one is based on the disconfirmation approach, and the other is based on a performance-only approach (Santos, 2003).

2.2.1 Disconfirmation approach

To date, the expectation-disconfirmation paradigm seeks to explore the relationship between customers' pre-purchase expectations and their perceptions of service performance. As consumers evaluate the levels of the service performance, they typically cannot help but compare that performance to what they expected. In turn, these expectations provide a baseline for the assessment of a customer's level of satisfaction. These models contend that service quality can be conceptualised as the

difference between what a consumer expects to receive and his or her perceptions of actual delivery. It is suggested that product and service exceeding some form of standard lead to satisfaction while performance falling below this standard results in dissatisfaction (Wilkie, 1990; Oliver, 1997). According to Nowen (1995) this expectancy disconfirmation approach has helped in explaining consumer perceptions of service quality as well as consumer satisfaction judgements. Using this definition, Gronroos (1984, p37) defines the concept of perceived service quality as “the outcome of an evaluation process, where the consumer compares his expectations with the service he perceives or he has received”. Parasuraman et al., (1985, p42) agree with this notion, and define service quality as “the comparison between customer expectation and perceptions of service”.

Based on disconfirmation approach, Parasuraman et al., (1985) propose a multi-dimensional service quality assessment tool SERVQUAL. SERVQUAL has been adopted by various researchers to numerous service industries as a means of gauging service quality. The primary model of SERVQUAL (Parasuraman et al., 1985) contained ten service quality dimensions-“reliability”; “responsiveness”; “competence”; “access”; “courtesy”; “communication”; “credibility”; “security”; “understanding /knowing the customer” and “tangibles”. However, by using factor analysis, it was subsequently reduced to five dimensions- “tangibles”; “reliability”; “responsiveness”; “assurance” and “empathy” (Parasuraman et al., 1988, p23).

The SERVQUAL scale is a principal instrument in the service marketing literature for assessing quality. This instrument has been widely utilised by both managers and academics (Babakus and Boller, 1992; Carman, 1990; Cronin and Taylor, 1992; Woodside et al., 1989 etc.). It is used to assess customer perception of service quality for a variety of services, such as banks, credit card companies, repair and maintenance companies, and long-distance telephone companies.

Apart from SERVQUAL, the other well-accepted model of service quality is the Technical/Functional Quality model (Gronroos, 1984). This model consists of two dimensions: (1) technical quality (the outcome of what a customer gets) and (2) functional quality (the process of how he gets it). Kang and James (2004) point out that SERVQUAL instrument focuses on the service delivery process and does not

address the service encounter outcomes. Gronroos (1982) suggests that service quality not only considers functional component (or process), but also technical aspect (or outcome) because utilising only functional quality attributes to explain or predict customers' behaviour might be a misspecification of service quality. However, it should be aware of that the measures of SERVQUAL are often borrowed by many researchers to measure the functional aspect of service quality (Brady and Cronin, 2001 and Swartz and Brown, 1989). However, attempts to measure technical quality have generally involved the use of qualitative methods (Brady and Cronin, 2001; Richard and Allaway, 1993; Kang and James, 2004) and it is required researchers to develop their own measures to assess the dimension. In reviewing the contemporary research about service quality, it is found that SERVQUAL has been used more frequently than functional and technical quality measure. This is probably because the service delivery process is what the researchers are interested in most. Although the evaluation of technical quality after service performance may also affect customers' perception, lack of empirical examination of its measurement may be the reason of not receiving as much attention as SERVQUAL does.

2.2.2 Performance only approach

More recently, there has been criticism in the literature of the disconfirmation approach. It has been argued that Cronin and Taylor's (1992) performance-only measure (the SERVPERF model) of service quality is superior because it is more reliable and defensible (Page and Spreng, 2002). The SERVPERF model takes a different approach than that of the SERVQUAL model and tries to eliminate the customers' expectation/perception (Cronin and Taylor, 1994). This model made use of the original SERVQUAL scale items to require the customer to rate a provider's performance. Unlike SERVQUAL, SERVPERF does not seek to estimate difference scores and requires the customer to rate only the performance of a particular service encounter. Cronin and Taylor (1992) point out that the elimination of the need to measure expectations on the grounds that customer expectations change when they experience a service and the inclusion of an expectations measure reduces the content and discriminant validity of the measures.

SERVPERF model argues against the use of expectations because an accurate expectations measure can only be obtained prior to the service encounter. As such, SERVPERF model suggests that service quality should be measured as an attitude (Cronin and Taylor, 1992). Customers develop this attitude on using the service very quickly. Further experience with the service provider will lead to further disconfirmation, which modifies the level of perceived service quality. The redefined level of perceived service quality similarly modifies a customer's purchase intentions towards the service provider. Thus, Baggs and Kleiner (1996) state that it is very important for service providers to know whether customers' actual purchase from firms have the highest level of perceived service quality or from those with which customers are most satisfied. This is because the SERVPERF model suggests that "service quality is an antecedent of consumer satisfaction and that consumer satisfaction exerts a stronger influence on purchase intentions than does service quality" (Cronin and Taylor, 1992 p.65).

2.2.3 An overview of SERVQUAL and SERVPERF model

Since Parasuraman et al., (1988, 1991) developed the instrument SERVQUAL for measuring customers' perceptions of service quality, there have been numerous studies in testing SERVQUAL and assessing alternative measures of service quality such as SERVPERF (Cronin and Taylor, 1992) in a variety of contexts.

The SERVQUAL model and its related instruments have been challenged for their shortcomings. In general, disagreements on SERVQUAL model mainly focus on two major issues-the dimensions of service quality and its application (Patrick et al., 1996). Cronin and Taylor (1992) question the relevance of the expectations-performance gap as the basis for measuring service quality. In their empirical study, SERVQUAL appeared to have a good fit in only two of the four industries examined, whereas SERVPERF had an excellent fit in all four industries. Page and Spreng (2002, p.190) argue that "if managers simply look at the attributes with the largest gap between the performance and a standard (either expectation or desire), they may not be focusing on important attributes. That is, just because there is large gap does not mean that the attributes are important". Cronin and Taylor (1992) further report that the performance-based scale (SERVPERF) is an improved means

of measuring service quality construct in comparison with the SERVQUAL scale, because it is more accurate in assessing customers' perceptions of service quality.

While the investigation into the dimensionality and the application of SERVQUAL and SERVPERF is beyond the scope of this study, the major issue of concern is the use of either of these two approaches and get an insight into their impact on customer satisfaction and subsequent behavioural intentions. It is thought that service quality dimensions tend to be context-bounded and service-type-dependent (Paulin and Perrien, 1996), as Baggs and Kleiner (1996) point out that customers' expectation and perception may not be correlated and can cause varying results from different respondents. Thus, Baggs and Kleiner (1996) suggest solving the problem by tailoring each SERVQUAL/SERVPERF study to the particular company or industry under investigation. This is in line with Babakus and Boller (1992) who argue that the dimensionality of service quality might depend on the type of services under study. The continuous rise in the use of SERVQUAL has been arguably attributed to a practical usefulness in diagnostic analysis for improving service quality, especially when it is applied in an on-line environment (Zeithaml et al., 2002; Jun et al., 2004; Gefen, 2002). In contrast, the applicability of SERVPERF approach has been rarely discussed in an on-line context. Nevertheless, either SERVQUAL or SERVPERF approach is not universally applicable across all the industries and they should be modified according to the specific environment.

2.3 Customer satisfaction

After having reviewed the service quality in Section 2.2, customer satisfaction is discussed in this section, since there is a strong linkage between those two concepts. Achieving customer satisfaction is the primary goal for most service firms today. Increasing customer satisfaction and customer retention leads to improved profits, positive word-of-mouth, and lower marketing expenditures (Reichheld, 1996; McDougall and Levesque, 2000). Oliver (1999) suggests that service quality and customer satisfaction are the seeds from which loyalty grows. The idea is that loyalty cannot be achieved without service quality and customer satisfaction. The inter-relationships among service quality, customer satisfaction, and loyalty have

been well established in marketing and management literature (Berry, 1995; Berry and Parasuraman, 1991; Foster and Cadogan, 2000; Graham, 1999 and Kandampully, 1997).

A basic agreement emanating from the wide range of literature on service quality and customer satisfaction is that service quality and customer satisfaction are conceptually distinct but closely related constructs (Parasuraman et al., 1994; Dabolkar, 1995; Shemwell et al., 1998 and Balabanis et al., 2006). However, there has been considerable debate about the causal link between these two concepts during the past two decades. Woodside et al., (1989) propose one of the first models specifically assessing the relationships between service quality perceptions, customer satisfaction judgements and customer loyalty. Their results suggest that customer satisfaction is an intervening variable that mediates the relationship between service quality judgements and customer loyalty (i.e., service quality→ satisfaction→ loyalty). Many researchers have supported the proposition that service quality leads to customer satisfaction, in turn to loyalty. Based on this point of view, Oliver (1980) points out that satisfaction is an attitude or evaluation which is formed by the customer comparing their pre-purchase expectations of what they will receive from the product or services to their subjective perceptions of the performance they actually did receive. Mittal and Lassar (1998) argue that satisfaction is a rating of customer's experience with the service outcome whereas quality is a judgement made about a firm's resources and skills. Satisfaction concerns the favourableness of the individual's evaluation of the outcomes and experiences associated with the service or product (Hunt, 1977). Lee et al., (2000) conduct a study on the determinants of perceived service quality and its relationship with satisfaction and loyalty by selecting three different service firms. Their result further confirms that service quality is an antecedent of customer satisfaction and customer satisfaction exerts a strong influence on loyalty.

Approaching this issue differently, Bitner (1990) investigates the service quality and customer satisfaction perceptions of 145 travellers at an international airport. The basis of Bitner's model is an attempt to reconcile hypotheses that customer attributions mediate disconfirmation and satisfaction judgements. Service quality

judgements, in turn, are hypothesised to mediate customer satisfaction judgements and customer loyalty. Thus, Bitner suggests an alternative ordering of the service quality and satisfaction constructs (i.e. satisfaction → service quality → customer loyalty). Bitner's results appear to support her hypothesised model and thus contradict the causal order reported by Woodside et al. (1989).

Facing these two conflicting propositions, Cronin and Taylor (1992), in a non-recursive structural model, present the first simultaneous test of both of the aforementioned relationships across four industries. For each of the four service industries they investigated, Cronin and Taylor's results support Woodside et al.'s (1989) conclusion that service quality appears to be a causal antecedent of customer satisfaction.

There is not a clear consensus regarding the causal link between service quality and customer satisfaction. However, customer satisfaction is usually defined as "an evaluative, affective, or emotional response" (Oliver and Swan, 1989, p.1). It is thought that customers can evaluate (be satisfied/dissatisfied with) the product/service only after they perceive the product/service. Lee et al., (2000) propose that customers perceive service quality immediately after the service consumption, and then their perceptions and expectation are generated based on the service received that will result in satisfaction/dissatisfaction. While the causal link between service quality and customer satisfaction is not the focal point of this research, the major issue concerns their impact on customer loyalty. This study accepts the proposition that service quality leads to customer satisfaction because the majority of researchers have argued and empirically supported that perceived service quality is an antecedent of customer satisfaction (Parasuraman et al., 1988; Cronin and Taylor, 1992; Spreng and Mackoy, 1996; Lee et al's., 2000 and Woodside et al., 1989).

2.4 The role of service quality, customer satisfaction and loyalty in an on-line environment

2.4.1 E-service quality

Research into service quality has been popular for more than two decades, it has been applied to the electronic commerce (e-commerce) environment and discussed and analysed extensively in the recent academic and professional literature. With the increasing amount of research into Internet marketing and e-commerce, service quality in on-line environment has been recognised as an important factor in determining the success or failure of electronic commerce (Santos, 2003; Yang, 2001). Zeithaml et al., (2002) point out that the on-line environment is very different from the off-line context, and has insisted that more works needs to be done to understand the contextual difference regarding the applicability of traditional measurement scales in cyberspace. Thus, the existing studies on e-service quality have attempted to identify the elements that define customers' perception of quality, and to build models that outline the differences between customers' expectations and the real service experience (De Ruyter et al., 2001; Feinberg and Kadam, 2002; Janda et al., 2002; Singh, 2002 and Zeithaml et al., 2002).

Like most areas that are new, researchers have taken different approaches and focused on a variety of aspects of e-quality. Some academic researchers have developed scales to evaluate Web sites. For example, Chen and Wells (1999) develop a scale to measure "attitude toward the Web site", an overall evaluation of the site. Subjects rated corporate and institutional Web sites on a set of 141 adjectives. The study results in a measure with three dimensions: "entertainment", "informativeness", and "organisation".

Using a sample of college students, Yoo and Donthu (2001) develop a scale - SITE-QUAL to measure the perceived quality of an Internet shopping site. This results in a nine-item scale with four dimensions: "ease of use", "aesthetic design", "processing speed", and "security".

Loiacono et al (2002) use several sources including literature review, interviews with Web surfers and designers, and a study of a large organisation's standards for

Web site design to come up with items for their measure of Web site quality, termed WebQual (TM). They then refine the scale by using student responses to a selected group of Web sites. Their finalised scale contained 36 items and 12 dimensions: “informational fit-to-task”, “interactivity”, “trust”, “response time”, “ease of understanding”, “intuitive operations”, “visual appeal”, “innovativeness”, “flow-emotional appeal”, “consistent image”, “on-line completeness”, and “better than alternative channels”.

However, Wolfinbarger and Gilly (2003) argue that defining e-service quality should go beyond measuring the website interface only. This is because a customers' on-line buying experience consists of everything from information search, product evaluation, decision making, making the transaction, delivery, returns and customer service. It is apparent that scales for evaluation of the website may not be sufficient for measuring service quality across various stages of the service delivery on-line. This is also in line with Parasuraman et al's., (2005) study who state that the purpose of developing scales for e-quality is for measuring the whole experience of customers regarding the service received rather than to generate information for Website designers.

Some of other studies adapt the theoretical models used to assess the quality of traditional services to the new characteristics of the on-line interaction (Janda et al., 2002 and Zeithaml et al., 2002). For example, Cox and Dale (2001) examine the applicability of determinants identified in a physical services environment to assess the services relating to e-commerce. It is argued that the lack of human interaction during the Web site experience means that determinants such as “competence”, “courtesy”, “cleanliness”, “comfort” and “friendliness”, “helpfulness”, “care”, “commitment”, “flexibility” are not particularly relevant in e-commerce. On the other hand, determinants such as “accessibility”, “communication”, “credibility”, “understanding”, “appearance” and “availability” are equally applicable to e-commerce as they are in physical services.

Zeithaml et al. (2002) discuss the themes of “reliability,” “responsiveness”, “access”, “assurance” and “customisation/personalisation” in an e-tailing environment by comparing with the SERVQUAL (Parasuraman et al., 1988).

Zeithaml claims that many of the perceptual attributes pertaining to Web site service quality remain the same as that in SERVQUAL such as doing as promised or knowing customers etc. However, some of the perceptual attributes need to be reformulated before they can be meaningfully used in an e-service context. For example, “tangibility” could be replaced with “website design/access”. Similarly, the personal flavour of SERVQUAL’s empathy dimension is not required except when customers experience problems. Instead, customers are more interested in receiving personalised services.

Due to the recent extensive academic research into e-quality, some researchers not only have focused on developing and verifying models for service quality in an on-line environment, but also have paid their attentions to industry-specific service quality in on-line context. For instance, Gefen (2002) investigated the service quality in the context of an on-line book store-Amazon.com. The measurement scale of the study was adapted from Parasuraman et al's ., (1988) SERVQUAL. The results suggest that the five dimensions of service quality in SERVQUAL still retain some of their convergent, discriminant and predictive validity in the context of on-line vendors who provide service through websites. The data collapsed five dimensions of SERVQUAL into three: (1) “tangible”, a combined scale of “reliability”, (2) “responsiveness”, “assurance”, (3) and “empathy”. Gefen claims that the combined dimensions “reliability”, “responsiveness”, and “assurance” are the primary dimension for increasing customer trust, while the “tangible” dimension is for building customer loyalty. The apparent lesser role of “empathy” may be because the lack of human interaction that makes attentive personal understanding “empathy” a somewhat less important aspect of service quality.

In addition, Parasuraman et al., (2005) selected two on-line stores from “100 Hot Sites” (amazon.com and walmart.com) to refine and test a multiple-item scale (E-S-QUAL) for measuring the service quality delivered by Web sites on which customers shop on-line, based on Zeithaml's (2000) study. Parasuraman et al., (2005) claim that the selection of these two on-line stores is because the dissimilarities across these two sites, that could provide a more robust context for testing the refined scales than a single site or two similar sites would have. The study used two stages of empirical data collection and revealed that two different

scales were necessary for capturing electronic service quality. The basic E-S-QUAL scale developed in the research is a 22-item scale of four dimensions: “efficiency”, “fulfilment”, “system availability”, and “privacy”. The second scale E-RecS-QUAL, is salient only to customers who had no routine encounters with the sites and contains 11 items in three dimensions: “responsiveness”, “compensation”, and “contact”. Both scales from Parasuraman et al's., (2005) study systematically assessed and improved e-service quality in the electronic retailing context.

The other research, which is worthy of mentioning here is Wolfinbarger and Gilly's (2003) general e-tailing study. Based on on-line and off-line focus groups, a sorting task and an on-line survey of a customer panel, Wolfinbarger and Gilly establish the dimensions of the e-tail experience and develop the scale for the measurement of e-service quality. Their analysis suggests four factors-“website design”, “fulfilment/reliability”, “privacy/security”, and “customer service” that are strongly predictive of customer judgements of quality, satisfaction and loyalty. Comparing Wolfinbarger and Gilly (2003) with Parasuraman et al., (2005), it can be seen that there are some conceptual and content overlaps between these two studies. However, both of the results about the relative importance of dimensions are very different due to their applications in a different context. For instance, “privacy” plays a significant role in customers' higher-order evaluation pertaining to web sites in Parasuraman et al's., (2005) study. In contrast, “privacy” is not significant in predicting e-service quality in Wolfinbarger and Gilly's (2003) research. In addition, although eTailQ's “website design” and “reliability/fulfilment” dimensions of Wolfinbarger and Gilly (2003) are similar to E-S-QUAL's “efficiency” and “fulfilment” of Parasuraman et al., (2005), E-S-QUAL's “system availability” dimension is not explicitly and fully reflected in eTailQ, as eTailQ only has subsumed more general website design dimensions.

In general, research into on-line shopping service quality is just emerging in marketing journals, nearly all of the studies exploring on-line shopping service quality have some conceptual or methodological weaknesses. For example, Janda et al.,(2002) point out that “some recent on-line shopping service quality research is exploratory in its conceptual development; some have utilised single item measures; and some are comparison oriented (i.e., to traditional stores) not quality oriented”

(p.415). Other studies have expanded the understanding of e-quality from a qualitative viewpoint, but have not developed quantifiable scales for use in further research. However, despite the limitations of any one study, through their collective work, certain patterns are starting to emerge.

For instance, “reliability”, “website design” and “responsiveness” appear in all the studies, although individual differences in variable do exist due to the nature of specific industry. Given the interest of this research is in consumer perception and experience of on-line quality in Internet grocery shopping, an important consideration in the development of e-quality measure in this study is to adopt existing established scales and experimental procedures in the similar context whenever possible. Therefore, Parasuraman et al's., (2005) study is a starting point and serves as the e-quality domain from which this research draws items for the e-quality scale. The next Section reviews relevant literature pertaining to customers' e-satisfaction.

2.4.2 E-satisfaction

The significant advances in understanding of customer satisfaction have been discussed in Section 2.2. As more e-tailers promise their customers that on-line experiences will be satisfying ones, understanding what creates a satisfying customer experience becomes crucial. Szymanski and Hise (2000) examine the factors that make consumers satisfied with their e-tailing experiences. They find that “convenience”, “site design” and “financial security” are the dominant factors in consumer assessments of e-satisfaction, which are consistent with the determinants of e-service quality (Zeithaml et al., 2002; Gefen, 2002; Parasuraman et al., 2005 etc.)

In addition, Shankar et al., (2003) conduct a study to investigate the levels of customer satisfaction and loyalty for the same service in both off-line and on-line contexts. The results are somewhat counterintuitive in that they show that the level of customer satisfaction for a service chosen on-line is the same as when it is chosen off-line; loyalty to the service provider is higher when the service is chosen on-line

than off-line. Shankar et al., (2003) suggest that the loyalty and satisfaction have a reciprocal relationship. That is satisfaction reinforces customer loyalty on-line. This is further confirmed by Anderson and Srinivasan (2003) that e-satisfaction has an impact on e-loyalty.

More recently, Ha (2006) develops a model that strongly suggests a positive view of the inter-relationships between antecedent variables and outcomes variables of satisfaction in the context of e-services. The research points out that e-loyalty, word-of-mouth and repeat-purchase intention are the outcome variables for e-satisfaction. In the next section, the role of loyalty in an on-line environment is introduced.

2.4.3 E-loyalty

Customer loyalty in the traditional “brick and mortar” marketplace has been studied in detail. However, very few researchers have addressed e-loyalty in depth since this is a newly emerging field. Srinivasan, et al., (2002) conduct a study on electronic loyalty and investigate the consequences of e-loyalty, including issues such as willingness to pay more and word-of-mouth promotion and identified eight factors (the 8Cs-“customisation”, “contact interactivity”, “care”, “community”, “convenience”, “cultivation, choice”, and “character”) that potentially impact e-loyalty. In addition, Anderson and Srinivasan (2003) also investigate the impact of satisfaction on loyalty in the context of electronic commerce. Findings of this research indicate that although e-satisfaction has an impact on e-loyalty, this relationship is moderated by consumers’ individual level factors (such as “convenience motivation”, “inertia” and “purchase size”) on the one hand, and firms’ business level factors (like “trust” and “perceived value”) on the other. Although Anderson & Srinivasan (2003) and Srinivasan, et al., (2002) have conducted the pioneering research about on-line loyalty, these studies do not control for the differences across product and service categories. Peterson et al., (1997) point out that the suitability of the Internet research for e-tailing depends to a large extent on the characteristics of the products and services being marketed.

Gefen (2002) compares customer loyalty in a non-Internet and Internet bookstores and find that service quality and trust increase customer loyalty with on-line vendors in both contexts. Similarly, Danaher et al., (2003) compare brand loyalty in on-line and traditional shopping environments for over 100 brands in 19 grocery product categories. They have found that for those products with popular brand name do better in the on-line environment than those with an unpopular brand. Their findings also show that on-line grocery shoppers are likely to judge product quality from the brand name and they perceive less risk when buying a well-known brand on-line due to the lack of interaction of human beings.

Rather than focusing on individual grocery products, Rafiq and Fulford (2005) conduct a study to examine transferability of store loyalty to on-line loyalty in Internet grocery shopping and identify that loyal customers are more likely to adopt brand extensions (i.e. on-line version of the off-line store). However, one concern for Rafiq and Fulford's (2005) research is that their study is still pretty much based on transactional level. The drivers of customer loyalty in Internet grocery shopping is explored based on the traditional point of view. Since the attitude of the customers in Internet grocery shopping is more long-term, customers are very likely to have high relationship intention, which is not opportunistic. It would be interesting to know that whether loyalty can be enhanced by relationship quality building in Internet grocery shopping.

2.5 Summary

In summary, service quality and customer satisfaction have been seen as two major determinants of loyalty from traditional point of view. They are inarguably the two core concepts that are at the crux of the marketing theory and practice (Sureshchandar et al., 2002b). However, the relationship between these two constructs has been a subject of major controversy with several researchers proclaiming different theories. This research does not address any issues regarding these debates. Here, the view is that satisfaction is relevant to the customers' post-purchase evaluation when comparing customers' pre-purchase expectation and performance received (Kotler, 1991). Therefore, this research stands by Woodside et al.,'s (1989) proposition that delivery of high quality service that will in turn

result in satisfied customers. This study aims to examine customer loyalty and its antecedents in Internet grocery shopping, using various validated theoretical frameworks in order to get a better understanding of the underlying processes of loyalty involved. Thus, it is necessary to investigate the question of whether the customers' perceived service quality is significantly and positively related to their satisfaction in the context of Internet grocery shopping.

A review of previous literature has tracked loyalty's development through behavioural and attitudinal phases of measurement to the current composite perspective (Jacoby and Chestnut 1978; Dick and Basu, 1994). This research adopts Dick and Basu's (1994) composite approach to measure loyalty in Internet grocery store. This is because store loyalty is broader than brand loyalty. Unlike store loyalty, brand loyalty is mainly towards specific product/service. In Internet grocery shopping the e-store itself contains both tangible and intangible elements; consumers buy products on the website across various stages of the service delivery, which may result in some experience with both services and products offered. This study defines loyalty as composite blend of customers' attitude and behaviour towards the Internet grocery store, measuring the degree to which one favours the store and buys its products repeatedly.

However, more recently the focus in marketing research has begun to shift from service quality and customer satisfaction to relationship marketing. Previous research focuses on service quality and customer satisfaction as the principal measures of loyalty. These measures have traditionally been used to evaluate non-relationship outcomes (Rosen and Surprenant, 1998). Kumar (2003) claims that transaction relationship is necessary but not a sufficient condition for building long-term relationship. This is also in line with Crosby et al's., (1990) view who argue that service quality and customer satisfaction do not guarantee customer loyalty and it is impossible to achieve customer loyalty without considering long-term relationship. There is a wide agreement in the relationship marketing literature that the long term relationship between two parties is the success of building loyal customer base (Heening-Thurau, 2000). The next chapter reviews the importance of relationship marketing, followed by a discussion of the theoretical background

regarding relationship marketing in the consumer market. In addition, the determinants of relationship marketing outcomes are explored, respectively.

Chapter 3

A REVIEW OF RELATIONSHIP QUALITY

3.0 Introduction

In the 1990s, relationship marketing has become one of the great interests to both marketing scholars and marketing practitioners. In the increasingly mature and complex markets in which organisations realise operating, building and sustaining relationship are much more important than customer acquisition (Payne, 2000). Relationship marketing focuses on approaches to building, developing and maintaining successful relational exchanges (Berry, 1983; Morgan and Hunt, 1994; Gronroos, 1994b) and is changing marketing orientation from attracting short term, discrete transaction to retaining long-lasting, intimate customer relationships. The core of relationship marketing is to create customer loyalty so that a stable, mutually profitable and long-term relationship is enhanced (Gronroos and Ravald, 1996).

The process of developing and enhancing relationships has traditionally been undertaken through face-to-face interaction between the customer and the personnel of a service provider (Lang and Colgate, 2003; Johns, 1996). However, the emergence of the Internet shopping gives “relationship building” a great opportunity to go a step further. With the rapid diffusion and adoption of the Internet shopping, using the Internet as a medium of interaction and a distribution channel is becoming increasingly popular among retailers (Lang and Colgate, 2003). Newell (2000) points out that the secret of the Internet for customer relationship management is not about opening an on-line store or finding new ways to give points or discounts; it is about using this technology to build mutually profitable relationship and strengthen the bond between a business and its customers. The ultimate purpose of it is to enhance customer loyalty. Unfortunately, there are very few empirical studies in locating

successful on-line models about relationship development. Research about the impact of technology on quality of the relationship has received little recognition at the moment. As organisations become increasingly customer focused and driven by customer demands, the need to meet customers' expectations and retain their loyalty becomes more critical (Disney, 1999). Given the belief in the economic advantage of customer loyalty, there is an agreement in the need to investigate the on-line factors underlying customer relationship building (Gronroos, 1994b; Gilbert, 1996 and Clark, 1997).

This research attempts to provide a conceptual framework centred on developing a model about loyalty formation through relationship quality building in Internet grocery shopping. In next section, following the description of the background and the definition of relationship marketing, theoretical concepts dealing with the antecedents and outcomes of relationship marketing are discussed.

3.1 Theoretical Background

3.1.1 Relationship marketing in consumer market

Relationship marketing was initially developed as an approach to establish, maintain and enhance the relationship at a profit between the buyer and the supplier in a business to business (B2B) context (Gronroos, 1994a; Selnes, 1998; Hunt and Morgan, 1994). More recently, shifting the relational perspective and transferring it into mass consumer markets have been received considerable attention from both academics and practitioners (Berry, 1995; Gwinner et al., 1998; Reynolds and Cuthbertson, 2003). There are advocates and critics of this shift in the focus of consumer market.

Advocates (O'Malley and Tynan, 2000; Bhattacharya and Bolton, 2000) believe that both business and consumer relationship marketing benefit in fostering relational bonds which will lead to reliable repeat business. Kumar et al., (2003) point out that when customers possess a high affinity and trust in the firm, their attitude is more long-term, not opportunistic and they may be willing to pay more to keep the relationship going. Thus, Sheth (1994) and Gruen (1995, p.449) claim that "relational

exchange is equally prevalent in consumer markets”, although there are typically a large number of consumers in retail markets compared to the Business-to-Business (B2B) market.

Some sceptics such as Szmingin and Humphreym (1998) and Sheaves and Barnes (1996) propose that the idea of establishing a relationship with the individual customer will only appear to work in situations where there are considerable interactions between customers and staff. Under such a situation customers would have the opportunity to establish relationships, which are not particularly different from those they have established with other people such as family, friends, neighbours, co-workers. However, Magi (2003) and Woodburn (2002) disagree with Szmingin & Humphreym's (1998) and Sheaves & Barnes' (1996) opinion and claim that the development of relationship with business providers and consumers might be feasible even in situations where the opportunity for face-to-face contact is limited by harnessing the power of IT to deliver elements of the marketing mix. Magi (2003) and Woodburn (2002) argue that customers vary in terms of how they perceive the value of a relationship and that the benefits of a long-term relationship is not equally valued by all. Therefore, effective consumer segmentation would have great strategic importance for retailers to develop relationship with customers (McGoldrick, 1997).

3.2 Definition of relationship marketing

Although there are different contexts, marketing scholars have defined relationship marketing in a similar fashion. The phrase relationship marketing appeared in the services marketing literature for the first time in Berry's (1983) paper. In that paper, he defined relationship marketing as “attracting, maintaining, and—in multi-service organisations-enhancing customer relationships” (p.25). According to Gronroos (1997, p. 407), relationship marketing is a way to “establish, maintain, enhance and commercialise customer relationships so that the objectives of the parties involved are met; this is done by a mutual exchange and fulfilment of promises”. A similar definition has been offered by Shani and Chalasani (1992) who view relationship marketing as “an integrated effort to identify, maintain, and build up a network with individual consumers and to continuously strengthen the network for the mutual

benefit of both sides, through interactive, individualised and value-added contacts over a long period of time”(p. 44).

The above definitions differ from each other somewhat. However, all of them indicate that the key elements of relationship marketing include mutual benefit, the fulfilment of promises, use of knowledge about customers to help them satisfy their needs, interaction and empathy with customers, and continuous dialogue with them. They make clear that relationship marketing is characterised by long-term alliances between the buyer and the seller that is mutually beneficial if sustained. Thus, the aim of relationship marketing is to capture increasing amounts of the lifelong loyalty of the best customers by offering products and services that respond to their individual needs (Jain, 2005).

3.3 Determinants of relationship marketing outcomes

The aim of reviewing relationship marketing theory is to find the key drivers that influence the relational outcomes such as customer loyalty (Henning-Thurau et al., 2002). Although there are several different approaches available to identify these variables and their impacts on relational outcomes, two approaches-relationship quality and relational benefit have been recognized as the most promising ways to explain relationships between service providers and consumers (Smith 1998; Crosby 1991; Crosby et al., 1990; Dorsch et al., 1998; Henning-Thurau and Klee, 1997 and Henning-Thurau et al., 2002). The relational benefit approach is based on the belief that relationship depends on different types of benefits to foster customer loyalty (Berry 1995). In contrast, relationship quality approach is based on the assumption that “customer loyalty is largely determined by a limited number of constructs reflecting the degree of appropriateness of a relationship” (Henning-Thurau and Klee 1997, p.751). In the next two sections these two approaches are discussed, respectively.

3.3.1 Relational benefit

Gwinner et al., (1998) have examined the benefits that customers receive as a result of engaging in long-term relational exchanges with service firms. They identified three distinct benefits: confidence, social and special treatment benefits. According to their results, confidence benefits have received more attention and are rated as more important than the other relational benefits by consumers, followed by social and special treatment benefits. Morgan et al., (2001) and Henning-Thurau (2000) propose that service providers can build customer relationships by initiating one or several types of benefits like economic benefit, social benefit and resource benefit. For example, business can enhance customer relationships by delivering economic benefits. Researchers have argued that one of the motivations for consumer to engage in relational exchanges is money savings (Berry 1995; Gwinner et al., 1998; Peterson, 1995; and Peltier and Westfall, 2000). Service providers may reward loyal customer with special price offers. For instance, grocery stores offer loyalty card and reward program to encourage frequent purchases. While attractive economics are important, they are not sufficient to sustain a healthy relationship (Morgan et al., 2000). Customers most interested in pricing incentives are particularly vulnerable to competitors' promotions. Marketers seeking to establish the strongest possible relationships should offer something more than price competition. A non-monetary bond like special treatment benefits is also proposed by many scholars such as time saving or the feeling of being regarded as a valued customer.

Yen and Gwinner (2003) point out that Gwinner et al's.,(1998) and Morgan and Hunt's (2000) and Henning-Thurau's (2000) theory is based largely on industrial marketing settings. The ability of previous models to explain relationships in an on-line context from a consumer's perspective is in need of further exploration and testing, since relational aspects of the exchange over the Internet may or may not continue to drive important outcomes such as customer loyalty. For example, social benefit focuses on service dimensions that contain interpersonal interactions and maintain customer loyalty through friendship (Morgan et al., 2000). However, the role played by the salesperson no longer exists on the Internet, so social benefit would have little effect on the consumer behaviour in an on-line environment. Further, Yen and Gwinner (2003) claim that confidence and special treatment benefits identified by

Gwinner et al.,(1998) still play a strong mediating role leading to customer satisfaction and loyalty during Internet shopping. Moreover, the special treatment benefits like the up-to-date security features and tailored services through emails from e-tailers may serve as key drivers in enhancing the relationship between customers and e-tailers.

Although the fulfilment of relational benefits can predict the future development of existing relationship (Henning-Thurau et al., 2002), this study is more interested in maintaining the ongoing relationship between consumers and the e-tailer in Internet grocery shopping. Moreover, this research also wants to get an insight into the nature of the relationship, as relationship quality is composed of several components. An in-depth understanding about the causal relations between these drivers and outcomes of relationship quality would suggest that managers implement and monitor relationship-marketing programs from another angle rather than purely focusing on the receipt of “utilitarian-oriented benefits” (Henning-Thurau et al., 2002, p.232).

3.3.2 Relationship quality

Relationship quality has been discussed as “a bundle of intangible values which augments products or services and results in an expected interchange between buyers and sellers” (Levitt, 1986 p.43). Additionally, relationship quality refers to customers’ perceptions of how well the whole relationship fulfils the expectations, predictions, goals and desires the customer has from the whole relationship (Jarvelin and Lehtinen, 1996). A more widely accepted definition from Smith (1998, p.2) defines relationship quality as “a higher-order construct consisting of a variety of positive relationship outcomes that mirror the overall strength of a relationship and the degree to which it meets the parties’ needs and expectations”.

Relationship quality can be regarded as a meta-construct composed of several key components reflecting the overall nature of relationships between companies and consumers (Hennig-Thurau et al., 2002). Although there is no consensus on which dimensions make up relationship quality, considerable overlap exists in the various conceptualisations. However, discussions of relationship quality often emphasise the importance of trust, relationship satisfaction, commitment and perceived investment

(Kumar et al., 1995; Crosby et al., 1990 and Dwyer et al., 1987 and De-Wulf et al., 2001, Dorsch et al., 1998, Gruen, 1995, Roberts et al., 2003, Shamdasani and Balakrishnan, 2000 and Wong and Sohal, 2002).

According to the existing literature for measuring relationship quality in consumer market (Roberts et al., 2003; De-Wulf et al., 2001 and Hennig-Thurau et al., 2002 etc.), very few empirical studies have examined the interaction between different dimensions of relationship quality and relational outcomes such as customer loyalty and it is unknown whether relationship quality would add any additional influences over traditional “evaluative components” (Shamdasani and Balakrishnan, 2000 p.401) of service encounters like service quality and customer satisfaction in explaining consumer behaviour intentions.

3.3.2.1 Differences in relationship quality between B2B and B2C market

Due to the different nature of “Business to Business” (B2B) and “Business to Customer” (B2C) markets, the application of relationship marketing into these two markets can be quite different. It is necessary to have a detailed explanation about these two markets first before moving into the discussion of relationship quality.

First, one of the major differences between B2B and B2C markets in relationship marketing is the basic form of the relationship (Gruen 1995). B2B relationship marketing includes partnerships, distribution channel relationships and business networks.(Anderson and Narus, 1990; Anderson and Weitz 1992 and Hakansson and Snehota, 2000). However, the relationship between the individual consumer and the business organisation is often in the form of a membership (Lovelock, 1983 and Gruen, 1995). A common example is the loyalty programme, which is often an important part of the relationship marketing strategy in B2C context. Monetary and non-monetary rewards are often given to those loyalty membership subscribers. According to Gruen (1995), the basic form of the relationship in B2C market is that the organisation possesses individual customers’ personal details and contact them at a regular basis and consumers acknowledge some affiliation with the organisation, even if this affiliation is informal (Madhavan et al., 1994). Therefore, it is necessary to empirically test whether the measure of the quality of this kind of relationship

predicts important relational outcomes from the consumer's perspective, if relationship quality is to be meaningful managerially.

Second, there are differences between organisational buyer behaviours and consumer behaviours (Roberts et al., 2003 and Webster, 1992). In B2B context, buyers are motivated by necessity (Roberts et al., 2003). However, in B2C market, buyers will indulge beyond economic necessity, like buying something because it is 'cool' or it satisfies an 'image' they want to portray (Stern, 1997). Thereby, the inter-relationships between the buyer and the seller in B2B market seems to be more formal than that in B2C market (Assael, 1995).

In Internet grocery shopping, all the transactions are conducted through the use of Internet self-service, it is not clear how relational aspects of the exchange over the Internet continue to drive important outcomes such as customer loyalty. In B2B relationships, switching costs can be very costly and alternatives are difficult to replace. In contrast, in B2C market, alternatives are readily available and substitutions cost minimal. One concern is whether these drivers influencing the relational outcomes identified by previous literature in B2B context are still valid in B2C Internet grocery shopping. If not, what kinds of drivers will have the greatest influences on consumer intentions in Internet grocery shopping?

3.3.2.2 Dimensions of relationship quality

According to Bitner (1990), satisfaction is considered to act as a global assessment of cumulative service encounters. In the field of relationship marketing relationship satisfaction leads to customer loyalty. Crosby (1991) claims that customer is able to trust the company's future performance because the level of past performance has been consistently satisfactory. Further, Hrebiniack (1974) posits that parties will desire to commit themselves to relationships characterised by trust. Dwyer et al., (1987) theorise trust as part of expectation development of a relationship that precedes commitment. Moreover, Keating et al., (2003) and Lang & Colgate (2003) find trust, relationship satisfaction and commitment to be the most sensitive facets of relationship quality. Building on past studies (Kumar et al., 1995; Crosby et al., 1990 and Dwyer et al., 1987 and De-Wulf et al., 2001, Dorsch et al., 1998, Gruen, 1995,

Roberts et al., 2003, Shamdasani and Balakrishnan, 2000 and Wong and Sohal, 2002), trust, commitment and relational satisfaction will also be relevant in Internet grocery shopping, because ensuring relationship satisfaction, trust and commitment in Internet grocery shopping is paramount to ensuring loyalty that contributes to a lasting bond by offering assurance, the firm will continue to meet customer expectations and act to instil customer's confidence. Furthermore, perceived relational investment is also identified to have an influence on the quality of the relationship in B2C market by De-Wulf et al., (2001). De-Wulf et al., (2001, p.36) claim that "an investment of time, effort, and irrecoverable resources in a relationship creates psychological ties that motivates parties to maintain the relationship and sets an expectation of reciprocation". Shani and Chalasani (1992) point out that for a relationship to exist, both parties must mutually benefit through interactive, individualised and value-added contacts over a long period of time. Moreover, Kang and Ridway (1996) and Bagozzi (1995) argue that consumers often continue supporting certain retailers when they have perceived relational investment from those retailers, although sometimes consumers pay back the retailers' friendness unconsciously. Therefore, perceived relational investment from retailers may greatly influence consumer future purchase intention. In the next section, a detailed discussion about each dimension of relationship quality (i.e. relationship satisfaction, trust, perceived relational investment, affective/calculative commitment) is drawn on.

3.3.2.2.1 Relationship satisfaction

Satisfaction with a product or service has traditionally been studied as a unidimensional construct. Leigh (1987) finds satisfaction is not a unidimensional construct. In fact for many products and services the "use of an overall, summary satisfaction measure may mask important diagnostic information about the nature of satisfaction... its determinants and consequences" (Leigh, 1987, p.353). While the theory and practice of customer satisfaction have attracted lot of attention during the past three decades, it has been recognised that customer satisfaction can be measured on a transaction (service encounter) level and a global relational level for the cumulative service encounters. (Jones and Suh, 2000; Shankar et al., 2003; Posselt and Gerstner, 2005; Crosby et al., 1990 and Palmer and Bejou, 1994). This approach

for measuring satisfaction becomes a central theme in the work of relationship marketing.

Two of the key global constructs predicting consumer behaviour have been service quality and customer satisfaction (transaction-specific satisfaction). Transaction-specific satisfaction dominated the marketing and consumer behaviour literature up through the early 1990s (Oliver, 1997; Yi, 1990). This approach defines satisfaction as a customer's evaluation of his or her experience with and reactions to a particular product transaction, episode, or service encounter (Olsen and Johnson, 2003). It captures the complex psychological reactions that customers have perceived a product's or service provider's performance on a given occasion or over a given time period (Oliver 1997). It allows companies to better track changes in performance that result from internal changes and/ or quality improvements, since transaction-specific satisfaction is more likely to depend on a specific performance attributes of the service encounter (Shankar et al., 2003).

However, relationship satisfaction leaves the time period of evaluation open. Relationship satisfaction shows that customers rely on their entire experience when forming intentions and making repurchase decisions. Thus, it is more likely to depend on factors that occur across all the transactions. Olsen and Johnson (2003) claim that relationship satisfaction should better predict customers' intentions and behaviour, since it is relatively stable and more similar to an overall attitude (Parasuraman et al., 1994).

Although these two types of satisfaction are related, it is important to recognise them as distinct constructs because some of the factors influencing them may be different. For example, the normal service encounter satisfaction is more likely to depend on performance on specific attributes of the service encounter. Szymanski and Hise (2000) conduct a study to examine what kind of factors made customers satisfied with the service encounter in e-tailing context. They find that convenience, site design and financial security are the dominant factors in consumer assessments of e-satisfaction. However, this kind of satisfaction only captures the transient-specific evaluation and emotions, whereas relationship satisfaction is more likely to depend on factors that occur across all the transactions by integrating the environmental perspective of

service experiences (Wirtz and Bateson, 1999). Customers often make their satisfied decisions based on the past experiences and the interactions with service encounters. Therefore, Shamdasani and Balakrishnan (2000) propose that all the customer-service attributes like service quality and customer satisfaction that is related to the interaction with the firm are antecedents of relationship satisfaction. This proposition is consistent with Crosby et al., (1990) and Czepiel (1990) that relationship satisfaction is the summary measure which provides an evaluation of the quality of all past interactions with the service provided and sums encounter satisfaction with specific products and services of the organisation.

3.3.2.2.2 Trust

Trust generally is viewed as an essential ingredient for successful relationships (Berry 1995; Dwyer et al., 1987; Morgan and Hunt 1994; Moorman et al., 1992; Schurr and Julie, 1985). Moorman and Zaltman (1993) define trust as "a willingness to rely on an exchange partner in whom one has confidence" (p.82). Moorman and Zaltman (1993) propose that an expectation of trustworthiness results from the ability to perform expertise and reliability. Morgan and Hunt (1994) define trust as "the perception of confidence in the exchange partner's reliability and integrity" (p.23). Both definitions highlight the importance of confidence and reliability in the conception of trust. Some research emphasise trust as confidence in the honesty and integrity of the other party, such as in a salesperson (Crosby et al., 1990). Rather than focusing on trust in individuals, this study examines customers' trust in on-line grocery merchant and on-line medium itself.

Gefen (2000) points out that trust is a significant antecedent of customers' willingness to engage in e-commerce with a given vendor. Gefen (2002) further claims that customer trust is a significant antecedent of on-line purchase activity because it allows the customer to assume, rightly or not, that the on-line vendor's behaviour will be as expected. Gefen et al., (2004) validate four-dimensional scale of trust in the previous research and incorporate "ability", "benevolence", "integrity" and "reliability" into B2C on-line environment to measure trust. Their studies have re-validated these four dimensions of trust in the context of e-service. Other researchers like Schoenbachler and Gordon (2002); Fam et al., (2004) and Yoon (2002) have also conducted research

about trust and relationship building on the Internet. From Schoenbachler and Gordon's (2002), Fam et al's.,(2004) and Yoon's (2002) study trust is reported to include the following four factors: "transactional security", "search functionality", "personal variables" and "web-site properties". Among these factors "transaction security" has been recognised as the most important factor. Press sometimes releases reports of misuse of credit cards; organised crime and fraud on the Internet and have made many consumers more wary of using the Internet. Some customers are afraid of giving their account details on the Internet, because they are not sure how the on-line retailer will deal with their privacy behind the screen. Berry (1995) points out that customer who trusts in certain service provider based on their previous experiences, which reduce uncertainty and vulnerability.

However, Jarvenpaa et al., (2000) find that Internet store size and perceived reputation seem to affect trust differently, depending on the type of the store. The effect of perceived store size on trust might be dependent on what the consumer is considering to buy. For example, comparing on-line bookstore with on-line travel services, the more uncertainty is likely to occur when buying air ticket than books. Buying a ticket might cost hundreds of pounds and there is more uncertainty in the purchase. That is, the more significant/ expensive the on-line transaction and hence more unfavourable the outcome if the merchant does not behave as expected, the more customers' trust might be influenced by the size of the store.

Sultan and Mooraj (2001, p.42) argue that "trust is central to exchange whether the business is off-line or on-line". Harris and Goode (2004) point out that trust is more important in the on-line environment than in conventional off-line context. The high importance of trust on-line appears intensively by the absence of physical contact with on-line firms and the "lack of touch" inherent to on-line exchange. Although in the early literature on on-line trust, customers especially concerned about on-line payment security and potential fraud (Hoffman et al., 1990; Ratnasinghama, 1998), Rafiq and Fulford (2005) find it is not the case for those customers who have transferred from the off-line store to the on-line store with the same retailer in Internet grocery shopping. Rafiq and Fulford (2005) indicate that in Internet grocery shopping customers' trust actually is nurtured from the off-line store and is transferred to an on-

line environment. They suggest that Internet grocery store is benefiting from its off-line market leadership that is partly consistent with Jarvenpaa et al's., (2000) research, although this situation does not apply to those “pure-Internet” grocery stores.

Yoon (2002) points out that when trust comes to on-line circumstances where a consumer is in no physical contact with either product or salesperson, trust is expected to play a pivotal role in affecting the purchase intentions of consumers. This idea is also supported by other authors such as Ravald and Gronroos (1996), who consider that trust develops through experience, and Curran et al., (1998) from whom trust is a state of being that develops over time.

Concerning the consequences of trust, Morgan and Hunt (1994), Larzelere and Huston (1980) view trust as a central construct of any long-term relationship. Therefore, trust is an important contributor to customer commitment that leads to long-term loyalty (Hess, 1995). The next section looks into the effects of customer attitudes on purchase behaviour or intentions. A review about commitment is explained in detail.

3.3.2.2.3 Commitment

Commitment is the most common dependent variable used in buyer-seller relationship studies (Anderson et al., 1987; Moorman et al., 1992; Jackson, 1985 and Dwyer et al., 1987). It is an important variable in discriminating between “stayer” and “leaver” (Mummalaneni, 1994). Commitment is the desire to continue the relationship and to work to ensure its continuance. As Scanzoni (1979) states that commitment is the most advanced phase of partners' interdependence. In marketing practice and research it is agreed that mutual commitment among partners in business relationships produces significant benefits for companies. Although several conceptualisations of attitudinal commitment have been used in the literature, each reflects one of three general themes: affective attachment, perceived costs and obligation (Meyer and Allen, 1987), which are labelled as “affective”, “calculative”, and “normative” commitment, respectively.

Allen and Meyer (1990) define affective commitment as “a person's emotional attachment to, identification with, and involvement in the organisation” (p.2). Thus,

people with strong affective commitment remain with the organisation because they have strong emotional attachment to the organisation. Calculative commitment is sometimes termed as continuance commitment. Martineau (1958) and Hackett et al., (1994) address calculative commitment is based on the person's recognition of the costs associated with leaving the organisation. Finally, normative commitment is based on a sense of obligation to the organisation (Weiner, 1982). In contrast to affective and calculative commitment, normative commitment focuses on the right or moral thing to do (Weiner, 1982). It concentrates on the obligation and / or moral attachment of people produced by the socialisation of people to the organisations' goals and values (Weiner, 1982; Allen and Meyer 1990). Since there is an absence of direct human contact in Internet grocery shopping, relational aspects of the exchange such as sense of obligation over the Internet may have very little effect on consumer behaviours.

As a consequence of the differences in motives, three forms of commitment should have different outcomes. That is, not all types of commitment may be beneficial for organisations (Anderson and Weitz, 1989; Konovsky and Cropanzano, 1991; Meyer et al., 1989). For example, Meyer et al., (1993) illustrate three categories of customers based on different types of commitment (i.e. people with strong affective commitment remain because they feel they want to; those with strong normative commitment remain because they feel they ought to; and those with strong calculative commitment remain because they feel they have to for the economic reason).

Wetzels et al., (1998) conduct a study to identify the antecedents and consequences of commitment in an office equipment service. They find that both affective and calculative commitment influence the intention to stay in the service. However, their results indicate that more affectively committed partners show a stronger intention to stay than customers who feel more calculatively committed. The latter type of commitment is weakly positively related to the intention to stay, since calculative commitment has positive influences on development of alternatives and opportunism (Kumar et al., 1994). Kanter (1968) claims that when calculative commitment has occurred, there must be a profit associated with continued participation and a cost associated with leaving. In calculative commitment there is no indication that relational norms or other pro-social behaviours exist between two parties. In fact,

without a relational bond to tie the partners, they would be willing to terminate the relationship at any time for another alternative when possible.

In contrast, affective commitment has strong positive influences on the intention or desire to stay in a relationship and willingness to invest in a relationship (Kumar et al., 1994). As Dick and Basu (1994) and Oliver (1999) propose that affective commitment provides resistance to counter-persuasion from competitors' offers and long lasting profitable relationship will not exist without affective commitment.

Amine (1998) points out that consistent repeat purchasing could have two main explanations. One is that it may be due to the consumers' tendency to reduce or avoid search efforts since consumers perceive little differentiation among brands in a low involvement category and undertake repeat purchase on inertia. Then there is a high probability of interrupting this consistent buying and switching to another brand when price increases, new brand launches or brand is out of stock. Dick and Basu (1994) describe this behavioural phenomenon as spurious loyalty to the brand, which will not last for long.

The other explanation of repeated purchasing is that consistent behaviour may also result from affective commitment to the products/services enabling the customer to resist changing the brand. Samuelsen and Sandvik (1997) state that affective commitment describes a kind of attitude strength between the customer and particular products/services thus extending the meaning of loyalty over the simple repeat purchasing of products/services.

By applying the results of prior research to the on-line shopping context, Park and Kim (2003) have identified that there is a positive relationship between site commitment and purchasing behaviour. This is further confirmed by De-Wulf et al., (2006) that web site success is a multi-dimensional construct composed of satisfaction, commitment and trust. Satisfaction is found to be instrumental in helping predict user commitment and trust in on-line shopping. Although the available literature has identified that commitment is an essential ingredient for a successful long-term relationship in on-line environment, very little research has demonstrated how cognitive and emotional antecedents may interfere with future loyal or disloyal behaviour in on-line context. That is there is lack of empirical evidence for

introducing the affective and calculative commitment into the on-line marketing literature. Consequently, the questions about the different effect of commitment on on-line relational behavioural outcomes still remain to be answered.

3.3.2.2.4 Perceived relational investment

Perceived relational investment has been identified to affect relationship quality and ultimately have a great impact on relational outcomes (Gruen, 1995; De-Wulf et al., 2001 and Kumar et al., 1995). De-Wulf et al., (2001, p.36) define perceived relational investment as “a consumer’s perception of the extent to which a retailer devotes resources, efforts and attention aimed at maintaining or enhancing relationships with regular customers that do not have outside value and can not be recovered if these relationships are terminated”. Although an investment of time, effort, and irrecoverable resources in a relationship has been recognised to create psychological ties, motivates parties to maintain the relationship and sets an expectation of reciprocation (Blau, 1964 and De-Wulf et al., 2001), very few studies have empirically examined the relationship between perceived relational investment and other dimensions of the relationship quality. Two pioneers De-Wulf et al., (2001) and Kumar et al., (1995) have tested the relationship between perceived relational investment and relationship quality. However, they simply treat relationship quality as a global conceptualisation. The interaction between perceived relational investment and other dimensions of the relationship quality is not clear. Moreover, separately testing perceived relational investment with the interaction of those dimensions of relationship quality would make realistic suggestions for managers to provide tailored service properly.

In Internet grocery shopping, the investment in both monetary (such as competitive prices) and non-monetary reward (like time saving or the feeling of being regarded as a valued customer) would make a great contribution to customer satisfaction and trust (Anckar et al., 2002). According to Jain (2005) customers should always feel they are getting more value in terms of product and service than the value of the money they spend. This happens when the company keeps investing in new processes and other reward schemes to enhance its offerings, customers are highly motivated since they are satisfied with their relationship with the company. Internet grocers today need to

focus on relational investment, because simply improving ordering and fulfilment does not make them competitive.

3.4 Outcomes of relationship quality

This section outlines a set of behavioural factors proposed to cover the domain of outcomes that result from building and sustaining relationship quality with customers. According to the recent literature (Roberts et al., 2003; Gruen 1995; Hennig-Thurau et al., 2002), the quality of the relationship between two parties directly affects behavioural intentions which are posited to lead to positive behavioural outcomes and increase customer lifetime value. Based on Zeithaml et al., (1996), Roberts et al., (2003) illustrate four positive behavioural outcomes such as “continuity of revenue”; “increased spending”; “pay price premium”; and “referred customers”. When customers praise the firm, they express preference for the company over others, increase the volume and frequency of their purchases, or agreeably pay a price premium, they are indicating attitudinally and behaviourally that they are bonding with the company. In addition, Sirohi et al., (1998) have simplified consumers’ favourable behavioural intentions into three measures. They are “willingness to repurchase”, “willingness to purchase more in the future” and “willingness to recommend to others”. Similarly, Gruen (1995) theorises “allocated purchase share” as one of the relational behavioural outcomes. He points out that the portion of an individual consumer’s purchases from the relational partner’s firm represents the positive behavioural performance of the relationship.

Hennig-Thurau et al., (2002) claim that the existing literature about the outcomes of relationship quality is equated with customer loyalty. The connection between loyalty and relational outcomes has been focused on measuring consumers’ behavioural intentions (Roberts et al., 2003; Gruen 1995; Hennig-Thurau et al., 2002; Zeithaml et al., 1996 and Sirohi et al., 1998). According to Zeithaml et al., (1996), behavioural intentions can be viewed as indicators that signal whether customers will remain with or defect from the company. When the relationship quality assessments are high, the customer’s behavioural intentions are favourable, which strengthens his or her relationship with the company. When relationship quality assessments are low, the

customer's behavioural intentions are unfavourable and the relationship is more likely to be weakened. Likewise, measures of customer's behavioural intentions are also widely used in practice to assess customer loyalty (Roberts et al., 2003).

However, Gruen (1995) demonstrate that "propensity to terminate the relationship" is a signal for those customers who have a negative relationship with the company. In a transactional relationship, any dissatisfaction would lead the customers to switch to a readily available alternative. However, good relationship quality between two parties will lower fluctuations in actual termination behaviour than would be experienced through discrete exchange.

In order to investigate the outcomes of relationship quality in Internet grocery shopping on a more concrete level, it is necessary to gain an insight into those possible antecedents of the relationship quality. Most of previous research sees relationship quality as a global measure. It is not clear about the different impact of relationship quality on relational outcomes (customer loyalty) as relationship quality consists of several dimensions. Each dimension plays different role on loyalty formation.

3.5 Summary

This chapter has examined five dimensions of relationship quality (i.e. relationship satisfaction, trust, perceived relational investment, affective and calculative commitment). In addition, the outcome of the relationship quality-customer loyalty has also been elaborated.

Customer loyalty has been considered as an important source of long term business success (Rust and Zahorik, 1993), and building a relationship with the customers is a good way to retain loyal customers in the long-term (Sheaves and Barnes, 1996). There is wide agreement in the relationship marketing literature that the quality of the relationship between the parties involved is an important determinant of the permanence and intensity of the relationship and, therefore, of the success of relationship marketing (Hennig-Thurau, 2000). In this research relationship quality is

defined as “a higher-order construct consisting of a variety of positive relationship outcomes that mirror the overall strength of a relationship and the degree to which it meets the parties’ needs and expectations” (Smith, 1998, p2).

In view of the components/dimensions of relationship quality proposed in past research, this study aims to explore the interactions between the dimensions that make up relationship quality and loyalty in Internet grocery shopping. To date, although relationship quality has been identified as a multi-dimension in relationship marketing literature, little attempts have been made to test the various effects of relationship quality on customer loyalty. Existing research does not tell which part of the relationship quality will have the greatest influences on customer loyalty due to the ignorance of the interactions among other components of relationship quality. Moreover, it is not known whether relationship quality would add any additional influences over the traditional “evaluative components” of service encounters (Shamdasani and Balakrishnan, 2000 p.401) like service quality and customer satisfaction in explaining consumer behaviour intentions. Furthermore, Gefen et al's., (2004); Harris and Goode's (2004); Srinivasan et al's., (2002) and Danaher et al's., (2003) research about on-line loyalty have identified that consumers’ evaluation (e.g. service quality, satisfaction, trust and commitment) for the off-line service attributes are still applicable to explain the consumers’ on-line behaviour. However, their studies have only focused on transactional patterns of exchange and are not from a relational perspective.

Thus, this research intends to fill the research gap by separately testing the interactions between each of the dimensions of the relationship quality, service quality, customer satisfaction and loyalty. It is expected that the results will not only provide e-retailers with the knowledge on the types of value drivers they should focus on, but also may help explain various aspects of loyalty formation and the “mixed effectiveness” of customer loyalty enhancement programs in Internet grocery shopping. The following chapter presents the theoretical framework and hypotheses of the study.

Chapter 4

RESEARCH MODEL AND HYPOTHESES

4.0 Introduction

Based on the literature review in Chapter 2.0 and 3.0, this chapter presents the hypothesised model and the hypotheses developed for the study. It begins with a summary of existing research gaps with respect to where this research adds theoretical contribution to the existing literature, followed by a discussion of the development of the conceptual model and hypotheses. Following this, the explanation of the effects of each hypothesis as well as the rationale for the development of the theoretical framework is elaborated in detail. In addition, an alternative aggregated model of relationship quality is also discussed in order to identify a model, which has the best performance in developing customer loyalty in Internet grocery shopping. Finally, a chapter summary is provided.

4.1 A summary of existing research gaps

Most existing examination of the nature and role of relationship quality in marketing literature have identified the close relationship between relationship quality and customer loyalty (De-Wulf et al., 2001; Roberts et al., 2003; Parsons, 2002; Palmer and Bejou, 1994). However, researchers have generally taken a narrow perspective on relationship quality, defining it as an overall measure. Even in those studies that have employed a multi-component perspective on relationship quality (Crosby et al., 1990; Dorsch et al., 1998), there has been no attempt to examine the existence of the interactive effects of various types of dimensions of relationship quality. The identification of interactive effects between the components of relationship quality

may well go a long way to explaining the mixed feelings of consumers about their relationships with the service provider. It is also recognised that different component of relationship quality in a relationship may have different consequences (Gruen, 1995).

Because the present study specifically focuses on the development of relationship quality on customer loyalty in Internet grocery shopping, the research design is based on the corresponding findings from the extensive literature review and an initial exploratory research (focus groups). There is ample theoretical justification for the proposition that developing relationship quality can enhance customer loyalty in an on-line context because for those customers who have transferred from the off-line store to the on-line store with the same retailer, often employ similar criteria to evaluate both Internet based and non-Internet based services. However, little empirical evidence is available to test these hypotheses. The available research about loyalty in an on-line context has been mainly based on a transactional level. It is not understood whether the interactive effects of the components of relationship quality will assign more weight over the traditional transactional measure such as service quality and customer satisfaction in determining customer loyalty in Internet grocery shopping.

Moreover, it will be interesting to know whether the effects of different components of relationship quality on customer loyalty are of equal magnitude or lead to the same direction. This has important implications for the management of customer relationships because Internet grocery retailers can build multiple-forms of activities based on the roles identified from the components of relationship quality. E-tailers can pay more attention to those dimensions of relationship quality that has strong effect on loyalty and take care of those less important dimensions, which also influence customers' perceptions towards loyalty. In the following sections, the proposed research hypotheses based on a disaggregated point of view about developing relationship quality and customer loyalty are discussed in detail.

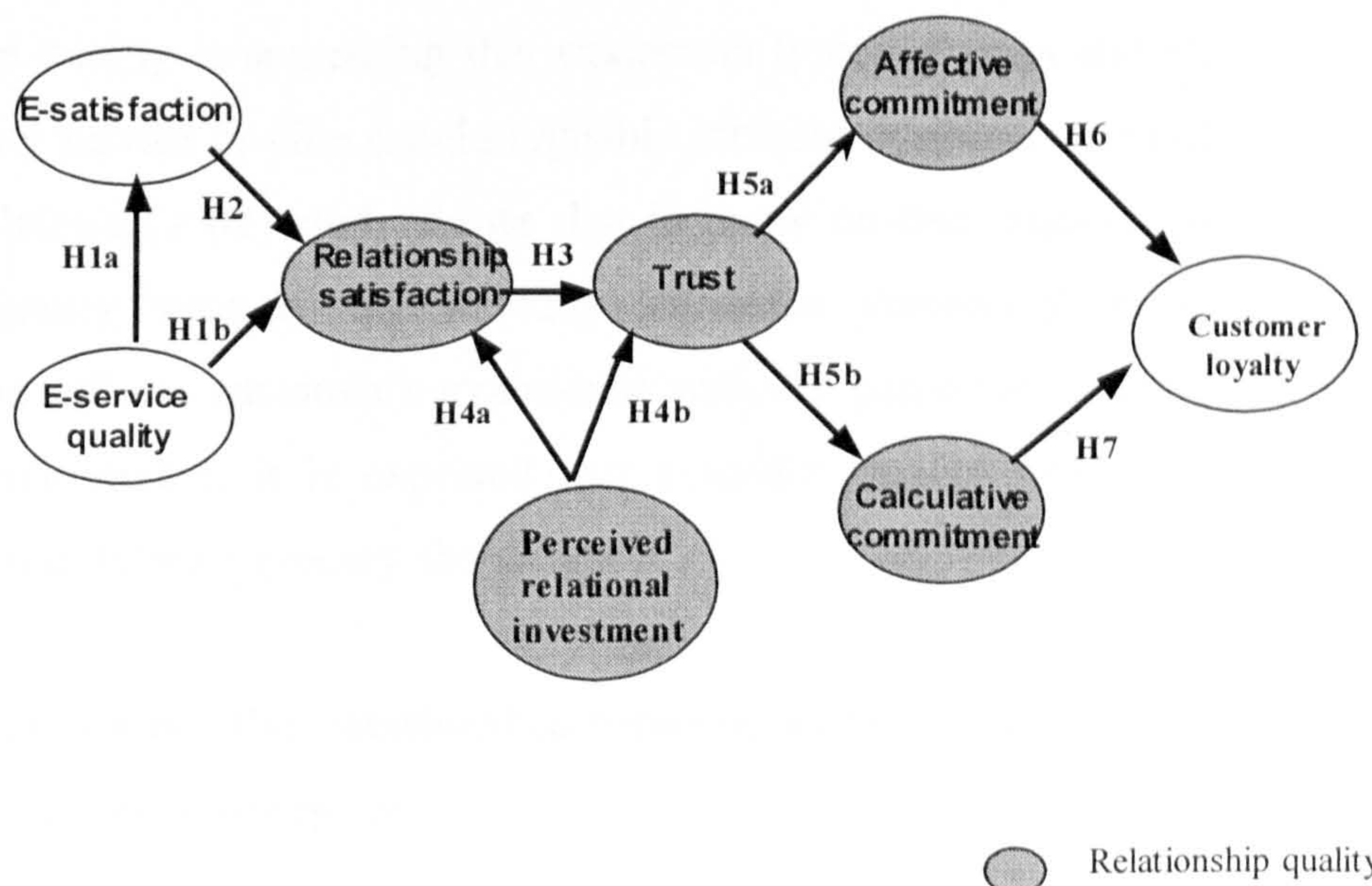
4.2 Model hypotheses

Based on the extensive literature review in conventional retailing (Parsons,2002; Hennig-Thurau et al.2002; Oliver,1999; Woodside et al., 1989; Sharma and Patterson,

2000; Sharland, 1997; Ping,1993; Parasuraman and Grewal 2000; Lee et al.,2001; Dorsch et al., 1998; Cronin et al.,2000; Roberts et al., 2003; Ruyter and Wetzels, 1998) and on-line research (Anderson and Srinivasan 2003; Reichheld and Schefer,2000; Srinivasan et al.,2002; Shankar et al., 2003; Gefen, 2002; Harris and Goode, 2004 and Reichheld and Sasser 1990) as well as initial exploratory research, a conceptual model containing ten hypotheses are developed, that aim to test whether the same phenomena occur in the context of Internet grocery shopping.

Figure 4.1 below depicts the proposed antecedents, mediators and consequences of customer loyalty in Internet grocery shopping from a consumer perspective. E-satisfaction and e-service quality are posited to be the antecedents of relationship quality and loyalty is considered as the critical relational outcome dimension. The key determinants of relationship quality-“relationship satisfaction”, “perceived relational investment”, “trust” and “commitment” have been developed based on existing literature. E-service quality and e-satisfaction have an impact on customer loyalty, which is mediated by the interactions of the dimensions of the relationship quality. Two types of commitment –calculative and affective commitment are posited to lead to customer loyalty.

Figure 4.1: Conceptual Model –Developing Customer Loyalty through E-service Quality, E-satisfaction and Relationship Quality Building in Internet Grocery Shopping in the UK



4.2.1 Antecedents of relationship quality

Service quality and customer satisfaction have been the focus of much marketing theory and practice. Although the relationship between service quality and customer satisfaction has gained increasing attention and stimulated considerable debate during the time, there are well-established research studies supporting the link that customers' satisfaction is the result of specific service transactions, which is based on an overall evaluation from the service quality perceived. The large number of theoretical and empirical studies (Cronin and Taylor, 1992; Parasuraman et al., 1988; Woodside et al., 1989; Bitner et al., 1990; Carman, 1990) regarding this causal link conducted is also a primary evidence for the salience of the link between these two concepts in marketing thought. Especially, the recent attention about this causal link has been directed to the e-tailing environment (Santos, 2003), as customer satisfaction is a central construct in on-line context, which mediates the effect of customers' service quality perceptions on behavioural intentions. Recent research in electronic retailing suggests that traditional measurement models (Woodside et al., 1989; Taylor and Baker, 1994) among service quality, customer satisfaction and loyalty can also be applied to an on-line environment (Keating et al., 2003).

Jun et al., (2004) found a significantly positive relationship between e-service quality and customers' satisfaction. This is in line with La and Kandampully (2002) who argue that customer satisfaction with an Internet shopping experience is closely associated with the perceived quality of the process of using the Web, since the level of satisfaction is an important indicant of a customer's state of mind and customers with different levels of satisfaction may react in different ways (Shemwell et al., 1998). As service quality is something that customers typically want and value, providing high quality service on-line should arguably increase customers' satisfaction with the e-tailer. Gefen's (2002) study shows that in many on-line retailing stores perceived service quality strongly and directly influence customers' satisfaction. Since satisfaction reflects customer's experience with the perceived services quality in an on-line environment, it is expected that e-service quality positively related to e-satisfaction in Internet grocery shopping:

H1a: There is a positive relationship between e-service quality and e-satisfaction in Internet grocery shopping.

4.2.1.1 E-service quality, e-satisfaction and relationship satisfaction

Although service quality and customer satisfaction are the fundamental concepts in marketing research and their pursuit is an important goal for business, these two concepts still focus on discrete exchanges at a transactional level. As the relationship between two parties develops, the customers' perceived service quality and satisfaction are upgraded to an accumulated level, which is the central theme in the work of the so-called "Nordic School" in the field of relationship quality (Gummesson, 1987) and has led to the proposition that repeated service quality and customer satisfaction at a transactional level leads to increased satisfaction at a relational level (Shemwell et al., 1998).

These two types of satisfaction are distinct conceptualisations. Traditional transactional satisfaction implicitly assumes that customer satisfaction is essentially the result of cognitive processes, the satisfaction in a relationship development between two parties emphasises a cumulative experiences. Lin (2003) points out that relationship satisfaction should be viewed as a judgment based on the cumulative experience made with certain product or service rather than a transaction-specific phenomenon. Jones and Suh (2000) claim that customers are likely to comment on global impressions and general experiences, once they have built relationship with the company.

Zeithaml and Bitner (1996) develop a service-perception model and assert that customers' perceptions of a service occur at different levels of analysis-at a transactional level from discrete exchanges and at the level of multiple experiences from relational exchanges. Their work suggests that a natural hierarchy exists when a relationship between two parties continues, customers' perceptions of the service at a transactional level combine to form perceptions of the firm as a whole at a relational level. Boulding et al., (1993) propose that relationship satisfaction is an aggregation of all previous transaction-specific evaluations and is updated after each specific transaction.

Crosby et al., (1990) conduct a study about relationship quality and claim that relationship satisfaction is a summary measure which provides an evaluation of the quality of all past interactions with the service provider and sums transaction-specific

satisfaction with the products or services of the organisation. This is consistent with Shamdasani and Balakrishnan (2000) who argue that service quality and customer satisfaction are the antecedents of relationship satisfaction. Although studies related to relationship quality in an on-line context are very scarce and there is no available research that has examined the relationship among e-service quality, e-satisfaction and relationship satisfaction in Internet grocery shopping, Keating et al., (2003) conducted an on-line study and for the first time empirically tested the relationship among these three concepts and identify that customers' relationship satisfaction is positively influenced by customers' perceived service quality and satisfaction with previous service encounters. Therefore, it can be inferred that offering high quality service and more satisfied experience will make consumers more satisfied with the relationship of Internet grocery retailers.

H1b: E-service quality has a positive effect on relationship satisfaction in Internet grocery shopping.

H2: E-satisfaction has a positive effect on relationship satisfaction in Internet grocery shopping.

4.2.2 Relationship satisfaction and trust

According to Selnes (1998) relationship satisfaction and trust are suggested to be two of the key concepts in relationship quality. Both concepts are similar in the sense that they represent some overall evaluation, feeling, or attitude about the other party in the relationships. Crosby et al., (1990) claim that customers' perceived uncertainty can be reduced as their relationship satisfaction with a firm or service employee improved. As trust is derived by comparing product or service performance from the other party with prior relational satisfactory, it is an aggregate evaluation at some higher level than relationship satisfaction (Selnes, 1998).

The importance of initiating, building and maintaining trust in an ongoing relationship between customers and the e-tailer as key facilitators of successful on-line business is increasingly being recognised in academic as well as in practitioner communities

(Krauter and Kaluscha, 2003; Schoenbachler and Gordon, 2002 and Yoon, 2002). Jarvenpaa et al's., (2000) study about consumer trust in Internet stores particularly emphasise the relationship between relationship satisfaction and trust. That is customers' relationship satisfaction with the on-line retailer exert a direct influence on perceived trust. Such claims reflect the findings of Gefen (2002) that the more satisfied the customers are with the relationship of the on-line vendor, the more they inclined to trust the on-line vendor and shop and repurchase with that same on-line vendor.

Since trust is a cumulative and reciprocal experience, people tend to develop positive attitudes towards those with whom they have some prior association. In a research of Internet grocery shopping, Rafiq and Fulford (2005) find that trust transfers from off-line to on-line grocery store. The reason for some Internet grocery shoppers to choose certain on-line store is because they normally shop with that store off-line and their past relationship with the retailer was satisfactory. Customers believe that the Internet grocery store has both the ability and motivation to reliably deliver goods and services of the quality expected by them. Thus, it is hypothesised that:

H3: Relationship satisfaction has a positive effect on trust in the relationship of Internet grocery shopping.

4.2.3 Perceived relational investment and relationship satisfaction and trust

De Wulf et al., (2001, p.36) define perceived relational investment as “a consumer’s perception of the extent to which a retailer devotes resources, efforts and attention aimed at maintaining or enhancing relationships with regular customers that do not have outside value and cannot be recovered if these relationships are terminated”. Perceived relational investment has been identified to affect relationship quality and ultimately has a great impact on relational outcomes such as loyalty. (Gruen, 1995; Wulf et al., 2001 and Kumar et al., 1995). According to De Wulf and Schroder (2003), behaviour tends to be repeated or curbed, once it is rewarded or punished. Smith and Barclay (1997, p.6) add that, “an investment of time, effort, and irrecoverable resources from the seller could create psychological bonds and encourage customers to stay in that relationship”. De Wulf et al. (2001) claim that

customers tend to be more satisfied with sellers who make efforts toward them. As a result, trust is increased when buyers receive deliberate investment (monetary or non-monetary) from sellers (Ganesan 1994). Thus, retailers invest in the relationship with customers that simultaneously increases customer's relational satisfaction and trust in them (Selnes, 1998). When the customer considers closer integration with the retailer, they may consider whether this will result in the company taking advantage of them by delivering poorer quality or poorer service. Therefore, this leads to the following hypotheses:

H4a: Perceived relational investment has a positive effect on relationship satisfaction in Internet grocery shopping.

H4b: Perceived relational investment has a positive effect on trust in Internet grocery shopping.

4.2.4 Trust and affective and calculative commitment

The details of commitment have already been elaborated in preceding sections (please see Section 3.3.2.3.3). When a customer stays in calculative based relationships, the relationship tends to last only as long as the costs/benefits do (Bendapudi and Berry, 1997). In contrast, affective commitment based relationship is likely to last much longer than that based on calculative commitment. In this case the customer's attachment to something concerned is focused on long-term co-operation and is based on feelings, rather than any rational consideration of the benefits (Moorman and Zaltman 1993).

Trust is highly valued in inter-organisational relationships that enables parties to continue the relationships (Granovetter, 1985; Hellen and Mohamed, 1991). Empirical support for the positive main effect of trust on affective commitment has been provided in marketing channel literature by Anderson and Weitz (1989) and Morgan and Hunt (1994). Although these studies both refer to global commitment, their operationalisations reflect primarily affective commitment. Geyskans and Steenkamp

(1995), Wetzels et al., (1998); Morgan and Hunt (1994); Anderson and Weitz (1989) and Anderson and Narus (1990) claim that trust has a stronger influence on affective commitment than on calculative commitment, because if partners in a relationship trust each other they are more emotionally involved and are less consciously weighing the benefits against the cost of the relationship. Consistent with these studies, Geyskens et al., (1996) further confirm that the higher a firm's trust in its partner, the higher motivation to continue the relationship for affective reasons. In contrast, Rempel et al., (1985) report that high trust parties maintained positive feelings toward their partners by discounting negative elements in ways that confirmed their positive trusting attitudes. When trust is low between two parties, decisions as whether to maintain the relationship are more likely to be based on a calculation of immediate benefits versus costs. Thus, Fullerton (2003) find that there is a negative relation between trust and calculative commitment in the context of a professional association.

Although the empirical research identifying the relationship between trust and affective/calculative commitment in an on-line context is very scarce, La and Kandampully (2002) conduct a pioneering research about the relationship between trust and commitment and find that trust in an on-line retailer provides the conditions necessary for an enduring relationship characterised by customers' affective commitment and lack of confidence in the on-line retailer helps customers to develop a sense of calculative commitment towards the on-line stores based on prices or other attributes. Therefore, it is expected that trust will be positively related to affective commitment and negatively related to calculative commitment in Internet grocery shopping.

H5a: There is a positive relation between trust and affective commitment in Internet grocery shopping.

H5b: There is a negative relation between trust and calculative commitment in Internet grocery shopping.

4.2.5 Affective, calculative commitment and customer loyalty

Customer loyalty is an important manifestation of relationship marketing outcomes, because loyalty signals a motivation to maintain a relationship with the focal firm

(Zeithaml et al., 1996). As indicated by the value-attitude-behaviour theory, it is commonly accepted that attitudes influence behaviour (Homer and Kahle, 1988; Korgaonkar et al., 1985). Affective commitment in marketing relationships has been described as a reflection of loyalty (Gundlach et al., 1995) and it is an important variable in discriminating between “stayer” and “leaver”. Some support can be found in the literature regarding this proposition. Several authors support the notion that affective commitment motivates customers to act (Gruen, 1995; Hennig-Thurau and Klee, 1997). Dick and Basu (1994) state that the stronger the affective commitment is, the more likely customers are to overcome potential obstacles in the relationship, resulting in repeat patronage, or purchase more or recommend to others. Morgan and Hunt (1994) and Price and Arnould (1999) found that customer advocacy is regarded as an important consequence of affective commitment. This is in line with Gremler and Gwinner (2000), who argue that customers who feel affectively committed in their relationships with the service provider can be expected to act as advocates for the service organisation. Advocacy and positive word-of-mouth communications have a lengthy tradition of loyalty research in services marketing. Dick and Basu (1994); Sirohi et al.'s (1998); Zeithaml et al., (1996) and Roberts et al., (2003) suggest that favourable behavioural intentions are associated with a service provider's ability to get its customers to say positive things about them, recommend them to other consumers, remain loyal to them, spend more with the company and pay price premiums. It is recognised that consumer acceptance of price increases is an important reflection of loyalty in the study of services marketing and service relationships (Zeithaml and Bitner, 1996). Morgan and Hunt (1994) find a positive relationship between affective commitment and customer acquiescence. This finding is further extended by Fullerton (2005) in the retailing context and identified that the acceptance of price increases is one area where affectively committed customers could acquiesce to accept the increases from their service provider. Although the relationship between affective commitment and customer loyalty has not been examined in an on-line retailing context, a hypothesis is formulated based on the previous empirical literature:

H6: Affective commitment is positively related to customer loyalty in Internet grocery shopping.

In contrast, calculative commitment is a psychological state that is brought forward by a perceived lack of choice or perceived switching costs (De-Wulf and Schroder, 2003). The organisational behaviour literature has generally identified a weak but positive effect of calculative commitment on loyalty (Allen and Meyer, 1990). Several retailing studies have also identified a positive relationship between calculative commitment and customer loyalty (Fournier et al., 1998; Fullerton, 2003; Grayson and Ambler, 1999). Bansal and Taylor (1999) and Anderson and Weitz (1992) find that there are number of reasons (like lack of choice; ease of switching etc.) for those calculatively committed customers to maintain a relationship. This is further confirmed by Bendapudi and Berry (1997), who argue that when there is a lack of alternatives or the market is less competitive, calculative commitment based customers might continue to make the purchases from the same service provider. Moreover, Fullerton (2003) claims that customers' commitment based on calculative commitment remain loyal to the company, usually actively investigate whether other stores have similar programs and may be quick to defect to a competitor that offers better or even similar products. These findings reflect the fact that customers may be forced to be loyal in a relationship built on calculative commitment but they will look to get out of the relationship when given an opportunity. Thus, it can be expected that:

H7: Calculative commitment is positively related to customer loyalty in Internet grocery shopping.

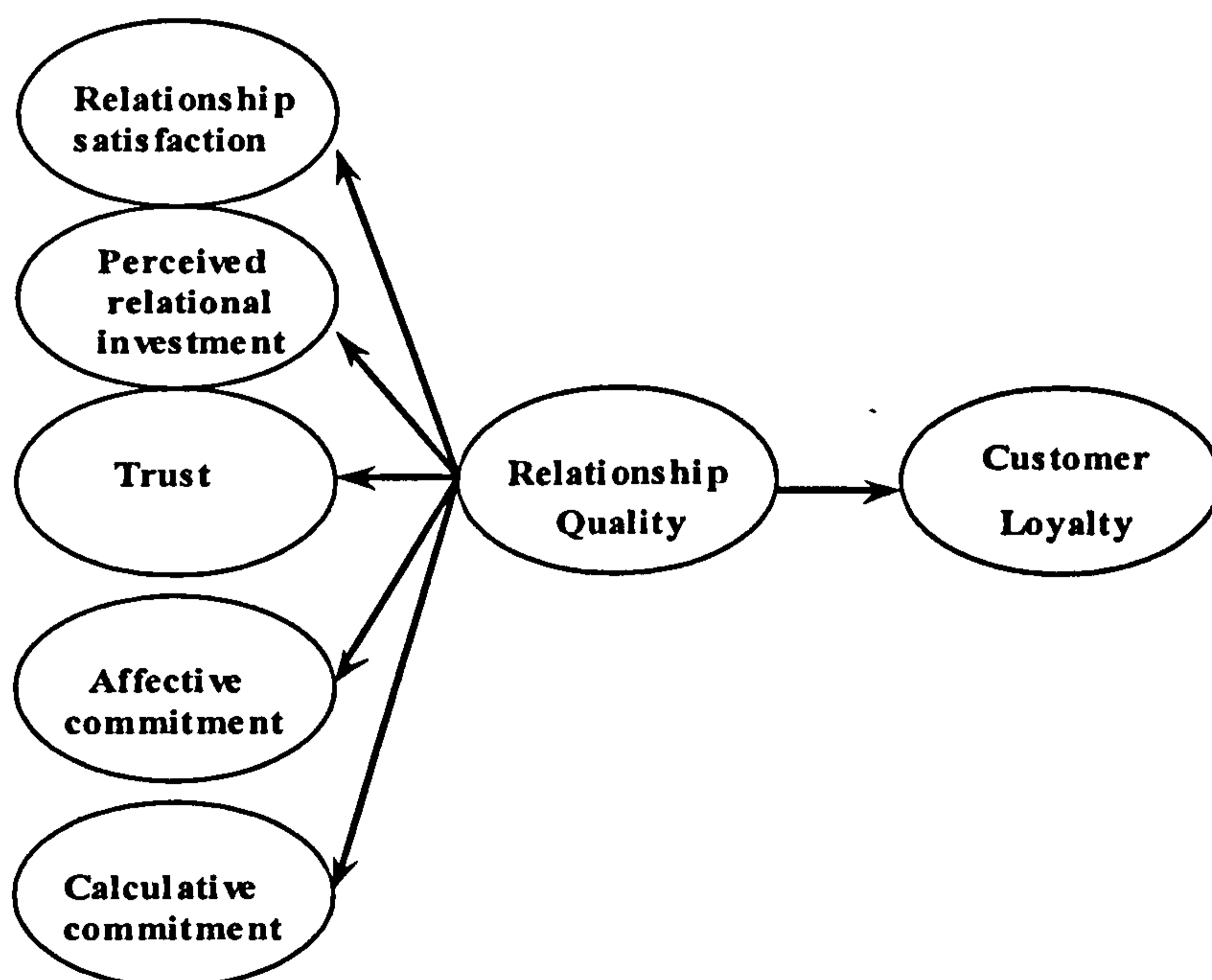
4.3 The aggregated model of relationship quality

In relation to the hypotheses based on a disaggregated model of relationship quality in the previous Section 4.2, it is necessary to discuss the alternative aggregated model of relationship quality, as one of the major aims of present study is to identify the best model of relationship quality for developing customer loyalty. Thus, a comparison between the proposed disaggregated model and the aggregated model can help to determine whether the proposed model is superior in developing loyalty and ensure that there is no other similarly formulated model that can achieve a superior performance. This step is particularly important when assessing the predictive validity and reliability of the proposed model.

According to the literature review on the conventional and on-line retailing in Chapters 2.0 and 3.0, the aggregated model is formulated based on a narrow perspective of relationship quality. In this sense, relationship quality is defined as a global measure containing relationship satisfaction, perceived relational investment, trust, affective and calculative commitment (De-Wulf et al., 2001; Dorsch et al., 1998; Crosby et al., 1990 and Kumar et al., 1995) and there is no attempt to examine the existence of the interactive effects of various dimensions of relationship quality.

De-Wulf et al., (2001) and Kumar et al., 1995) empirically test the relationship between relationship quality and customer loyalty in a retailing context and find that a higher level of relationship quality leads to a higher level of loyalty. This is further confirmed by Wong and Sohal (2006) that relationship quality is positively correlated with customer loyalty. Figure 4.2 outlines the aggregated model of relationship quality and customer loyalty that aims to test whether this model is superior to the disaggregated one of relationship quality and stable for predicting loyalty in Internet grocery shopping.

Figure 4.2: The Alternative Model – Relationship Quality and Customer Loyalty in Internet Grocery Shopping in the UK



4.4 Summary

This chapter starts with a summary of the existing research gaps, and then a conceptual disaggregated model of relationship quality is developed based on the extensive literature review and a primary exploratory study (focus groups). Ten hypotheses are formulated for the development of customer loyalty in Internet grocery shopping through service quality, customer satisfaction and relationship quality building. Since relationship quality is of the particular interest to the current study, an alternative aggregated model of relationship quality is also discussed, that aims to identify a best model for developing customer loyalty in Internet grocery shopping. Both models are subject to be formally tested via a structural equation modelling analysis (please see Chapter 7.0 and 8.0). The following chapter discusses the methodology employed for this research.

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Chapter 5

RESEARCH METHODOLOGY AND ITEM DEVELOPMENT

5.0 Introduction

This chapter describes the methodology used in this study. The first section elaborates the data collection procedures and the strengths and weakness of the chosen methods. In discussing the limitations, several solutions are proposed for overcoming them. Following the research design, details of the development of the questionnaire and the rationale behind the chosen measures are explained. The survey implementation is discussed in the end of the chapter.

The research process involves a decision on the methodology to be selected by the researcher. Runkel and McGrath (1972) observe that it is not possible, in principle, to do an unflawed study. There is no one true method, or correct set of methodological choices, or best strategies that will guarantee the success of a research study.

According to Desphande (1983) two basic research paradigms have dominated the major research studies in marketing and other social sciences: one is the positivist view, also known as the traditionalist, or experimentalist, which is synonymous with the quantitative paradigm; the other is the idealist school of thought, also known as the constructivist, naturalistic, interpretative, post-positivist or post-modern, which is associated with the qualitative paradigm.

Ideally, as Desphande (1983) points out, researchers should understand the advantages and disadvantages of the methods used and their relative strengths and weaknesses so that they can adopt appropriate procedures. In this way, an

appropriate mix of research methods ensures that the weaknesses of one methodology are compensated for by the strengths of the other and vice-versa. Therefore, like all other research studies, the criteria for choosing this research design rests on the aims and the context of the research study (Easterby-Smith et al., 1994).

This study is integrative in nature and uses a multi-method research strategy in the belief that each of the various research strategies employed provides insights from a different perspective (Gill and Johnson, 1991). It is desired that the results of the study be both theoretically and operationally relevant. Thus, both qualitative (focus groups) and quantitative methodologies (on-line survey) are employed. Figure 5.1 is an overview of the research process for this study.

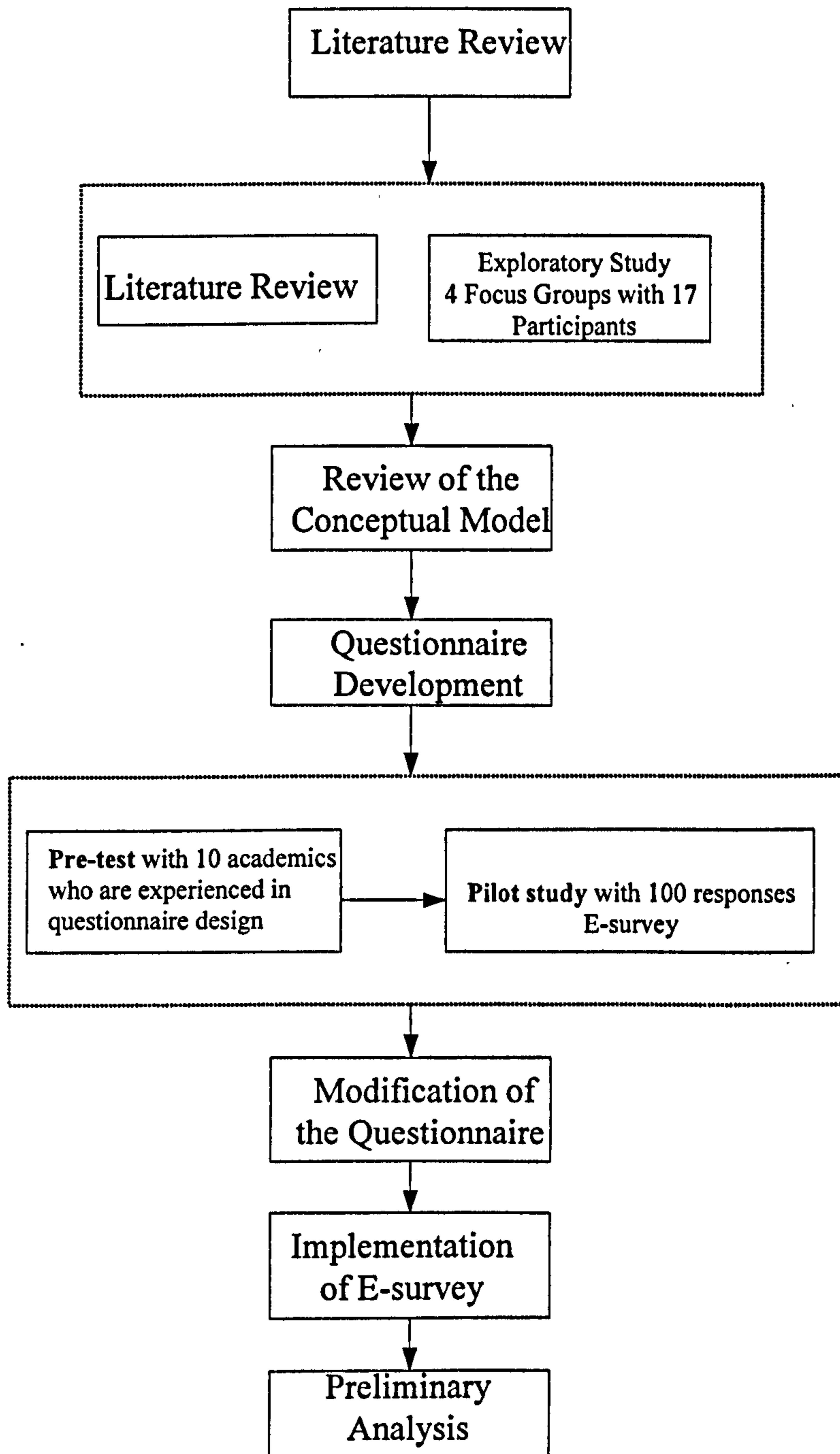
5.1 Research design

5.1.1 Data collection method: strengths and weakness of the chosen methods and solutions to overcome them

Clark et al. (1998) posit that qualitative research such as the focus group method add totally new dimensions to issues under study as it can provide a deeper understanding of the customer-retailer relationship from the customer's perspective (Gwinner et al., 1998). Flick (1998) and Neuman (1997) suggest that focus groups are useful in exploratory research or in generating new ideas for hypotheses.

As the existing literature is not yet rich enough to provide a sound conceptual foundation to Internet grocery shopping, a qualitative exploratory research should be used to seek insights into the general nature of the problem, the possible decision alternatives, and relevant variables that need to be considered (Aaker et al., 2001). Because the focus area of this research is relatively new, there is no empirical research about developing relationship quality in the Internet grocery context. Thus, exploratory research is required to develop an understanding of the detailed determinants of relationship quality in Internet grocery shopping and their impact on consumer loyalty. The approach used here is also consistent with the procedures

Figure 5.1: An Overview of the Research Process



recommended by several researchers (Wolfenbarger and Gilly, 2003; Szymanski and Hise, 2000; Keating et al., 2003; Anderson and Srinivasan, 2003 and Srinivasan et

al., 2002) for developing marketing theory. These authors have also conducted exploratory focus groups to provide input in developing their conceptual models in the areas of e-tailing. Another reason for conducting a qualitative exploratory research is because it is useful for establishing priorities among research questions for learning about the practical problems of carrying out the research and can provide an overall background for the current study through eliciting information from consumer behaviours.

However, one of the most common problems of conducting focus groups are the concerns of generalisability (Buyers and Wilcox, 1991). Buyers and Wilcox (1991) further point out that “a research should not generalise from focus group results to the larger population from which the respondents are a sample, and it is well to remember that the respondents are volunteers who may be more extroverted, outgoing, and sociable than the average individual” (p.67). According to Calder (1977), generalisability problem from focus groups can be solved through follow-up quantitative research.

Thus, following the exploratory study, an on-line survey was chosen as the main distribution method for the survey conducted for this research. A quantitative approach is capable of generating quantifiable data on a large number of people who are representative of a wider population. Furthermore, the results generated by the quantitative method can be analysed in a rigorous and statistical manner. This ensures the validity and reliability of the research.

The on-line survey method was chosen over such other quantitative methods as mail survey, random digit dialling or mall intercept for several reasons. First, an on-line survey is consistent with the context of this study, as this study aims to investigate those customers who have bought groceries on-line. Since, the respondents are quite familiar with websites, they are more likely to complete the on-line survey accurately (Szymanski and Hise, 2000). Second, an on-line approach can be more effective for identifying and reaching on-line shoppers. In comparison with traditional grocery shoppers, Internet grocery shoppers are still relatively few in number and can be quite difficult to access through traditional research methods. Because an on-line survey provides convenient anytime /anywhere access it makes

it easy for people to participate. While the shorter time involved in administering an on-line survey means potential mistakes in interpretation can be reduced. Email follow-ups can then also be used to enhance the response rate, thus helping speed up the response process (Scornavacca et al., 2004 and Simsek, 1999). However, Scornavacca et al., (2004) argue that a critical problem concerning the quality of the on-line survey is the sampling frame. Bradley (1999) further claims that sampling is one of the greatest challenges on the development of on-line survey. In order to minimise any kind of bias that might influence the outcomes of the study, a database of a consumer panel from a marketing research firm was used. The database included more than 5,000 Internet grocery shoppers and the participants were selected randomly rather than using a convenience sample. Although Ranchhod and Zhou (2001) point out that people who prefer to answer on-line surveys are usually those who have a better understanding of the technology and use the Internet extensively as a communication medium, it was thought this situation would not cause any serious sampling bias as the target population are required to be familiar with the web and do their grocery shopping on-line.

5.1.2 Secondary research

The literature discussed in Chapters 2.0 and 3.0 serves as a basis for drawing a comprehensive picture of the existing measurement scale for the study. The purpose of this research is to develop a model of customer loyalty through relationship quality building in Internet grocery shopping and examine the inter-relationships between service quality, customer satisfaction and the dimensions that make up relationship quality by considering loyalty as the critical behavioural outcome.

Although the relationship between service quality, customer satisfaction and loyalty is well established in the previous literature (e.g. Cronin et al., 2000; Taylor and Baker, 1994; McDougall and Levesque, 2000 and Jun et al., 2004), since Internet grocery shopping is a recently emerged business, little academic literature has addressed customer loyalty in an on-line context from a relationship marketing perspective.

The most recent piece of literature about relationship quality in conventional retailing is De-Wulf et al.'s (2001) study. Although this study is not an on-line study, some of their constructs are still relevant to the context of Internet grocery shopping. However, it should be noted that “relationship quality” is a conceptualisation, which helps to find the key drivers that influence the relational outcomes such as customer loyalty. Hence, one of the objectives of this research is to gain an insight into all the dimensions of relationship quality. It helps to understand the inter-relationship among each construct, as not all of them may play equal role in loyalty formation. As De-Wulf et al.'s (2001) study only treats “relationship quality” as a global measure, it is necessary to look at other studies, which measure “relationship quality” as a multi-construct.

Roberts et al's., (2003), Gruen's (1995), Crosby et al's., (1990) and Garbarino and Johnson's (1999) studies are consulted for developing the conceptual research model, since their research applied relationship quality in a B2C context, which is particular relevant to the current study. As for the measurements of relationship quality, apart from the literature discussed in Chapter 3.0, recent relationship marketing books (e.g. Hennig-Thurau, 2000; Sheth and Parvatiyar, 2000) also provide a basic review of the development and present state of research into relationship quality. In addition, census reports from the National Statistical Office are essential for the sampling design of this investigation. The information about customer demographic features from those reports is important in ensuring a well-balanced sample. The applicability of the measures has been first examined through an exploratory study to determine the suitability of the items in the context of Internet grocery shopping.

5.1.3 Exploratory research

Due to the dearth of studies of on-line loyalty in the grocery industry, an understanding of the background behind customers' thoughts and experiences about Internet grocery shopping is used to gain an insight into characteristics of Internet grocery store loyalty. An exploratory methodology-focus group was decided upon in order to uncover customers' behaviours and attitudes in Internet grocery shopping.

Four focus groups were conducted by interviewing research and administration staff from both Bristol and Loughborough Universities and the friends they recommended. According to Rafiq and Fulford (2005) on-line shoppers have a relatively high income. Moreover, on-line shoppers tend to be very well educated (Teller et al., 2006; Geuens et al., 2003). These findings do seem relevant to some professional occupations, such as university research staff. Initially, twenty people were recruited to participate in the research. However, three people did not turn up at the required time. Five people attended the first focus group and the second; the third and the fourth group consisted of four people, respectively. Each focus group lasted about 40 minutes. All the participants were frequent Internet grocery shoppers and able to access a broadband Internet connection either at home or work.

Of the seventeen respondents nine are female and eight are male. A total of five (29%) are aged between 18 and 30; eight (47%) between 31 and 45; four (24%) between 46 and 55. 58% of the sample is research staff and 18% is administration staff. The rest of the sample-24% comes from outside of the university. Although six retailers namely Tesco, Sainsbury, Ocado, Asda, Waitrose and Food Ferry currently offer Internet grocery shopping in the UK, the respondents in the focus groups were mainly Tesco.com and Sainsbury's users. This is due to the strong market leadership of these two stores and their nationwide delivery coverage.

Standardised interview guides were followed in conducting the four sessions. The questions asked during the interview were mainly open-ended and designed to elicit customers' real experiences. The transcripts from each focus group were analysed. Seven themes pertinent the process of relationship quality development between the Internet retailer and the customer during loyalty formation were generated, which matched the earlier theoretical findings.

To identify factors that influence the perceived service quality, participants were asked about favourable and unfavourable factors they had perceived while Internet grocery shopping. "Convenience", "friendly customer services", "personalisation", "website design" and "safety of the on-line transaction" are the predominant themes for favourable factors and "punctuality", and "substitutions" tend to be unfavourable factors affecting customers' service quality. After identifying these factors

respondents were required to give general evaluation of the service quality in Internet grocery shopping. They were asked to demonstrate whether their satisfactory/unsatisfactory experiences could lead to a higher level of attitudinal aggregation such as trust and commitment in Internet grocery shopping. Finally, respondents were asked if they would define themselves as loyal customers. The rationale behind customer loyalty was also explored.

In general, service quality was mentioned most frequently during the group discussions. The dimensions of service quality discussed in the groups tend to support to Parasuraman et al.'s (2005) finding about on-line service quality such as the fulfilment of the order, technical functioning of the website, the degree of security and the efficiency of the website. The results of the focus groups also reveal that e-service quality contributes to participants' satisfaction with Internet grocery shopping. Although the participants described several problems with Internet grocery shopping, they were still satisfied or felt that service was acceptable due to multiple previous satisfactory encounters. This is because assessment of overall relationship satisfaction along with the gradually improving on-line service quality can be updated after each transaction. This result is consistent with Roberts et al. (2003) and Palmer and Bejou (1994), who argue that the customer's overall relationship satisfaction is not only an aggregation of all previous transaction-specific evaluation of the service quality, but also is a function of all previous transaction-specific satisfaction. Further, participants claimed that they had no doubt about their chosen retailers' "reliability", "responsibility" and "honesty", because their confidence in the on-line retailers had already been gained from the past satisfactory performance.

Some participants mentioned that they like the coupons and regular discount provided by the retailers. They feel quite good when they receive coupons or vouchers and get other information about the products through emails. Although it was quite easy to find out about the participants' feeling and concern about costs (calculative commitment), none of them agreed that they had an attachment and identification to their retailer (affective commitment). On the contrary, respondents repeatedly said that they like the overall store and the products it provided. That is the reason why they chose the similar retailer for their existing on-line store. When

participants were asked whether they would like to switch to another Internet grocery retailer, if they are not satisfied with the service, their answers were negative. Participants either say it would be time consuming to build a new shopping list on the new retailer's website or they are lazy and cannot be bothered to switch. Some participants even said they had been using their retailer for years and could not find a reason to switch.

In essence, the results confirmed that customer loyalty in Internet grocery shopping consists of both psychological elements (affective commitment) as well as behaviour patterns (repeat purchases). It should be noted that, the findings of this exploratory research reveals the relationship between the customer and the on-line retailer has already been established in an off-line context before the customer decides to shop on-line. Moreover, commitment and trust appeared to be the two central constructs in the development of relationship quality that have also been nurtured in an off-line environment. This motivates customers' loyal behaviours such as "to repurchase", "purchase more" or "to recommend to others" in the on-line store. The switching from the off-line store to the same on-line store indicates the customers' perception about brand consistency.

5.1.4 Sampling plan

5.1.4.1 Sampling population and sampling frame

Data for this study was gathered using a self-administrated questionnaire that was distributed to individual respondents by the use of an Internet panel administered by a market research firm. For this study the target population consists of customers who have bought groceries on-line and are over 18 years of age. However, Hansen (2000) claims that the contact sample of an on-line survey can possibly influence the outcomes of a study. For example, one could argue that consumers participating in an on-line panel may be more involved in using the Internet as compared to non-panel consumers. To reduce problems related to the type of contacting sample, this study employed the following procedures: (1) The panel had to have at least 5,000 consumers representatives of those who access Internet grocery shopping; and (2)

the respondents were selected via automated random selection; (3) screening questions were designed to make sure the chosen respondents are qualified for the study purpose and to screen out those who were over-represented in the on-line panel (for example, students are sometimes over-represented on-line). It is thought that these procedures would help to reduce the chance of sampling bias.

5.1.4.2 Sample size

The sample size determination for this research is based on structural equation modelling (SEM) technique, which is employed for the statistical analysis at a later stage. Sample size, as in any other statistical method, provides a basis for the estimation of sampling error. The critical question in technique of SEM involves how large a sample is needed since it is generally understood among statisticians that SEM requires a large sample size. Kline (1998) offers rough guidelines towards the optimal SEM sample size saying that with less than 100 cases, almost any type of SEM analysis may be untenable unless only a very simple model is evaluated. Between 100 and 200 subjects- a “medium” sample size-is a better minimum, but again this not an absolute because things like model complexity must also be considered. Sample sizes that exceed 200 cases could be considered “large”. Hair et al., (1998) point out that the minimum ratio between sample size and the respondents is at least five respondents for each estimated parameter, with a ratio of 10 respondents per parameter considered most appropriate. Hu et al., (1992) find that when the normality assumption is reasonable, both the ML and the Scaled ML (estimation of parameters in SEM) perform well with sample size over 500. Considering the model complexity of this study and the rough guidelines from previous research, an estimation of 500 responses was felt necessary to meet the requirements for SEM analysis. In the end, a total of 519 responses were received within a week of which 485 were usable.

5.1.4.3 Sampling method

Sampling methods can be classified as probability and non-probability sampling (Malhotra, 1996, Churchill, 1995, Parasuraman, 1991). Probability samples are selected in such way that every element of the population has a known, nonzero

likelihood of selection. That is there is no bias in the choice. Each element, each household, in the sampling frame has an equal chance of being chosen. However, non-probability samples are those in which specific elements from the population have been selected in a non-random manner. Non-randomness results mean population elements are selected on the basis of convenience because they are easy or inexpensive to reach. In this study the respondents are selected by the panel using a random selection from the database.

A random sample is selected for this research, in which each Internet grocery shopper in the database from the panel had an equal probability of being selected. It is thought that a random sample would be more representative of the Internet grocery population and thus provides a better ability to generalise to the population than non-probability sampling.

5.2 Questionnaire design

This section discusses the methods used in generating the measurement items. Following the exploratory study, a questionnaire with multiple item seven-point Likert scales (1=strongly disagree; 7=strongly agree) was developed for all the theoretical constructs used in the conceptual model. The Likert scale avoids the problem of development pairs of dichotomous adjectives. The scale consists of a series of statements expressing either a favourable or an unfavourable attitude toward the concept under study. The respondent is asked to indicate the level of her or his agreement or disagreement with each statement by assigning it a numerical score. The scores are then totalled to measure the respondent's attitude.

It should be noted here that the Likert scale used in this study is characterised by seven response options. Traditional guidelines suggest that the appropriate number of categories should be seven plus or minus two (i.e. between five and nine) (Malhotra, 1996; Parasuraman, 1991). However, the reason for using 7-point Likert scales for this research is twofold. One is because respondents can finely discriminate each response category in a larger number of scale points (Malhotra, 1996; Parasuraman, 1991). The common problem of using Likert scale questions

especially those with few number of scale points is that respondents are very likely to choose the middle point like “don’t know” or “not applicable” without thinking their answer through. According to Nunnally (1978) and DeVellis (1991) larger number of scale points leads to larger variances, resulting in increased reliability.

The other reason is because more categories are required (e.g. seven or more categories) when the data is analysed with sophisticated statistical techniques (Malhotra, 1996). Since SEM is the data analysis method for this study, the number of scale categories may influence the size of correlation coefficient, which is the common measure of the relationship between variables. The correlation coefficient decreases with a reduction in the number of scale categories. Thus, all the Likert-scale questions in the survey are 7-point scales, regardless of their original scale category from previous authors.

In developing the measurement scales the relevant previous literature and studies were reviewed. Most of the measurements for the constructs in the conceptual model are readily available in the literature, although some are adapted to suit an on-line retail environment.

The data was collected using a structured questionnaire with questions in a prearranged order. The survey contains the measures, accompanied by a cover letter. The cover letter explained the purpose of the study, assured participants of the confidentiality of the data, and thanked them for participating. For the two initial questions, shoppers were asked to indicate their main and secondary Internet grocery store and how long they had shopped with their main Internet grocery store. This procedure helped to screen out unsuitable respondents, since this study is interested in regular and frequent Internet shoppers. This on-line survey is divided into four parts. Part one asks about customers’ experiences in Internet grocery shopping. The questions are mainly focused on the service quality they have received when they buy groceries on-line and the customers are also required to rate their shopping experience and their level of trust in the grocery retailer. Part two measures customers’ relationship with the retailer. Questions in this section aims to measure customers’ commitment and their perceived investment from the retailer. Part three aimed to explore customer loyalty and required customers to give their

opinions about the Internet grocery store they have chosen. Lastly, part four is about customers' demographic information and their general shopping habits.

5.3 Construct measures

The conceptual model of this research consists of eight constructs (Please see Chapter 4.0-Fig. 4.1). These are "e-satisfaction"; "e-service quality"; "relationship satisfaction"; "trust"; "affective commitment"; "calculative commitment"; "perceived relational investment" and "customer loyalty".

Construct 1: E-service quality is conceptualised by Parasuraman et al's, (2005) four dimensions (22-item). It comprises 4 categories: "efficiency"; "system availability"; "fulfilment"; "privacy". The scale ranges from 1=strongly disagree to 7=strongly agree.

Construct 2: E-satisfaction is adapted from Jones and Suh's (2000) measure. E-satisfaction is measured using three semantic differential items commonly used to measure customer satisfaction: the degree to which the consumer is satisfied/dissatisfied (e.g., Oliver, 1980 and Zeithaml et al., 1996) and feels pleased/displeased (e.g., Spreng et al., 1996) and favourable/unfavourable toward the Internet grocery retailer. These items are measured using a seven-point scale. The scale ranges from 1= Strongly disagree to 7=Strongly agree.

Construct 3: Relationship satisfaction is adapted from Jones and Suh's (2000), who point out that rather than developing new items for measuring relationship satisfaction, both transaction-specific and relationship satisfaction can use the same established scale, changing only the directions to respondents. This strategy has been successfully applied to the measures of relationship satisfaction (Crosby and Stephens, 1987 and Hunt and Morgan, 1994). Thus, relationship satisfaction in this study is measured by using the same items as those measures of e-satisfaction.

Construct 4: Trust is borrowed from Anderson and Srinivasan's (2003) measure, which contains 4 items. The original 5-point Likert scale is modified to a 7-point

Likert scale for this study (see explanation in Section 5.2). The scale ranges from 1= Strongly disagree to 7=Strongly agree.

Construct 5: Affective and calculative commitment are adapted from Allen and Meyer's (1990) and Fullerton's (2005) measure. By consulting these two studies, Fullerton's (2005) 6 items on a 9-point Likert scale measures has been changed to a 7-point scale for this study. The scale ranges from 1= Strongly disagree to 7=Strongly agree.

Construct 6: Perceived relational investment replicates De-Wulf et al.,'s (2001) three items on a 7-point Likert scale measures. The scale ranges from 1= Strongly disagree to 7=Strongly agree.

Construct 7: Loyalty is adapted from Zeithaml et al.'s., (1996) study (i.e. a 5-item behavioural intention measure is accompanied by a 7-point Likert scale-from 1=not all likely to 7=extremely likely).

Details regarding the selection of the construct measures and further justification for using the proposed scales are elaborated in the following section. The two subsequent sections (Section 5.3.2 and 5.3.3) provide a discussion of the pilot study and the formal survey implementation.

5.3.1 Items for measuring e-service quality

The measure of e-service quality in this study has adopted the scale E-S-QUAL (please see **Table 5.1**) developed by Parasuraman et al., (2005), which is based on items from the e-service quality scale in Zeithaml et al., (2000). Zeithaml et al., (2000) developed a framework for consumer evaluation of e-service quality gleaned from focus group research with customers who shop on the Internet. They compare these findings on e-service quality with what is known about traditional service quality and identify 11 dimensions for e-service quality: “access”, “ease of navigation”, “efficiency”, “flexibility”, “reliability”, “personalisation”,

“security/privacy”, “responsiveness”, “assurance/trust”, “site aesthetics”, and “price knowledge”.

Further, Parasuraman et al., (2005) incorporate Zeithaml et al's, (2000) exploratory research into two questionnaire versions with different scale anchors and formats, and then evaluate the alternative versions in two focus group interviews. After simplification of the directions, elimination of some confusing items and choosing a Likert-type scale format for collecting responses, the revised questionnaire has 113 items with 5-point scales ranging from 1 (strongly disagree) to 5 (strongly agree).

However, it should be noted that Parasuraman et al., (2005) have found lot of items in their questionnaire related to service recovery (such as product returns, problems, compensation for problems, ways to reach the company for information or to deal with problems). Since recovery is an important aspect of service quality, Parasuraman et al., (2005) re-test these items for separate analysis to develop an e-recovery service scale (E-RecS-QUAL). A further analysis of the remaining items to develop an e-core service quality scale (E-S-QUAL) is also conducted. This process results in the final E-S-QUAL Scale, consisting of 22 items in four dimensions, which are labelled and defined as: “efficiency”, “fulfilment”, “system availability” and “privacy”. In addition, E-RecS-QUAL consists of 11 items in three dimensions: “responsiveness”, “compensation”, “contact”. This research only incorporates E-S-QUAL scales into the analysis, as this study is more interested in the ongoing relationship between experienced customers and the e-tailer and in customers’ purchase behaviour and their perceptions towards the e-core service quality.

The only recent literature about measuring e-service quality in the Internet grocery industry is Parasuraman et al., (2005), that selects two on-line stores-amazon.com and walmart.com-to verify the E-S-QUAL and E-RecS-QUAL scales. It is thought that the dissimilarities across the sites provided a more robust context for testing the refined scales than a single site or two similar sites would have. As a result the coefficient alpha values for all the measures in both samples exceed the minimum standard of 0.7 (Nunnally and Bernstein, 1994), suggesting that the measures are reliable. The four dimensions of E-S-QUAL have consistently strong and positive

correlations with perceived value (0.52 to 0.72 for amazon.com and 0.48 to 0.73 for walmart.com) and loyalty intentions (0.48 to 0.65 for amzon.com and 0.48 to 0.69 for walmart.com). These results attest the predictive validity.

Another similar research to Parasuraman et al., (2005) is Wolfinbarger and Gilly's (2003) general e-tailing study-wherein their 14 eTail scale items are grouped into four dimensions labelled as "Web site design", "fulfilment/reliability", "security/privacy", and "customer service". Wolfinbarger and Gilly's (2003) and Parasuraman et al's., (2005) studies have some conceptual and content overlap. For instance, eTailQ's "Web site design" and "reliability/fulfilment" are similar to E-S-QUAL'S "efficiency" and "fulfilment dimensions". However, another two factors "privacy" and "customer services" did play a different role in Wolfinbarger and Gilly's (2003) and Parasuraman et al's., (2005). In Wolfinbarger and Gilly's (2003) study, it is found that customers do not need "customer service" in each transaction and "privacy" appears only to be important when shoppers are new to the website. In contrast, these two factors are important in Parasuraman et al's., (2005) study. Parasuraman et al., (2005) point out that these two factors play a significant role in customers' higher-order evaluations of the e-service quality apart from "efficiency" and "fulfilment".

Past studies about e-service quality (Cai and Jun, 2003; Jun et al., 2004; Lee and Lin, 2005 and Janda et al., 2002 etc.) have also used some similar measures as Parasuraman et al., (2005). For instance, "reliability", "website design" and "responsiveness" seem to appear in all the e-service quality studies, although individual differences in variables do exist due to the nature of specific industry investigated.

In reviewing the past research about e-service quality, it is found that studies into on-line shopping service quality are relatively new. Some recent e-service quality research is exploratory in its conceptual development such as (Cox and Dale, 2001; Zeithaml et al., 2002) while others have picked out the measures of e-service quality (like SERVQUAL) from studies of the physical environment (Jun and Cai, 2001; Lee and Lin, 2005 and Janda et al., 2002 etc). The two most recent studies by Parasuraman et al., (2005) and Wolfinbarger and Gilly (2003) have empirically

tested e-service quality in an on-line context through both qualitative and quantitative research methods. However, Wolfinbarger and Gilly's (2003) study is about general on-line shopping, which focuses on all customers who have experiences in buying products or information on-line. In comparison, Parasuraman et al's., (2005) study specifically focuses on measuring e-service quality research conducted in Internet grocery shopping. Thus, Parasuraman et al's., (2005) study is a starting point and serves as the e-service quality domain from which this research draws items for the e-service quality scales. Although Parasuraman et al's., (2005) study was done very recently, given the focus of this research is on consumer perception and experience about Internet grocery shopping, an important consideration in the development of e-service quality measure in this study is to adopt existing scales and experimental procedures from similar context whenever possible.

In addition, it should be noted here that an additional item “my Internet grocery store regularly substitutes items” is added together with Parasuraman et al's., (2005) E-S-QUAL scales into the survey. This is based on the focus group discussion, where substitution was rated an important attribute of service quality in Internet grocery shopping. It often causes problems, which leads to customer dissatisfaction. Hence, although this item was not included in Parasuraman et al's., (2005) study, it is thought necessary to add it to the questionnaire for further analysis.

5.3.2 Items for measuring e-satisfaction

The measurement of customer satisfaction has received lot of attention during the past three decades. In the literature, three Likert-scale items to measure the degree to which the customer attitude is satisfied/dissatisfied, pleased/displeased, and favourable/unfavourable (Jones and Suh, 2000). These are the most common methods of measuring satisfaction (please see **Table 5.2**). Three satisfaction questions are usually asked on Likert-scales labelled as “very satisfied to very dissatisfied”; “very pleased to very displeased; “favourable to unfavourable”. These measures have been used in number of studies such as (Crosby and Stephens, 1987;

Oliver and Swan, 1989; Zeithaml et al., 1996; Spreng et al., 1996 *etc*). Yi (1990) suggests that as an overall satisfaction measure this one is “reasonably valid”.

Table 5.1: E-service quality items from Parasuraman et al, (2005)

ITEMS	
Efficiency	<ol style="list-style-type: none"> 1 The Website of my Internet grocery store makes it easy to find what I need. 2 It makes it easy to get anywhere on the Website of my Internet grocery store. 3 The website of my Internet grocery store enables me to complete a transaction quickly. 4 Information at the websit of my Internet gorcery store is well organised. 5 The website of my Internet grocery store loads its pages fast. 6 The website of my Internet grocery store is simple to use. 7 The webiste of my Internet grocey store enables me to get on to it quickly. 8 The website of my Internet grocery store is well organised.
System availability	<ol style="list-style-type: none"> 1 The website of my Internet grocery store is always available for business. 2 The website of my Internet grocery store launches and runs right away. 3 The website of my Internet grocery store does not crash. 4 Pages at the website of my Internet grocery store do not freeze after I enter my order information.
Fulfilment	<ol style="list-style-type: none"> 1 My Internet grocery store delivers orders when promised. 2 The website of my Internet grocery store makes items available for delivery within a suitable time frame. 3 My Internet grocery store quickly delivers what I order. 4 My Internet grocery store sends out the items ordered. 5 My Internet grocery store has in stock the items the company claims to have. 6 My Internet grocery store is truthful about its offering. 7 My Internet grocery store makes accurate promises about delivery of products.
Privacy	<ol style="list-style-type: none"> 1 My Internet grocery store protects information about my Web-shopping behaviour. 2 My Internet grocery store does not share my personal information with other websites. 3 The website of my Internet grocery store protects information about my credit card.
Additional question was developed based on the exploratory research:	
My Internet grocery store regularly substitutes items.	

Source: Parasuraman et al., (2005 p.230-231). The additional question was included into the questionnaire together with 22 items of Parasuraman et al, (2005).

Although relatively little research has examined satisfaction in an on-line environment, rather than developing new items for the study of e-tailing, researchers tend to use the same established satisfaction scale, changing only the number of items. This strategy has been successfully applied to Szymanski and Hise's (2000) study. Szymanski and Hise (2000) investigate customer satisfaction with overall e-tailing by adapting two semantic differential items (satisfied/dissatisfied and pleased/displeased) to capture on-line convenience, merchandising, site design and the financial security of on-line transactions. Thus, this research decided to adopt

Jones and Suh's (2000) three semantic differential items due to the frequent use in academic practice.

Table 5.2: E-satisfaction items from Jones and Suh, (2000)

<p>Overall, how do you feel about your Internet-shopping experience?</p> <p>1. Very dissatisfied (=1) to very satisfied (=7)</p> <p>2. Very displeased (=1) to very pleased (=7)</p> <p>3. Very unfavourable (=1) to very favourable (=7)</p>

Source: Jones and Suh, (2000, p.151).

5.3.3 Items for measuring relationship satisfaction

The differences between e-satisfaction and relationship satisfaction have already elaborated upon Chapter 2.0 and 3.0. Rather than developing new items for relationship satisfaction, it was decided to use the same three Likert-scale items of e-satisfaction (mentioned in Section 5.3.2) to measure relationship satisfaction (please see Table 5.3). This time these three Likert-scale items measure the degree to which the customer is satisfied/dissatisfied, pleased/displeased, and feels favourable /unfavourable toward relationship they have had with their Internet grocery store.

This method is used because the reliability and validity of relationship satisfaction has already been established in previous research (Crosby and Cowles, 1986; Crosby and Stephens, 1987 and Crosby et al., 1990). Relationship satisfaction is measured using three semantic differential items commonly used to measure customer satisfaction. The items include satisfied/dissatisfied, pleased/displeased, and favourable/unfavourable, and are measured using a seven-point scale. The directions for the relationship satisfaction scale instruct respondents to evaluate their *relationship* they have had with their Internet grocery store. By contrast, the directions for e-satisfaction scale instruct respondents to evaluate their *experience* they have had with their Internet grocery store. Previous research suggests that relationship satisfaction and customer satisfaction are distinct conceptualisations

and consumers may view these two types of satisfaction differently and provide quite different responses when asked about both types of satisfaction (Jones and Suh, 2000).

Table 5.3: Relationship satisfaction items from Jones and Suh, (2000)

Please rate your relationship with your Internet grocery store?

1. Very dissatisfied (=1) to very satisfied (=7)
2. Very displeased (=1) to very pleased (=7)
3. Very unfavourable (=1) to very favourable (=7)

Source: Jones and Suh, (2000, p.151).

5.3.4 Items for measuring trust

Regarding the level of trust in the Internet grocery retailer, the complication of items appropriate to measure it has been guided by a review of interpersonal relationship research in social psychology and recent e-tailing literature in marketing.

The brand trust conceptualisation used by Hess (1995) is based on the premise that a brand is trusted by the consumer to the degree that the brand is perceived as being altruistic, reliable, honest, and competent, and that the consumer knows what to expect from a brand. Of these aspects, the brand trust scale assesses brand honesty, altruism, and reliability. Hess' (1995) brand trust scale comprises 11 items over three dimensions. These trust scales were later transferred and adapted by recent e-tailing research (Harris and Goode 2004) to gauge the extent to which customers had confidence and faith in the integrity of two websites (i.e. Books.com and Flights.com).

Doney and Canon (1997) conducted a study to identify the variables, which influence the development of supplier firm and salesperson's trust. Although trust in the supplier firm and trust in the salesperson can be seen as two targets of trust, Doney and Canon (1997) treat these two types of trust as uni-dimensional construct.

In both cases, the final measures of trust include items that tap the credibility and benevolence aspects of trust, along with some global measures of trust. This study is later adopted by Jarvenpaa et al., (2000), who assesses consumers' trust towards the Internet store. Jarvenpaa et al's., (2000) result shows that the perceived store size and perceived reputation seem to affect trust greatly depending on the type of the Internet store. The effect of perceived store size on trust might be dependent on what the consumer is considering buying. In a similar vein to Harris and Goode (2004), Jarvenpaa et al's., (2000) study also focuses on the holiday and book/gift websites which are quite different from buying groceries on-line. When customers are going to buy relatively expensive products like air tickets or some gift products, perceived store size and perceived reputation of the Internet store may have an impact on their trust. Although some customers have only experienced using Internet only grocery store, the majority of the customers in this study have transferred from the off-line to on-line grocery store with the same retailer, so according to Rafiq and Fulford (2005), a part of their trust has already been built in the off-line environment. In addition, customers' perceptions of the sellers' sites vary from those that sell imperishable products on-line. Thus, it is felt that neither of the scales from Harris and Goode (2004) and Jarvenpaa et al's., (2000) suits the contexts of this research.

Another well known trust scale has been developed by Morgan and Hunt (1994) based on the dyadic trust scale of Larzelere and Huston (1980) (i.e. reliability, integrity and confidence). A dyadic trust scale was originally shown to be associated with love and intimacy of self-disclosure, especially for longer married partners. Morgan and Hunt (1994) adapt a dyadic trust scale for relationship marketing to measure interpersonal relationships between organisations, which is widely used in the marketing literature. Anderson and Srinivansan (2003) further revise the dyadic trust scale and incorporate it into an electronic commerce study. Anderson and Srinivansan (2003) conducted an e-survey by a random sample of 5000 consumers drawn from a large list of e-tailing customers maintained by an on-line marketing research firm to identify the impact of satisfaction on loyalty in the context of electronic commerce. The original dyadic trust scale consists of eight items, which are reduced to 4 items to suit the context of e-tailing (Anderson and Srinivasan, 2003). The Cronbach's alpha coefficient for these four items is 0.95,

indicating strong reliability. It also can be accepted as sufficient for examining previously validated scales (Tabachnick and Fidell, 1996). The finding indicates that e-satisfaction has an impact on e-loyalty. This relationship is moderated by consumers' individual level factors and firms' business level factors. For instance, with respect to business level factors, both trust and perceived value developed by the company significantly accentuate the impact of e-satisfaction on e-loyalty.

The available research about the development of trust scales in on-line grocery context is scarce. A conservative position is to adopt existing established scales from relevant similar literature. The original dyadic trust scale (Larzelere and Huston 1980) has been widely and extensively used in the marketing research literature by many researchers such as Morgan and Hunt (1994) and De-Wulf et al., (2001), and that this scale also has been applied in an e-tailing context by Anderson and Srinivansan (2003). The reliability and validity of the items have been further confirmed by Anderson and Srinivansan (2003) in an e-tailing environment, which is very relevant to the situation of this study. Thus, all four items from Anderson and Srinivansan (2003) do not need much modification in this study, it is thought the reliability and validity of the original scales can be kept (Please see Table 5.4).

5.3.5 Items for measuring affective and calculative commitment

Previous research on commitment in marketing channels has emphasised only one type of commitment and conceptualised it as an identification and attachment oriented force that links two parties (Morgan and Hunt, 1994). However, research

Table 5.4: Trust items from Anderson and Srinivasan (2003)

ITEMS

1. The performance of this web-site meets my expectations;
2. This Web site can be counted on to successfully complete the transaction;
3. I can trust the performance of this Web site to be good;
4. This Web site is reliable for online shopping.

Source: Anderson and Srinivasan (2003 p.135). The items originally used a 5-point Likert-type scale measure.

dealing with interpersonal relationships and organisational behaviour (Fullerton, 2003; 2005; Kumar et al., 1994; Allen and Meyer, 1990) suggests that there are many types of commitment, each of which may affect relationships in different ways.

A well known paper on organisational commitment is that of Allen and Meyer's (1990). This study was conducted to test aspects of the three-component model of commitment, which integrates various conceptualisations. Commitment in Allen and Meyer's (1990) study was based on three themes: affective commitment, calculative/continuance commitment, and normative commitment. Briefly, "employees with a strong affective commitment remain with the organisation because they want to; those with a strong calculative/continuance commitment remain because they need to; and those with a strong normative commitment remain because they feel they ought to do so" (Allen and Meyer, 1990., p.3). However, normative commitment will not be discussed further in this research. As it is thought that in Internet grocery shopping, the measure of obligation-based commitment is irrelevant.

The validity and reliability of Allen and Meyer's (1990) three-component model is further investigated in marketing channel literature by Kumar et al., (1994). Affective and calculative commitment are each measured using four items based on the scales used in Allen and Meyer's (1990) study. Fullerton (2005) examines retail-service relationships, finding that affective commitment and calculative/continuance commitment are partial mediators of the service quality-loyalty relationship. The results also show that affective commitment to the retailer has a positive impact on customer loyalty while calculative/continuance commitment in marketing relationship has a deleterious effect on customer loyalty. The study is based on two samples, the first is drawn from the customers of men's specialty-clothing store, while the second is collected from the customers of a major Canadian retail grocery chain in a mid-sized Canadian city. Fullerton's (2005) study adapts Allen and Meyer's (1990) affective and calculative/continuance scales. All the measure employed in the study shows acceptable reliabilities [Cronbach's alpha (α) > 0.80] (Nunnally and Bernstein, 1994).

With regard to the recent development in e-tailing, the recent literature (De-Wulf et al., 2006; Park and Kim, 2006 and Hsieh et al., 2005) about the role of commitment on the web site tends to use one type of commitment. For instance, Hsieh et al., (2005) have borrowed 4 items from Garbarino and Johnson's (1990) single commitment scale and 1 item from Morgan and Hunt's (1994) commitment scale to investigate the effects of various relational bonds on customer commitment across search-experience of goods/services on the Internet. In the similar vein, De-Wulf et al., (2006) adapt three items from De-Wulf et al.,'s (2001) single commitment scale to validate a process model of web site success in an on-line shopping context by identifying the role of pleasure as a key mediating variable.

Since very few studies about e-tailing have addressed the different effects of various types of commitment, there is no solid empirical basis for using an established measure that links each of the potential consequences to each type of commitment in an on-line context. Therefore, Fullerton's (2005) six items for measuring two types of commitment (affective and calculative commitment) are used in this study due to the similar research context and their acceptable reliability and validity (Please see Table 5.5).

Table 5.5: Commitment items from Fullerton (2005)

ITEMS

Affective commitment [Cronbach's alpha (a)=0.98 clothing, Cronbach's alpha (a)=0.97 grocery]

1. I feel emotionally attached to X.
2. X has a great deal of personal meaning for me;
3. I feel a strong sense of identification with X.

Calculative commitment [Cronbach's alpha (a)=0.97 clothing, Cronbach's alpha (a)=0.98 grocery]

1. It would be very hard for me to switch away from X right now even if I wanted to;
2. My life would be disrupted if I switch away from X;
3. It would be too costly for me to switch from X right now.

Source: Fullerton (2005 p.104).

5.3.6 Items for measuring perceived relational investment

In the bricks-and mortar context, consumer trust is affected by a seller's investments in resources (Doney and Cannon, 1997). Jarvenpaa et al., (2000) point out that the

greater the resources and investment by the firm, the greater the customers' trust that is inspired. Although perceived relational investment has been frequently discussed in relationship marketing, very limited research has empirically addressed this issue in any detail.

Smith and Barclay (1997) developed a trust-based model of the effective selling partner relationships and tested it in the context of computer industry. They point out that five social exchange factors might be indicative of trust in ongoing exchange relationships. Perceived relational investment is one of those five factors. Perceived relational investment is defined as "the resource, effort, and attention devoted to a relationship that does not have outside value and cannot be recovered if the relationship is terminated" (Smith and Barclay, 1997 p.6). Six items are developed to measure perceived relational investment by Smith and Barclay (1997) and the reliability of the measure is all above 0.80, which meets Nunnally's (1978) guidelines.

In addition, De-Wulf et al., (2001) conducted a study into relational investment in consumer relationships. Since the original measure of perceived relational investment (Smith, 1997) has been applied in B2B relationship marketing, it is less applicable to the retail context, De-Wulf et al., (2001) use focus groups to examine how consumers describe perceived relational investment. Four focus groups were organised in which participants were asked open-ended questions about their own behaviour with respect to shopping for clothing. The final three items of perceived relational investment are distilled by factor analysis and the reliability is uniformly high for this construct.

Due to the limited empirical research about perceived relational investment, it is felt that De-Wulf et al's., (2001) three items are more relevant than Smith and Barclay's (1997) six items. Although the items for perceived relational investment never have been applied to an on-line environment, it has at least been tested in a B2C retailing context (Please see Table 5.6).

Table 5.6: Perceived relational investment from De-Wulf et al., (2001)**ITEMS**

1. This store makes efforts to increase regular customers loyalty;
2. This store makes various efforts to improve its tie with regular customers;
3. This store really cares about keeping regular customers.

Source: De-Wulf et al., (2001) Each scale is measured by seven-point scales with “strongly disagree” and “strongly agree” as the anchors.

5.3.7 Items for measuring customer loyalty

The key relational marketing outcome in the marketing literature is customer loyalty (Hennig-Thurau et al., 2002). Sheth and Gary (1982 p.2) point out that “brand loyalty is essentially a relational phenomenon”. They further claimed that the same is also true of store loyalty, person loyalty, process loyalty and other forms of committed behaviour. Customer loyalty, as discussed in Chapter 2.0, focuses on a customer’s repeat purchase behaviour associated with a positive attitude. This attitude of the customer is more long-term and the customers perceive high relationship quality with the retailer and are not opportunistic. Rather, they may be willing to pay more to keep the relationship going.

Zeithaml et al., (1996) develop a 13-item battery to gauge a wider range of behavioural intentions. This battery includes items to capture several facets of behavioural intentions not incorporated in previous studies such as “likelihood of paying a price premium” and “remaining loyal to a company even when its prices go up”, “intent to do more business with the firm in the future”, and “complaint intentions when service problems occur”. The 13 items are grouped into five categories.

Zeithaml et al's., (1996) scale is widely used in marketing literature to assess customer loyalty intentions. Sirohi et al., (1998) incorporate and modify Zeithaml et al's., (1996) loyalty scale to identify consumer perceptions and store loyalty intentions for a supermarket retailer. The store loyalty intentions in their study are

measured by “intention to continue shopping”, “intention to increase purchases” and “intention to recommend the store”.

Gefen (2002) conducted a study of customer loyalty in e-commerce. He also incorporates Zeithaml et al's., (1996) scale into the study. Since the objective of his study was to examine the extent to which service quality influences customer trust and loyalty, 5 items were selected from the original Zeithaml et al's., (1996) loyalty scale. All of the reliability coefficients for the measure are above the equivalent suggested threshold of 0.80 for Cronbach's alpha (Nunnally and Bernstein, 1994). Similar to Gefen (2002), Srinivasan et al., (2002) investigate the antecedents and consequences of customer loyalty in an on-line B2C context by using items adapted from Zeithaml et al's., (1996), the Cronbach's alphas for the scale items exhibit satisfactory levels of internal consistency.

However, it should be noted that a recent e-tailing literature Harris and Goode (2004) suggest capturing e-loyalty using Oliver's (1997) four-stage loyalty framework with four items each designed to evaluate cognitive, affective, conative and action loyalty. Although the Oliver's (1997) four-stage framework has been frequently discussed in evaluating the development of behavioural and attitudinal loyalty, it is felt that there is an overlap between the conceptual model of this research and the Oliver's (1997) four-stage framework. The focus of this research is to identify how customer loyalty can be developed through relationship quality building in Internet grocery shopping. The process of the relationship development between customers and the retailer has already covered that four-stage framework and the outcome of each stage has been separately evaluated accordingly in this research. In comparison, Zeithaml et al's., (1996) behavioural scale seems more suitable for this study, as it contains both favourable and unfavourable behavioural intentions. It will help to get an insight into the reason and the motivation behind customers' loyalty and disloyalty in Internet grocery shopping. Thus, 5 items are selected from the original 13-item battery (Zeithaml et al., 1996) to suit the context of this research (Please see Table 5.7).

Table 5.7: Customer loyalty items from Zeithaml et al., (1996)

ITEMS
Loyalty
1.Say positive things about XYZ to other people;
2.Recommend XYZ to someone who seeks your advice;
3.Encourage friends and relatives to do business with XYZ;
4.Consider XYZ your first choice to buy-services;
5. Do more business with XYZ in the next few years.

Source: Zeithaml et al., (1996 p.38). Each item is accompanied by a 7-point likelihood scale (1=not at all likely and 7=extremely likely).

5.4 Survey implementation

5.4.1 Pre-testing

According to McDaniel and Gates (2002) all the rewriting and editing in the world will not guarantee success and a pre-testing is the least expensive way to ensure the success of questionnaire research. The primary purpose of a pre-test is to make certain that the questionnaire gives the respondent clear, understandable questions that will evoke clear, understandable answers.

The questionnaire for this study was first pre-tested among a convenience sample of 10 academics, who had experience in questionnaire design. The 10 respondents were asked to provide comments regarding the relevance and wording of the questionnaire items, length of the survey, and the time taken to complete it. It is particularly important to get feedbacks from people with diverse expertise, as their suggestions can be very useful in guiding item additions and deletions, and to improve the wording of some items.

5.4.2 Pilot study

Following the pre-test, a pilot study aiming to achieve 100 responses was launched. A small-scale pilot survey of the population can help to see the answering pattern from respondents and any problems with the questionnaire and also identify if all the parts of the questionnaire work. Based on the pilot study, some of the questionnaire items were dropped. Further, the wording of some of the questions was changed to improve clarity. The final questionnaire is enclosed in **Appendix I**.

The data presented for the whole quantitative stage in this research was collected from an on-line survey among UK consumers by using self-administered questionnaires. The questionnaires are distributed using an internet-panel administered by a market research firm. Before launching the pilot study, all the questions in the questionnaire were randomised. It is believed that randomisation of the questions will enable respondents to think carefully rather than filling in the answers based on inertia. For each completed questionnaire, the respondent received £1 as a token of appreciation for their time and participation. Within four days, 100 completed pilot study questionnaires were returned.

5.4.3 Formal survey implementation

Following the pilot study, the formal survey aiming to achieve 500 responses was launched. Screening questions were added at the beginning of the survey to screen out the population who are over-represented in the pilot study. In order to ensure the quality of the data, the time taken to fill in each questionnaire was monitored. A total 519 responses were received within a week and 485 questionnaires were usable.

5.5 Summary

This chapter describes the research design of the study with regard to the use of an Internet based on-line survey as the main data collection method. It explains the procedures for conducting the research, which include the literature review,

exploratory study and pre-testing followed by the process of developing the survey instrument.

Overall, this chapter discusses various methodological choices and their rationales related to the data collection method, item generation, questionnaire development, survey design and the research scope. Following the research methodology, the empirical results particularly the descriptive analyses are presented in the following chapter.

Chapter 6

EMPIRICAL ANALYSIS AND RESULTS- EXAMINATION OF THE DATA AND STATISTICAL DESCRIPTIVES

6.0 Introduction

This chapter describes the process involved in preparing the raw data for use in AMOS-the structural equation modelling (SEM) program for assessing the model-to-data fit. It begins with a brief discussion of the overall raw data sets. Following this, a review of the distributions of the overall data is provided and the data normality and outliers are examined before revealing the descriptive demographic analysis of the data. Based on the preliminary evaluation, a summary of key findings and justifications from the aforementioned steps is undertaken to ensure that the data in this study is appropriate for in-depth analysis using the SEM.

6.1 Examination of the data

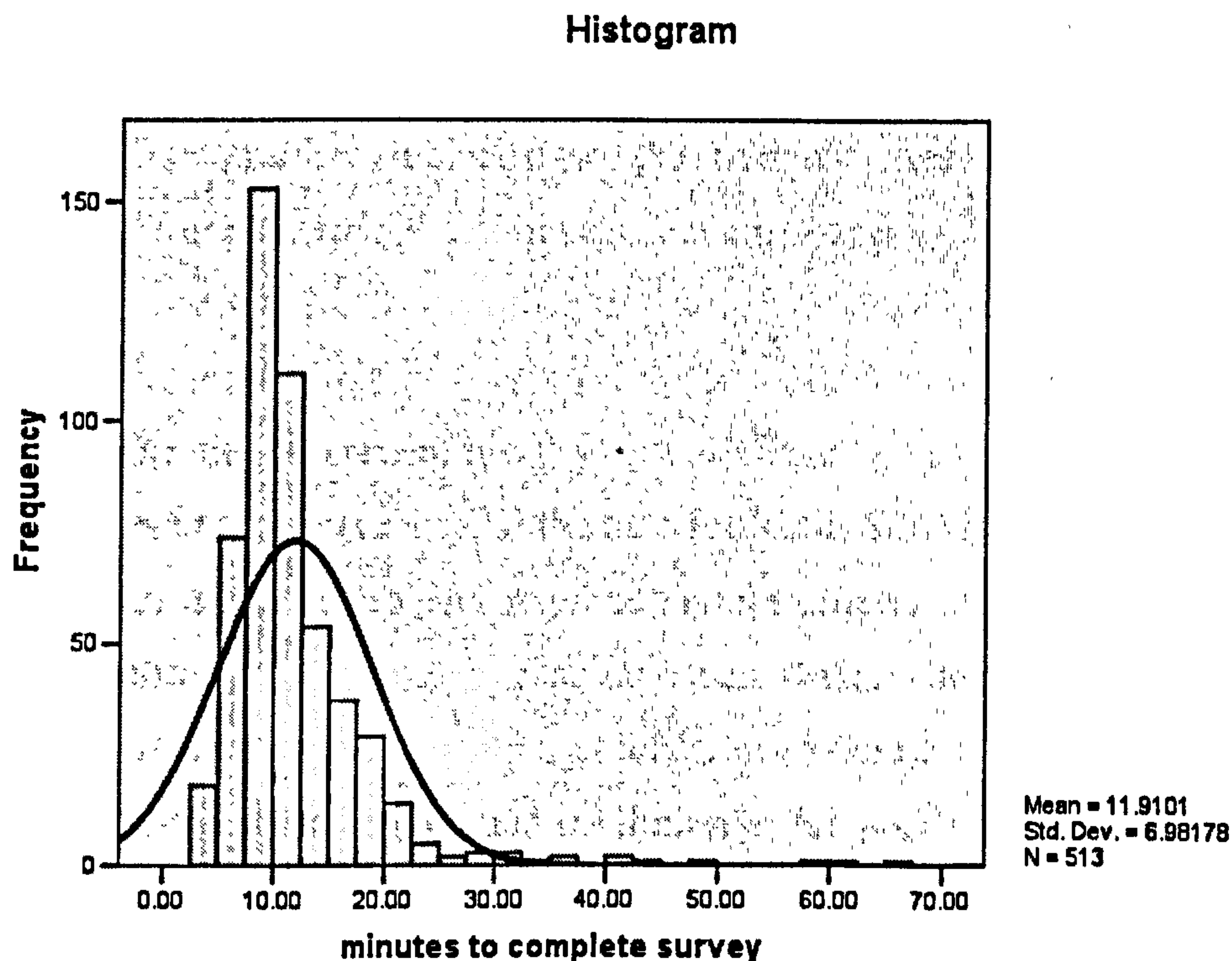
6.1.1 Deletion of unqualified data

An online survey was chosen as the main distribution method for this research. The data presented in this research was collected from an on-line survey using self-administered questionnaires. The received data consist of five hundred and nineteen responses in total. However, in order to ensure that all the data was able to generate good quality results, the following three criteria were applied for the selection of the data and four hundred and eighty five responses were left for analysis. **Figure 6.1** is a frequency histogram, which gives an overview of the time taken by respondents to complete the questionnaire.

First, from **Figure 6.1** it can be seen that the distribution of the histogram is not quite normal as its mean (11.91) and median (6.99) are significantly different. Normally, about 2/3 (68%) of all the observations in a normal distribution lie within one standard deviation (SD) either side of the mean and about 99.7% of the observations lie within about 3 standard deviations (SDs) either side of the mean.

However, **Figure 6.1** shows that the distribution of the completion time is a little positively skewed, that suggests the completion time is much more clustered around the low end of the scale between (-1SD) below the mean and (+3SD) above the mean. As the distribution is not symmetrical, the possible data that can be included for further analysis ranges from roughly five minutes [mean (12)- 1 SD (7)=5] to thirty-three minutes [mean (12)+3 SD (3*7)=33]. In addition, it seems from the histogram that there are still some completion times that are longer than 33 minutes. It is thought that it is better to include that data into the analysis in the first place, until further evidence is found that they are unqualified.

Figure 6.1: An overview of the completion time for the questionnaire



Before launching the questionnaire, its length and completion time was tested among some Internet grocery shoppers who are familiar with computer and regularly do grocery shopping online. Generally, the average time taken for people to complete the questionnaire was about fifteen minutes. It is felt that for this study completion of the questionnaire in less than five minutes must mean that little thought was given to the questions. Thus, eighteen responses with completion time less than five minutes were deleted as well as six responses without a record of the completion time.

Second, although some responses had reasonable completion time, some of the answers in the questionnaire did not make sense (e.g. the same answers are given throughout the questionnaire). It can be seen that those questionnaires were not carefully answered. Therefore, a further eight responses were deleted.

Finally, a couple of respondents who said they had shopped for groceries on-line every day were checked against their weekly spending (£40-80) and the number of people they shopped for was determined to be only 1 or 2 people. It is likely that the data provided by these two respondents was inaccurate and it was therefore deleted from the further analysis.

After the initial checking and the deletion of thirty-four unqualified responses, the remaining data was further subjected to the normality testing and the outliers checking, which is explained in detail in next section.

6.2 Data preparation and screening

This section is about the preparation of the data for SEM. SEM is the major statistical technique used in this research and requires certain criteria of the data to be met, especially regarding the distributional characteristics. Data related problems can cause model-fitting programs to fail to yield a solution or to “crash”. Therefore, carefully screened data and the consideration and resolution of the problematic data before the main analysis are fundamental to ensure the accuracy of a SEM analysis.

6.2.1 Tests of normality and outliers of the data

6.2.1.1 Normality

Normally distributed data is the data that is from one or more normally distributed populations. The most fundamental assumption in multivariate analysis is normality. There are two types of normality: univariate and multivariate normality. Univariate normality refers to a single variable. However, multivariate normality (the combination of two or more variables) means that the individual variables are normal in a univariate sense and that their combinations are also normally distributed. Thus, if a variable is multivariate normal, it is also univariate normal. The reverse is not necessarily true (two or more univariate normal variables are not necessarily multivariate normal). Thus, a situation in which all variables exhibit univariate normality will help gain, although not guarantee, multivariate normality (Hair et al., 1998). This study focuses on assessing and achieving univariate normality for all the variables, and emphasise multivariate normality only when it is especially critical, because multivariate normality is very difficult to assess.

Normality of variables is normally assessed by either statistical tests or a visual check of the histogram. A visual check is the simplest diagnostic test for normality it compares the observed data values with a distribution approximating normal distribution. However, this method is very subjective. What is needed is an objective test to decide whether or not distribution is normal. The skewness and kurtosis tests are the common methods used to examine the deviation from normality, but they deal with only one aspect of non-normality each. Skewness has to do with the symmetry of the distribution; a skewed variable is one whose mean is not in the centre of the distribution. Kurtosis has to do with the peakedness of a distribution; a distribution is either too peaked (with short, thick tails) or too flat (with long, thin tails). In a normal distribution the value of skewness and kurtosis should be zero.

However, the actual value of skewness and kurtosis are not, in themselves informative. Instead, the value is normally converted into a z-score, which is simply a score from a distribution that has a mean of 0 and a standard deviation of 1, which can be converted from $Z_{skewness} = \text{Skewness} / \text{Std.Error of Skewness}$ or $Z_{kurtosis} = \text{Kurtosis} / \text{Std.Error of Kurtosis}$. If taking the absolute value (z-score) in a

normal distribution, it is expected about 5% to have an absolute value greater than ± 1.96 , and 1% to have absolute values greater than ± 2.58 and none to be greater than about 3.29. Falling off these ranges, these cases are significant outliers.

Field (2005) argues that large samples give rise to small standard errors and so when sample sizes are big, significant values arise from even small deviations from normality. Therefore, Field (2005) suggests that for a large sample (200 or more) it is more important to look at the shape of the distribution visually and to look at the value of the skewness and kurtosis rather than calculate their significance. This is in line with Hair et al., (1998), who argue that tests of significance are less useful in large samples and that researchers should always use both the graphical plots and any statistical tests to assess the actual degree of departure from normality. Based on the recommendation of Field (2005) and Hair et al., (1998), this study assesses the normality by looking at the skewness and kurtosis values in combination with the distribution of the histograms provided by SPSS software. Table 6.1 below displays the assessment of the normality for the variables, which are used in the analysis.

From Table 6.1, it can be seen that the multivariate kurtosis value is 539.40, which is bigger than the upper threshold of 3.29 and indicates significant non-normality. Turning to the individual items (the univariate normality), the results show that the majority of C.R. values are greater than 3.29, which is significant at $p < 0.001$. Given that the sample size of this research is four hundred and eighty five that is a quite large and can be very sensitive due to the small standard errors, it is not surprising that the results are relatively poor as this kind of significance test is less useful in this situation.

Table 6.1: Assessment of Normality

Constructs	Item No	Skew	C.R.	Kurtosis	C.R.
E-service quality	SQ16	-0.40	-3.62	-0.50	-2.25
	SQ21	-1.12	-10.07	1.45	6.53
	SQ25	-0.62	-5.54	0.24	1.09
	SQ23	-0.80	-7.17	0.20	0.89
	SQ26	-1.24	-11.12	2.06	9.25
	SQ06	-0.75	-6.77	0.54	2.41
	SQ11	-1.17	-10.53	1.55	6.95
	SQ01	-1.15	-10.33	1.44	6.46
	SQ09	-0.99	-8.88	0.84	3.77
	SQ15	-0.86	-7.74	0.73	3.26
	SQ33	-1.35	-12.09	2.29	10.28
	SQ17	-1.02	-9.14	1.40	6.31
	SQ30	-1.21	-10.87	1.94	8.71
	SQ20	-1.39	-12.53	2.21	9.95
	SQ12	-1.06	-9.52	0.64	2.87
	SQ05	-0.99	-8.90	0.54	2.44
	SQ04	-0.85	-7.68	0.65	2.90
	SQ02	-1.25	-11.24	1.90	8.54
	SQ03	-0.88	-7.93	0.72	3.23
	SQ10	-1.72	-15.50	3.33	14.98
SQ08	-0.76	-6.87	0.34	1.55	
SQ32	-0.74	-6.68	0.37	1.65	
SQ07	-0.92	-8.30	0.87	3.92	
E-satisfaction	ESAT3	-0.92	-8.29	1.02	4.59
	ESAT2	-0.73	-6.52	0.56	2.54
	ESAT1	-0.85	-7.66	1.10	4.96
Relationship satisfaction	RELSAT3	-0.82	-7.40	0.61	2.74
	RELSAT2	-0.81	-7.29	0.76	3.40
	RELSAT1	-0.63	-5.62	0.36	1.62
Trust	TRUST1	-1.16	-10.47	1.90	8.56
	TRUST2	-0.96	-8.61	1.14	5.13
	TRUST3	-0.96	-8.67	1.38	6.22
	TRUST4	-1.09	-9.80	1.61	7.23
Perceived relational investment	INVST01	-0.35	-3.10	-0.58	-2.60
	INVST10	-0.13	-1.12	-0.50	-2.24
	INVST12	-0.23	-2.09	-0.71	-3.17
Calculative commitment	CACM3	0.95	8.50	-0.03	-0.12
	CACM2	0.67	5.98	-0.51	-2.30
	CACM1	0.56	5.02	-0.61	-2.76
Affective commitment	AFCM1	1.00	9.01	0.00	-0.01
	AFCM2	0.37	3.34	-0.93	-4.18
	AFCM3	0.76	6.87	-0.38	-1.69
Loyalty	RECOM3	-0.68	-6.11	0.33	1.48
	RECOM2	-0.85	-7.62	0.77	3.47
	RECOM1	-0.51	-4.61	-0.36	-1.60
	MORE1	-0.52	-4.69	-0.30	-1.37
	REPCH1	-0.75	-6.76	-0.06	-0.27
Multivariate				539.40	87.52

Note: C.R: is the critical ratio, which represents the parameter estimate divided by its standardised error and operates as a z-score in testing that the estimate is statistically different from zero.

Therefore, it was decided to visually compare the histograms (not produced here) by using the "Frequency" command of SPSS software to assess the actual degree of

departure of the data from the normality. Having checked the shape of the distribution for each item, it is found that among the items of 8 constructs (e-service quality; e-satisfaction; relationship satisfaction; perceived relational investment; trust; affective commitment; calculative commitment and loyalty), the items of 5 constructs (e-service quality; perceived relational investment; affective commitment; calculative commitment and loyalty) look very normal. The items for the remaining 3 constructs (e-satisfaction, relationship satisfaction and trust) are a little negatively skewed (as is evident from the histogram-see **Figure 6.2, 6.3 and 6.4** below). However, bearing in mind what was just mentioned in the last section about the large sample, because this is a large sample (485), it is not surprising that the sample contains minority of non-normal data. It is thought that this is unlikely to have a large impact on the analysis. As indicated by Byrne (2001), there are some analytical methods that are available for accommodating non-normal distribution in SEM analysis. Details regarding the solution for solving non-normality are discussed in Section 6.3.

6.2.1.2 Outliers

An outlier is a case with such an extreme value on one variable (a univariate outlier) or a combination of scores on two or more variables (multivariate outlier) that it distorts statistics (Tabachnick and Fidell, 2001). Outliers can be identified from a univariate, bivariate, or multivariate perspective. Univariate and bivariate outliers are used to assess one or two variables, examine the distribution of observations and select those cases falling at the outer range of the distribution.

However, multivariate outliers involve a multivariate assessment of each observation across a set of variables. As this study involves a number of variables, the multivariate analyses are what this research is interested in.

Locating both univariate and bivariate outliers is quite straightforward by checking (1) the shape of the distribution such as looking at scatterplots or boxplot; (2) by comparing z-scores.

Figure 6.2: Univariate Normality Testing of E-satisfaction

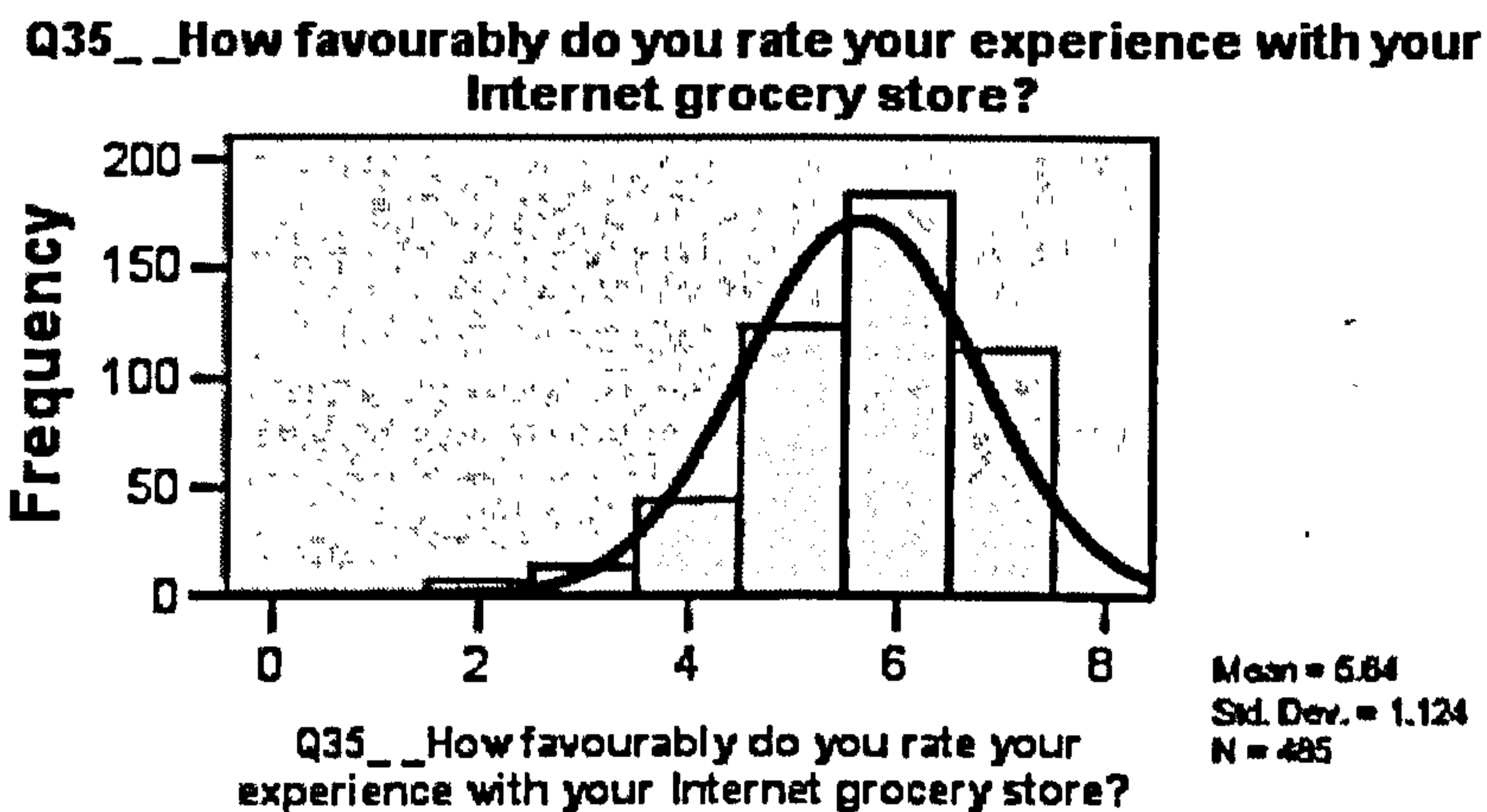
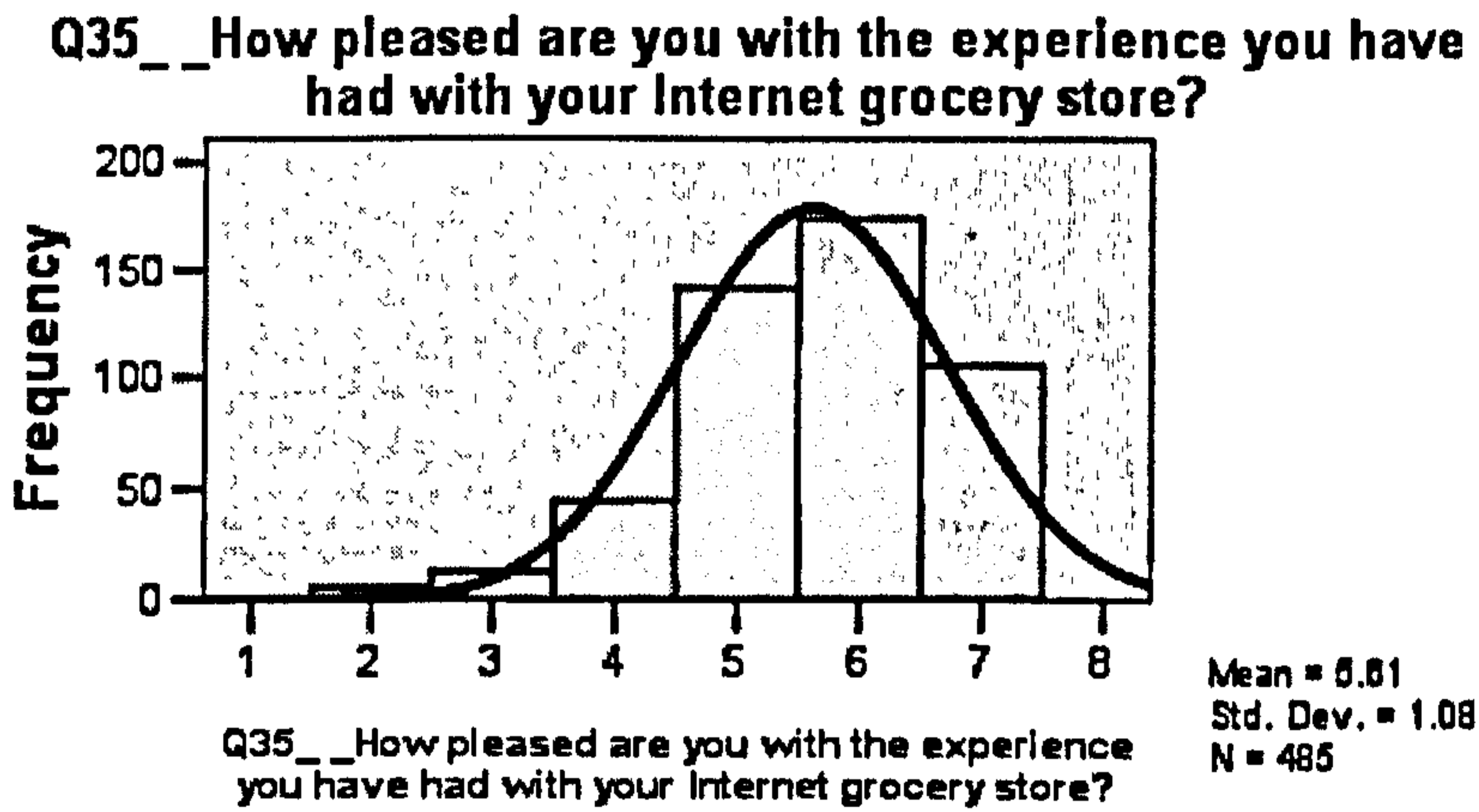
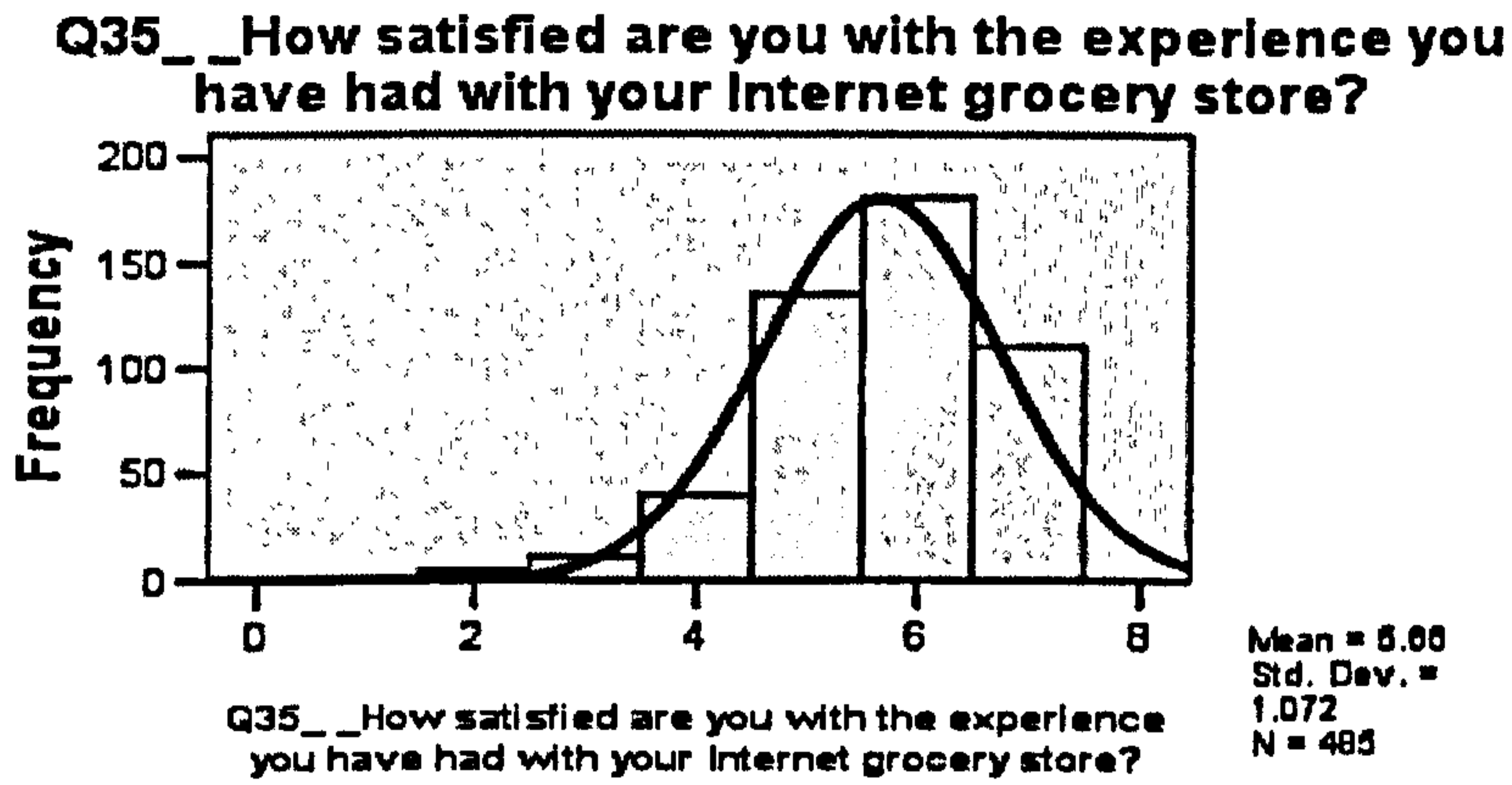
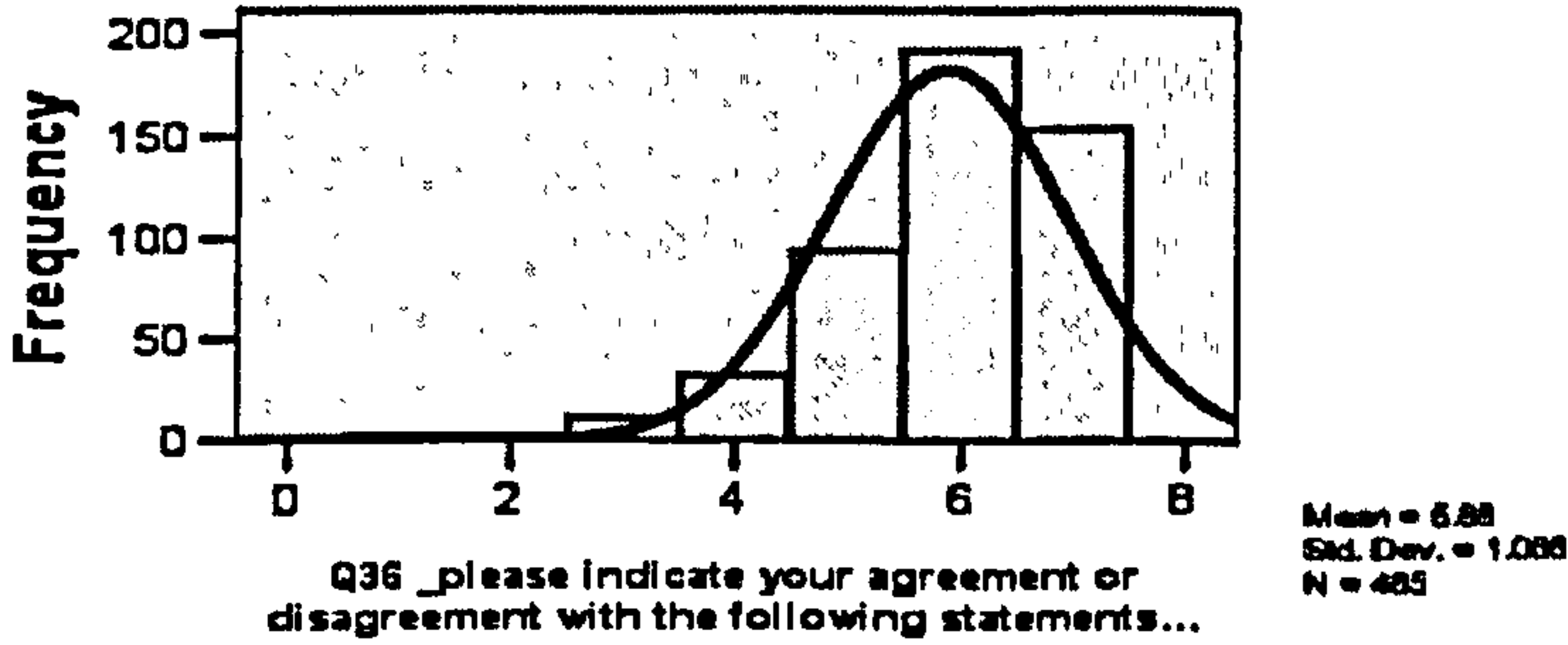
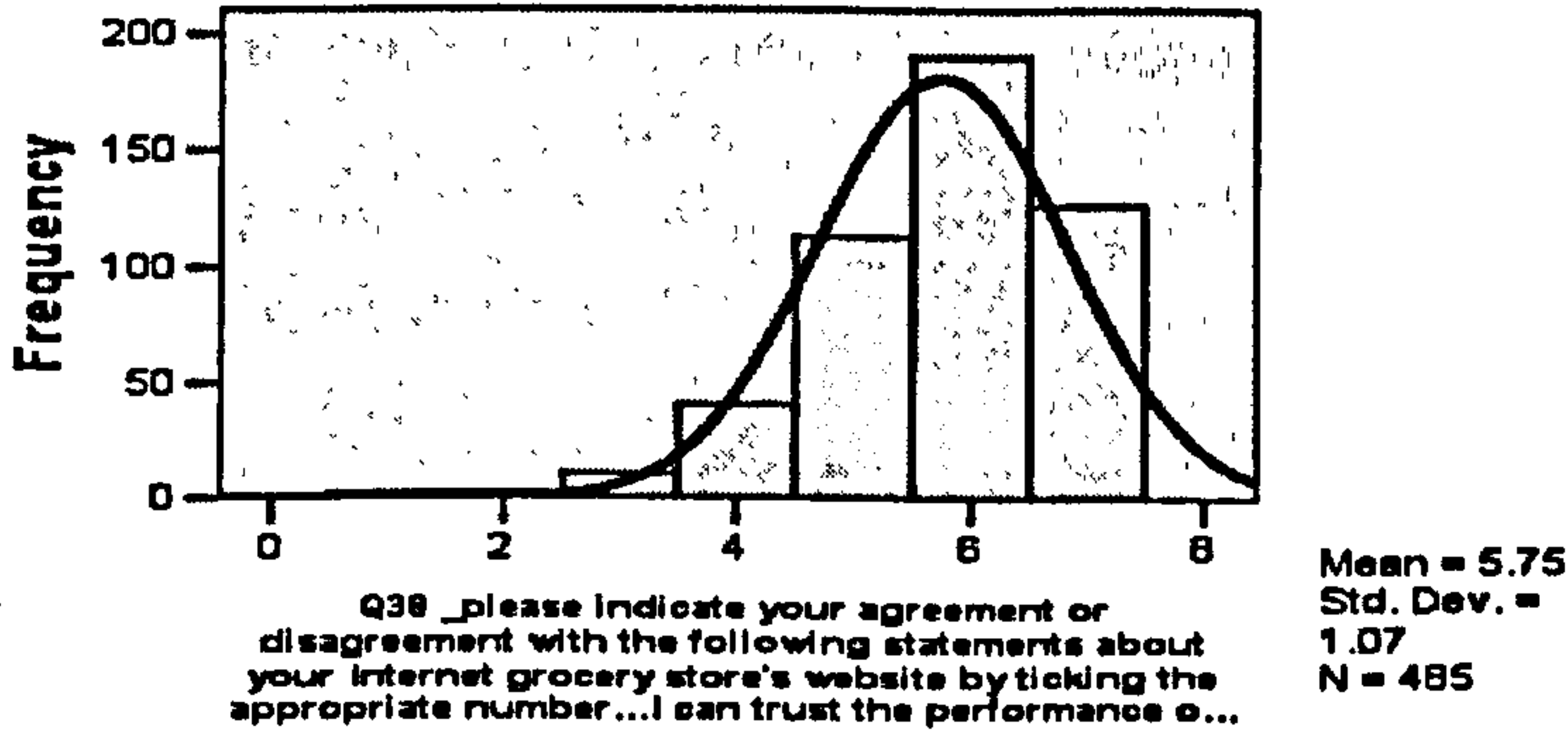


Figure 6.3: Univariate Normality Testing of Trust

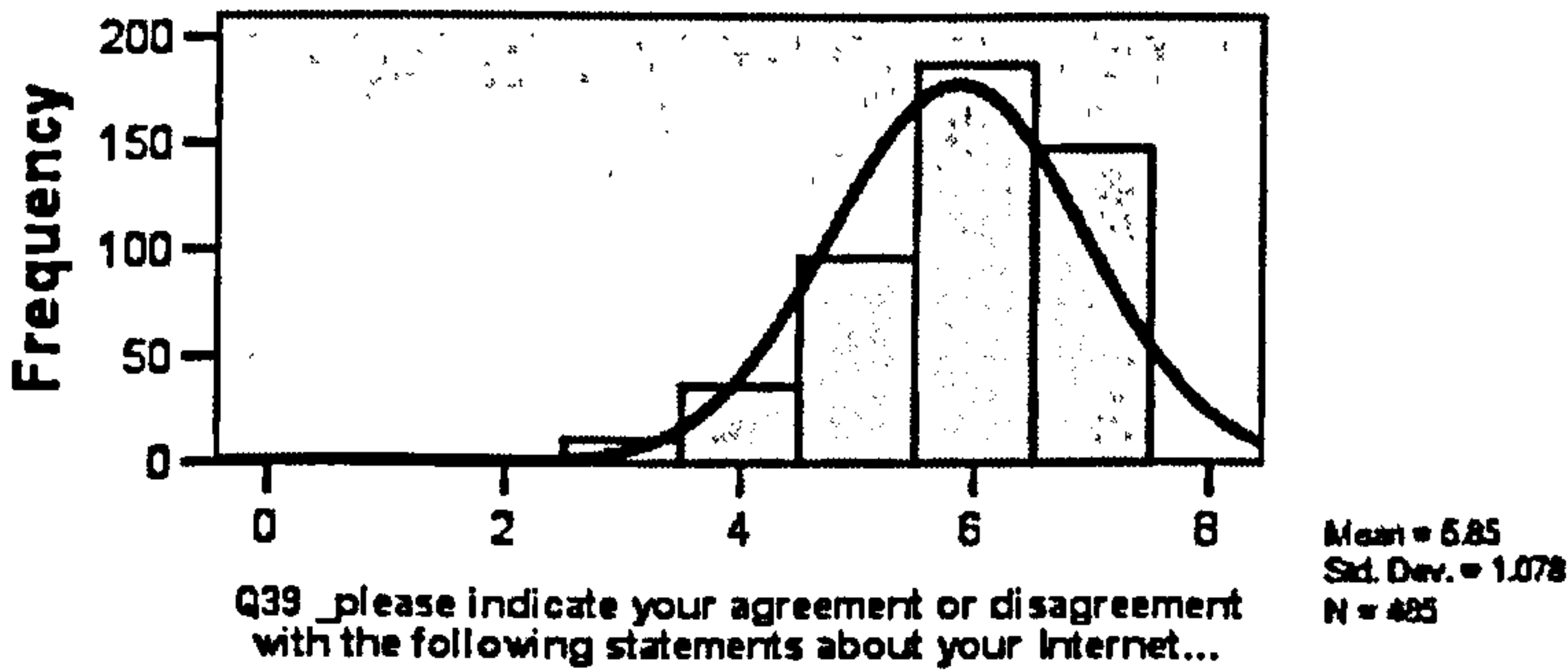
Q36 _please indicate your agreement or disagreement with the following statements about your Internet grocery store's...



Q38 _please indicate your agreement or disagreement with the following statements about your Internet grocery store's website by ticking the appropriate number...I can trust the performance of this...



Q39 _please indicate your agreement or disagreement with the following statements about your Internet grocery store's website by...



Q37 _please indicate your agreement or disagreement with the following statements about your Internet grocery...

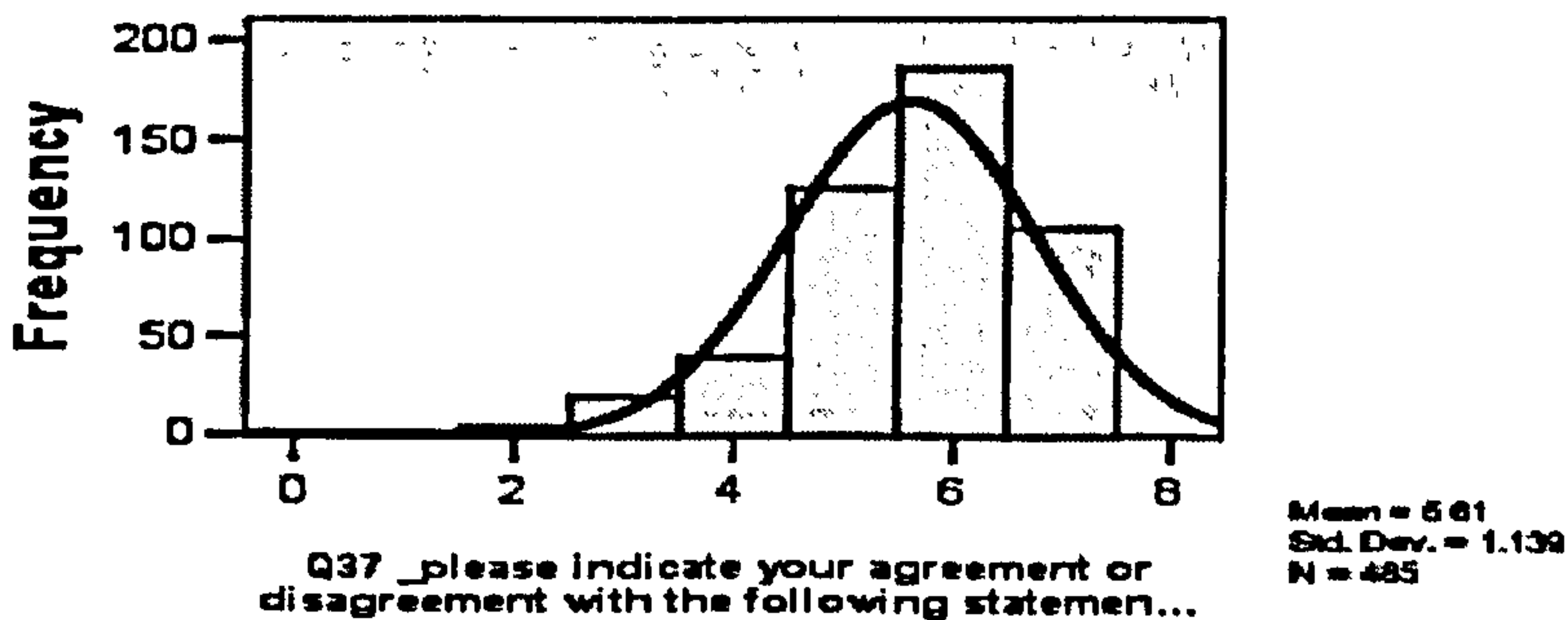
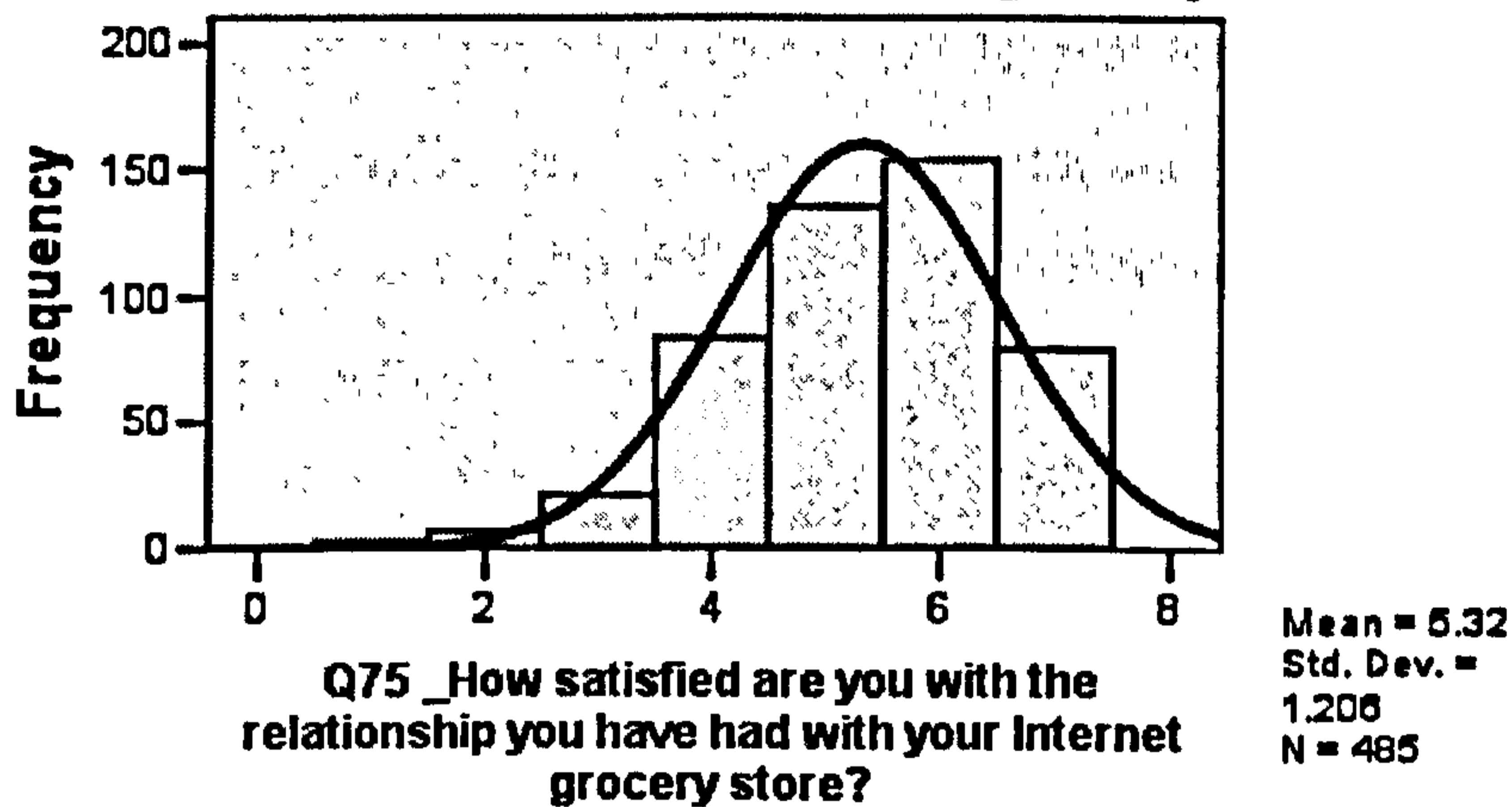
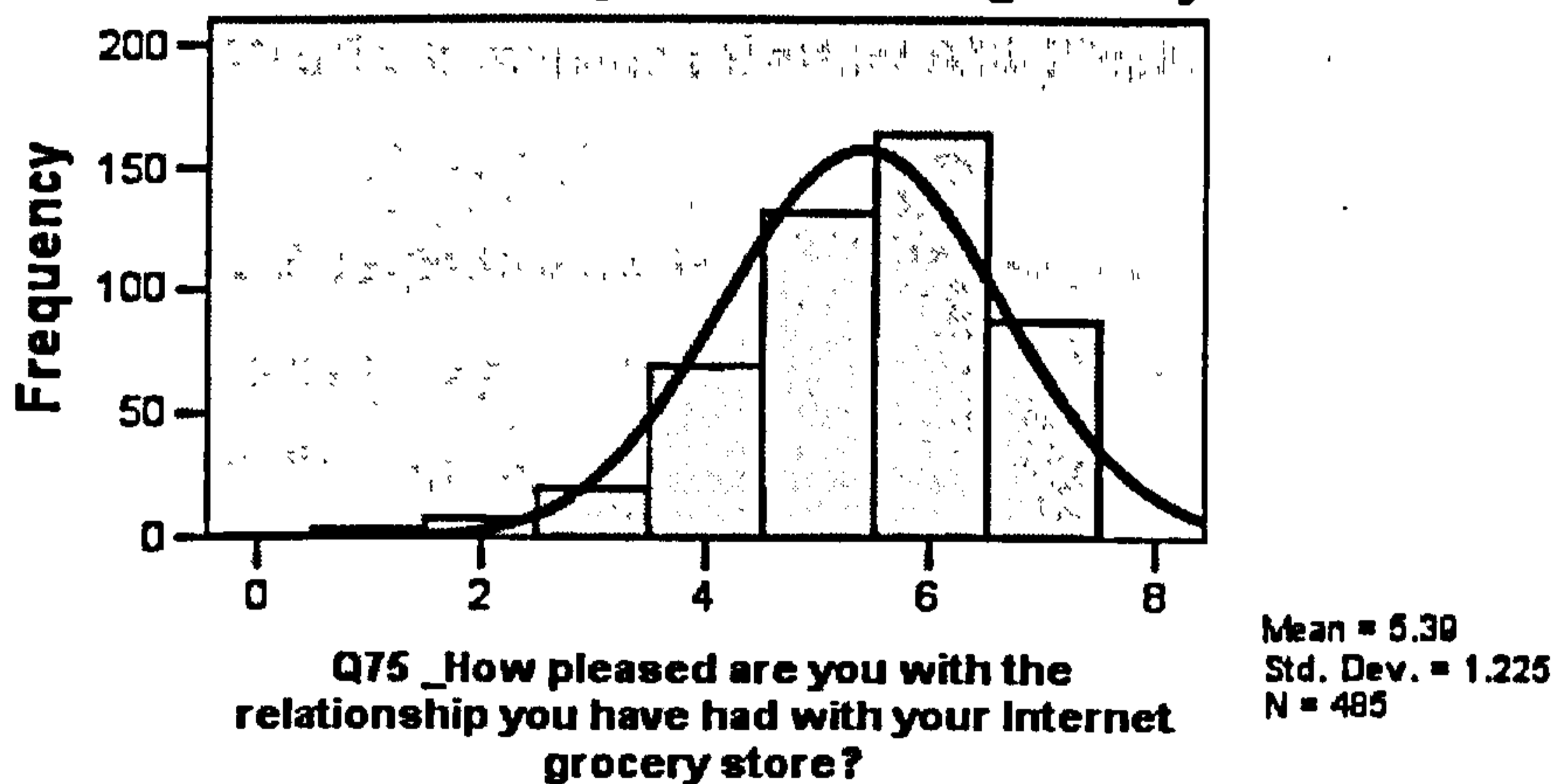


Figure 6.4: Univariate Normality Testing of Relationship Satisfaction

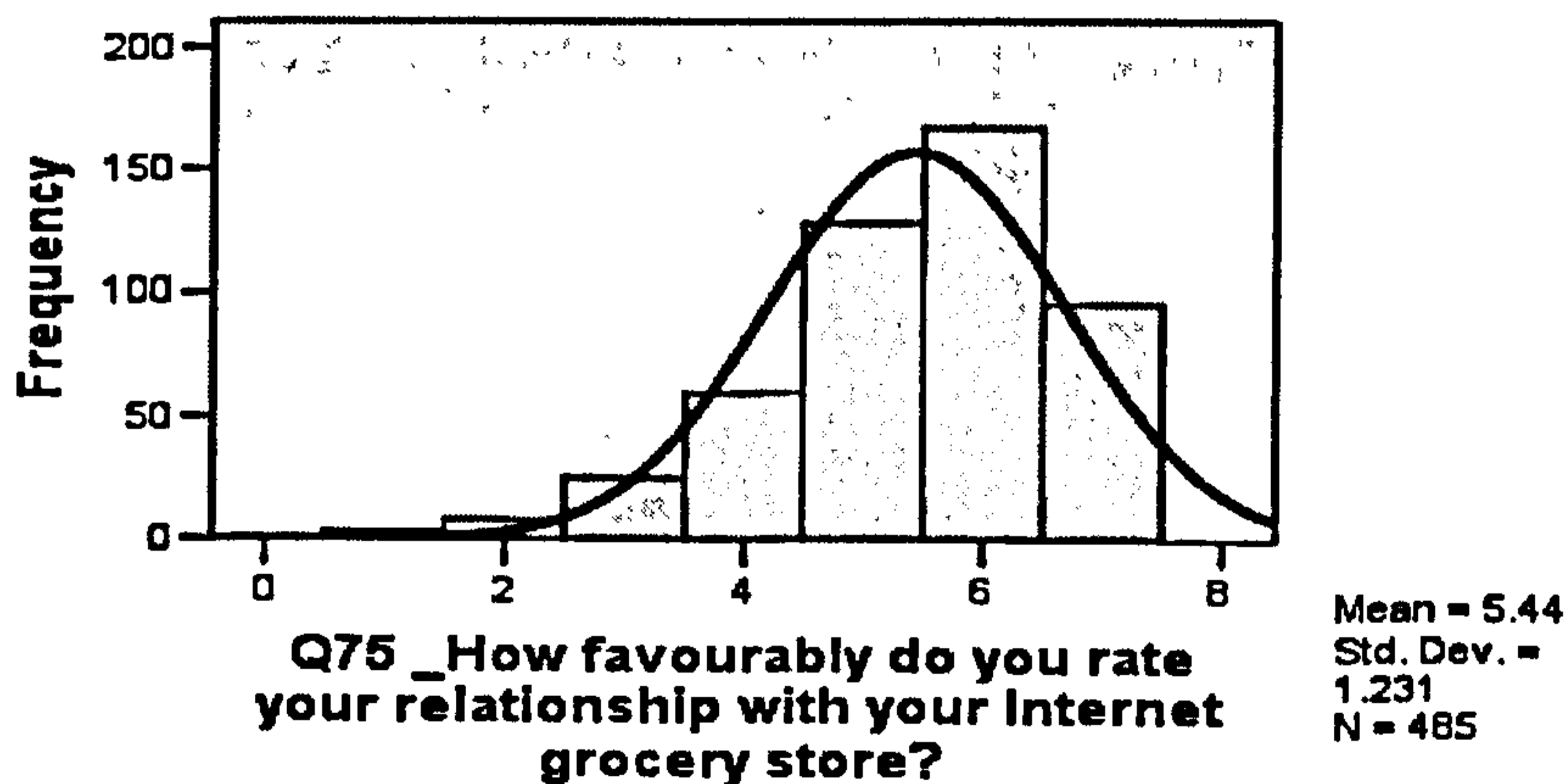
Q75 _How satisfied are you with the relationship you have had with your Internet grocery store?



Q75 _How pleased are you with the relationship you have had with your Internet grocery store?



Q75 _How favourably do you rate your relationship with your Internet grocery store?



In contrast, when dealing with multivariate outliers, a common method used is Mahalanobis D^2 analysis. The Mahalanobis D^2 measure calculates the distance in multidimensional space of each observation from the mean centre of the observations. It effectively evaluates the position of each observation compared with the centre of all the observations on a set of variables. It provides a common measure of multidimensional centrality and also has statistical properties that allow for significance testing. It is suggested that a very conservative level is $p < 0.001$ as the threshold value for designation as an outlier.

However, all the aforementioned tests have their limitations because with large sample sizes (200 or more) it is very easy to get significant results caused by small deviations from normality, and so a significant test does not necessarily tell whether the deviation from normality is enough to bias any statistical procedures (Field, 2005 and Hair et al., 1998). Table 6.2 below shows the multivariate outliers, which were generated from a Mahalanobis distance test by AMOS software.

It can be seen that the significance level of 39 observations out 100 cases is < 0.001 (the first top 39 observations on the left of the table). After the visual examination of the original SPSS file, no evidence is found that this data is aberrant and not representative of any observations in on-line grocery shopping population. If these outliers are deleted, this study may run the risk of improving the multivariate analysis but limiting its generalisability.

The other thing to be aware of is that the statistical technique this research is going to use is SEM. Gallini and Casteel (1987) show that with sample sizes around 500 the elimination of outliers results in minimal changes to SEM estimates. However, with relatively small sample sizes, when the outliers have been removed from the data, there are significant changes that are noted in the parameter estimates and the chi-square statistics.

Based on the result of the Mahalanobis D^2 test, no observations are extreme on a sufficient number of variables to be considered unrepresentative of the sample. In all instances, the observations designated as outliers, seem similar enough to the remaining observations to be retained in the multivariate analysis. It is believed that

Table 6.2: Identification of Multivariate Outliers

Observation Number	Mahalanobis D ²	Significance	Observation Number	Mahalanobis D ²	Significance
434	163.788	0.000	439	80.495	0.002
8	146.835	0.000	312	80.471	0.002
154	141.206	0.000	335	80.184	0.002
14	138.211	0.000	178	79.538	0.002
164	135.333	0.000	3	78.672	0.003
299	132.915	0.000	379	78.000	0.003
416	130.955	0.000	372	77.237	0.004
179	124.060	0.000	208	77.182	0.004
143	119.649	0.000	363	77.178	0.004
430	116.871	0.000	395	77.068	0.004
405	115.448	0.000	45	76.496	0.004
272	108.975	0.000	56	75.813	0.005
250	106.529	0.000	320	75.110	0.006
481	105.447	0.000	346	75.007	0.006
465	101.629	0.000	212	74.037	0.007
195	100.696	0.000	183	73.546	0.008
423	99.723	0.000	477	73.407	0.008
194	98.895	0.000	206	73.400	0.008
375	97.936	0.000	297	73.364	0.008
344	97.081	0.000	288	72.601	0.010
108	93.952	0.000	441	72.311	0.010
422	92.948	0.000	169	71.912	0.011
334	92.296	0.000	313	71.734	0.012
32	92.063	0.000	209	71.481	0.012
338	91.146	0.000	160	71.106	0.013
129	91.041	0.000	483	71.074	0.013
139	90.982	0.000	356	71.043	0.013
189	90.687	0.000	90	70.463	0.015
33	90.645	0.000	420	70.342	0.015
29	90.225	0.000	60	69.879	0.017
457	89.209	0.000	473	69.499	0.018
397	89.120	0.000	57	69.336	0.019
187	88.788	0.000	36	69.331	0.019
468	88.377	0.000	443	68.947	0.020
376	88.176	0.000	77	68.773	0.021
112	87.740	0.000	120	68.745	0.021
162	86.899	0.000	126	68.051	0.024
200	86.529	0.000	394	67.904	0.025
38	85.996	0.000	240	67.778	0.025
360	85.299	0.001	211	66.756	0.031
95	84.941	0.001	40	66.636	0.031
287	84.434	0.001	440	66.336	0.033
321	84.113	0.001	270	66.243	0.034
442	83.759	0.001	367	65.942	0.035
39	83.378	0.001	43	65.342	0.039
52	83.270	0.001	386	65.315	0.040
190	83.256	0.001	223	64.975	0.042
359	81.107	0.001	64	64.744	0.044
144	80.841	0.002	224	64.737	0.044
19	80.827	0.002	410	64.559	0.045

these 39 observations should be retained; especially they may be accommodated in SEM analysis in a manner, which does not seriously distort the analysis.

6.3 Solutions for solving non-normality and outliers

As outliers are those observations with a unique combination of characteristics identifiable as distinctly different from the other observations, a decision must be made on their retention or deletion after they have been identified. According to Hair et al., (1998) outliers cannot be categorically characterised as either beneficial or problematic, but instead they must be viewed within the context of the analysis and should be evaluated by the type of information they may provide. Hair et al., (1998) further argue that outliers should be retained unless there is demonstrable proof that they are truly aberrant and not representative of any observations in the population. After carefully checking and examining the outliers that have been identified in this study, it is felt these 39 observations in this research are similar to the remaining respondents of the sample and can be considered to represent the sample. Based on the guidance of Hair et al., (1998), it is decided that these 39 observations should be retained in the analysis.

Transformations are sometimes used as a remedy for non-normal distribution data. The idea behind transformations is to transform all of the data and correct for distributional problems or outliers. However, this method is associated with several drawbacks and is not universally recommended. Tabachnick and Fidell (2001) state that an analysis is interpreted from the variables that are in it, and transformed variables are sometimes harder to interpret especially for the scores generated.

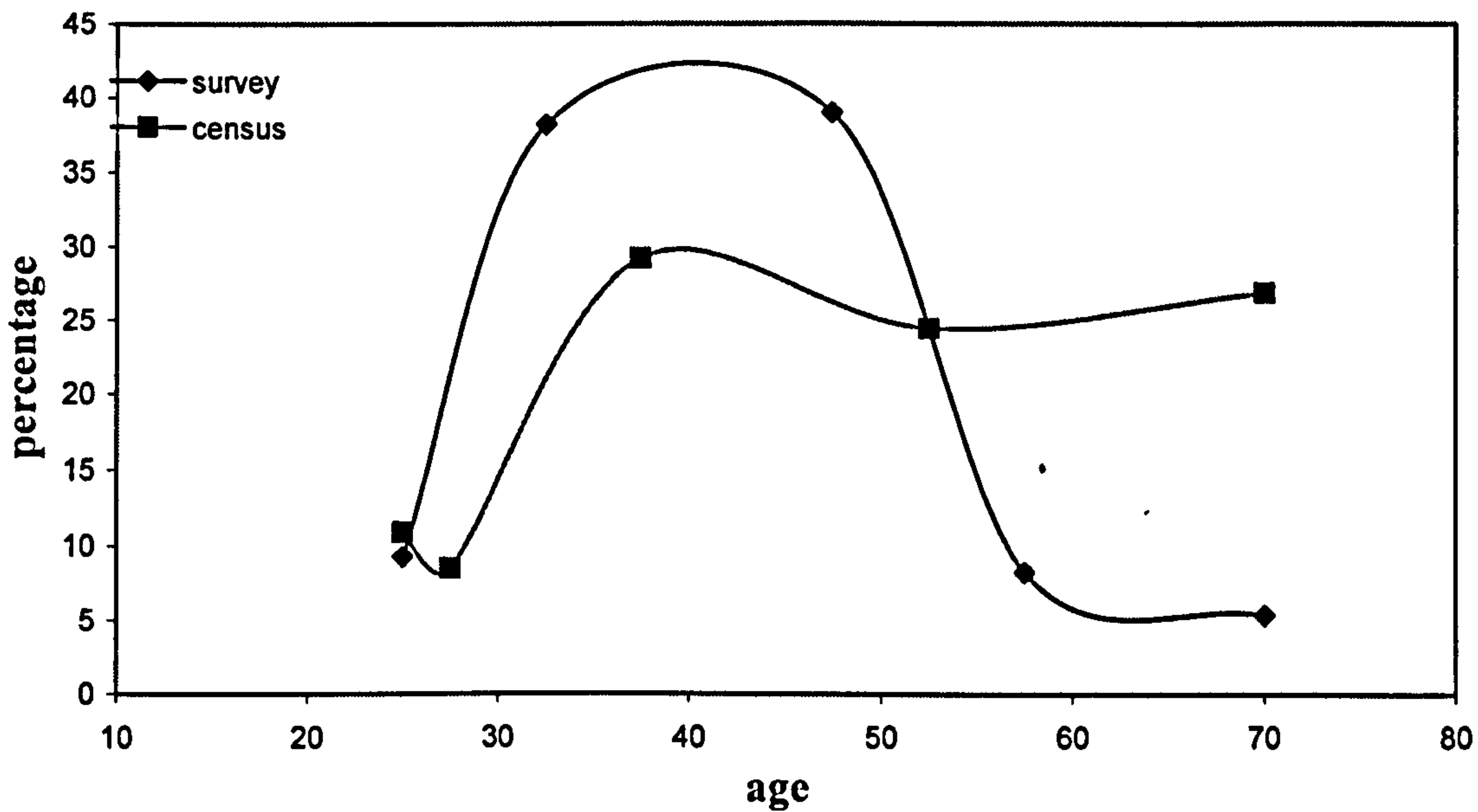
Due to rapid development in dealing with non-normal data in SEM, several corrective procedures are now available that appears to mitigate the impact of non-normality. Enders (2001) uses the Monte Carlo simulation to examine full information of maximum-likelihood estimation (FIML) in structural equation models with non-normal indicator variables. It is somewhat surprising to find that the presence of non-normal data does not exacerbate the problem, as FIML bias is relatively unaffected by non-normal data. Since FIML bias is relatively unaffected by the distribution shape and thus appears to be the method of choice, it is believed that these non-normal data identified in this study will not cause too much concern for this research. The following section reports the preliminary results of the study, which convey some general characteristics of the research samples.

6.4 Profile of the respondents

6.4.1 Demographic distribution of the respondents

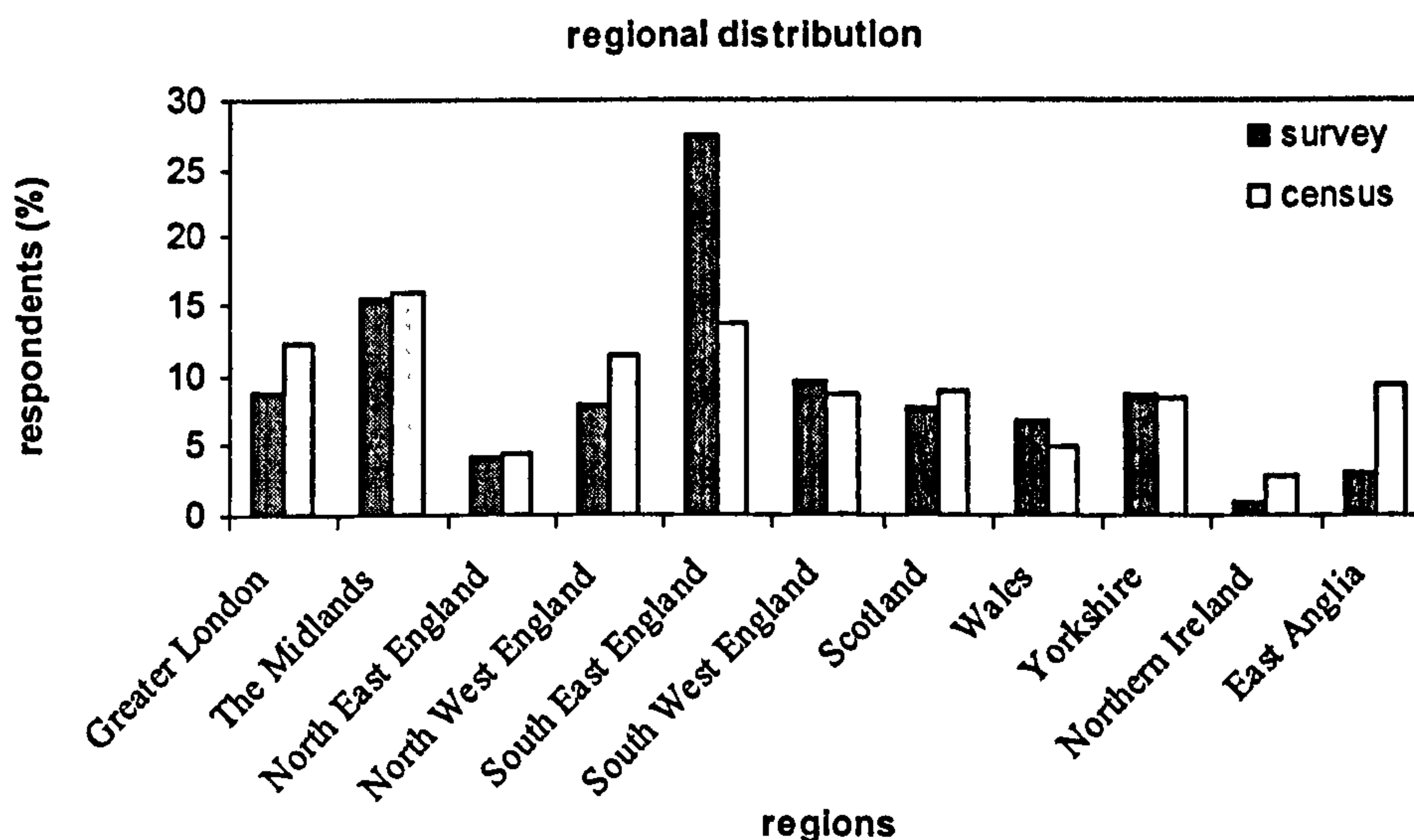
The ultimate goal of this research is to make inferences about the total population based on the responses given by the respondents sampled, although some results are still subject to a certain amount of error. The results of this survey seem to be satisfactory based on the following analyses and when compared with census information (please see **Figure 6.5** below). Of four hundred eighty-five respondents in this survey, two hundred and thirty-eight (49.1%) are males and two hundred and forty-seven (50.90%) are females. The gender distribution from the 2001 national census is 48.6% for males and 51.4% for females, respectively. It can be seen that these two groups of data are quite close. Of four hundred eighty-five respondents, forty-five (9.28%) are younger than 25 years old; one hundred and eighty-five (38.14%) are between 25-40 years old; one hundred and eighty-nine (38.97 %) are between 41-55 years old; forty (8.25%) are between 56-60 years old and twenty six (5.36%) are over 60 years old. From **Figure 6.5** below it can be seen that the age distribution between 30-50 years old is over-represented in this survey compared with the census figures. This indicates that the major on-line grocery shoppers mainly come from two age groups (i.e. the 25-40 and 41-55 age groups). This is probably because people over 50 years old are less likely to use the website and prefer to do their grocery shopping in the store. Likewise, those younger people who are less than 30 years old may also be less likely to buy groceries on-line due to the relatively simple life style and more free time. In contrast, those people who are between 30-50 years old are more likely to have a busy family or working life and they value the convenience of Internet grocery shopping.

Figure 6.5: Age distribution



In this survey, of four hundred eighty five respondents forty three people (8.87%) live in the Greater London area; seventy five (15.46%) in the Midlands; nineteen (3.92%) and thirty-eight (7.84%) in North East and North West England respectively; one hundred thirty-three (27.42%) and forty six (9.48%) in South East and South West England; thirty seven (7.63%) in Scotland; thirty-two (6%) in Wales; forty-one (8.45%) in Yorkshire; five (1.03%) in Northern Ireland and fifteen (3.09%) in East Anglia. Figure 6.6 below shows the region distribution between this survey and the 2001 census. A paired t-test shows no difference between these two distribution data sets ($p=1.00$). Paired correlation is significant ($p=0.01$, coefficient =0.73). However, there are some individual regional differences in England. For instance, for some areas like the South East with rapid economic growth, the proportion of people who shop on-line is relatively higher than the population of the regional distribution. In contrast, East Anglia is mainly an agricultural region, which has relatively fewer people buying groceries on-line.

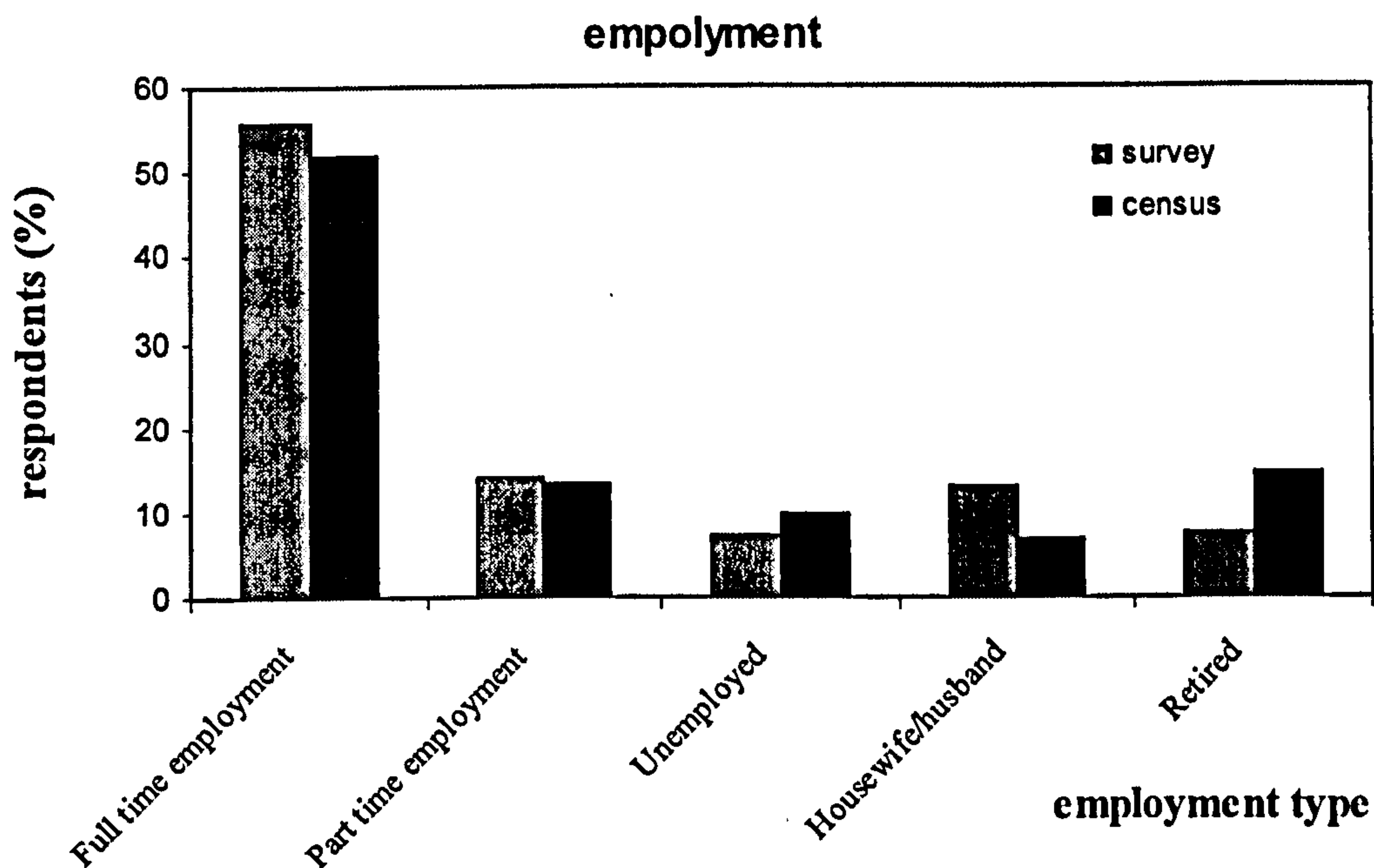
Figure 6.6: Regional distribution



According to the Government General Household Survey in 2002/03, the average annual income in the UK for males is £25,500 and £16,300 for females. However, the results from this survey reveal that on-line grocery shoppers' annual income tends to be higher than the national average. Almost 50% of on-line grocery shoppers had an annual salary over £30,000; 12% between £15,000-19,999 and 11.3% between £20,000-24,999.

Figure 6.7 below compares the employment distribution between the respondents in the survey and the 2001 national census. A paired t-test shows no difference in their distribution patterns ($p=0.36$). There is a close correlation between the respondents in the survey and the national census. ($p=0.01$, coefficient=0.95). Some differences can be seen in the categories of full time-employed and house wife/husband. The proportion of on-line grocery shoppers in these two categories is relatively higher than the employment distribution of national census. It shows that the major on-line grocery shoppers may come from these two categories.

Figure 6.7: Employment distribution



In this study, of four hundred eighty-five respondents one hundred seventy-five people (36%) have a University degree, while one hundred and seventeen (24%) and one hundred and ninety-three respondents (40%) highest education is secondary school and college, respectively.

In short, it appears that the majority of the respondents are married, middle aged, and enjoy a higher than average household income. Further, the South East and the Midlands have relatively more on-line grocery shoppers than other regions.

6.4.2 Store usage

Tesco is the market leader in both off-line and on-line shopping. Of 485 respondents two hundred and thirty-eight people (49%) say that they have shopped at Tesco's off-line store, seventy-three (15%) and eighty-four respondents (17%) do their conventional shopping at Sainsbury's and Asda. Only nine respondents (2%) do their

offline shopping at Waitrose. This probably reflects its small market coverage. Of four hundred eighty-five respondents, ninety-three per cent of Tesco on-line customers have shopped at Tesco off-line store. The transfer ratio from off-line to on-line for Sainsbury's and Asda is about fifty-two per cent and fifty eight per cent, respectively. Waitrose has about a thirty-three per cent transfer rate.

In addition, among four hundred and eighty-five responses about seventy per cent of the people claim that they have always shopped with their current on-line store. More than 50% of respondents say that out of 10 times, they would select their main Internet grocery store 10 times. It is quite obvious that loyalty transfers from off-line to on-line store. It seems that customers' on-line loyalty has already been partly formed in conventional shopping. Generally speaking, the information obtained in this survey is a representative cross section of the target population of Internet grocery shoppers in the UK.

6.5 Summary

This chapter can be seen as the preparation for SEM analysis. It deals with a set of issues that are resolved after the data is collected but before the main SEM analysis. This chapter provides a broad explanation of the examination of the data that includes the statistical descriptive analysis of the characteristics of the on-line grocery shoppers. Although in theory SEM studies should exclusively model the situation in which the multivariate normality assumption is met, this is always not the case in real practice. As there is no universal remedy for solving those problems, this chapter has explicitly explained the rationale to dealing with outliers and non-normal data based on suggestions from the previous research literatures.

The following chapter starts by introducing the conceptualisation of SEM, and then follows that with a discussion of its advantages and disadvantages. In addition the measurement model of SEM is explained prior to the analysis of its structural model.

Chapter 7

EMPIRICAL ANALYSIS AND RESULTS OF E-SERVICE QUALITY AND E-SATISFACTION MODEL IN INTERNET GROCERY SHOPPING

7.0 Introduction

This chapter begins with the introduction of Structural Equation Modelling (SEM) followed by the rationale behind the use of this data analysis technique. A discussion follows a 3-stage process of examining the raw data set into the SEM model is elaborated. Specifically, the development of measurement and structural model is interpreted into details. An evaluation of the overall model and the comparison of an alternative model are discussed in the end.

7.1 What is structural equation modelling (SEM)?

Conceptually, structural equation modelling is a collection of statistical techniques that allow a set of relationships between one or more independent variables (IVs), either continuous or discrete, and one or more dependent variables (DVs), to be examined. Both IVs and DVs can be either measured variables (directly observed) or latent variables. A latent variable is a variable that is not directly measured but is assessed indirectly through two or more measured observed variables.

Substantive use of SEM has been growing in psychology and social sciences. One reason for its popularity is that the use of confirmatory methods provides researchers with a comprehensive means for assessing and modifying theoretical models. As such, they offer great potential for furthering theory development. Hair et al., (1998) point out that the most obvious difference between SEM and other

multivariate technique is the use of separate relationships for each of a set of dependent variables. In simple terms, SEM estimates a series of separate, but interdependent, multiple regression equations simultaneously by specifying the structural model used by the statistical program. Although five major programs (AMOS, EQS, LISREL, SAS, CALIS) are available dealing with SEM, AMOS is chosen for this study due to its simplicity and user-friendly feature.

7.2 Why structural equation modelling (SEM)?

There are a number of advantages for using SEM rather than traditional “measured variable only” technique such as regression or multivariate analysis of variance. When relationships among factors are examined, the relationships are free of measurement error because the error has been estimated and removed, leaving only common variance. Reliability of measurement can be accounted for explicitly within the analysis by estimating and removing the measurement error. Additionally, complex relationships can be examined. When the phenomena of interest are complex and multi-dimensional, SEM is the only analysis that allows complete and simultaneous tests of all the relationships. As the main focus of this research is to explore the whole process for the development of customer loyalty in Internet grocery shopping, SEM allows a broad range of factors such as service quality, customer satisfaction, relationship quality *etc.* to be addressed simultaneously.

However, Tabachnick and Fidell (2001) address the limitation of SEM is that it must be used to test a theory, first. One cannot use SEM without prior knowledge of, or hypotheses about, potential relationships among variables. This is perhaps the largest difference between SEM and other techniques. This problem was overcome in this study, as a research model was developed based on an extensive literature review.

7.3 General issues related to structural equation modelling (SEM)

7.3.1 The technique for running SEM- EFA versus CFA

Exploratory factor analysis (EFA) is normally used in an exploratory research to unearth the underlying factors for identifying the relationships between the latent factors and the observed variables. The purpose is to distil the minimum number of factors that is able to explain the covariation among the observed variables. This approach is especially designed for the situation where links between the observed and latent variables are unknown or uncertain (Sureshchandar et al., 2002a). However, EFA suffers from certain limitations. For instance, although researchers can have a fairly good idea about the presence of a particular factor, they may not know which variable influences the factor (Byrne, 2001). Second, it often happens that an item loads on more than one factor and thus the distinctiveness of the factors is affected. Therefore, the unidimensionality of the item is affected as well.

However, confirmatory factor analysis (CFA) is able to overcome the aforementioned limitations and addresses the situation by testing the inter-relationships between the observed and the latent variables statistically. SEM plays a confirmatory role because the researcher has the complete control over the specification of indicators for each construct. CFA is often used when the researcher has some knowledge of the underlying latent variable structure. Before running SEM, the hypothesised model is built on logic and theoretical findings. Researchers postulate relations between the observed measurement and the underlying factors. The CFA focuses solely on the link between factors and their measured variables, within the framework of SEM. In comparison, such a solution, is not possible with EFA.

Given the fact that relationship quality and loyalty at an advantage stage of marketing research, the interest of this study mainly focuses on the inter-relationships between the constructs of relationship quality and loyalty, adopting CFA technique will be appropriate for this research.

7.3.2 Estimation method/analysis strategy

Model fit determines the degree to which the structural equation model fits the sample data. Several procedures are undertaken to test the measurement properties of the model using latent variable structural equation modelling. All structural equation models are estimated via AMOS and the Maximum Likelihood (ML) extraction method is preferred due to the ML's robustness against non-normal data (Hair et al., 1998; Kline, 1998; Byrne, 2001). Model fit criteria commonly used are chi-square (χ^2), goodness of fit index (GFI), adjusted goodness of fit index (AGFI), and root mean square error of approximation (RMSEA). These criteria are based on differences between the observed (original, S) and model-implied (reproduced, Σ) correlation or covariance matrix (Schumacker and Lomax, 1996).

Chi-Square (χ^2)- A significant χ^2 value relative to the degree of freedom indicates that the observed and estimated matrices differ. Statistical significance indicates the probability that this difference is due to sampling error. A non-significant χ^2 value indicates that the two matrices are not statistically different. Therefore, this research is interested in obtaining a non-significant χ^2 value with associated degree of freedom.

GFI and AGFI indices-The GFI and AGFI can be classified as absolute indexes of fit because they basically compare the hypothesised model with no model at all (Hu and Bentler, 1995). Although both indexes range from zero to 1.00, values close to 0.90 are indicative of good fit.

In terms of goodness of fit indices, there is a need to check two more indices. That is the Tucker Lewis index (TLI), and the comparative fit index (CFI). TLI is consistent with the other indices noted in this section, yields values ranging from zero to 1.00, with values close to 0.95 (for large samples) being indicative of good fit (Hu and Bentler, 1999). In contrast, CFI ranges from zero to 1.00 and is derived from the comparison of a hypothesised model with the independence model. As such, each provides a measure of complete covariation in the data. Although a value > 0.90 was originally considered representative of a well-fitting model (Bentler, 1992), a revised cut-off value close to 0.95 has recently been advised (Hu and Bentler, 1999).

In addition, the root mean square error of approximation (RMSEA) takes into account the error of approximation in the population and asks the question-“How well would the model, with unknown but optimally chosen parameter values, fit the population covariance matrix if it was available?” (Browne and Cudeck, 1993, pp137-138). This discrepancy, as measured by the RMSEA, is expressed per degree of freedom, thus making the index sensitive to the number of estimated parameters in the model (i.e., the complexity of the model); values less than 0.05 indicate good fit, and values as high as 0.08 represent reasonable errors of approximation in the population (Browne and Cudeck, 1993).

The above goodness-of-fit indexes are specifically selected in this study because they are the most commonly fit statistics used by researchers to evaluate adequacy of model fit (Hair et al., 1998; Byrne, 2001).

7.3.3 Measurement model versus structural model

Structural equation modelling (SEM) is usually carried out in two phases. One is for testing the measurement model and the other is for the structural model. The measurement model stage specifies the causal relations and the underlying latent variables or theoretical constructs, which are presumed to determine responses to the observed measures (Anderson and Gerbing, 1982). All the scales used to operationalise the constructs need to be examined through the estimation of the measurement model (Anderson and Gerbing, 1988). To assess the measurement model three analyses will be conducted.

First, a highly mandatory condition for construct validity and reliability is to check the unidimensionality of the measure (Anderson and Gerbing, 1991). Unidimensionality refers to the existence of a single construct underlying a set of measures. Each construct is measured by multiple indicators and each indicator measures only a single construct. That is, the set of indicators defining each construct are unidimensional (Anderson and Gerbing, 1982).

Second, the measurement model is further assessed for construct reliability and validity testing. Unidimensionality alone, although a prerequisite, is not sufficient to

establish the usefulness of a scale. Once unidimensionality of a scale is established, its statistical reliability should be assessed before it is subjected to any further validation analysis (Ahire and Golhar, 1996).

Following measurement purification, the path relationships within the model is analysed by a structural model. The structural model specifies the causal relations among the theoretical constructs. The reason for drawing a distinction between the measurement model and the structural model is that proper specification of the measurement model is necessary before meaning can be assigned to the analysis of the structural model. That is good measurement of the latent variables is prerequisite for the analysis of the causal relationships among the latent variables.

In the following sections, the evaluation of the measurement part of the model first focuses on the relationships between the latent variables and their indicators. The aim is to determine the validity and reliability of the measures used to represent the constructs of interest. Following the discussion of the measurement model, the evaluation of the structural part of the model focuses on the substantive relationships of interest (i.e. the linkages between the various endogenous and exogenous latent variables). The aim here is to determine whether the theoretical relationships specified at the conceptualisation stage are indeed supported by the data.

7.4 Stages for conducting structural equation modelling (SEM)

First, a brief description about the original theoretically based conceptual model is carried out before testing the hypothesised relationships in the conceptual model.

Second, the assessment of the measurement scales and the test of the hypothesised relationships represented in the conceptual model is conducted with the use of AMOS. The measurement model is assessed with the confirmatory factor analysis (CFA). As detailed at Section 7.3.3, the first step for conducting measurement model is to check the unidimensionality with each construct, and then with all the possible pairs of the constructs in the hypothesised model. It should be noted that the test is normally carried out with first-order CFA structure in the first place if

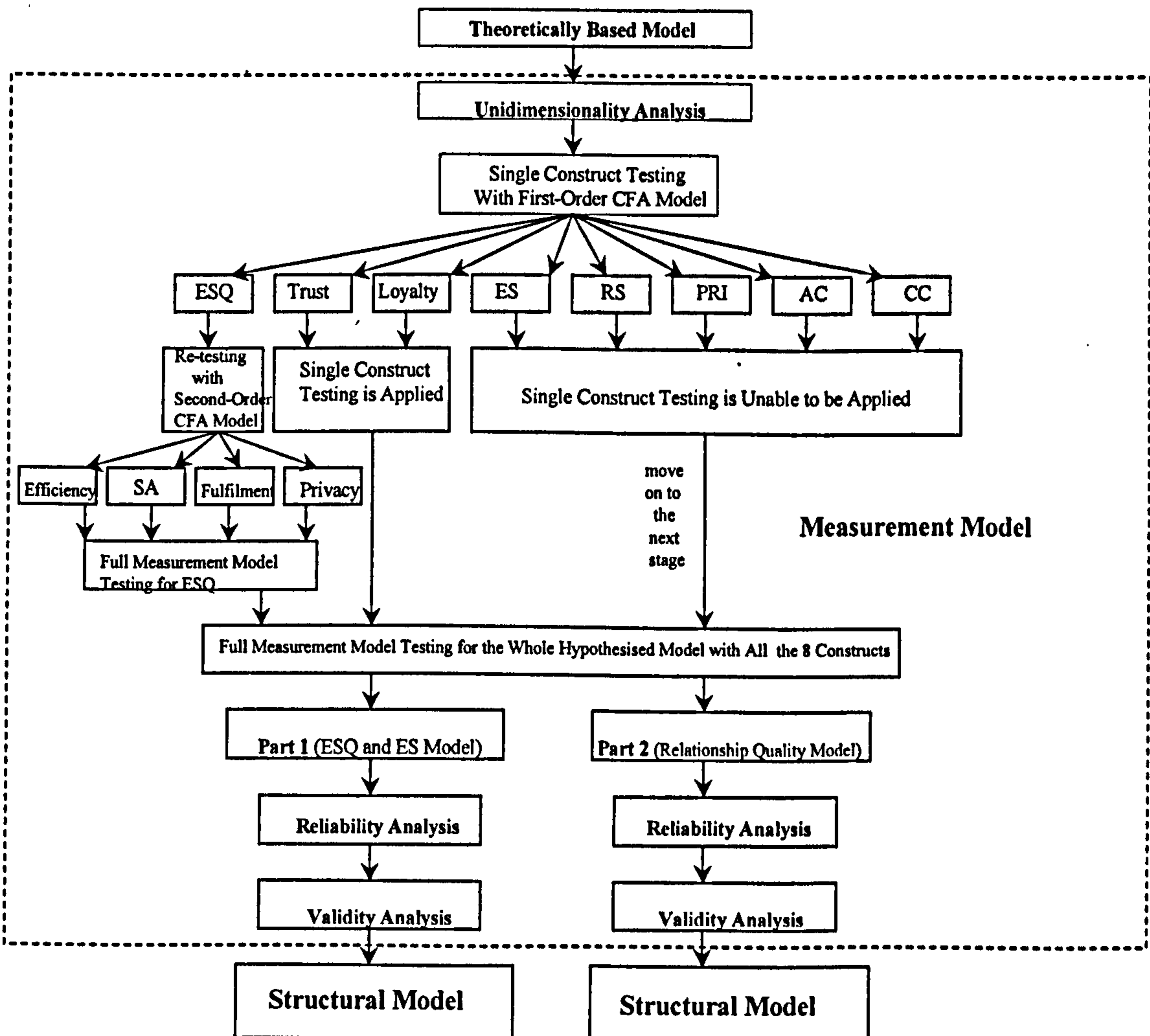
possible. Otherwise, second-order CFA structure is applied (please see Section 7.6.2.1.1 for the details of first/second order factor structure). The other important point worth mentioning here is that the original conceptual model is divided into two parts due to some practical problems after the unidimensionality testing for the whole measurement model (details regarding the separation are explained in Section 7.6.4.1). Following the division, all the analyses including unidimensionality test are applied into two separate models, respectively.

Third, the two separate measurement models are further assessed with construct reliability and validity examination after the unidimensionality testing in order to obtain the consistency and generalisation of the results.

Fourth, following the measurement purification for each construct and their indicators, the hypothesised relationships from the conceptual model (two separate models) is tested with the structural model.

Finally, an alternative model is designed to compare with the proposed hypothesised model to find the best level of fit and the best model to explain the customer loyalty in Internet grocery shopping. Figure 7.1 below depicts the whole process for conducting the measurement and structural model.

Figure 7.1: Stages for Conducting Structural Equation Modelling (SEM)



Note: a. ESQ: E-service quality; SA: System Availability; ES: E-satisfaction; RS: Relationship Satisfaction; PRI: Perceived Relational Investment; CC: Calculative Commitment; AC: Affective Commitment.

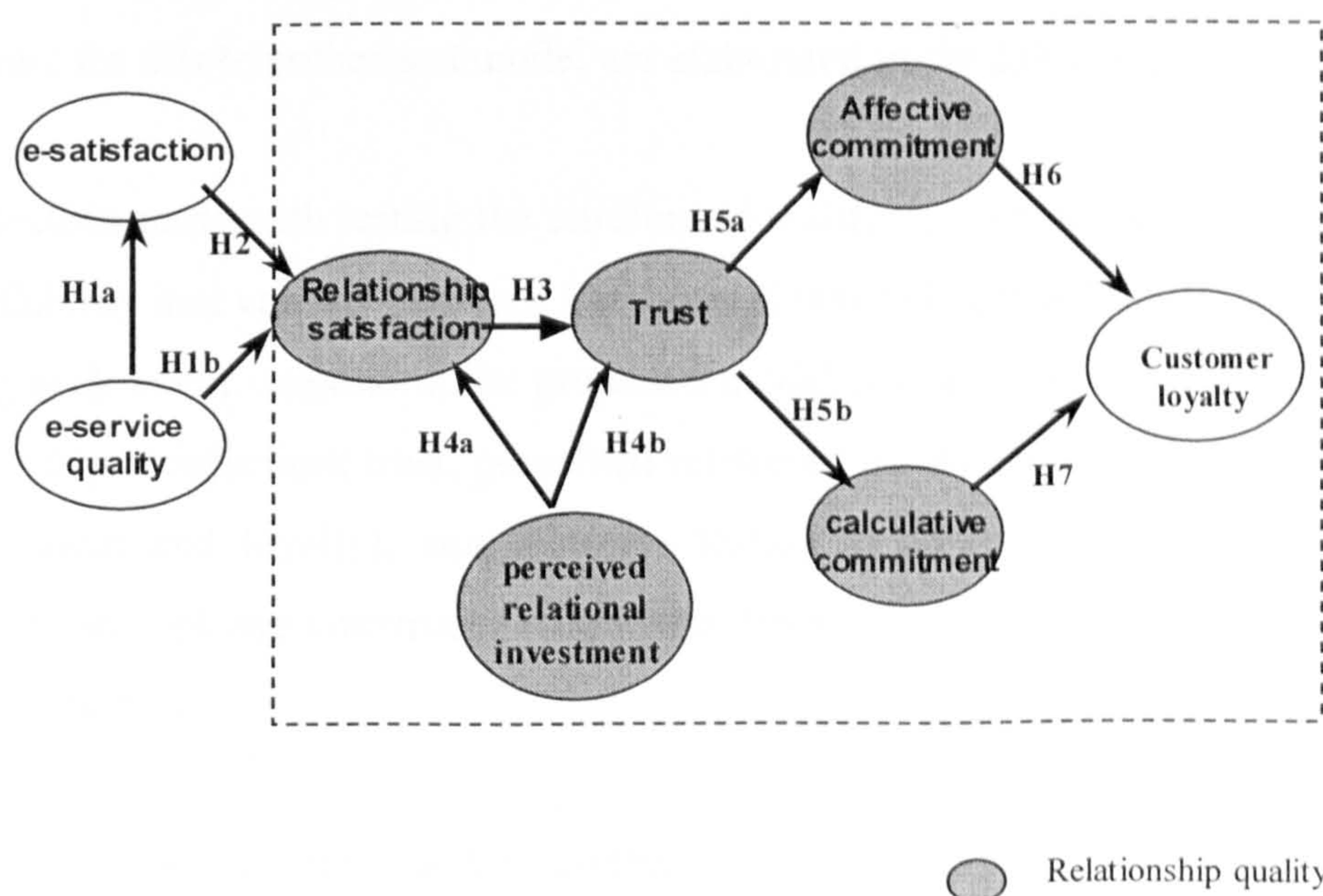
b. All the analyses regarding the measurement model testing are surrounded with the dashed line.

7.5 Stage 1: developing a theoretically based model

The hypothesised model is shown in Fig 7.2. Figure 7.2 is a pictorial representation of the model, expressed as a path diagram (the direction of the arrows indicates theoretical causal relationships). E-satisfaction and e-service quality are posited to

be the antecedents of relationship quality, and loyalty is considered as the critical relational outcome dimension. The key determinants of relationship quality—“relationship satisfaction”, “perceived relational investment” “trust” and “affective and calculative commitment” have been developed based on existing literature. E-service quality and e-satisfaction have an impact on customer loyalty, which is mediated by the interactions of the dimensions of the relationship quality. Two types of commitment directly lead customer loyalty. The postulated causal relations among all variables in this hypothesised model are grounded in the theory and empirical research.

Figure 7.2: Conceptual Model – Relationship quality and Customer Loyalty in Internet Grocery Shopping in the UK



In reviewing this model, it can be seen that relationship quality is represented as a multi-dimensional construct with relationship satisfaction (RS), perceived relational investment (PRI), trust, affective commitment (AC) and calculative commitment (CC) operating as conceptually distinct factors. This part of the model is based on the work of Kumar et al., (1995); Crosby et al., (1990); Dwyer et al., (1987); Shani

and Chalasani (1992); De-Wulf et al., (2001) and Keating et al., (2003) *etc.* in conceptualising relationship quality in a retail environment. The model argues that relationship quality holds the central position in developing customer loyalty in Internet grocery shopping because it is considered to be the most enduring and intensive facets of loyalty, although E-service quality (ESQ) and E-satisfaction (ES) are essential to loyalty, they are not sufficient in building loyalty. With the hypothesised model completely specified, the next stage is to test the data for meeting the assumptions underlying the structural equation modelling.

7.6 Stage 2: Developing the measurement model

According to Byrne (2001) the task involved in developing the measurement model of SEM is twofold: (a) to determine the number of indicators to use in measuring each construct, and (b) to identify which items to use in formulating each construct. Thus, details regarding the number of indicators and the formulation of each construct for this hypothesised model are elaborated in the following sections.

This section starts with testing the unidimensionality of each construct, followed by the reliability and validity analysis. Unidimensionality is carried out by individually testing each latent variable in the proposed model (e-service quality; e-satisfaction; relationship satisfaction; trust, perceived relational investment; affective/calculative commitment and loyalty), and then the testing is conducted by linking all the possible pairs of the constructs within the model (linking all 8 constructs in the model together).

It should be noted here that the unidimensionality test with each latent variable should be done with first order structure factor analysis if possible, otherwise using second structure factor analysis or keeping on moving to the next stage with the original indicators. For the constructs (e.g. e-service quality) that have a second order factor structure, each of its sub-dimensions is examined first, followed by linking all the sub-dimensions together (please refer to Fig. 7.1 for detail).

7.6.1 Unidimensionality analysis for the measurement model

The procedure for estimating unidimensionality is recommended by Garver and Mentzer (1999). They suggest that it should first be done independently with each latent variable. Items are omitted as required at each step to obtain adequate measurement model fit. Indices of fit are normally used to suggest unidimensionality. Once each construct in the measurement model is deemed unidimensional by itself, then unidimensionality should be conducted for all possible pairs.

The most commonly reported index of fit for examining unidimensionality is chi-square χ^2 , that is a measure of exact fit (Bollen and Long, 1993). However, chi-square χ^2 rejects the model fitting as the number of cases increases (Hoelter, 1983). The other fit statistics such as Goodness of Fit Index (GFI) and Adjusted Goodness of Fit Index (AGFI) are frequently reported in the articles about SEM for unidimensionality testing (Ping, 2004). In order to check the unidimensionality of each construct, all 8 constructs in the model are subject to the individual testing, and then the full measurement model is estimated with CFA, which is carried out by an overall unidimensionality test for all the constructs.

7.6.2 Single construct measurement model testing

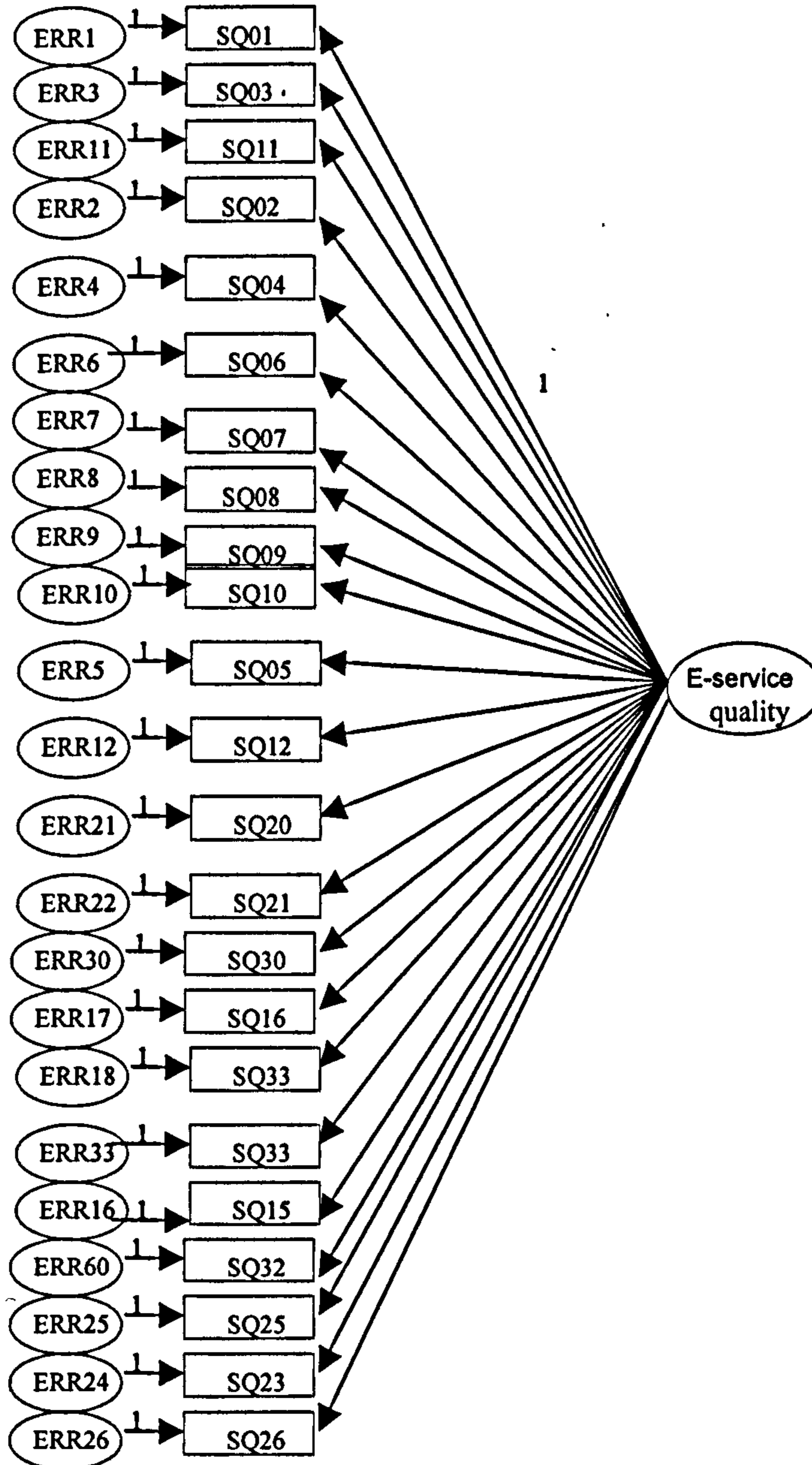
7.6.2.1 Unidimensionality analysis for e-service quality

Twenty two items of ESQ (e-service quality) were borrowed from Parasuraman et al's.(2005), E-S-QUAL and one item was generated from the focus groups at the exploratory stage. The measurement model for ESQ (Figure 7.3) consists of 23 items and yields a poor level of model fit: χ^2 value is 2879.44 ($\chi^2/df=12.52$), which exceeds 3 as recommended by Bagozzi and Yi (1988). Other estimated parameters GFI (0.43); AGFI (0.52); CFI (0.71); IFI (0.71) and TLI (0.68) all suggest poor fit as their values below the recommended thresholds.

In reviewing both unstandardised, as well as standardised maximum likelihood parameter estimates (Table 7.1) below, most of the parameter estimates are

statistically significant and substantively meaningful, except for SQ 16 (its c.r = -0.04; $p > 0.05$).

Figure 7.3: First Order CFA Testing for E-service Quality



A review of the modification indices (Table 7.2) reveals a strong evidence of poor fit in the model. More than half of the items of e-service quality are either highly correlated with one another or error correlations are found between item pairs.

Since correlation matrix is typically of interest in presenting results between variables, it is usually to request this when checking the overall model. From the correlation matrix (Table 7.3) some patterns can be seen between the variables. Correlation coefficients between half of the variables are very close or exceed 0.70. According to Garver and Mentzer (1999), if the correlation coefficients are close or bigger than 0.70, then researcher should consider using second-order CFA to test the Model rather than using first order factor model. In theory, fit statistics related to a model parameterised either as a first-order structure or as a second-order structure is equivalent (Byrne, 2001). However, some differences emerge when generating research findings. Details regarding the differences between first-order and second-order structure are elaborated in the next section.

Table 7.1: Selected AMOS Text Output for ESQ: Maximum Likelihood Estimates

Regression		Unstandardised				Standardised
Weights		Estimate	S.E.	C.R.	P	Estimate
SQ01	<-- ESQ	1.00				0.80
SQ03	<-- ESQ	1.09	0.05	22.57	0.00	0.86
SQ11	<-- ESQ	1.05	0.05	21.84	0.00	0.84
SQ02	<-- ESQ	1.05	0.05	22.67	0.00	0.87
SQ04	<-- ESQ	1.08	0.05	21.72	0.00	0.84
SQ06	<-- ESQ	0.98	0.05	20.34	0.00	0.80
SQ07	<-- ESQ	1.04	0.05	21.79	0.00	0.84
SQ08	<-- ESQ	1.11	0.05	21.78	0.00	0.84
SQ09	<-- ESQ	1.01	0.05	20.43	0.00	0.81
SQ10	<-- ESQ	0.93	0.05	19.16	0.00	0.77
SQ05	<-- ESQ	0.96	0.05	17.63	0.00	0.72
SQ12	<-- ESQ	0.98	0.06	17.05	0.00	0.70
SQ20	<-- ESQ	0.62	0.05	12.56	0.00	0.55
SQ21	<-- ESQ	0.60	0.05	12.25	0.00	0.54
SQ30	<-- ESQ	0.68	0.05	14.30	0.00	0.61
SQ16	<-- ESQ	-0.06	0.07	-0.83	0.41	-0.04
SQ17	<-- ESQ	0.66	0.05	14.33	0.00	0.61
SQ33	<-- ESQ	0.66	0.05	14.32	0.00	0.61
SQ15	<-- ESQ	0.63	0.05	12.51	0.00	0.54
SQ32	<-- ESQ	0.65	0.06	11.84	0.00	0.52
SQ25	<-- ESQ	0.63	0.05	11.72	0.00	0.51
SQ23	<-- ESQ	0.64	0.06	11.72	0.00	0.51
SQ26	<-- ESQ	0.61	0.05	13.40	0.00	0.58

Note: ESQ: E-service quality.

Table 7.2: AMOS Text Output for Full Measurement Model of E-service Quality: Modification Indices and Parameter Change Statistics

Covariances:			M.I.	Par Change
ERR26	↔	ERR25	127.87	0.54
ERR24	↔	ERR25	119.93	0.64
ERR24	↔	ERR26	93.32	0.47
ERR16	↔	ERR60	89.85	0.52
ERR33	↔	ERR25	56.16	0.35
ERR33	↔	ERR26	93.07	0.37
ERR33	↔	ERR16	57.64	0.33
ERR18	↔	ERR26	86.73	0.36
ERR18	↔	ERR24	60.95	0.37
ERR18	↔	ERR16	68.00	0.36
ERR18	↔	ERR33	100.48	0.39
ERR30	↔	ERR16	73.34	0.39
ERR30	↔	ERR33	190.04	0.55
ERR30	↔	ERR18	56.42	0.30
ERR22	↔	ERR16	77.92	0.43
ERR22	↔	ERR33	141.97	0.51
ERR22	↔	ERR18	85.92	0.39
ERR22	↔	ERR30	104.21	0.45
ERR21	↔	ERR16	87.11	0.45
ERR21	↔	ERR33	145.82	0.52
ERR21	↔	ERR18	88.72	0.40
ERR21	↔	ERR30	116.61	0.48
ERR21	↔	ERR22	278.59	0.79
ERR12	↔	ERR9	68.17	0.33
ERR5	↔	ERR12	107.94	0.51
ERR11	↔	ERR9	62.95	0.22
ERR8	↔	ERR3	54.68	0.19
ERR6	↔	ERR9	51.09	0.21
Variances:			M.I.	Par Change
Regression Weights:			M.I.	Par Change
SQ32	←	SQ15	62.40	0.34
SQ25	←	SQ26	83.83	0.42
SQ25	←	SQ23	87.34	0.36
SQ26	←	SQ25	93.14	0.31
SQ26	←	SQ23	67.97	0.26
SQ26	←	SQ33	57.02	0.28
SQ26	←	SQ17	53.19	0.27
SQ23	←	SQ25	87.34	0.37
SQ23	←	SQ26	61.17	0.36
SQ15	←	SQ32	64.97	0.28
SQ15	←	SQ21	54.86	0.29
SQ15	←	SQ20	60.23	0.30
SQ33	←	SQ26	61.02	0.29
SQ33	←	SQ17	61.63	0.29
SQ33	←	SQ30	116.81	0.38
SQ33	←	SQ21	99.97	0.35
SQ33	←	SQ20	100.83	0.35
SQ17	←	SQ26	56.86	0.28
SQ17	←	SQ33	61.56	0.28
SQ17	←	SQ21	60.50	0.27
SQ17	←	SQ20	61.35	0.27
SQ30	←	SQ15	50.94	0.25
SQ30	←	SQ33	116.43	0.40
SQ30	←	SQ21	73.38	0.31
SQ30	←	SQ20	80.63	0.32
SQ21	←	SQ15	54.12	0.28
SQ21	←	SQ33	86.97	0.38
SQ21	←	SQ17	52.69	0.29
SQ21	←	SQ30	64.05	0.31
SQ21	←	SQ20	192.62	0.53
SQ20	←	SQ15	60.50	0.30
SQ20	←	SQ33	89.33	0.38
SQ20	←	SQ17	54.41	0.30
SQ20	←	SQ30	71.67	0.33
SQ20	←	SQ21	196.15	0.54
SQ12	←	SQ05	50.30	0.25
SQ05	←	SQ12	55.12	0.22

7.6.2.1.1 Testing e-service quality with the second order factor structure

Two perspectives on the factor analysis structure can be gained with the introduction of the first-order factor and the second-order factor models. In first-order factor model, the researcher specifies just one level of factors (the first order). A first order factor is a unidimensional factor determined directly from its indicators (Garver and Mentzer, 1999). In this research, an example of first order factor is directly measurable, operational constructs like relationship satisfaction, which can be explained as the relationship customers have with their Internet grocery store.

However, when the construct in a CFA model has several dimensions, it is necessary to see the structural relationships between the dimensions. The items for e-service quality in this study are drawn from Parasuraman et al's., (2005) study called E-S-QUAL, which aims to measure the entire customers' perception about the general e-core-service quality on Internet shopping.

For instance, E-S-QUAL Scale (Parasuraman et al., 2005) is first generated by four dimensions about customer perceptions of the Internet retailer's "efficiency", "system availability", "fulfilment" and "privacy". These specific four dimensions are then measured by individual items. This structure can be represented by a second-order factor model, which posits the first-order factors estimated are actually sub-dimensions of a broader and more encompassing construct. As respondents perceive e-service quality at two levels: these four specific dimensions in terms of Internet retailer's "efficiency", "system availability", "fulfilment" and "privacy" represent the first order factors and the second factor would be the overall perceived e-service quality, which would be indicated by a first order factors just described.

Garver and Mentzer (1999) offer two guidelines for determining the level of factors to be specified in the measurement model. From a theoretical perspective, researchers should consider whether a first or second order factor model would be better at answering research questions. From a statistical consideration, researcher should examine the correlation coefficient between first order factors. If the correlations is greater than 0.70, then using second order factor models. Otherwise, Garver and Mentzer (1999) recommend using the first factor model.

Table 7.3 shows the correlation coefficients between first order factors for e-service quality. Almost half of the correlation coefficients between items from E-S-QUAL are close or bigger than 0.70. Moreover, as customers normally evaluate service quality at an overall level, it is thought that using second order factor model would be more relevant than using the numerous first order factors in generalising the research findings about customer’s perception of the quality of the Internet grocery store, that is also consistent with the work of Parasuraman et al's., (2005) hypothesised E-S-QUAL. In the following sections, each sub-dimension of e-service quality is tested with unidimensionality analysis.

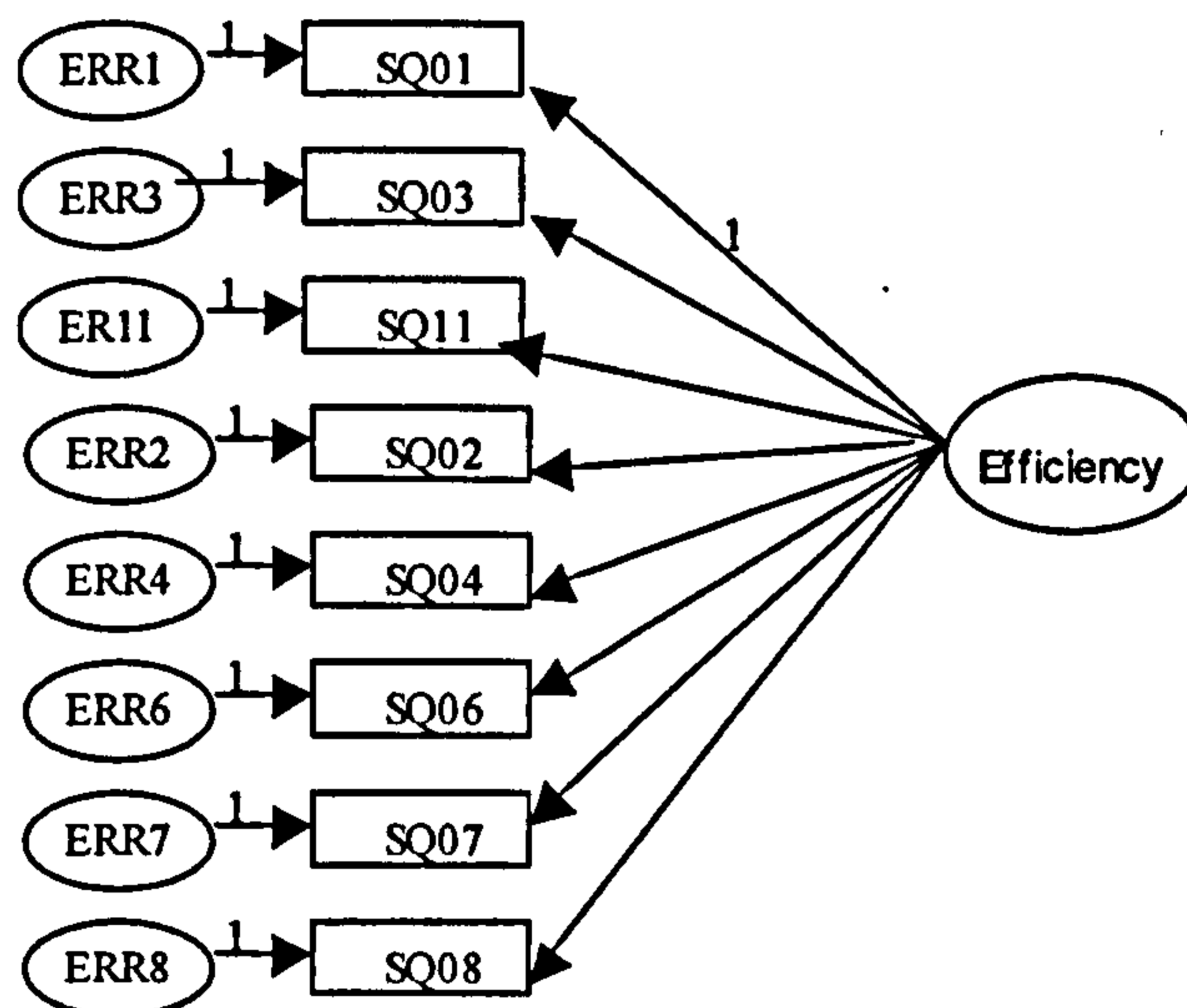
Table 7.3: AMOS Text Output for the Full Measurement Model of E-service Quality: Correlation Matrix among Latent Factors

All Implied Correlations - Estimates																								
	ESQ	SQ32	SQ01	SQ09	SQ25	SQ26	SQ23	SQ15	SQ33	SQ17	SQ16	SQ30	SQ21	SQ20	SQ12	SQ05	SQ04	SQ02	SQ11	SQ03	SQ10	SQ08	SQ07	SQ06
ESQ	1.00																							
SQ32	0.52	1.00																						
SQ01	0.80	0.41	1.00																					
SQ09	0.81	0.42	0.64	1.00																				
SQ25	0.51	0.27	0.41	0.41	1.00																			
SQ26	0.58	0.30	0.46	0.47	0.30	1.00																		
SQ23	0.51	0.27	0.41	0.41	0.26	0.30	1.00																	
SQ15	0.54	0.28	0.43	0.44	0.28	0.31	0.28	1.00																
SQ33	0.61	0.32	0.49	0.49	0.31	0.35	0.31	0.33	1.00															
SQ17	0.61	0.32	0.49	0.49	0.31	0.35	0.31	0.33	0.38	1.00														
SQ16	-0.04	-0.02	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	1.00													
SQ30	0.61	0.32	0.49	0.49	0.31	0.35	0.31	0.33	0.37	0.37	-0.02	1.00												
SQ21	0.54	0.28	0.43	0.43	0.28	0.31	0.28	0.29	0.33	0.33	-0.02	0.33	1.00											
SQ20	0.55	0.28	0.44	0.44	0.28	0.32	0.28	0.30	0.34	0.34	-0.02	0.33	0.29	1.00										
SQ12	0.70	0.36	0.56	0.56	0.36	0.41	0.36	0.38	0.43	0.43	-0.03	0.43	0.38	0.38	1.00									
SQ05	0.72	0.37	0.57	0.58	0.37	0.42	0.37	0.39	0.44	0.44	-0.03	0.44	0.39	0.39	0.51	1.00								
SQ04	0.84	0.44	0.67	0.68	0.43	0.49	0.43	0.46	0.52	0.52	-0.03	0.52	0.45	0.46	0.59	0.61	1.00							
SQ02	0.87	0.45	0.69	0.70	0.44	0.50	0.44	0.47	0.53	0.53	-0.03	0.53	0.46	0.47	0.61	0.62	0.73	1.00						
SQ11	0.84	0.44	0.67	0.68	0.43	0.49	0.43	0.46	0.52	0.52	-0.03	0.51	0.45	0.46	0.59	0.61	0.71	0.73	1.00					
SQ03	0.86	0.45	0.69	0.70	0.44	0.50	0.44	0.47	0.53	0.53	-0.03	0.53	0.46	0.47	0.61	0.62	0.73	0.75	0.73	1.00				
SQ10	0.77	0.40	0.61	0.62	0.39	0.44	0.39	0.42	0.47	0.47	-0.03	0.47	0.41	0.42	0.54	0.55	0.65	0.66	0.65	0.66	1.00			
SQ08	0.84	0.44	0.67	0.68	0.43	0.49	0.43	0.46	0.52	0.52	-0.03	0.52	0.45	0.46	0.59	0.61	0.71	0.73	0.71	0.73	0.65	1.00		
SQ07	0.84	0.44	0.67	0.68	0.43	0.49	0.43	0.46	0.52	0.52	-0.03	0.52	0.45	0.46	0.59	0.61	0.71	0.73	0.71	0.73	0.65	0.71	1.00	
SQ06	0.80	0.42	0.64	0.65	0.41	0.46	0.41	0.44	0.49	0.49	-0.03	0.49	0.43	0.44	0.56	0.58	0.68	0.70	0.68	0.69	0.62	0.68	0.68	1.00

7.6.2.1.1.1 Unidimensionality testing for efficiency

E-S-QUAL (Parasuraman et al., 2005) is a multiple-dimensional scale for measuring e-service quality, which includes 22-item scales for four dimensions: “efficiency”, “fulfilment”, “system availability”, and “privacy”. Thus, the unidimensionality analysis starts from the single construct measurement testing with the sub-dimensions of E-S-QUAL. The four dimensions “efficiency”, “fulfilment”, “system availability”, and “privacy” are tested individually before testing the full measurement model of e-service quality by linking these four dimensions together.

Figure 7.4: Single-construct Measurement Testing for Efficiency



The measurement model for efficiency (Figure 7.4) yields χ^2 value of 146.25 ($\chi^2/df = 7.31$), which exceeds 3 as recommended by Bagozzi and Yi (1988). Other goodness of fit indices are GFI (0.93); AGFI (0.87); CFI (0.97); IFI (0.97), TLI (0.95) and RMSEA (0.11). Although the value for AGFI and RMSEA do not meet the requirement level, other fittings seem quite reasonable and marginally adequate.

In reviewing both the unstandardised, as well as standardised maximum likelihood parameter estimates (Table 7.4), all the parameter estimates are statistically significant and substantively meaningful. The Modification Indices (MIs) reveal

that all the parameter estimates are statistically significant and there are no outstanding values suggestive of model poor fitting. Although the fit of the current model does not meet the recommended guidelines in a number of instances, taking each of aforementioned factors into account, no further consideration is given to the inclusion of additional parameters or deletion of any of the existing items.

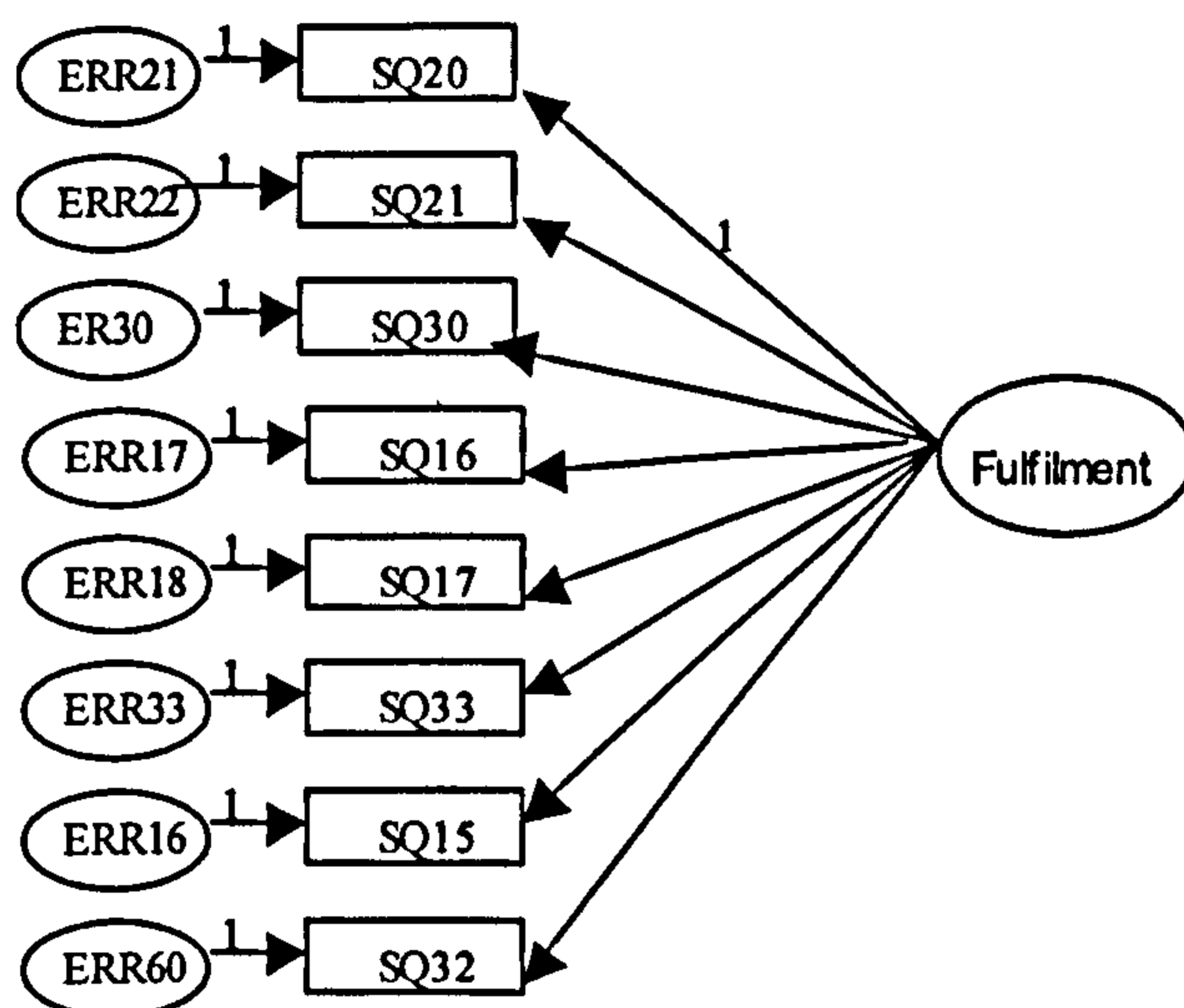
**Table 7.4: Selected AMOS Text Output for Efficiency Model:
Maximum Likelihood Estimates**

Regression Weights		Unstandardised				Standardised	
		Estimate	S.E.	C.R.	P	Estimate	
SQ01	<--	Efficiency	1.00			0.79	
SQ03	<--	Efficiency	1.14	0.05	23.11	0.00	0.89
SQ11	<--	Efficiency	1.04	0.05	20.92	0.00	0.83
SQ02	<--	Efficiency	1.08	0.05	22.79	0.00	0.88
SQ04	<--	Efficiency	1.13	0.05	22.45	0.00	0.88
SQ06	<--	Efficiency	0.98	0.05	19.74	0.00	0.79
SQ07	<--	Efficiency	1.09	0.05	22.50	0.00	0.88
SQ08	<--	Efficiency	1.16	0.05	22.56	0.00	0.88

Model Fit: $\chi^2=146.25$; $\chi^2/df=7.31$; GFI=0.93; AGFI=0.87; CFI=0.97; IFI=0.97; RMSEA=0.11; TLI=0.95.

7.6.2.1.1.2 Unidimensionality testing for fulfilment

The measurement model for fulfilment (Figure 7.5) is estimated and resulted in a poor level of model fit: The observed χ^2 for this model is 267.81 ($\chi^2/df = 13.39$), which exceeds 3 as recommended by Bagozzi and Yi (1988). Other goodness of fit indices are GFI (0.87); AGFI (0.76); CFI (0.89); IFI (0.89), TLI (0.85) and RMSEA (0.16) and show a very poor fitting model. It seems that the current model can be improved. In an effort to address the problems, the next stage should examine those inconsistent estimates and the areas of poor fitting in the model.

Figure 7.5: Single-construct Measurement Testing for Fulfilment (i)

7.6.2.1.1.2.1 Offending estimates and poor fitting in fulfilment model (i)

In reviewing both the unstandardised, as well as standardised maximum likelihood parameter estimates (Table 7.5). Except for “SQ16-Fulfilment” (c.r.<1.96, based on a probability level of 0.05), all other parameter estimates are statistically significant and substantively meaningful. Therefore, this non-significant parameter “SQ16-Fulfilment” can be considered unimportant to the model. It is deleted at the next stage.

The next task is to identify any areas of poor fitting in the model. A review of the modification indices (MI) reveals some evidence of poor fitting in the model. In reviewing the parameters in the Covariance section (Table 7.6), the largest MI is 90.37 between err21 and err22. Looking back at the Fulfilment Model (i) (Figure 7.5), these two items correspond to another two similar items (SQ20 and SQ21) about the truthfulness of the e-tailer. Thus, it can be decided that if let the model to be re-estimated with one of the covariance errors (let’s say err22) specified as free, the overall χ^2 value can drop by at least 90.37. The re-specified model is labelled as Fulfilment Model (ii) (Figure 7.6). Results from this analysis are discussed in the next section.

**Table 7.5: Selected AMOS Text Output for Fulfilment Model (i):
Maximum Likelihood Estimates**

Regression Weights			Unstandardised				Standardised
			Estimate	S.E.	C.R.	P	Estimate
SQ20	←	Fulfilment	1.00				0.85
SQ21	←	Fulfilment	0.98	0.04	24.30	0.00	0.85
SQ30	←	Fulfilment	0.92	0.04	20.97	0.00	0.81
SQ16	←	Fulfilment	0.00	0.07	-0.06	0.96	0.00
SQ17	←	Fulfilment	0.83	0.04	18.95	0.00	0.75
SQ33	←	Fulfilment	0.93	0.04	22.53	0.00	0.84
SQ15	←	Fulfilment	0.84	0.05	17.76	0.00	0.71
SQ32	←	Fulfilment	0.79	0.06	14.26	0.00	0.61

Model Fit: $\chi^2=267.81$; $\chi^2/df=13.39$; GFI=0.87; AGFI=0.76; CFI=0.89; IFI=0.89; RMSEA=0.16; TLI=0.85.

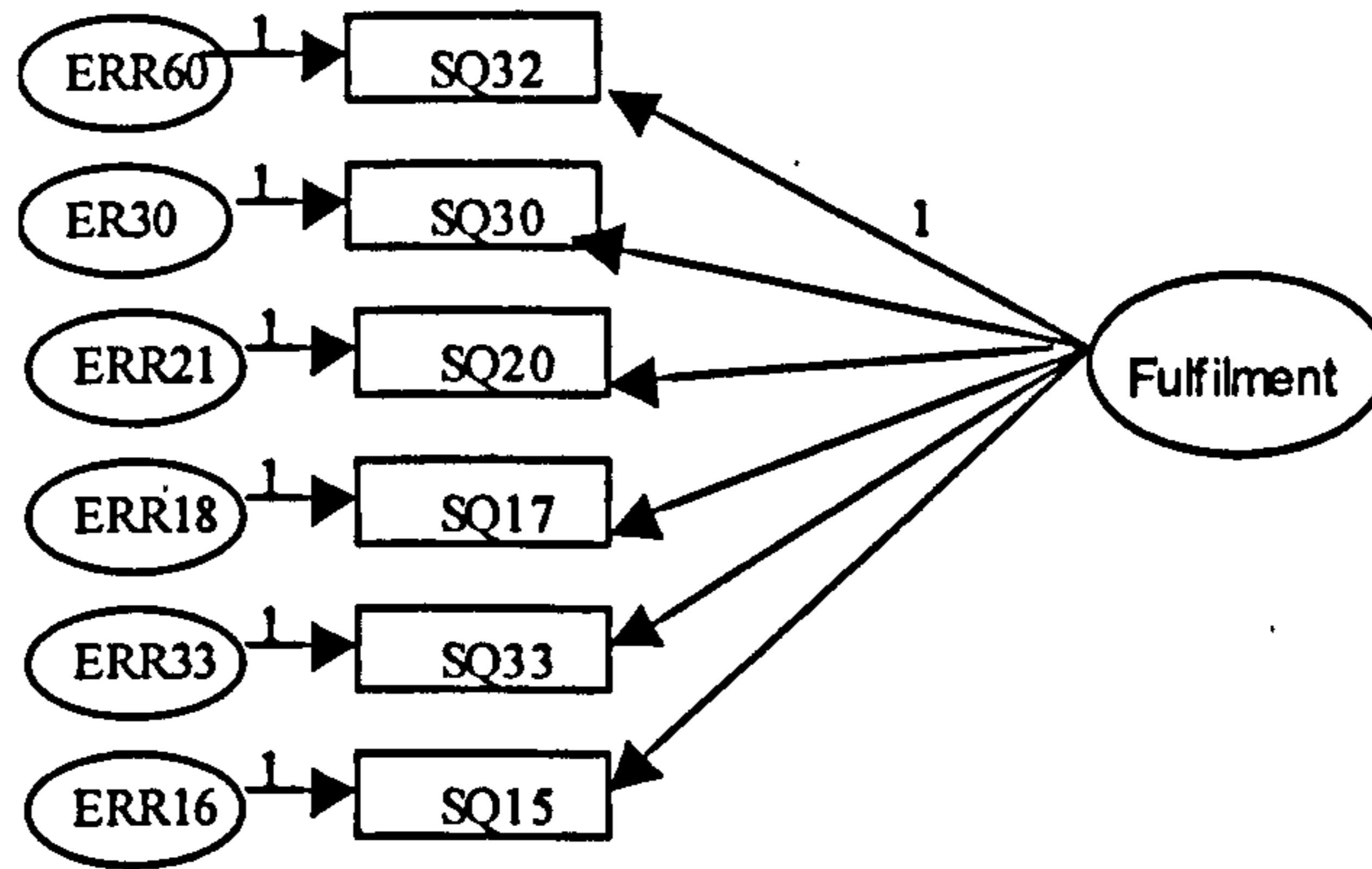
**Table 7.6: AMOS Text Output for Fulfilment Model (i): Modification Indices
and Parameter Change Statistics**

Covariances:			M.I.	Par Change
ERR21	↔	ERR22	90.37	0.21
Variances:			M.I.	Par Change
Regression Weights:			M.I.	Par Change

7.6.2.1.1.2.2 Re-specified measurement model for fulfilment model (ii)

The re-specified full measurement model ii (Figure 7.6) yields an overall χ^2 value of 82.99 with 9 degrees of freedom ($\chi^2/df=9.22$). The goodness-of-fit (GFI) and the adjusted GFI (AGFI) are at 0.95 and 0.87. Although the value for AGFI is still below the recommended level of 0.90. It can be seen there is an improvement comparing to Model i (please see Figure 7.5). All standardised and unstandardised parameter estimates are statistically significant this time (Table 7.7).

Figure 7.6: Single-construct Measurement Testing for Fulfilment (ii)



Turning to the modification indices (MIs), it can be seen that all the parameter estimates are statistically significant and there are no outstanding values suggestive of model poor fitting. Although the fit of the current model does not meet the recommended guidelines in some instances, taking each of aforementioned factors into account, no further consideration was given to the inclusion of additional parameters.

**Table 7.7: Selected AMOS Text Output for Fulfilment Model (ii):
Maximum Likelihood Estimates**

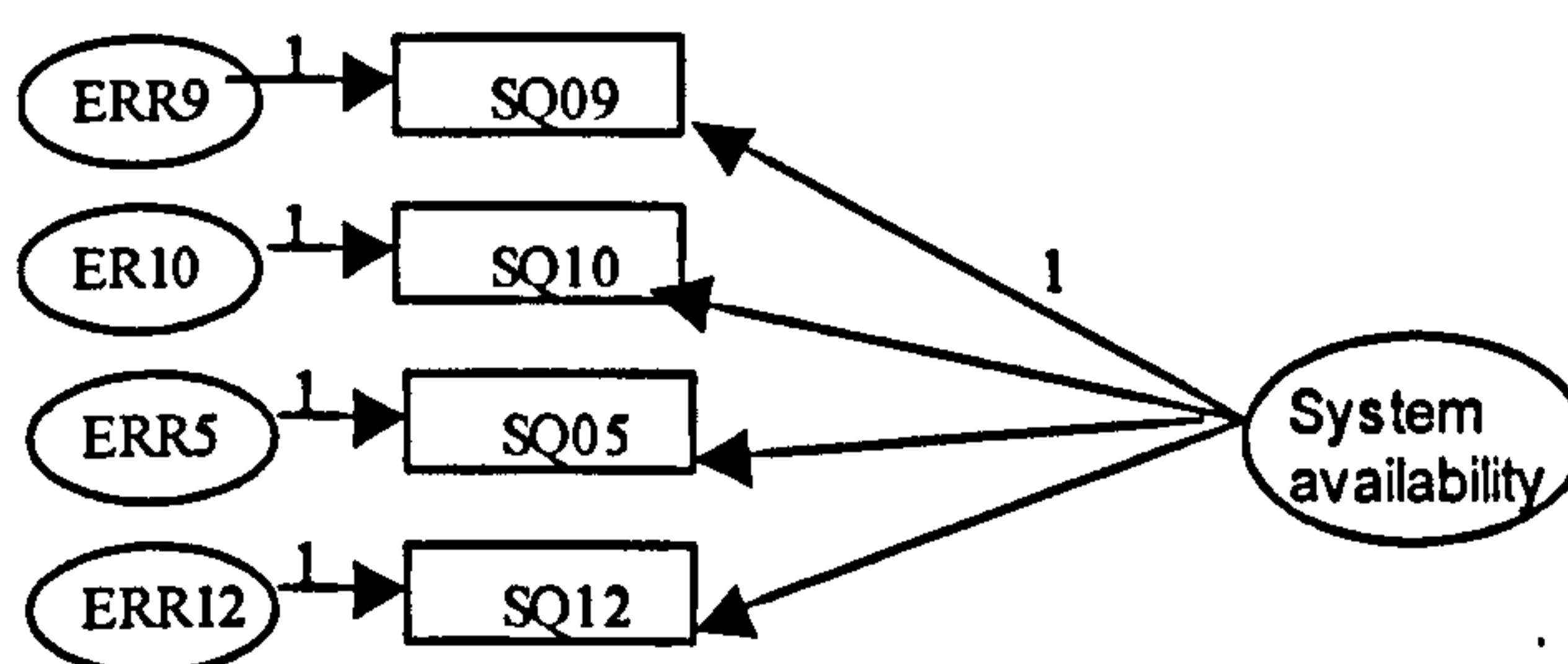
Regression Weights			Unstandardised				Standardised
			Estimate	S.E.	C.R.	P	Estimate
SQ20	←	Fulfilment	1.00				0.79
SQ30	←	Fulfilment	1.03	0.05	20.04	0.00	0.84
SQ17	←	Fulfilment	0.90	0.05	17.76	0.00	0.75
SQ33	←	Fulfilment	1.03	0.05	20.92	0.00	0.86
SQ15	←	Fulfilment	0.92	0.06	16.70	0.00	0.72
SQ32	←	Fulfilment	0.87	0.06	14.02	0.00	0.63

Model Fit: $\chi^2=82.99$; $\chi^2/df=9.22$; GFI=0.95; AGFI=0.87; CFI=0.96; IFI=0.96; RMSEA=0.13; TLI=0.92.

7.6.2.1.1.3 Unidimensionality testing for system availability

The measurement model for system availability (Figure 7.7) yields χ^2 value of 21.18 ($\chi^2/df = 10.59$), which exceeds 3 as recommended by Bagozzi and Yi (1988). Other estimated parameters are GFI (0.98); AGFI (0.89); CFI (0.98); IFI (0.98) and TLI (0.95) are marginally adequate, despite of the value for RMSEA (0.14) being above the recommended level between 0.05 and 0.08.

Figure 7.7: Single-construct Measurement Testing for System Availability



In reviewing both the unstandardised, as well as standardised maximum likelihood parameter estimates (Table 7.8), all the parameter estimates are statistically significant and substantively meaningful. Modification indices (MIs) reveal that all the parameter estimates are statistically significant and there are no outstanding values suggestive of model poor fitting. Although the fit of the current model does not exceed the recommended guidelines in many instances, taking each of aforementioned factors into account, no further consideration is given to the inclusion or deletion of additional parameters.

**Table 7.8: Selected AMOS Text Output for System Availability Model:
Maximum Likelihood Estimates**

Regression Weights			Unstandardised				Standardised
			Estimate	S.E.	C.R.	P	Estimate
SQ09	<--	SA	1.00				0.85
SQ10	<--	SA	0.87	0.04	19.93	0.00	0.77
SQ05	<--	SA	1.02	0.05	20.67	0.00	0.82
SQ12	<--	SA	1.11	0.05	21.79	0.00	0.85

Note: SA: System Availability.

Model Fit: $\chi^2=21.18$; $\chi^2/df=10.59$; GFI=0.98; AGFI=0.89; CFI=0.98; IFI=0.98; RMSEA=0.14; TLI=0.95.

7.6.2.1.1.4 Results of all single constructs of e-service quality measurement model

Table 7.9 below summarises the indices of fit for all the constructs, which can be tested with the single construct measurement model and Table 7.10 illustrates all the retained items of e-service quality from the unidimensionality testing for each single construct. Although Garver and Mentzer (1999) suggest two stages to test the unidimensionality for the measurement model, it should be noted that there is some practical difference when testing with each single construct of e-service quality. That is unidimensionality testing with a construct which only has two/three measures, is difficult to demonstrate by using CFA as the model is under or just identified. AMOS software cannot work under that condition. In E-S-QUAL model (Parasuraman et al., 2005) a construct- “privacy” has got only three indicators. Thus, the first stage of unidimensionality test cannot be applied to “privacy”. Given the aforementioned situation, it is decided that testing of “privacy” keeps on moving to the second stage of the unidimensionality analysis. That is “privacy” will be linked with other pairs of constructs where possible.

Table 7.9: Results of Single Construct Measurement Model of E-service Quality

Variables	χ^2	DF	χ^2/df	GFI	AGFI	CFI	IFI	RMSEA	TLI
Efficiency	146.25	20	7.31	0.93	0.87	0.97	0.97	0.11	0.95
System Availability	21.18	2	10.59	0.98	0.89	0.98	0.98	0.14	0.95
Fulfillment	82.99	9	9.22	0.95	0.87	0.96	0.96	0.13	0.92
Privacy	-	-	-	-	-	-	-	-	-

Note: Privacy has only three indicators, which are unable to be subjected to single construct measurement model testing, as the model is just-identified. Thus, privacy is tested at the second stage of the unidimensionality analysis.

Table 7.10: Retained items used for the full measurement model testing of E-service quality

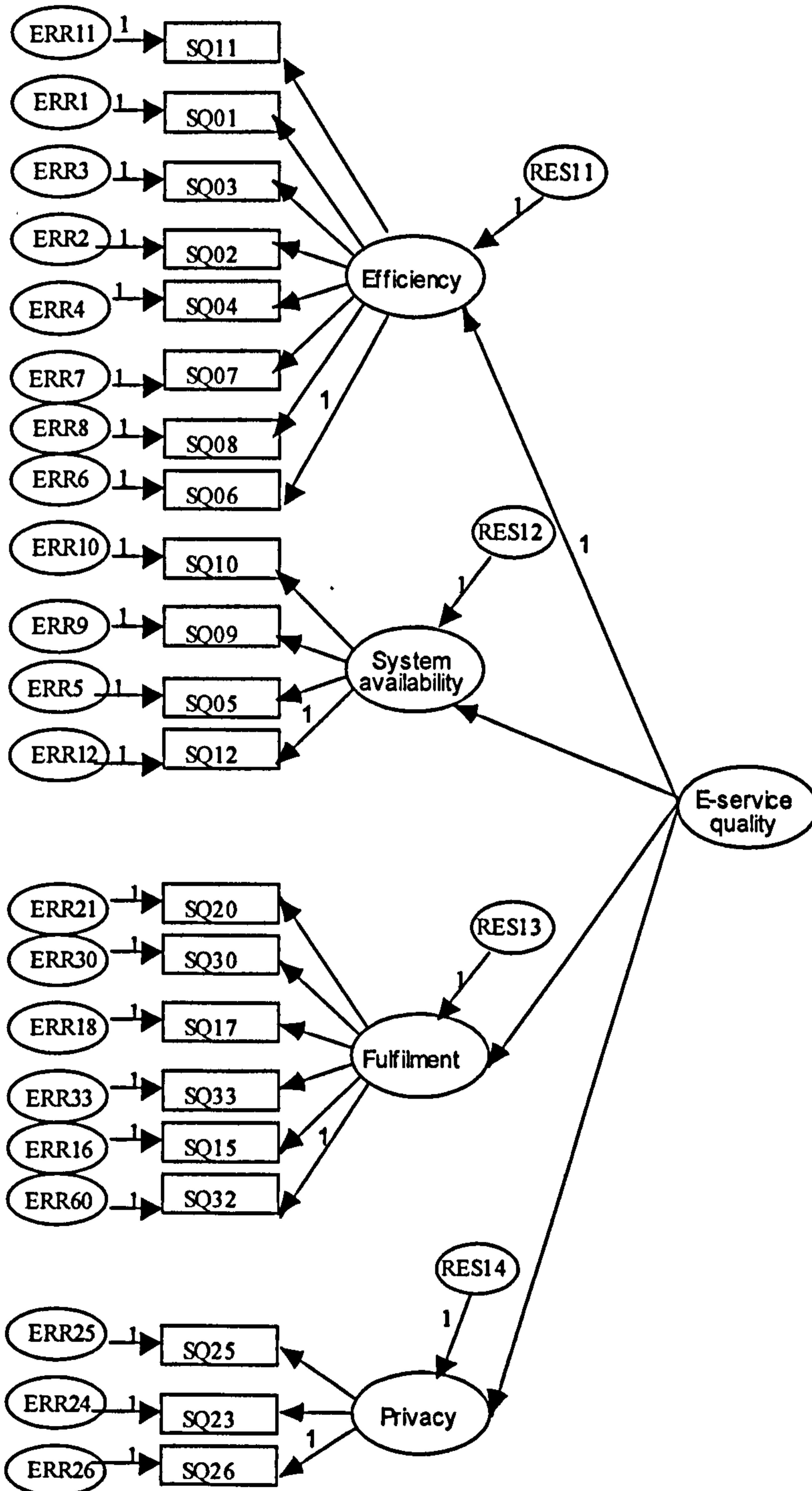
Original Number of items	Constructs	Source	Item deleted	Item Retained
23	ESQ	Parasuraman et al., (2003) twenty two-item		yes
	SQ01←Efficiency			yes
	SQ03←Efficiency			yes
	SQ02←Efficiency	SQ 16 is developed from the		yes
	SQ04←Efficiency	exploratory research.		yes
	SQ11←Efficiency			yes
	SQ06←Efficiency			yes
	SQ07←Efficiency			yes
	SQ08←Efficiency			yes
	SQ09←SA			yes
	SQ10←SA			yes
	SQ05←SA			yes
	SQ12←SA			yes
	SQ20←Fulfillment			yes
	SQ30←Fulfillment			yes
	SQ17←Fulfillment			yes
	SQ33←Fulfillment			yes
	SQ15←Fulfillment			yes
	SQ21←Fulfillment		yes	
	SQ16←Fulfillment		yes	
	SQ25←Privacy			yes
	SQ23←Privacy			yes
	SQ26←Privacy			yes
	SQ32←Fulfillment			yes

Note: SA: System availability.

7.6.2.1.2 Full measurement model testing of e-service quality

Based on the results of the single construct measurement testing, this section tests the full measurement model for e-service quality. At this stage, all the possible pairs of the dimensions in e-service quality model are linked together and examined with the second-order CFA (confirmatory factor analysis) structure.

Figure 7.8: Second Order CFA testing for E-S-QUAL (i)



The full measurement model for e-service quality (Figure 7.8) is estimated and resulted in a poor level of model fit: The observed χ^2 for this model is 922.60 ($\chi^2/df = 4.99$), exceeded 3 recommended by Bagozzi and Yi (1988). The goodness-of-fit index (GFI) and adjusted GFI (AGFI) are at 0.84 and 0.80, which are much lower than the recommended level of 0.90, despite having an acceptable value for CFI, IFI at 0.91. The value for TLI at 0.90 is marginally adequate and RMSEA is at 0.09, which exceeds the recommended level between 0.05 and 0.08. It seems that the current model needs to be improved. In an effort to address the problems, the next stage examines those nonsensical or theoretically inconsistent estimates and the areas of poor fitting in the model.

7.6.2.1.2.1 Offending estimates and poor fitting in the full measurement model of e-service quality (i)

In reviewing both of the unstandardised, as well as standardised maximum likelihood parameter estimates (Table 7.11). All the parameter estimates are statistically significant and substantively meaningful.

The next task is to identify any areas of poor fitting in the model. A review of the modification indices (MI) reveals some evidence of poor fitting in the model. In reviewing the parameters in Covariance section (Table 7.12), the largest MI to be 143.18 between res 13 and res 14. Since MIs related to the residuals do not have substantive meaning, they are uninterpretable. In addition, err11 and err 6 are correlated with res12. As res12 is uninterpretable, the model needs to be re-estimated with the error covariance of err6 and err11 specified as free parameters.

Turning to the Regression Weights portion, it can be found that two parameters (item “privacy” and item “fulfilment”) indicate cross-loadings. The highest MI value is 68.60 between “privacy” and “fulfilment”. Such misspecification means that item “fulfilment” could measure “privacy”. Alternatively, item “privacy” could be replaced with “fulfilment”. In Wolfinbarger and Gilly's (2003) study “privacy” is identified as not being a significant factor in predicting e-service quality. They further emphasise that privacy is highly correlated with “website design”. It appears that inferences of “privacy” are initially obtained from other quality factors

particularly “website design” in their research. This may be the case in this study due to the high correlation between “fulfilment” and “privacy”. Thus, the Model (i) (Figure 7.8) is re-estimate with “privacy” specified as free parameter.

**Table 7.11: Selected AMOS Text Output for E-service quality (i):
Maximum Likelihood Estimates**

Regression Weights		Unstandardised				Standardised	
		Estimate	S.E.	C.R.	P	Estimate	
Efficiency	<←	ESQ	1.00			0.94	
SA	<←	ESQ	1.06	0.06	17.94	0.00	0.91
Fulfilment	<←	ESQ	0.66	0.05	12.61	0.00	0.70
Privacy	<←	ESQ	0.68	0.06	11.69	0.00	0.65
SQ01	<←	Efficiency	1.00				0.80
SQ03	<←	Efficiency	1.12	0.05	23.49	0.00	0.89
SQ11	<←	Efficiency	1.04	0.05	21.92	0.00	0.84
SQ02	<←	Efficiency	1.06	0.05	23.34	0.00	0.88
SQ04	<←	Efficiency	1.11	0.05	22.74	0.00	0.87
SQ06	<←	Efficiency	0.98	0.05	20.53	0.00	0.81
SQ07	<←	Efficiency	1.07	0.05	22.86	0.00	0.87
SQ08	<←	Efficiency	1.14	0.05	22.73	0.00	0.87
SQ09	<←	SA	1.00				0.88
SQ10	<←	SA	0.88	0.04	22.14	0.00	0.80
SQ05	<←	SA	0.97	0.05	21.76	0.00	0.80
SQ12	<←	SA	1.03	0.05	22.40	0.00	0.81
SQ20	<←	Fulfilment	1.00				0.79
SQ30	<←	Fulfilment	1.04	0.05	19.95	0.00	0.84
SQ17	<←	Fulfilment	0.92	0.05	17.92	0.00	0.76
SQ33	<←	Fulfilment	1.03	0.05	20.75	0.00	0.86
SQ15	<←	Fulfilment	0.93	0.06	16.74	0.00	0.72
SQ25	<←	Privacy	1.00				0.80
SQ23	<←	Privacy	0.96	0.06	16.68	0.00	0.76
SQ26	<←	Privacy	0.87	0.05	17.24	0.00	0.81
SQ32	<←	Fulfilment	0.89	0.06	14.23	0.00	0.64

Note: ESQ: E-service quality; SA: System availability.

Model Fit: $\chi^2=922.60$; $\chi^2/df=4.99$; GFI=0.84; AGFI=0.80; CFI=0.91; IFI=0.91; RMSEA=0.09; TLI=0.90.

Table 7.12: AMOS Text Output for Full Measurement Model of E-service quality (i): Modification Indices and Parameter Change Statistics

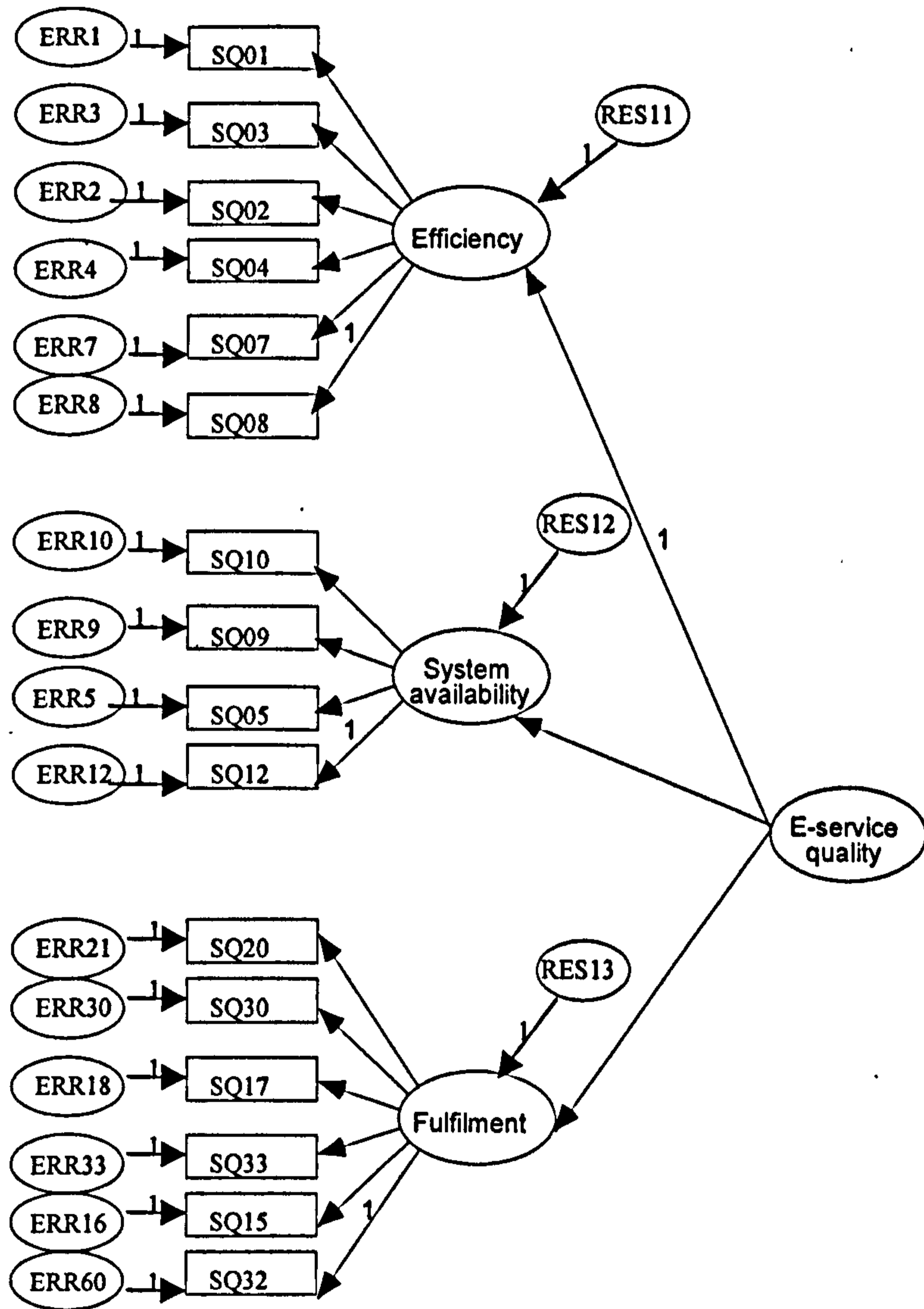
Covariances:			M.I.	Par Change
res13	<-->	res14	143.18	0.40
ERR11	<-->	res12	76.64	0.22
ERR6	<-->	res12	57.38	0.20
Variances:			M.I.	Par Change
Regression Weights:			M.I.	Par Change
Privacy	<--	Fulfillment	62.94	0.37
Fulfillment	<--	Privacy	68.60	0.30

7.6.2.1.2.2 Re-specified full measurement model for e-service quality (ii)

The re-specified full measurement Model (ii) (Figure 7.9) yields an overall χ^2 value of 373.01 with 101 degrees of freedom ($\chi^2/df=3.69$). The goodness-of-fit (GFI) and the adjusted GFI (AGFI) are at 0.91 and 0.88. Although the value of AGFI is still below the recommended level of 0.90, it can be seen that there is an improvement compared with Model (i) (please see Figure 7.8). Other goodness of fit indices are IFI (0.96), CFI (0.96), TLI (0.95) and RMSEA (0.08) appears to be adequate. All standardised and unstandardised parameter estimates are statistically significant this time (Table 7.13).

Modification indices (MIs) reveal that all the parameter estimates are statistically significant and there are no outstanding values suggestive of model poor fitting. Thereby, it indicates that the full measurement Model (ii) for testing e-service quality (Figure 7.9) represents the best fit and provides a good evidence of unidimensionality for the scales of e-service quality to the data so far in the analyses.

Figure 7.9: Full Measurement Model (ii) testing for E-S-QUAL



**Table 7.13: Selected AMOS Text Output for E-service quality (ii):
Maximum Likelihood Estimates**

Regression Weights		Unstandardised				Standardised	
		Estimate	S.E.	C.R.	P	Estimate	
Efficiency	←	ESQ	1.00			0.95	
SA	←	ESQ	1.03	0.07	14.35	0.00	0.88
Fulfillment	←	ESQ	0.64	0.06	11.64	0.00	0.67
SQ01	←	Efficiency	1.00				0.78
SQ03	←	Efficiency	1.15	0.05	22.76	0.00	0.90
SQ02	←	Efficiency	1.10	0.05	22.58	0.00	0.89
SQ04	←	Efficiency	1.14	0.05	22.07	0.00	0.88
SQ07	←	Efficiency	1.10	0.05	21.95	0.00	0.87
SQ08	←	Efficiency	1.19	0.05	22.33	0.00	0.89
SQ09	←	SA	1.00				0.87
SQ10	←	SA	0.88	0.04	21.76	0.00	0.80
SQ05	←	SA	0.98	0.05	21.69	0.00	0.81
SQ12	←	SA	1.04	0.05	22.28	0.00	0.82
SQ20	←	Fulfillment	1.00				0.79
SQ30	←	Fulfillment	1.04	0.05	19.97	0.00	0.84
SQ17	←	Fulfillment	0.92	0.05	17.88	0.00	0.76
SQ33	←	Fulfillment	1.03	0.05	20.73	0.00	0.86
SQ15	←	Fulfillment	0.93	0.06	16.75	0.00	0.72
SQ32	←	Fulfillment	0.89	0.06	14.21	0.00	0.64

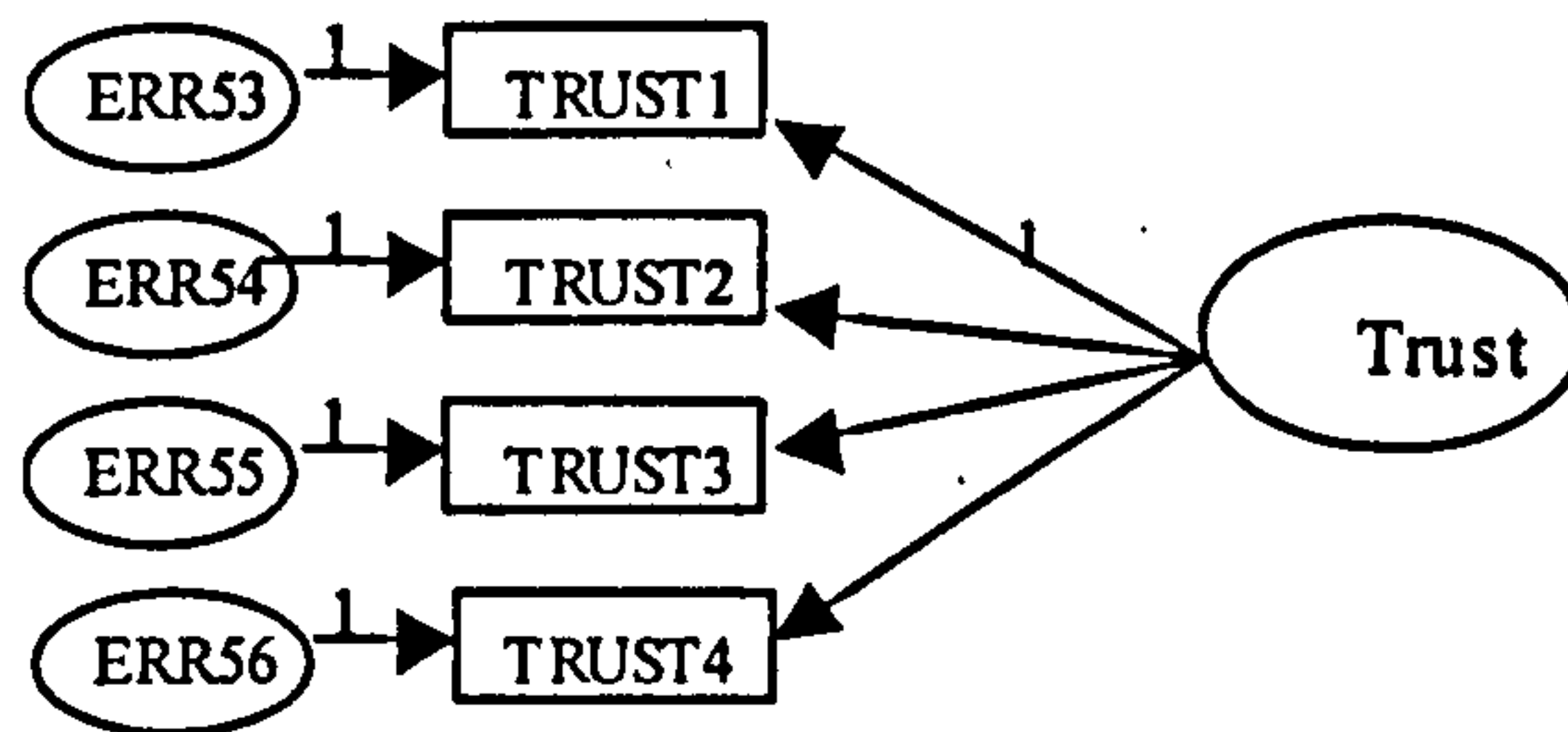
Note: ESQ: E-service quality; SA: System availability.

Model Fit: $\chi^2=373.01$; $\chi^2/df=3.69$; GFI=0.91; AGFI=0.88; CFI=0.96; IFI=0.96; RMSEA=0.08; TLI=0.95.

7.6.2.2 Unidimensionality analysis for trust

The measurement model for trust (Figure 7.10) yields χ^2 value of 10.55 ($\chi^2/df=5.28$), which exceeds 3 as recommended by Bagozzi and Yi (1988). Other goodness of fit indices GFI (0.95); AGFI (0.99); CFI (1.00); IFI (1.00) and TLI (0.99) are very high and provide strong confidence in the plausibility of the measurement model, despite of the value for RMSEA (0.09), which is lightly higher than the recommended level between 0.05 and 0.08.

In reviewing both the unstandardised, as well as standardised maximum likelihood parameter estimates (Table 7.14), all the parameter estimates are statistically significant and substantively meaningful. Modification indices (MIs) reveal that all the parameter estimates are statistically significant and there are no outstanding values suggestive of model poor fitting. Thereby, indicating that the measurement model for testing Trust (Figure 7.10) represents the best fit and provides a good evidence of unidimensionality for the scales of Trust to the data so far in the analysis.

Figure 7.10: Single-construct Measurement Testing for Trust

**Table 7.14: Selected AMOS Text Output for Trust:
Maximum Likelihood Estimates**

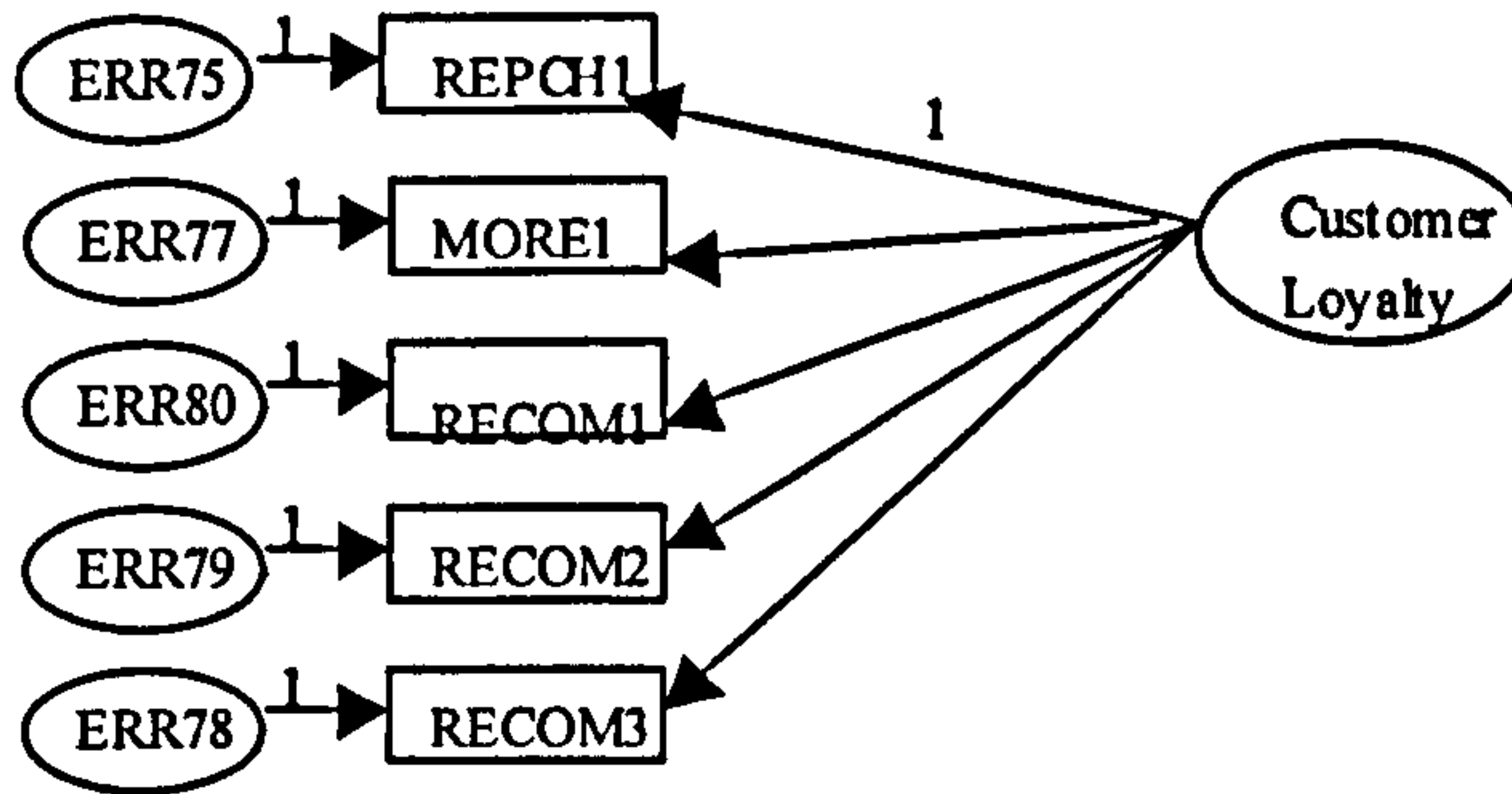
Regression Weights	Unstandardised					P	Standardised Estimate
			Estimate	S.E.	C.R.		
TRUST1	<--	trust	1.00				0.90
TRUST2	<--	trust	1.06	0.04	29.31	0.00	0.89
TRUST3	<--	trust	1.05	0.03	33.64	0.00	0.94
TRUST4	<--	trust	1.02	0.03	30.86	0.00	0.90

Model Fit: $\chi^2=10.55$; $\chi^2/df=5.28$; GFI=0.95; AGFI=0.99; CFI=1.00; IFI=1.00; RMSEA=0.09; TLI=0.99.

7.6.2.3 Unidimensionality Analysis for Customer Loyalty

The measurement model for Customer Loyalty (Figure 7.11) yields χ^2 value of 17.89 ($\chi^2/df=3.59$), which exceeds 3 as recommended by Bagozzi and Yi (1988). Other goodness of fit indices GFI (0.99); AGFI (0.96); CFI (0.99); IFI (0.99); TLI (0.98) and RMSEA (0.07) are very high and provide a strong confidence in the plausibility of the measurement model.

Figure 7.11: Single-construct Measurement Testing for Customer Loyalty



In reviewing both the unstandardised, as well as standardised maximum likelihood parameter estimates (Table 7.15), all the parameter estimates are statistically significant and substantively meaningful. Modification indices (MIs) reveal that all the parameter estimates are statistically significant and there are no outstanding values suggestive of model poor fitting. Thereby, it indicates that the measurement model for testing customer loyalty (Figure 7.11) represents the best fit and provides a good evidence of unidimensionality for the scales of customer loyalty to the data so far in the analysis.

**Table 7.15: Selected AMOS Text Output for Customer Loyalty:
Maximum Likelihood Estimates**

Regression		Unstandardised				Standardised	
Weights			Estimate	S.E.	C.R.	P	Estimate
MORE1	<←	loyalty	0.78	0.07	12.05	0.00	0.57
RECOM1	<←	loyalty	1.19	0.07	18.03	0.00	0.85
RECOM2	<←	loyalty	1.12	0.06	19.33	0.00	0.91
RECOM3	<←	loyalty	1.11	0.06	18.57	0.00	0.89
REPCH1	<←	loyalty	1.00				0.72

Model Fit: $\chi^2=17.89$; $\chi^2/df=3.59$; GFI=0.99; AGFI=0.96; CFI=0.99; IFI=0.99; RMSEA=0.07; TLI=0.98.

7.6.3 Results of single construct measurement model for e-service quality, trust and customer Loyalty

Table 7.16 below summarises the indices of fit for all the constructs, which can be tested with the single construct measurement model. Although χ^2/df ratio of each construct exceeds the recommended level 3, this statistics can be sensitive to larger sample sizes, with a sample greater than 200, being vulnerable to over estimation of significant differences (Hair et al., 1998). In this study the sample size (485) indicates that this result could be unreliable, and points to the need to use alternative measures of absolute fit. According to Ping (2004), GFI and AGFI appear to be growing in popularity and are frequently used in assessing unidimensionality. Looking at the GFI and AGFI value of those three constructs, two have shown a strong evidence of unidimensionality except for that of E-S-QUAL, which is slightly lower than the recommended level of 0.90.

In addition, Table 7.17 illustrates the retained items from the single construct measurement model testing, which are used at the second stage of the unidimensionality analysis. In the following section, the full measurement model of customer loyalty, which contains eight constructs, are discussed in detail.

Table 7.16: Results of Single Construct Measurement Model for E-service quality, Trust and Customer Loyalty

Variables	χ^2	DF	χ^2/df	GFI	AGFI	CFI	IFI	RMSEA	TLI
E-service quality(E-S-Qual)	373.01	101.00	3.69	0.91	0.88	0.96	0.96	0.08	0.95
E-satisfaction	-	-	-	-	-	-	-	-	-
Relationship satisfaction	-	-	-	-	-	-	-	-	-
Perceived relational investment	-	-	-	-	-	-	-	-	-
Trust	10.55	2.00	5.28	0.99	0.95	1.00	1.00	0.09	0.99
Calculative commitment	-	-	-	-	-	-	-	-	-
Affective commitment	-	-	-	-	-	-	-	-	-
Loyalty	17.89	5.00	3.59	0.99	0.96	0.99	0.99	0.07	0.98

Note: E-satisfaction; relationship satisfaction; perceived relational investment; affective commitment and calculative commitment only have three indicators respectively, which are unable to be subjected to the single construct measurement model testing, as the model is under-identified. They are tested at the second stage of the unidimensionality analysis.

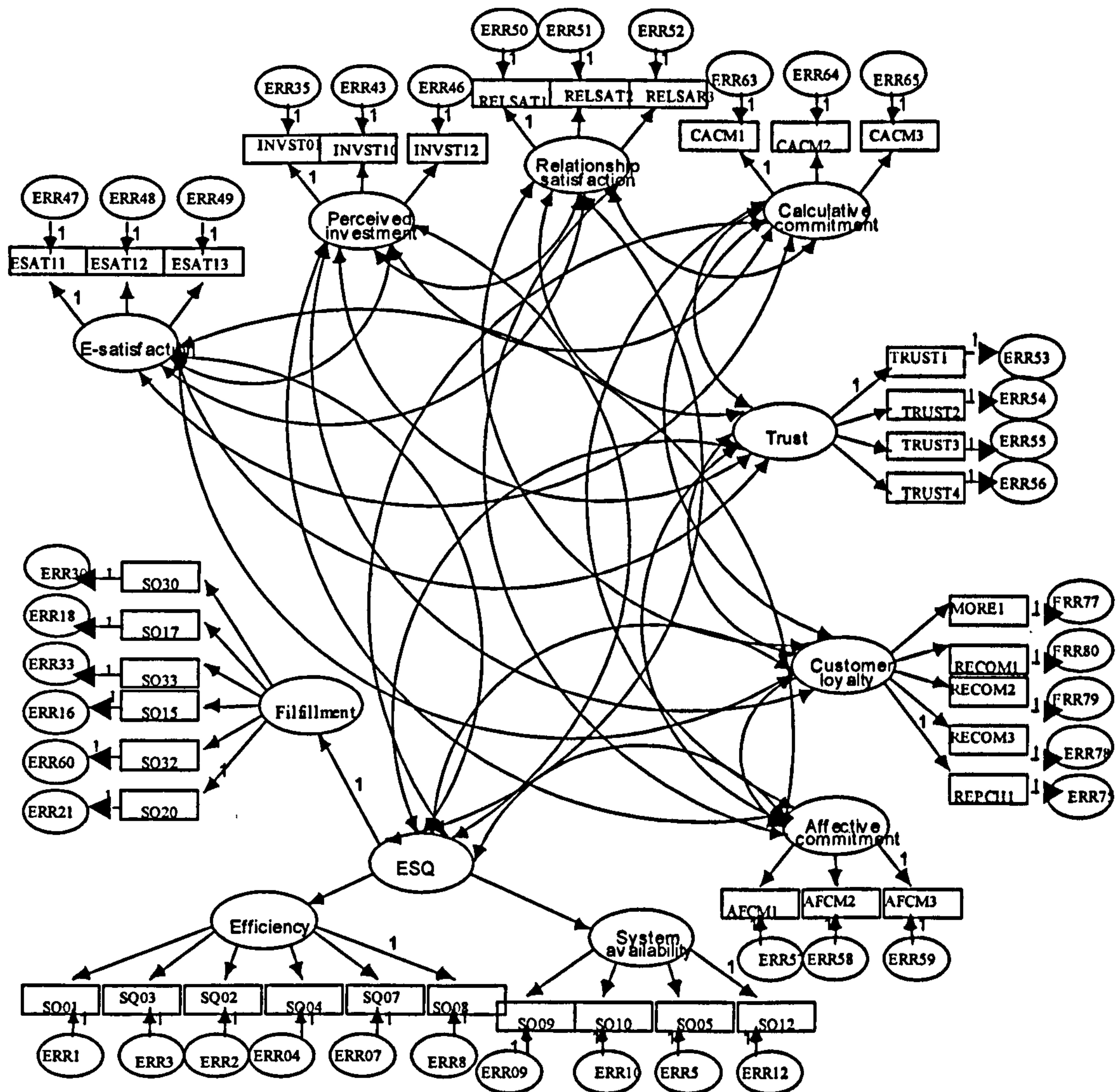
Table 7.17: Retained Items Used for the Second Stage of Unidimensionality Analysis

Original Number of items	Constructs	Source	Item deleted	Item Retained
23	ESQ SQ01←Efficiency SQ03←Efficiency SQ02←Efficiency SQ04←Efficiency SQ11←Efficiency SQ06←Efficiency SQ07←Efficiency SQ08←Efficiency SQ09←SA SQ10←SA SQ05←SA SQ12←SA SQ20←Fulfillment SQ30←Fulfillment SQ17←Fulfillment SQ33←Fulfillment SQ15←Fulfillment SQ21←Fulfillment SQ16←Fulfillment SQ25←Privacy SQ23←Privacy SQ26←Privacy SQ32←Fulfillment	Parasuraman et al., (2003) twenty two-item SQ 16 is developed from the exploratory research.	 yes yes yes yes yes yes yes yes	yes yes yes yes yes yes yes yes yes
3	ES ESAT1←ES ESAT2←ES ESAT3←ES	Jones and Suh (2000) three-item		yes yes yes
3	RS RELSAT1←RS RELSAT2←RS RELSAT3←RS	Jones and Suh (2000) three-item		yes yes yes
3	PRI INVST01←PRI INVST10←PRI INVST12←PRI	De-Wulf (2001) three-item		yes yes yes
4	TRUST TRUST1←TRUST TRUST2←TRUST TRUST3←TRUST TRUST4←TRUST	Anderson and Srinivasan (2003) four-item		yes yes yes yes
3	AC AFCM1←AC AFCM2←AC AFCM3←AC	Fullerton (2004) three-item, wich originally is adopted from Allen and Meyer (1990)		yes yes yes
3	CC CACM1←CC CACM2←CC CACM3←CC	Fullerton (2004) three-item, wich originally is adopted from Allen and Meyer (1990)		yes yes yes
5	LOYALTY REPCH1←LOYALTY MORE1←LOYALTY RECOM1←LOYALTY RECOM2←LOYALTY RECOM3←LOYALTY	Zeithaml et al., (1996) five-item		yes yes yes yes yes

Note: SA: System availability; ES: E-satisfaction; PRI: Perceived relational investment; AC: Affective commitment; CC: Calculative commitment.

7.6.4 Full measurement model testing of customer loyalty

Figure 7.12: Full Measurement Model of Customer Loyalty (i)



The full measurement model (Figure 7.12) yields χ^2 value of 1417.66 ($\chi^2/df=2.00$), which is well within the recommended level 3 by Bagozzi and Yi (1988). Other estimated parameters GFI (0.87); AGFI (0.85) are lower than the lower threshold level (0.90). CFI (0.96); IFI (0.96) and TLI (0.96); RMSEA (0.05) are found to be well above the recommended level. In an effort to see whether the current model can be further improved, the next stage is to examine the maximum likelihood parameter estimates and modification indices (MIs).

7.6.4.1 Offending estimates and poor fitting in the full measurement model of customer loyalty (i)

In reviewing both the unstandardised, as well as standardised maximum likelihood parameter estimates (Table 7.18), all the parameter estimates are statistically significant. A review of the modification indices (Table 7.19) reveals that item fulfilment not only correlated with e-satisfaction, but also with relationship satisfaction.

Since correlation matrix is typically of interest in presenting results between latent variables, it is usually of interest to request this statistic when determining the final model. From the correlation matrix (Table 7.20) it can be seen an unusual correlation coefficient 0.87 between e-satisfaction and relationship satisfaction. According to Hair et al., (1998), correlation between two items exceeding 0.80, can be indicative of multicollinearity and corrective action should be taken. Multicollinearity exists when there is a strong evidence of overlap between two or more items. This condition arises from the situation where two variables are so highly correlated that they both, essentially, represent the same underlying construct. In addition, it should be noted that there is another highly correlated coefficient 0.84 between CC (calculative commitment) and AC (affective commitment). Corrections for these two pairs of constructs are conducted at two stages. First, the correction for the multicollinearity between e-satisfaction and relationship satisfaction is carried out in the following sections. The solution for the high correlation between calculative and affective commitment is discussed in detail in Section 8.2.1 of Chapter 8.0.

However, past literature have identified that relationship satisfaction and e-satisfaction are distinct conceptualisations (Crosby et al., 1990, 1987) and the scales for measuring both constructs have been validated in number of studies (Jones and Suh, 2000; Szymanski and Henard, 2001 and Crosby et al., 1990, 1987). The reason for correlation between these two items is possibly because customers cannot distinguish these two concepts very clearly as both constructs are measured in the same way. Although no limit has been set that defines what are considered as high correlations, values exceeding 0.80 can be considered for deletion (Hair et al., 1998).

Table 7.18: Selected AMOS Text Output for the Full Measurement Model of Customer Loyalty (i): Maximum Likelihood Estimates

Regression Weights		Unstandardised				Standardised	
		Estimate	S.E.	C.R.	P	Estimate	
Efficiency	←	ESQ	1.00			0.90	
SA	←	ESQ	1.11	0.07	16.23	0.00	0.89
Fulfillment	←	ESQ	0.76	0.06	12.38	0.00	0.74
SQ01	←	Efficiency	1.00				0.78
SQ03	←	Efficiency	1.16	0.05	22.62	0.00	0.90
SQ02	←	Efficiency	1.10	0.05	22.31	0.00	0.89
SQ04	←	Efficiency	1.15	0.05	21.90	0.00	0.88
SQ07	←	Efficiency	1.10	0.05	21.75	0.00	0.87
SQ08	←	Efficiency	1.19	0.05	22.21	0.00	0.89
SQ09	←	SA	1.00				0.87
SQ10	←	SA	0.88	0.04	21.45	0.00	0.80
SQ05	←	SA	0.99	0.05	21.61	0.00	0.81
SQ12	←	SA	1.06	0.05	22.39	0.00	0.82
SQ20	←	Fulfillment	1.00				0.79
SQ30	←	Fulfillment	1.04	0.05	19.97	0.00	0.84
SQ17	←	Fulfillment	0.92	0.05	17.91	0.00	0.76
SQ33	←	Fulfillment	1.03	0.05	20.72	0.00	0.86
SQ15	←	Fulfillment	0.93	0.06	16.81	0.00	0.73
ESAT1	←	ES	1.00				0.94
ESAT2	←	ES	1.04	0.02	52.44	0.00	0.98
ESAT3	←	ES	1.06	0.02	45.48	0.00	0.95
RELSAT1	←	RS	1.00				0.92
RELSAT2	←	RS	1.07	0.03	40.58	0.00	0.96
RELSAT3	←	RS	1.08	0.03	41.55	0.00	0.97
SQ32	←	Fulfillment	0.90	0.06	14.29	0.00	0.64
INVST12	←	PRI	1.00				0.86
INVST10	←	PRI	0.93	0.04	22.45	0.00	0.85
INVST01	←	PRI	0.94	0.05	20.37	0.00	0.81
AFCM3	←	AC	1.00				0.90
AFCM2	←	AC	1.08	0.04	27.13	0.00	0.89
AFCM1	←	AC	0.81	0.04	20.27	0.00	0.75
TRUST4	←	Trust	1.00				0.90
TRUST3	←	Trust	1.04	0.03	34.38	0.00	0.94
TRUST2	←	Trust	1.04	0.04	29.84	0.00	0.89
TRUST1	←	Trust	0.99	0.03	30.84	0.00	0.90
CACM1	←	CC	1.00				0.63
CACM2	←	CC	1.34	0.10	13.00	0.00	0.75
CACM3	←	CC	1.38	0.10	14.03	0.00	0.84
REPCH1	←	CL	0.90	0.05	19.14	0.00	0.72
MORE1	←	CL	0.71	0.05	14.01	0.00	0.57
RECOM1	←	CL	1.04	0.04	25.43	0.00	0.84
RECOM2	←	CL	0.99	0.03	29.78	0.00	0.90
RECOM3	←	CL	1.00				0.90

Note: ESQ: E-service quality; SA: System availability; ES: E-satisfaction; RS: Relationship Satisfaction; PRI: Perceived Relational Investment; AC: Affective Commitment; CC: Calculative Commitment; CL: Customer Loyalty.

Model Fit: $\chi^2=1417.66$; $\chi^2/df=2.00$; GFI=0.87; AGFI=0.85; CFI=0.96; IFI=0.96; RMSEA=0.05; TLI=0.96.

Given the situation that keeping relationship satisfaction and e-satisfaction in the same model causes problems, it is believed that dividing the conceptual model into two portions is more practically plausible since complete deletion of relationship satisfaction from the model is against the substantive and empirical rationale based on previous literature. One part of the model (Part 1 Model) contains e-service

quality and e-satisfaction. The other part of the Model (Part 2 Model) consists of all the dimensions of relationship quality including relationship satisfaction, perceived relational investment, trust, calculative and affective commitment). Although relationship satisfaction was assumed to serve as an intermediate variable, which links e-service quality, e-satisfaction and the dimensions of relationship quality in the original conceptual model, it has to be excluded from the Part 1 model due to the conflict caused by the multicollinearity between e-satisfaction and relationship satisfaction. Details regarding the model for Part 1 are explained in the following section and the other part of the model (Part 2) is elaborated in Chapter 8.0.

Table 7.19: AMOS Text Output for the Full Measurement Model of Customer Loyalty (i): Modification Indices and Parameter Change Statistics

Covariances:		M.I.	Par Change
Variances:		M.I.	Par Change
Regression Weights:		M.I.	Par Change
Fulfillment	<-- RS	55.81	0.24
Fulfillment	<-- ES	60.67	0.27

Table 7.20: AMOS Text Output for the Full Measurement Model of Customer Loyalty (i): Correlation Matrix among Latent Factors

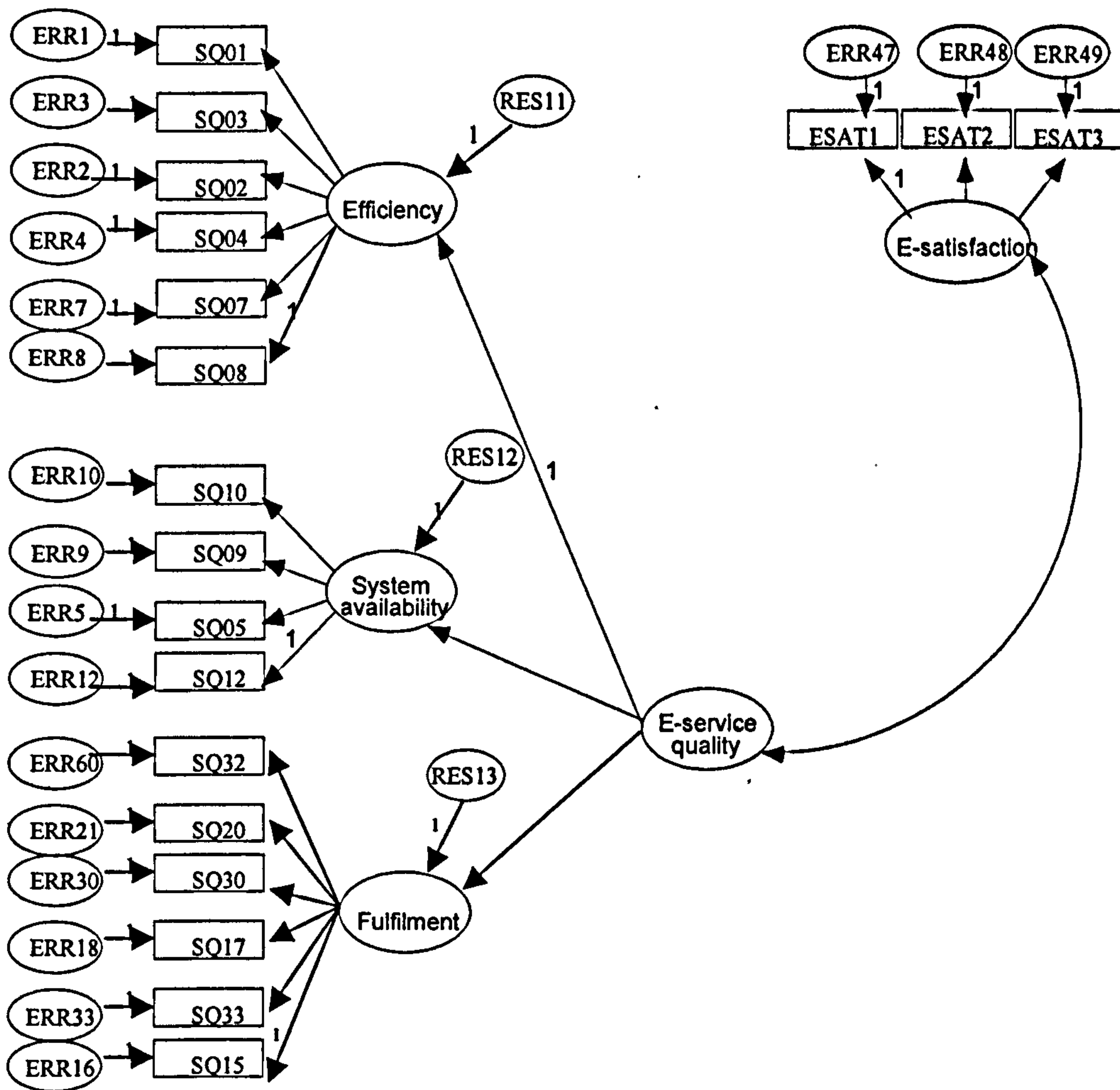
All Implied Correlations - Estimates								
	CL	CC	Trust	AC	PRI	RS	ES	ESQ
CL	1.00							
CC	0.33	1.00						
Trust	0.52	0.05	1.00					
AC	0.51	0.84	0.19	1.00				
PRI	0.60	0.41	0.28	0.55	1.00			
RS	0.77	0.15	0.65	0.34	0.50	1.00		
ES	0.70	0.14	0.73	0.30	0.44	0.87	1.00	
ESQ	0.45	0.01	0.72	0.17	0.25	0.55	0.58	1.00

Note: ESQ: E-service quality; SA: System availability; ES: E-satisfaction; RS: Relationship Satisfaction; PRI: Perceived Relational Investment; AC: Affective Commitment; CC: Calculative Commitment; CL: Customer Loyalty.

7.7 Full measurement model testing-part 1 (relationship between e-service quality and e-satisfaction)

Figure 7.13 below is the first part of the measurement model containing e-service quality and e-satisfaction that are proposed to be the antecedents of relationship quality and customer loyalty in Internet grocery shopping.

Figure 7.13: Full Measurement Model for E-service Quality and E-satisfaction



According to the full measurement model (Figure 7.13) the observed χ^2 for this model is 571.15, $\chi^2/df=(3.86)$, exceeded 3 as recommended by Bagozzi and Yi (1988). Given the known sensitivity of χ^2 to sample size, χ^2 index provides little guidance in determining the extent to which the model does not fit. The goodness-of-fit index (GFI) and adjusted GFI (AGFI) at 0.89 and 0.86 are lower than the recommended level of 0.90, despite having an acceptable value for CFI, IFI, TLI and RMSEA at 0.95, 0.95, 0.94 and 0.08, respectively. It is not surprising that the value for GFI and AGFI is relatively low, because Ping (2004) states that GFI and AGFI tend to decline as model complexity increases. Although the current model only includes two latent variables, the concern is about the complexity of e-service quality. The e-service quality contains three first-order factors and these three factors have 16 indicators. With such a number of observed variables, using GFI and AGFI to assess unidimensionality is inappropriate. However, Bentler (1990), Steiger (1990) suggest other indexes of fit such as CFI and RMSEA could assess unidimensionality among other indices of fit. The value of CFI (0.95) and RMSEA (0.08) are marginally adequate in the current model.

In reviewing both unstandardised and standardised maximum likelihood parameter estimates (Table 7.21), all parameter estimates are statistically significant and substantively meaningful. Turning next to the modification indices (Table 7.22), there are no outstanding values suggestive of poor model fit except for one pair of parameters (“fulfilment” and “e-satisfaction”) that are indicative of cross-loading (MI=65.48). Such misspecification could mean that the formation of e-satisfaction is initially obtained from the fulfilment of the Internet grocery service such as accurate representation of the product, on time delivery and accurate orders. Given the situation that the MI value between these two items is not substantially large and such problem is very difficult to avoid, it can be accepted that Figure 7.13 represents the best fit for the scales to the data so far in the analyses.

Table 7.21: Selected AMOS Text Output for the Measurement Model of E-service Quality and E-satisfaction: Maximum Likelihood Estimates

Regression Weights		Unstandardised				Standardised	
		Estimate	S.E.	C.R.	P	Estimate	
Efficiency	<--	ESQ	1.00			0.93	
SA	<--	ESQ	1.05	0.07	16.13	0.00	0.88
Fulfillment	<--	ESQ	0.70	0.06	12.21	0.00	0.71
SQ01	<--	Efficiency	1.00				0.78
SQ03	<--	Efficiency	1.16	0.05	22.68	0.00	0.90
SQ02	<--	Efficiency	1.10	0.05	22.39	0.00	0.89
SQ04	<--	Efficiency	1.15	0.05	21.94	0.00	0.88
SQ07	<--	Efficiency	1.10	0.05	21.82	0.00	0.87
SQ08	<--	Efficiency	1.19	0.05	22.28	0.00	0.89
SQ09	<--	SA	1.00				0.87
SQ10	<--	SA	0.88	0.04	21.59	0.00	0.80
SQ05	<--	SA	0.99	0.05	21.61	0.00	0.81
SQ12	<--	SA	1.05	0.05	22.31	0.00	0.82
SQ20	<--	Fulfillment	1.00				0.79
SQ30	<--	Fulfillment	1.04	0.05	19.97	0.00	0.84
SQ17	<--	Fulfillment	0.92	0.05	17.89	0.00	0.76
SQ33	<--	Fulfillment	1.03	0.05	20.71	0.00	0.86
SQ15	<--	Fulfillment	0.93	0.06	16.80	0.00	0.72
ESAT1	<--	ES	1.00				0.94
ESAT2	<--	ES	1.05	0.02	52.57	0.00	0.99
ESAT3	<--	ES	1.05	0.02	43.92	0.00	0.95
SQ32	<--	Fulfillment	0.90	0.06	14.26	0.00	0.64

Note: ESQ: E-service quality; ES: E-satisfaction; SA: System availability.

Model Fit: $\chi^2=571.15$; $\chi^2/df=3.86$; GFI=0.89; AGFI=0.86; CFI=0.95; IFI=0.95; RMSEA=0.08; TLI=0.94.

Table 7.22: AMOS Text Output for the Measurement Model of E-service Quality and E-satisfaction: Modification Indices and Parameter Change Statistics

Covariances:		M.I.	Par Change	
res13	<-->	ES	100.93	0.31
Variances:		M.I.	Par Change	
Regression Weights:		M.I.	Par Change	
Fulfillment	<--	ES	65.48	0.29

7.7.1 Reliability analysis for the full measurement model of e-service quality and e-satisfaction

Reliability of a measure is the ability to yield consistent results (Nunnally, 1988). Reliability is frequently characterised as the “repeatability” of a measure. There have been many proposals for assessing reliability (Hattie, 1985; Nunnally, 1978). Coefficient alpha (Cronbach, 1951) is frequently employed to test reliability, because it does not depend on the assumptions required of other indices of reliability (Bollen, 1989). However, Ping (2004) points out some drawback of using coefficient alpha. Coefficient alpha assumes its items are perfectly correlated with their underlying construct (i.e. measured without error) (Bollen, 1989). This assumption is unreasonable in practice, because it underestimates reliability (Smith, 1974).

There have been several proposals for computing reliability of items that are measured with error (Gerbing and Anderson, 1988). A common principal measure used in assessing the measurement model is the composite reliability of each construct. That is to measure the internal consistency of the construct indicators, depicting the degree to which they “indicate” the common latent (unobserved) construct. More reliable measures provide the researcher with greater confidence that the individual indicators are all consistent in their measurements. A commonly used threshold value for acceptable reliability is 0.70. The composite reliability of a construct is calculated as:

$$\text{Construct reliability} = \frac{(\text{Sum of standardised loading})^2}{(\text{Sum of standardised loadings})^2 + \text{Sum of measurement error}}$$

Where the standardised loadings are obtained directly from the AMOS output. The measurement error is 1.0 minus the reliability of the indicator, which is the square of the indicator’s standardised loading. The indicator reliability should exceed 0.50, which roughly corresponds to a standardised loading of 0.7.

Another measure of reliability is the variance extracted measure (Hair et al., 1998). This measure reflects the overall amount of variance in the indicators accounted for by the latent construct. Higher variance extracted values occur when the indicators are truly representative of the latent construct. The variance extracted measure is a complementary measure to the construct reliability value. The variance extracted measure is calculated as:

$$\text{Variance Extracted} = \frac{\text{Sum of squared standardised loadings}}{\text{Sum of squared standardised loadings} + \text{Sum of indicator measurement error}}$$

This measure is quite similar to the reliability measure but differs in that the standardised loadings are squared before summing them. Guidelines suggest that the variance extracted value should exceed 0.50 for a construct.

Table 7.23 below contains the computations for both the composite reliability and the variance-extracted measures. In terms of composite reliability, all the constructs exceed the suggested level of 0.70. In terms of variance extracted, all the constructs exceed the threshold value of 0.50. Thereby, demonstrating that all the constructs and the indicators in the measurement model-Part 1 (Figure 7.13) are internally consistent and have acceptable reliability values in their original form.

7.7.2 Validity analysis for the measurement model of e-service quality and e-satisfaction

Whereas reliability concerns the consistency of test scores, validity concerns, broadly speaking, how they should be interpreted. Validity is multifaceted. Construct validity is most general type of validity that concerns whether an indicator actually measures the construct the researcher believes it does. However, different validity terms are used to illustrate various aspects of construct validity. A comprehensive list of validity types that are typically mentioned in texts and research works includes face, content, convergent, discriminant validity (Sureshchandar et al., 2002a).

Table 7.23: The Measurement Model for Part 1

Constructs	Source	Standardised regression weight	Composite	Variance	SMC
			Reliability	Extracted	Estimates
ESQ	Parasuraman et al., (2003) twenty two-item		0.98	0.79	
Efficiency		0.93	0.97	0.85	0.87
SQ01←Efficiency		0.78			0.61
SQ03←Efficiency		0.90			0.81
SQ02←Efficiency		0.89			0.79
SQ04←Efficiency		0.88			0.77
SQ07←Efficiency		0.87			0.76
SQ08←Efficiency		0.89			0.79
SA		0.88	0.94	0.80	0.77
SQ09←SA		0.87			0.79
SQ10←SA		0.80			0.76
SQ05←SA		0.81			0.64
SQ12←SA		0.82			0.65
Fulfilment		0.71	0.94	0.72	0.51
SQ20←Fulfilment		0.79			0.67
SQ30←Fulfilment		0.84			0.62
SQ17←Fulfilment		0.76			0.70
SQ33←Fulfilment		0.86			0.73
SQ15←Fulfilment		0.72			0.53
SQ32←Fulfilment		0.64			0.41
ES	Jones and Suh (2000) three-item		0.99	0.96	
ESAT1←ES		0.94			0.89
ESAT2←ES		0.99			0.97
ESAT3←ES		0.95			0.90

Note: SA: System availability; ES: E-satisfaction.

Face validity “Face validity concerns with the degree to which a measurement seems to measure what it is supposed to”(McDaniel and Gates, 2002 p.301). Researchers look at the measure and see whether it seems a good reflection of the construct. Therefore, face validity most time relies on researcher’s subjective judgment. It is probably the weakest way of demonstrating the construct validity. In order to avoid the subjective evaluation of the measure, all the constructs adopted for this research are justified from the review of the previous literature with the similar context. Thus, it can be claimed that the instrument of this study has strong face validity.

Content validity Content validity normally examines whether the scale provides adequate coverage of the topic under study. It sounds a little bit complicated as it involves several checking stages like defining precisely what is to be measured; identifying all the possible items through extensive literature review and focus groups; opinions from a panel of experts; pre-testing is needed before launching the formal survey. All the scales adopted are based on previous literature and they have been previously established and validated. In addition, this research has gone through all the aforementioned procedures very carefully (please Chapter 5.0), it is believed that the content validity is ensured in this research.

Convergent validity Convergent validity is the degree to which two or more attempts to measure the same concept through maximally dissimilar methods are in agreement (Bagozzi and Phillips, 1982). If two or more measures are true indicators of a concept, then they should necessarily be highly correlated. Fornell and Larcker (1981) also suggest that convergent validity exists when item factor loadings are greater than 0.7 and item squared multiple correlations (SMC) are greater than 0.5.

Discriminant validity Discriminant validity is “the degree to which measures of distinct concepts differ. This means that measures of different concepts should share little common variance (in a relative sense) and that too high a covariation casts doubt on the uniqueness of the measures and/or the concepts” (Bagozzi and Phillips 1982 p.469). Fornell and Larcker (1981) claim that the squared correlation between construct must be less than the average variance extracted (AVE) of each underlying construct in order for the constructs to have discriminant validity.

Table 7.24: All Implied Correlation Estimates for Model-Part 1

All Implied Correlations - Estimates		
	ES	ESQ
ES	0.79	
ESQ	0.56	0.96

Note: a. ES: E-satisfaction; ESQ: E-service quality.

b. Average variance extracted (AVE) values are shown on the diagonal.

Table 7.25: Retained Items Used in Structural Model for Part 1

Original Number of items	Constructs	Source	Item deleted	Item Retained
23	ESQ SQ01←Efficiency SQ03←Efficiency SQ02←Efficiency SQ04←Efficiency SQ11←Efficiency SQ06←Efficiency SQ07←Efficiency SQ08←Efficiency SQ09←SA SQ10←SA SQ05←SA SQ12←SA SQ20←Fulfillment SQ30←Fulfillment SQ17←Fulfillment SQ33←Fulfillment SQ15←Fulfillment SQ21←Fulfillment SQ16←Fulfillment SQ25←Privacy SQ23←Privacy SQ26←Privacy SQ32←Fulfillment	Parasuraman et al., (2003) twenty two-item SQ 16 is designed from the exploratory research.	 yes yes yes yes yes yes yes yes yes yes yes yes	yes yes yes yes yes yes yes yes yes yes yes yes yes yes
3	ES ESAT1←ES ESAT2←ES ESAT3←ES	Jones and Suh (2000) three-item		yes yes yes

Note: SA: system availability; ESQ: e-service quality; ES: e-satisfaction.

From Table 7.23 it can be seen that there is a strong evidence of convergent validity for the majority of indicators except for one indicator "SQ32-Fulfillment", for which the factor loading and SMC are below the recommended level.

Table 7.24 shows the correlations between the e-service quality and e-satisfaction. The average variance extracted (AVE) of each construct is shown on the diagonal. On the basis of this most restrictive test, a strong evidence for discriminant validity can be found for all the pairs of latent constructs of the model-Part 1.

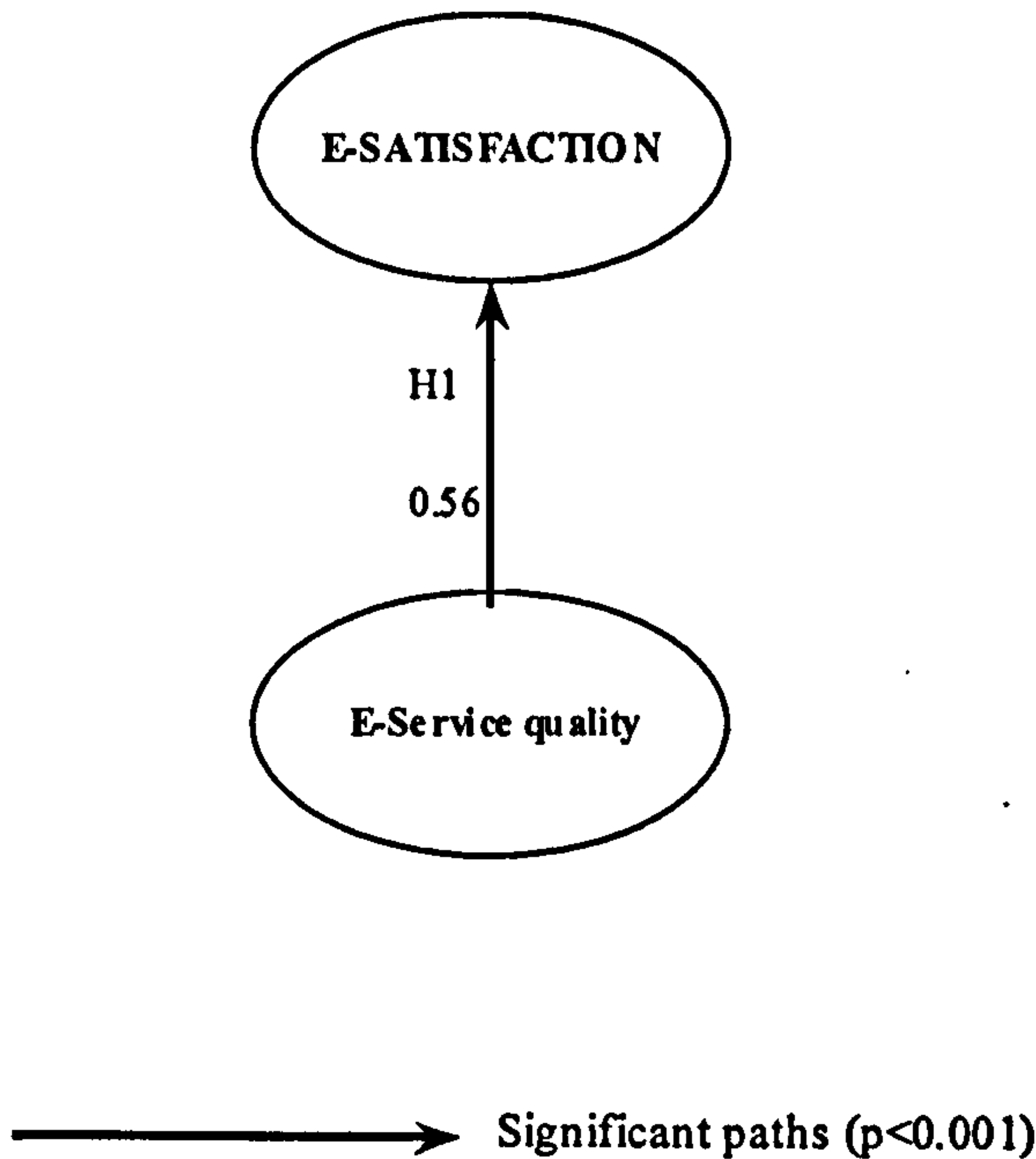
To sum up, the majority of the indicators of e-service quality and e-satisfaction have shown a strong evidence of unidimensionality, reliability, face, content, convergent and discriminant validities, although a few unqualified indicators need to be deleted at next stage. Table 7.25 is a summary for retained items, which is used in structural model in the next section.

7.8 Stage 3: Developing the structural model for Part 1 (relationship between e-service quality and e-satisfaction)

7.8.1 Structural evaluation of the hypothesised model of e-service quality and e-satisfaction

Based on the purification of all the scales in the measurement model, the structural equation model in Figure 7.14 is estimated and resulted in χ^2 (488.68); χ^2/df (3.73); GFI (0.90); AGFI (0.87); RMSEA (0.08); CFI (0.96); IFI (0.96); TLI (0.95). Although the value of AGFI (0.87) is slightly lower than the recommended level 0.90, other fittings seem very reasonable.

Figure 7.14: Structural Equation Results for Model of E-service Quality and E-satisfaction



Model fit: $\chi^2 = 488.68$; $\chi^2/df = 3.73$; GFI=0.90; A GFI=0.87
CFI=0.96; IFI=0.96; TLI=0.95; RMSEA =0.08.

In reviewing both the unstandardised, as well as standardised maximum likelihood parameter estimates (Table 7.26), all the parameter estimates are statistically significant. A review of the modification indices (Table 7.27) reveals there are no outstanding values suggestive of model poor fitting, except for one pair of parameters (“fulfilment” and “e-satisfaction”) that is indicative of cross-loading (MI=61.55). Such misspecification could mean that the formation of e-satisfaction is initially obtained from the fulfilment of the Internet grocery service such as accurate representation of the product, on time delivery and accurate orders. Given the situation that the MI value between these two items are not substantially large and such problem is very difficult to be avoided, it can be accepted that Figure 7.14 represents the best fit for the scales to the data so far in the analyses. Taking each of these factors into account, no further consideration is given to the inclusion of additional parameters. It can be decided that the current model is the final and most parsimonious model and represents the best fit to the data overall.

Table 7.26: Selected AMOS Text Output for E-S-QUAL Model: Maximum Likelihood Estimates

Regression Weights		Unstandardised				Standardised	
		Estimate	S.E.	C.R.	P	Estimate	
Efficiency	←	ESQ	1.00			0.93	
SA	←	ESQ	1.05	0.07	16.09	0.00	0.88
Fulfillment	←	ESQ	0.70	0.06	12.11	0.00	0.70
ES	←	ESQ	0.58	0.05	10.89	0.00	0.56
SQ01	←	Efficiency	1.00				0.78
SQ03	←	Efficiency	1.16	0.05	22.69	0.00	0.90
SQ02	←	Efficiency	1.10	0.05	22.41	0.00	0.89
SQ04	←	Efficiency	1.15	0.05	21.95	0.00	0.88
SQ07	←	Efficiency	1.10	0.05	21.84	0.00	0.87
SQ08	←	Efficiency	1.19	0.05	22.29	0.00	0.89
SQ09	←	SA	1.00				0.87
SQ10	←	SA	0.88	0.04	21.62	0.00	0.80
SQ05	←	SA	0.99	0.05	21.62	0.00	0.81
SQ12	←	SA	1.05	0.05	22.30	0.00	0.82
SQ20	←	Fulfillment	1.00				0.80
SQ30	←	Fulfillment	1.03	0.05	20.18	0.00	0.84
SQ17	←	Fulfillment	0.90	0.05	17.92	0.00	0.76
SQ33	←	Fulfillment	1.03	0.05	21.14	0.00	0.87
SQ15	←	Fulfillment	0.90	0.06	16.43	0.00	0.70
ESAT1	←	ES	1.00				0.94
ESAT2	←	ES	1.05	0.02	52.57	0.00	0.99
ESAT3	←	ES	1.05	0.02	43.92	0.00	0.95

Note: E-service quality: ESQ; E-satisfaction: ES; System availability: SA.

Model Fit: $\chi^2=488.68$; $\chi^2/df=3.73$; GFI=0.90; AGFI=0.87; CFI=0.96; IFI=0.96; RMSEA=0.08; TLI=0.95.

Table 7.27: AMOS Text Output for the Structural Model of E-service Quality and E-satisfaction: Modification Indices and Parameter Change Statistics

Covariances:			M.I.	Par Change
res13	<-->	res3	94.13	0.30
Variances:			M.I.	Par Change
Regression Weights:			M.I.	Par Change
Fulfillment	<--	ES	61.55	0.28

7.8.2 Structural results of the hypothesised model for the model of e-service quality and e-satisfaction

In short, the causal relationship between e-service quality and e-satisfaction) is found to be statistically significant. This path reflects the impact of (H1a) e-service quality on e-satisfaction.

Two previous hypothesised paths (e-satisfaction→relationship satisfaction; e-service quality→ relationship satisfaction) are not further discussed due to the multicollinearity between e-satisfaction and relationship satisfaction and these two constructs are subsequently deleted from Part 1 model.

Table 7.28: Structural Parameters of the Model-Part 1

No of hypotheses	Hypotheses	Path coefficients	Std Error	C.R. Value	Standardised path coefficients	Hypothesis supported
1	H1a: E-service quality →E-satisfaction	0.58**	0.05	10.89	0.56**	yes
2	H1b: E-service quality→ Relationship satisfaction	Unable to test due to the high correlation between e-satisfaction and relationship satisfaction				
3	H2: E-satisfaction→ Relationship satisfaction	Unable to test due to the high correlation between e-satisfaction and relationship satisfaction				

Note: Significance level are denoted as *p<0.05; **p<0.01; ***p<0.001.

7.9 Summary

This chapter discusses the results of the application of two prerequisite constructs (e-service quality and e-satisfaction) of loyalty in the context of Internet grocery shopping.

The results of the preliminary measurement model (Figure 7.12) reveals that the original conceptual model has to be examined at two stages as there is high correlation between e-satisfaction and relationship satisfaction. To avoid offended parameter estimates, the original conceptual model is divided into two parts. One contains e-service quality and e-satisfaction; the other includes all the dimensions of relationship quality. Although Relationship satisfaction was assumed to serve as an intermediate variable that links e-service quality, e-satisfaction and the dimensions of relationship quality in the original conceptual model, it should be noted that relationship satisfaction does not participate in the examination of **Part 1 Model - e-service quality and e-satisfaction model** because of respondents' conceptual confusion about e-satisfaction and relationship satisfaction. In order to avoid overlaps and multicollinearity, relationship satisfaction is excluded from the Part 1 model analysis.

With regard to the structural model of Part 1, the path of e-service quality → e-satisfaction is found to be statistically significant. This path reflects the impact of (H1a) e-service quality on e-satisfaction.

Following this chapter, the results of the measurement and structural model evaluation of the second part of the model (**Part 2**)-relationship quality is presented in next chapter.

Chapter 8

EMPIRICAL ANALYSIS AND RESULTS OF RELATIONSHIP QUALITY MODEL IN INTERNET GROCERY SHOPPING

8.0 Introduction

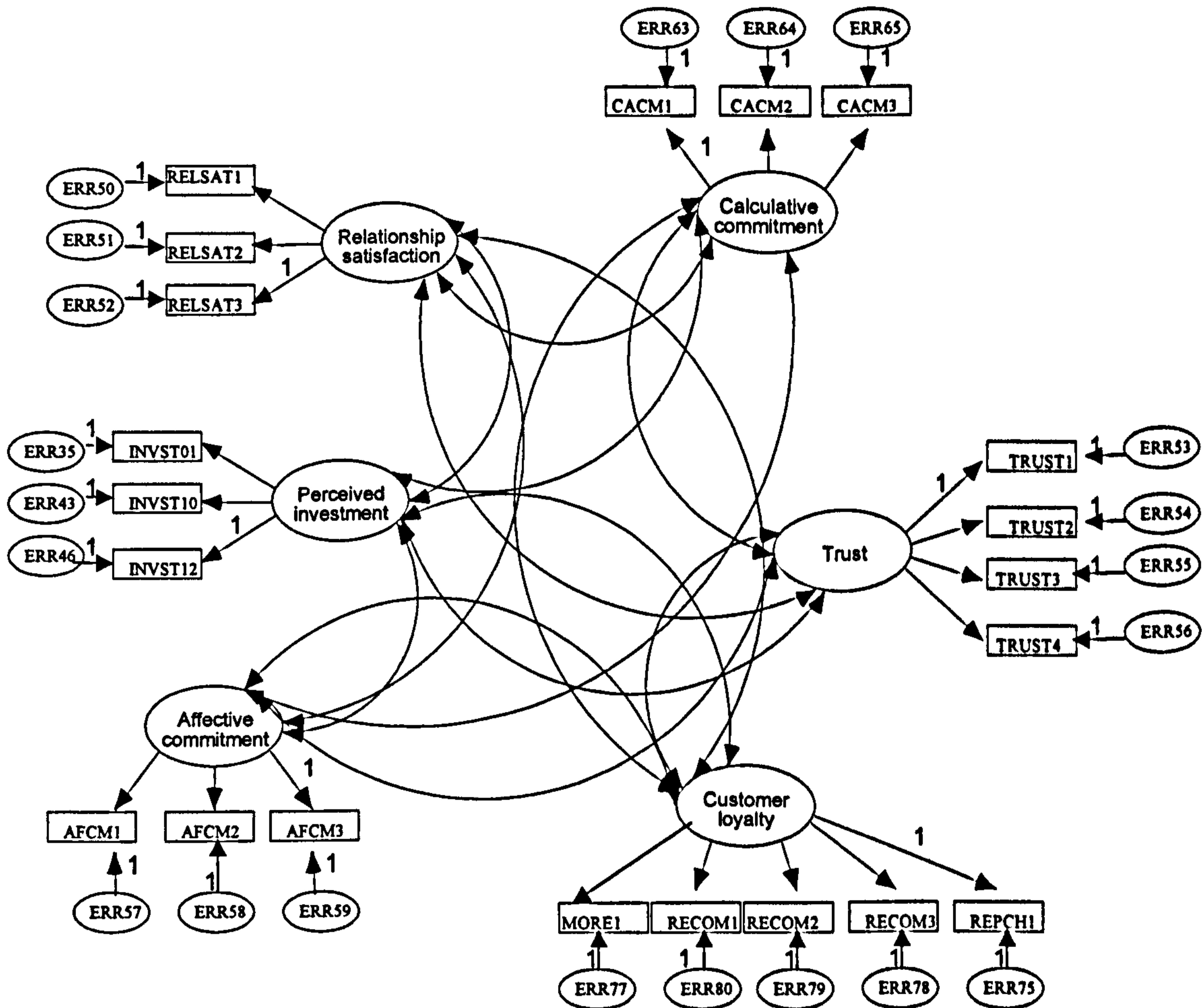
This chapter outlines the empirical results of the second part of the model-relationship quality, which is discussed in Chapter 7.0. The analyses of this part follow similar procedures of part 1 as that of Chapter 7.0. Since all the single constructs of relationship quality measurement model have already been tested in Chapter 7.0 (please see Section 7.6.2.2 -7.6.2.4), the relationship quality model is discussed in two stages-the full measurement model and the structural model in this chapter. Finally, an alternative model is developed, which aims to test whether another similarly formulated model can achieve a higher level of it.

8.1 Stage 1: Developing the measurement model for Part 2-relationship quality

8.1.1 Unidimensionality analysis for relationship quality

The full measurement Model (Figure 8.1) yields an overall χ^2 value of 358.25 with 174 degrees of freedom ($\chi^2/df=2.06$). The goodness-of-fit (GFI) and the adjusted GFI (AGFI) at 0.94 and 0.91 are adequate. The root mean squared error of approximation (RMSEA) provides a measure of the expected goodness of fit for the model. It is approximated for the population, and at 0.05 is found to be well within the recommended range of 0.05 and 0.08. Both CFI and IFI are found to be well above the recommended threshold of 0.90 at 0.98, providing further support for the acceptance of the measurement model.

Figure 8.1: Full Measurement Model for Relationship Quality in Internet Grocery Shopping



In addition, in reviewing both the unstandardised, as well as standardised maximum likelihood parameter estimates (Table 8.1), all the parameter estimates are statistically significant. A review of the modification indices reveals there are no outstanding values suggestive of model inappropriate fitting. Taking each of these factors into account, no further consideration is given to the inclusion of additional parameters. It can be argued that the current model is the final and most parsimonious model and represents the best fit to the data overall. The Goodness of Fit Index (GFI) and Adjusted Goodness of Fit Index (AGFI) are found to be well

within the recommended level of 0.90 at 0.94 and 0.91, respectively. It can be concluded that Figure 8.1 provides a good evidence of unidimensionality for the scales in relationship quality model, as these two fit statistics- GFI and AGFI are frequently reported in the articles about SEM for unidimensionality testing (Ping, 2004).

**Table 8.1: Selected AMOS Text Output for Relationship Quality Model:
Maximum Likelihood Estimates**

Regression		Unstandardised				Standardized
Weights		Estimate	S.E.	C.R.	P	Estimate
RELSAT1	<-- RS	1.00				0.92
RELSAT2	<-- RS	1.07	0.03	40.44	0.00	0.96
RELSAT3	<-- RS	1.08	0.03	41.35	0.00	0.97
INVST01	<-- PRI	1.00				0.81
INVST10	<-- PRI	1.00	0.05	19.75	0.00	0.85
INVST12	<-- PRI	1.07	0.05	20.38	0.00	0.86
TRUST1	<-- trust	1.00				0.90
TRUST2	<-- trust	1.06	0.04	29.56	0.00	0.89
TRUST3	<-- trust	1.05	0.03	33.69	0.00	0.94
TRUST4	<-- trust	1.02	0.03	30.68	0.00	0.90
AFCM1	<-- AC	1.00				0.75
AFCM2	<-- AC	1.34	0.07	20.35	0.00	0.89
AFCM3	<-- AC	1.24	0.06	20.28	0.00	0.90
CACM1	<-- CC	1.00				0.63
CACM2	<-- CC	1.34	0.10	12.98	0.00	0.75
CACM3	<-- CC	1.38	0.10	14.01	0.00	0.84
REPCH1	<-- loyalty	1.68	0.19	9.12	0.00	0.72
MORE1	<-- loyalty	1.34	0.16	8.37	0.00	0.58
RECOM1	<-- loyalty	1.94	0.21	9.48	0.00	0.84
RECOM2	<-- loyalty	1.84	0.19	9.64	0.00	0.90
RECOM3	<-- loyalty	1.86	0.19	9.62	0.00	0.90
REPCH3	<-- loyalty	1.00				0.43

Note: Relationship satisfaction: RS; Perceived relational investment: PRI; Affective commitment: AC; Calculative commitment: CC.

Model Fit: $\chi^2=358.25$; $\chi^2/df=2.06$; GFI=0.94; AGFI=0.91; CFI=0.98; IFI=0.98; RMSEA=0.05; TLI=0.98.

8.1.2 Reliability analysis for relationship quality model

The Table 8.2 contains the computations for both the composite reliability and the variance-extracted measures. In terms of composite reliability, all the constructs exceed the suggested level of 0.70. In terms of variance extracted, all the constructs exceed the threshold value of 0.50. Thereby, demonstrating that all the constructs

and the indicators in the measurement model of relationship quality (Figure 8.1) are internally consistent and have acceptable reliability values in their original form.

8.1.3 Validity analysis for relationship quality model

Item factor loadings and SMC from the confirmatory factor analysis completed shown in Table 8.2. According to Fornell and Larcker (1981), convergent validity exists when item factor loadings are greater than 0.7 and item squared multiple correlations (SMC) are greater than 0.5. From Table 8.2 it can be seen that there is a strong evidence of convergent validity except for two indicators (MORE1-LOYALTY and CACAM1-CC), which factor loadings and square multiple correlations (SMC) are below the recommended level.

Table 8.3 shows the correlations between the latent variables. The average variance extracted (AVE) of each construct is shown on the diagonal. Fornell and Larcker (1981) claim that the squared correlation between construct must be less than the average variance extracted (AVE) of each underlying construct in order for the constructs to have discriminant validity. On the basis of this most restrictive test, it can be found a strong evidence for discriminant validity between all the pairs of latent constructs.

To sum up, all the factors of relationship quality have shown a strong evidence of unidimensionality, reliability, face, content, convergent and discriminant validities. Although a few unqualified indicators need to be deleted at next stage, it can be claimed that customer's perceptions of relationship quality and their relational outcome-customer loyalty, consisting of above identified factors (Relationship satisfaction, perceived relational investment, trust and affective/calculative commitment). Table 8.4 is a summary for retained items, which is used in structural model of relationship quality in next section.

Table 8.2: The Measurement Model for Relationship Quality

Constructs	Source	Standardised regression weight	Composite Reliability	Variance Extracted	SMC Estimates
RS RELSAT1←RS RELSAT2←RS RELSAT3←RS	Jones and Suh (2000) three-items	0.92 0.96 0.97	0.98	0.95	0.84 0.92 0.94
PRI INVST01←PRI INVST10←PRI INVST12←PRI	De-Wulf (2001) three-item	0.81 0.85 0.86	0.93	0.82	0.65 0.72 0.74
TRUST TRUST1←TRUST TRUST2←TRUST TRUST3←TRUST TRUST4←TRUST	Anderson and Srinivasan (2003) four-item	0.90 0.89 0.94 0.90	0.99	0.98	0.80 0.79 0.88 0.81
AC AFCM1←AC AFCM2←AC AFCM3←AC	Fullerton (2004) three-item, which is originally adopted from Allen and Meyer (1990)	0.75 0.89 0.90	0.93	0.82	0.57 0.79 0.80
CC CACM1←CC CACM2←CC CACM3←CC	Fullerton (2004) three-item, which is originally adopted from Allen and Meyer (1990)	0.63 0.75 0.84	0.86	0.68	0.39 0.57 0.71
LOYALTY REPC1←LOYALTY MORE1←LOYALTY RECOM1←LOYALTY RECOM2←LOYALTY RECOM3←LOYALTY	Zeithaml et al., (1996) five-item	0.72 0.58 0.84 0.90 0.90	0.89	0.62	0.52 0.33 0.70 0.82 0.81

Note: RS: Relationship satisfaction; PRI: Perceived relational investment; AC: Affective commitment; CC: Calculative commitment.

Table 8.3: All Implied Correlation Estimates for Relationship Quality Model

All Implied Correlations - Estimates						
	CL	CC	AC	TRUST	PRI	RS
CL	0.62					
CC	0.13	0.68				
AC	0.41	0.78	0.82			
TRUST	0.53	-0.05	0.15	0.98		
PRI	0.57	0.00	0.34	0.29	0.82	
RS	0.77	-0.04	0.25	0.65	0.51	0.95

Note: a. RS: Relationship satisfaction; PRI: Perceived relational investment; AC: Affective commitment; CC: Calculative commitment.

b. Average variance extracted (AVE) values are shown on the diagonal.

Table 8.4: Retained Items Used in Structural Model for Relationship Quality

Original Number of items	Constructs	Source	Item deleted	Item Retained
3	RS RELSAT1←RS RELSAT2←RS RELSAT3←RS	Jones and Suh (2000) three-items		yes yes yes
3	PRI INVST01←PRI INVST10←PRI INVST12←PRI	De-Wulf (2001) three-item		yes yes yes
4	TRUST TRUST1←TRUST TRUST2←TRUST TRUST3←TRUST TRUST4←TRUST	Anderson and Srinivasan (2003) four-item		yes yes yes yes
3	AC AFCM1←AC AFCM2←AC AFCM3←AC	Fullerton (2004) three-item, which is originally adopted from Allen and Meyer (1990)		yes yes yes
3	CC CACM1←CC CACM2←CC CACM3←CC	Fullerton (2004) three-item, which is originally adopted from Allen and Meyer (1990)	yes	yes yes
5	LOYALTY REPCH1←LOYALTY MORE1←LOYALTY RECOM1←LOYALTY RECOM2←LOYALTY RECOM3←LOYALTY	Zeithaml et al., (1996) five-item	yes	yes yes yes yes

Note: RS: Relationship satisfaction; PRI: Perceived relational investment; AC: Affective commitment; CC: Calculative commitment.

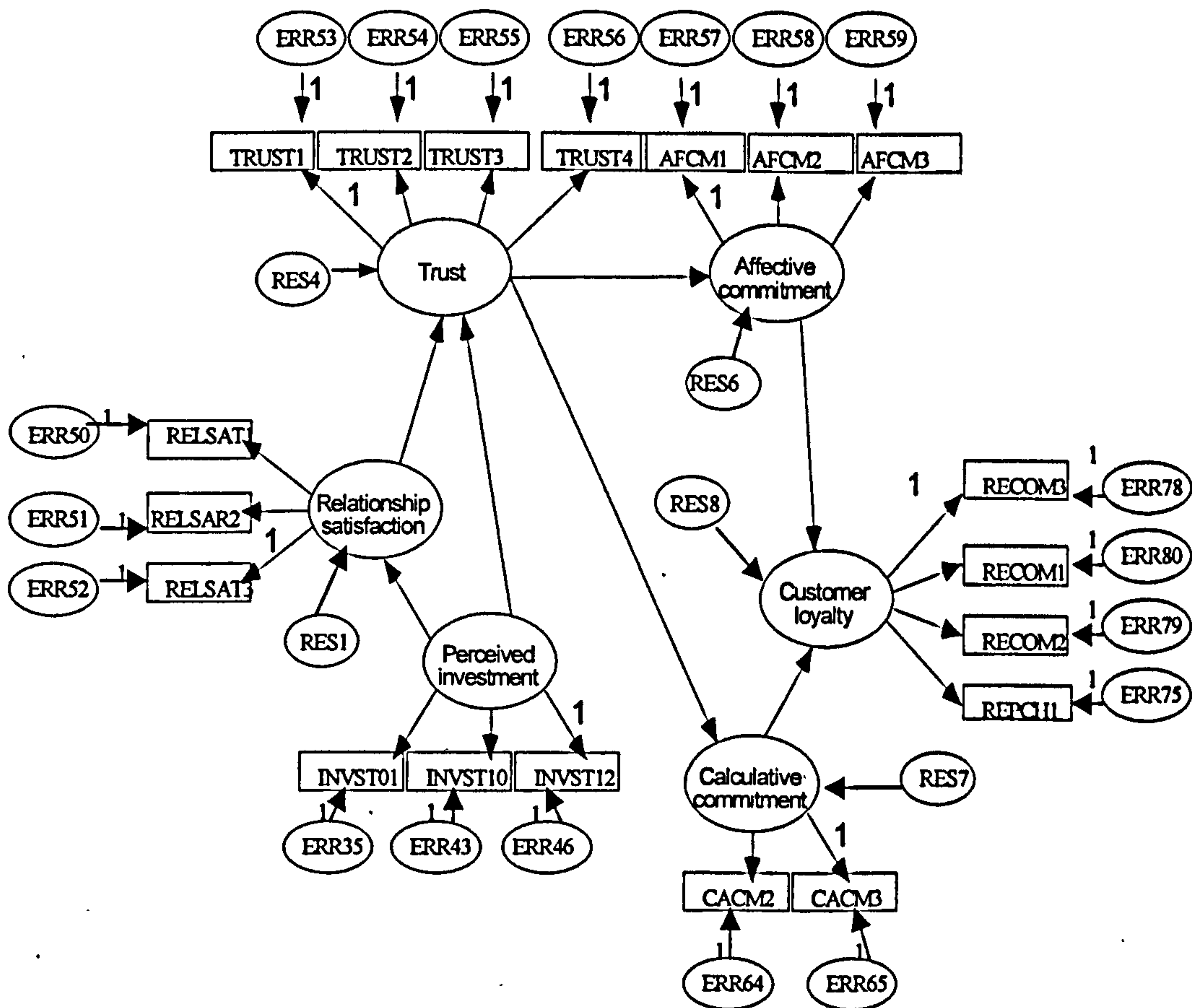
8.2 Stage 2: Developing structural model for relationship quality

Having assessed the overall model and aspects of the measurement model, the path relationships within the relationship quality model is analysed by structural equation modelling (SEM) to examine the estimated coefficients themselves for both practical and theoretical implications.

8.2.1 Structural evaluation of the hypothesised model for relationship quality (i)

The structural equation model in Figure 8.2 is estimated and resulted in a poor level of fit: χ^2 (1079.62); χ^2/df (7.45); GFI (0.84); AGFI (0.78); RMSEA (0.12); CFI (0.89); IFI (0.88); TLI (0.87).

Figure 8.2: Structural Model for Relationship Quality (i)



In reviewing both of the unstandardised, as well as standardised maximum likelihood parameter estimates (Table 8.5). It can be found that the C.R. value between trust and PRI (perceived relational investment) is less than 1.96 and

$p > 0.05$. This indicates that no significant relationship exists between these two constructs. Although De-Wulf et al., (2001) identify that trust is shown to be resulting from perceived relational investment in conventional retailing. However, it is not the case in Internet grocery retailing. As the majority of the participants in this research are those customers who have transferred from the off-line to the on-line store with the same retailer, their trust in the grocery retailer may be established in an off-line environment. Thus, there may not exist direct relationship between customers' trust and perceived relational investment during the on-line purchase as trust may be transferred from the off-line to the on-line grocery store, although it does not necessarily apply to those customers who have only used "pure-Internet" grocery store.

**Table 8.5: Selected AMOS Text Output for Relationship Quality Model (i):
Maximum Likelihood Estimates**

Regression Weights		Unstandardised				Standardised	
		Estimate	S.E.	C.R.	P	Estimate	
RS	←	PRI	0.45	0.04	10.71	0.00	0.50
trust	←	PRI	0.54	0.04	14.56	0.00	0.68
trust	←	PRI	-0.04	0.03	-1.28	0.20	-0.06
CC	←	trust	0.04	0.08	0.49	0.62	0.01
AC	←	trust	0.30	0.06	5.03	0.00	0.25
loyalty	←	AC	0.56	0.07	8.63	0.00	0.58
loyalty	←	CC	-0.03	0.06	-0.46	0.65	-0.07
RELSAT3	←	RS	1.00				0.97
RELSAT2	←	RS	0.99	0.02	51.99	0.00	0.96
RELSAT1	←	RS	0.93	0.02	41.11	0.00	0.92
RECOM2	←	loyalty	1.11	0.06	19.18	0.00	0.91
RECOM1	←	loyalty	1.20	0.07	18.17	0.00	0.87
RECOM3	←	loyalty	1.11	0.06	18.56	0.00	0.90
CACM2	←	CC	0.17	0.34	0.51	0.61	0.31
CACM3	←	CC	1.00				1.96
AFCM1	←	AC	1.00				0.74
TRUST1	←	trust	1.00				0.90
TRUST2	←	trust	1.06	0.04	29.53	0.00	0.89
TRUST4	←	trust	1.02	0.03	30.46	0.00	0.90
TRUST3	←	trust	1.06	0.03	33.64	0.00	0.94
AFCM3	←	AC	1.22	0.06	19.23	0.00	0.87
AFCM2	←	AC	1.41	0.07	19.35	0.00	0.92
INVST01	←	PRI	1.00				0.80
INVST10	←	PRI	0.99	0.05	19.46	0.00	0.84
INVST12	←	PRI	1.09	0.05	20.02	0.00	0.88
REPCH1	←	loyalty	1.00				0.73

Note: Relationship satisfaction: RS; Perceived relational investment: PRI; Affective commitment: AC; Calculative commitment: CC.

Model Fit: $\chi^2=1079.62$; $\chi^2/df=7.45$; GFI=0.84; AGFI=0.78; CFI=0.89; IFI=0.89; RMSEA=0.12; TLI=0.87.

Turning next to CC (calculative commitment) and trust, its C.R. value is 0.49 ($p=0.62$). In addition, no relationship is found between CC (calculative commitment) and loyalty (c.r. value= -0.46; $p=0.65$). It is not surprising that AMOS Maximum Likelihood Estimates yields such results. From past literature, calculative commitment is brought about by a perceived lack of choice or perceived switching costs (Fullerton, 2003). It is always accompanied by the consideration of potential benefits. However, if trust exists, one party must have confidence in the other party's reliability and integrity (Morgan and Hunt, 1994). Thus, trust reduces the perception of risk associated with the opportunistic behaviour. Therefore, trust and calculative commitment are two reverse conceptualisations. A deletion of the arrow between these two factors can be supported by a strong substantive rationale.

Likewise, calculative commitment itself cannot directly lead to customer loyalty, as previously mentioned, calculative commitment is usually associated with opportunistic behaviour. Whereas, loyalty not only accompanied by repeat buying, but also with a positive attitude (Dick and Basu, 1994). Based on the empirical rationale, the relationship between calculative commitment and loyalty is subsequently re-specified.

In reviewing these misspecification statistics, it is evident that the model could be further improved with the re-specification of possibly another three pairs of correlated items in Regression Weights section (Table 8.6) (AC-PRI; AC-CC; Loyalty-RS), as the residuals in the Covariance section (Table 8.6) do not have any substantial meaning, the model could be improved with the re-specification of possibly another three pairs of correlated items in Regression Weights section (AC-PRI; AC-CC; Loyalty-RS). The largest MI is 174.54 between Loyalty and RS (relationship satisfaction). Since these two constructs are highly correlated, this definitely signals some potential relationship between these two items. Although relationship satisfaction is a dimension of relationship quality, it is an overall measure, which summarises all customers past experiences with the retailer and the service encounters. Crosby et al., (1990) claim that the level of relationship satisfaction is likely to have an important effect on the "stay-or-leave" decision. To put it another way, it is very possible that relationship satisfaction alone can directly lead to customer loyalty. Further, Bolton (1998); Macintosh and Lockshin (1997)

and De Wulf et al., (2001) find positive paths from relationship satisfaction to both relationship duration and purchase intentions, which can be considered as behavioural indicators of customer loyalty. Based on the empirical rationale, the model is subsequently re-specified with an addition of the path between relationship satisfaction and customer loyalty.

**Table 8.6: AMOS Text Output for Structural Relationship CFA Model (i):
Modification Indices and Parameter Changes Statistics**

Modification Indices				
Covariances:			M.I.	Par Change
RES6	<-->	PRI	105.59	0.77
RES7	<-->	RES6	91.45	0.72
RES8	<-->	PRI	67.47	0.51
RES8	<-->	RES1	120.52	0.52
ERR65	<-->	RES6	59.18	0.53
Variances:			M.I.	Par Change
Regression Weights:			M.I.	Par Change
AC	<--	PRI	105.59	0.46
AC	<--	CC	91.45	0.07
CC	<--	AC	85.14	0.52
loyalty	<--	PRI	67.47	0.30
loyalty	<--	RS	174.54	0.50
loyalty	<--	trust	88.17	0.45
CACM3	<--	AC	55.03	0.38
CACM3	<--	AFCM3	50.65	0.25

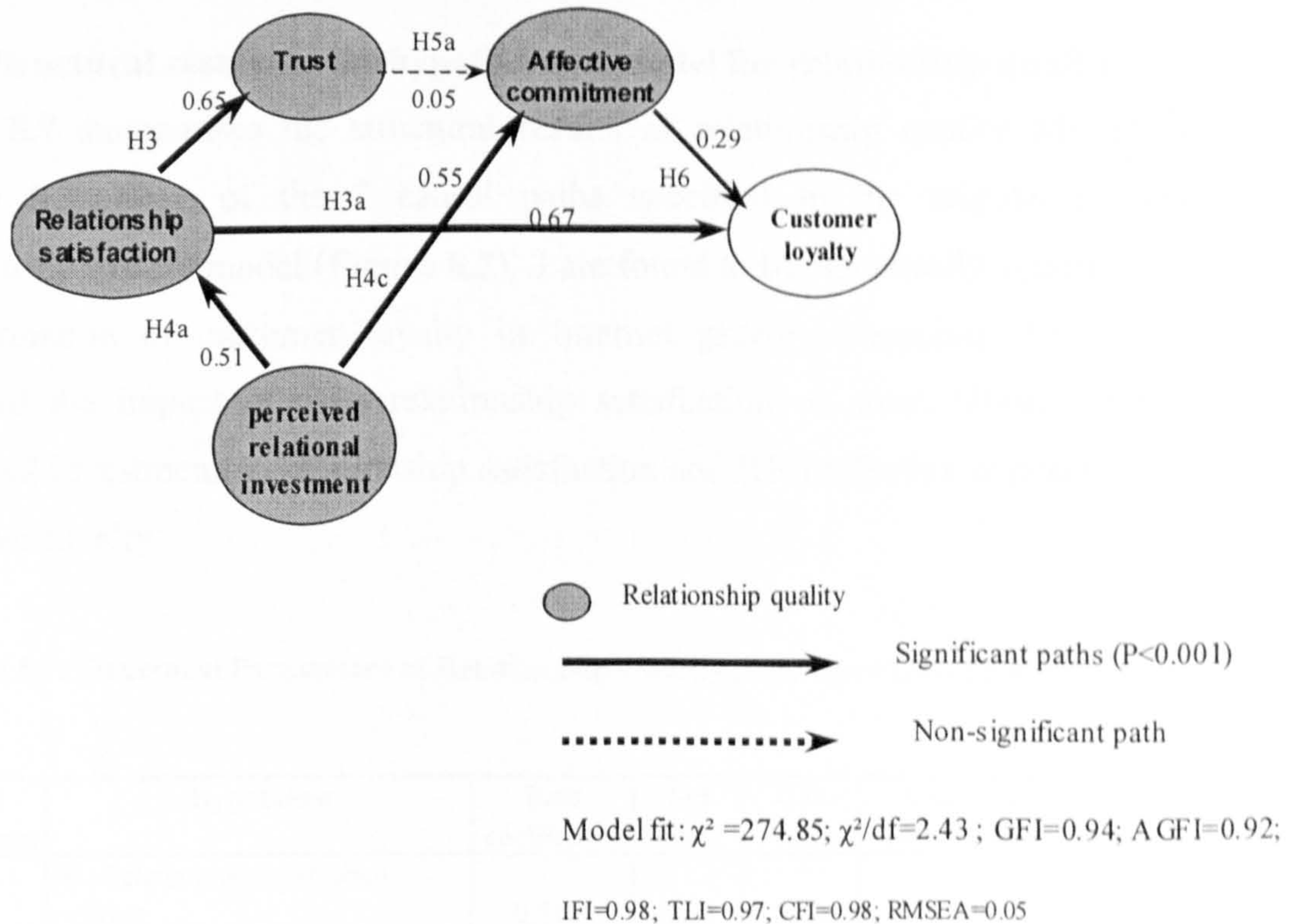
The second problematic items are AC and CC. These two items are highly correlated with each other. In addition, their indicators are also correlated (CACM3-AC and AC-CACM3). From previous literature, some researchers like Fournier et al. (1998); Fullerton (2003) and Grayson and Ambler (1999); Gruen et al., (2000) have found that commitment can have an effect on customer loyalty via both feelings of positive affect and feelings of calculation. However, others such as Garbarino and Johnson (1999); Pritchard et al., (1999); De-Wulf et al., (2001) and Morgan and Hunt (1994) see commitment as unidimensional. They have generally

taken commitment as a global dimension and claimed that measure of commitment with both aspects-“desire for continuity” and “willingness to make efforts”. Whilst some researchers define commitment as multi-dimensional measure and recognise that different forms of commitment in a relationship may have different consequences, in practice customers may not deliberately separate two types of commitment as two distinct conceptualisations. Commitment can be a rather general attitude for customers. That is probably the reason why affective commitment and calculative commitment are so highly correlated in this study. Thus, it is considered that such misspecification can be solved by the deletion of calculative commitment.

Finally, the MI value (105.59) between AC (affective commitment) and PRI (perceived relational investment) in Regression Weights section seems quite high. Since these two constructs are highly correlated, this indicates some potential relationship between these two constructs. Although very few marketing studies have discussed the relationship between affective commitment and perceived relational investment, some social psychological articles like Rhatigan and Axsom (2006) do address investment strength lies in its emphasis on affective commitment, which is theorised to be a key concept and critical precursor to predicting and understanding stay/leave decisions. This could possibly be the case in an e-retailing context. Customers are likely to be committed to a relationship, if the investment (such as tangible or intangible rewards) they have received from their e-tailer is not easily replaceable from other potential retailer. Thus, an inclusion of the path between affective commitment and perceived relational investment results in a statistically significant difference in fit from **Model (i)-Figure 8.2** and such a re-specification is supported by a strong substantive rationale (Rhatigan and Axsom 2006). In the next section, results from these analyses are discussed and the respecified model is labelled as **Model (ii)-Figure 8.3**.

8.2.2 Re-specified structural model for relationship quality (ii)

Figure 8.3: Re-specified Structural Model for Relationship quality (ii)



The re-specified full measurement model (**Figure 8.3**) yields an overall χ^2 value of 274.85 with 113 degrees of freedom ($\chi^2/df=2.43$). The goodness-of-fit (GFI) and the adjusted GFI (AGFI) are at 0.94 and 0.92, provide more confidence in the plausibility of the structural model. The root mean squared error of approximation (RMSEA) provides a measure of the expected goodness of fit for the model if it is approximated for the population, and at 0.05 is found to be well within the recommended range of 0.05 and 0.08. Both CFI and IFI are found to be well above the recommended threshold of 0.90 at 0.98, providing further support for the acceptance of the model. As such, there is a high degree of confidence provided in the parsimony of the model. From the statistical perspective, it is noted that the

addition of each new parameter results in a statistically significant difference in fit from Model (i). The inclusion of two additional paths, and the deletion of three initially specified paths result in a final model that fits the data well. It appears that the revised Model (ii)-Figure 8.3 has the greatest potential for replication in other samples of relationship quality, compared with Model (i)-Figure 8.2.

8.2.3 Structural results of the hypothesised model for relationship quality

Table 8.7 summarises the structural results of relationship quality Model (ii)-Figure 8.3. First, of the 7 causal paths specified in the original proposed relationship quality model (Figure 8.2), 3 are found to be statistically significant for the formation of customer loyalty in Internet grocery shopping. These paths reflected the impact of (H3) relationship satisfaction on trust; (H4a) perceived relational investment on relationship satisfaction and (H6) affective commitment on customer loyalty.

Table 8.7: Structural Parameters of Relationship Quality (Customer Loyalty as Outcome)

No of hypotheses	Hypotheses	Path coefficients	Std Error	C.R. Value	Standardised path coefficients	Hypothesis supported
1	H3: Relationship satisfaction → Trust	0.51**	0.03	16.20	0.65**	yes
2	H4a: Perceived relational investment → Relationship satisfaction	0.46**	0.04	11.01	0.51**	yes
3	H4b: Perceived relational investment → Trust	-0.04	0.03	-1.28	-0.06	no
4	H4c: Perceived relational investment → Affective commitment	0.50**	0.05	10.18	0.55**	yes
5	H3a: Relationship satisfaction → Customer loyalty	0.61**	0.04	14.76	0.67**	yes
6	H5a: Trust → Affective commitment	0.06	0.06	1.03	0.05	no
7	H5b: Trust → Calculative commitment	0.04	0.08	0.50	0.01	no
8	H6: Affective commitment → Customer Loyalty	0.27**	0.04	7.43	0.29**	yes
9	H7: Calculative commitment → Customer Loyalty	-0.03	0.06	-0.46	-0.07	no

Note: Significance level are denoted as *p<0.05; **p<0.01; ***p<0.001.

Second, two paths, which are not specified a priori (relationship satisfaction → customer loyalty; perceived relational investment → affective commitment), have proved to be essential components of the causal structure. They are, therefore added to the final structural Model (ii) (Fig 8.3).

Third, three previously hypothesised paths (perceived relational investment → trust; trust → calculative commitment; calculative commitment → customer loyalty) are not significant and are subsequently deleted from the model.

Table 8.8 below details the standardised direct and indirect effects measured on loyalty from the four dimensions of relationship quality. It can be seen that two dimensions (relationship satisfaction and affective commitment) of relationship quality have direct effect on loyalty. Relationship satisfaction has the strongest direct effect (its standardised coefficient is 0.67) on loyalty formation. In contrast the direct effect on loyalty from affective commitment is relatively weak, its standardised coefficient is 0.29. In addition, perceived relational investment indirectly influences loyalty (its standardised coefficient is 0.51). Contrary to the expectation, trust has very little effect on loyalty.

Table 8.8: Determinants of Customer Loyalty-Analysis of Direct and Indirect Effects

Construct	Direct Effect (1)	Indirect Effects(2)	Total Effect (3)
Relationship satisfaction	0.67	0.01	0.68
Perceived relational investment	–	0.51	0.51
Trust	–	0.01	0.01
Affective commitment	0.29	–	0.29

Finally, it should be noted that very weak relationship is found between trust and affective commitment in Model (ii) (Fig 8.3). Due to the central role of trust in

relationship quality from past literature, it is thought it would be better to keep trust in the final structural model.

8.3 Stage 3: Developing an alternative model

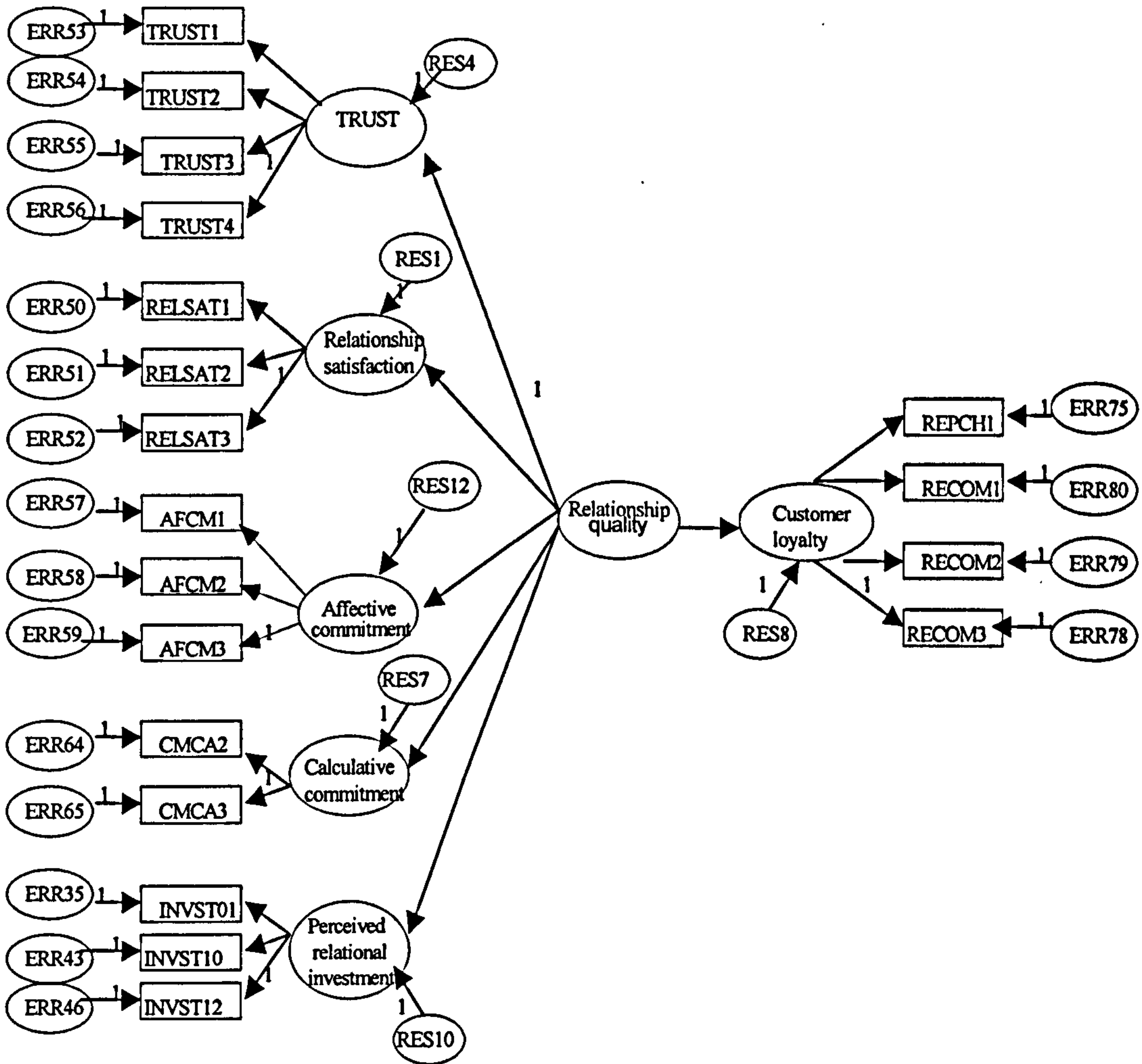
The final approach to model assessment is to compare the final proposed model with an alternative model. The purpose of doing this is to determine if there is other similarly formulated model that can achieve a higher level of fit compared with the proposed model. One proposed alternative model of relationship quality is based on the literature review (please see **Figure 8.4** below).

From the review of the literature in Chapter 4.0, it can be seen that most recent examinations of the nature and role of relationship quality in developing customer loyalty have still taken a narrow perspective on relationship quality, defining it as a global measure (De-Wulf et al., 2001; Dorsch et al., 1998; Shamdasani and Balakrishnan, 2000; Wong and Sohal, 2002 *etc*). Even in the studies that have employed a multi-component perspective on relationship quality, there has been no attempt to examine the existence of the interactive effects of various types of dimensions of relationship quality. The identification of interactive effects between the components of relationship quality and customer loyalty is the major objective of this research. However, this study also aims to test an alternative model by treating relationship quality as an overall measure and see which model can achieve a better fitting for explaining customer loyalty.

8.3.1 The structural evaluation of the alternative model (i)

Based on the purification of all scales in the measurement model in Chapter 7.0, all the identified constructs of relationships quality from the original hypothesised model are loaded onto relationship quality as first order factors regardless of their initially specified paths for the inter-relationships. In the meantime, relationship quality represented a second-order factorial structure for customer loyalty (please see **Figure 8.4**). This alternative model yields an overall χ^2 value of 701.64 with 146 degrees of freedom ($\chi^2/df=4.81$), which is larger than 3 as recommended by

Figure 8.4: An Alternative Structural Model for Relationship Quality (i)



Bagozzi and Yi (1988). The goodness-of-fit index (GFI) and adjusted GFI (AGFI) at 0.86 and 0.82 are below the recommended level of 0.90. Although CFI and IFI show an acceptable value of 0.93, it seems that the current model still needs to be improved. In an effort to address the problems, the next stage is to examine the nonsensical or theoretically inconsistent estimates and the areas of poor fitting in the model.

8.3.2 Offending estimates and poor fitting in the alternative model (i)

Both the unstandardised, as well as standardised maximum likelihood parameter estimates are presented in Table 8.9. All the parameter estimates are statistically significant and substantively meaningful.

**Table 8.9: Selected AMOS Text Output for Alternative Model (i):
Maximum Likelihood Estimates**

Regression		Unstandardised				Standardised	
Weights		Estimate	S.E.	C.R.	P	Estimate	
RS	←	RQ	1.00			0.82	
trust	←	RQ	0.63	0.05	12.38	0.00	0.60
AC	←	RQ	0.74	0.08	9.87	0.00	0.57
PRI	←	RQ	0.96	0.08	11.50	0.00	0.66
CC	←	RQ	0.49	0.09	5.36	0.00	0.40
loyalty	←	RQ	1.10	0.08	14.05	0.00	0.91
RELSAT2	←	RS	1.07	0.03	40.43	0.00	0.96
RELSAT1	←	RS	1.00				0.92
RECOM2	←	loyalty	1.11	0.06	19.43	0.00	0.91
RECOM1	←	loyalty	1.17	0.07	17.99	0.00	0.84
RECOM3	←	loyalty	1.12	0.06	18.97	0.00	0.90
CACM2	←	CC	1.47	0.21	6.97	0.00	0.92
CACM3	←	CC	1.00				0.67
AFCM1	←	AC	1.00				0.74
TRUST1	←	trust	1.00				0.90
TRUST2	←	trust	1.06	0.04	29.57	0.00	0.89
TRUST4	←	trust	1.02	0.03	30.68	0.00	0.90
TRUST3	←	trust	1.05	0.03	33.63	0.00	0.94
AFCM3	←	AC	1.22	0.06	19.25	0.00	0.87
AFCM2	←	AC	1.41	0.07	19.12	0.00	0.93
INVST01	←	PRI	1.00				0.81
INVST10	←	PRI	0.98	0.05	19.61	0.00	0.84
INVST12	←	PRI	1.06	0.05	20.24	0.00	0.86
REPCH1	←	loyalty	1.00				0.72
RELSAT3	←	RS	1.08	0.03	41.19	0.00	0.97

Note: RS: Relationship satisfaction; PRI: Perceived relational investment; AC: Affective commitment; CC: Calculative commitment.

Model Fit: $\chi^2=701.64$; $\chi^2/df=4.81$; GFI=0.86; AGFI=0.82; CFI=0.93; IFI=0.93; RMSEA=0.09; TLI=0.92.

The next task is to identify any areas of poor fitting in the model. As the residuals in Covariances portion (Table 8.10) are uninterpretable, the parameters in Regaression Weights section reveal some evidence of poor fitting in the model. The parameter represents a correlation between CC (calculative commitment) and AC (affective

commitment). As this problem has been discussed in last section, it is considered it would be appropriate to re-estimate the model with Item CC re-specified as a free parameter. The respecified model is labelled as **Model (ii)-Figure 8.5**. Results from this analysis are discussed in the next section.

**Table 8.10: AMOS Text Output for an Alternative CFA Model (ii):
Modification Indices and Parameter Change Statistics**

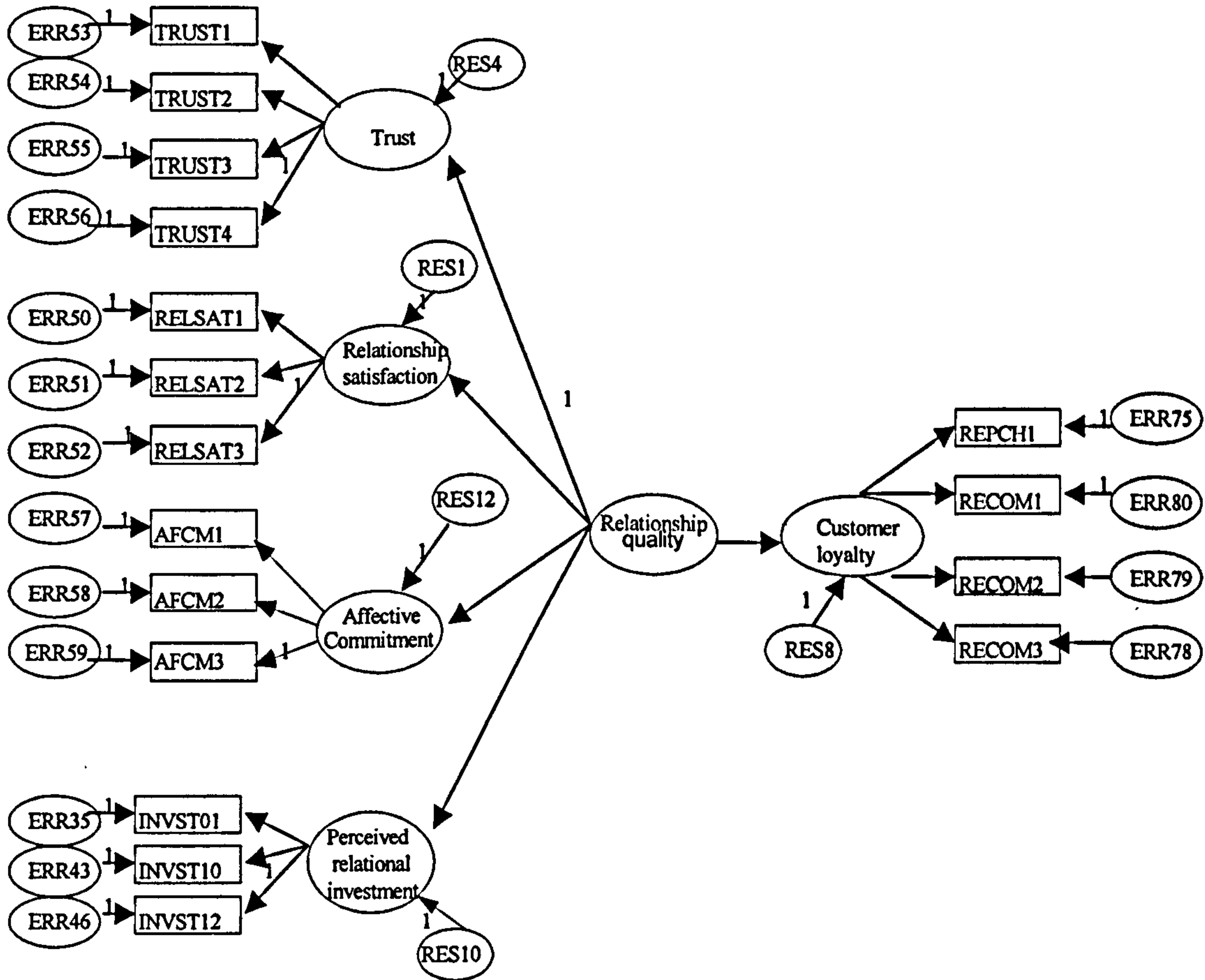
Modification Indices				
Covariances:			M.I.	Par Change
RES6	<-->	RES7	177.273	0.712
RES1	<-->	RES4	64.172	0.223
ERR65	<-->	RES6	80.115	0.553
Variances:			M.I.	Par Change
Regression Weights:				
CC	<--	AC	109.085	0.468
AC	<--	CC	141.271	0.564
CACM3	<--	AFCM3	51.392	0.252

8.3.3 Re-specified the alternative model for relationship quality (ii)

The re-specified full measurement model (Figure 8.5) yields an overall χ^2 value of 359.73 with 114 degrees of freedom ($\chi^2/df=3.16$), which still slightly exceeds the recommended level of 3. The goodness-of-fit (GFI) is at 0.91; the adjusted GFI (AGFI) at 0.88 which is lower than the recommended level of 0.90, but there is an improvement compared with **Model (i)-Fig 8.4**. At the same time the root mean squared error of approximation (RMSEA) provides a measure of the goodness of fit for the model, if it is approximated for the population, and at 0.07 is found to be within the recommended range of 0.05 and 0.08. Both CFI and IFI are found to be well above the recommended threshold of 0.90 at 0.97, providing further support for

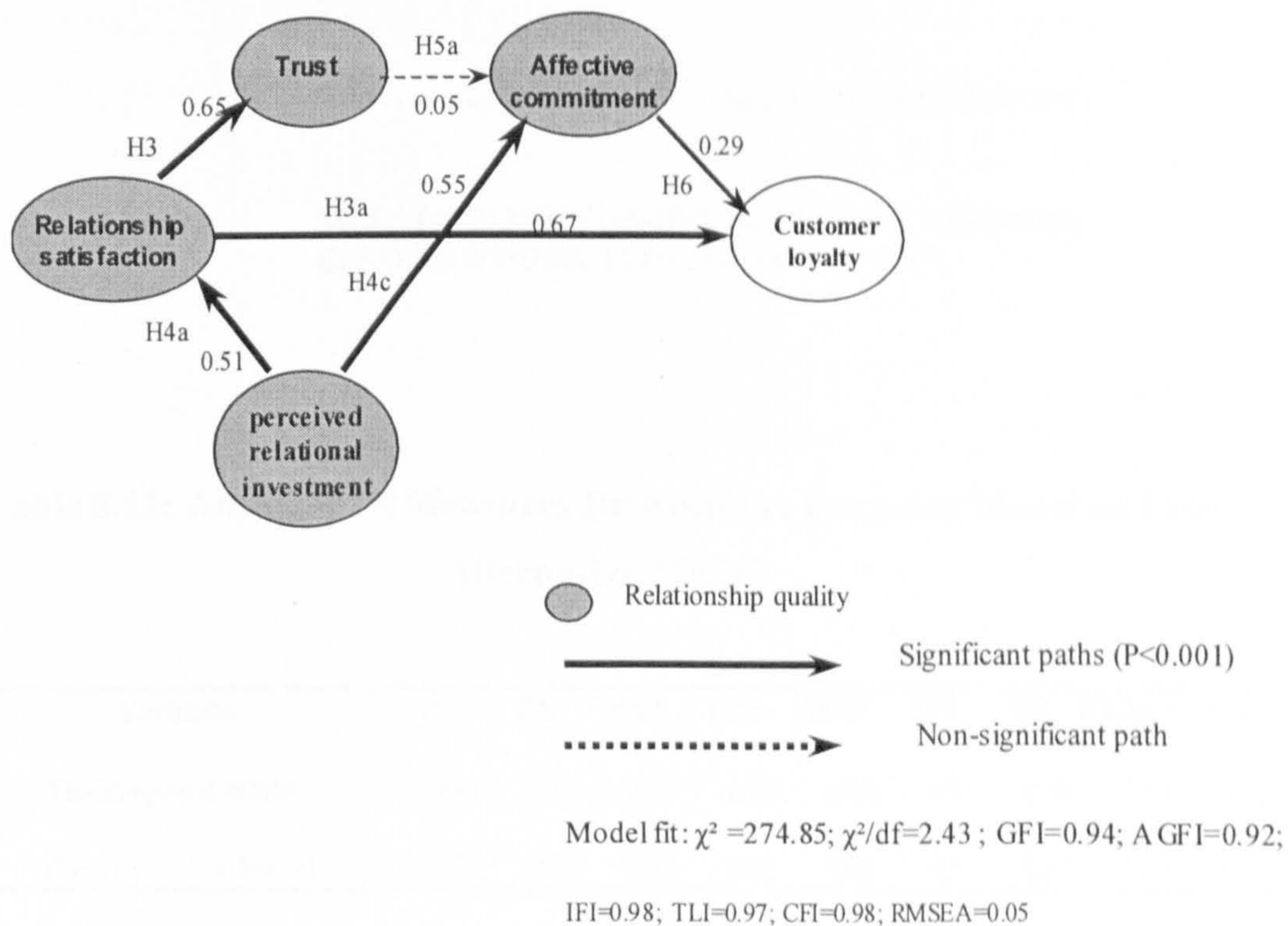
the acceptance of the structural model. As such, there is a high degree of confidence provided in the parsimony of the model.

Figure 8.5: Re-specified Alternative Model for Relationship Quality (ii)

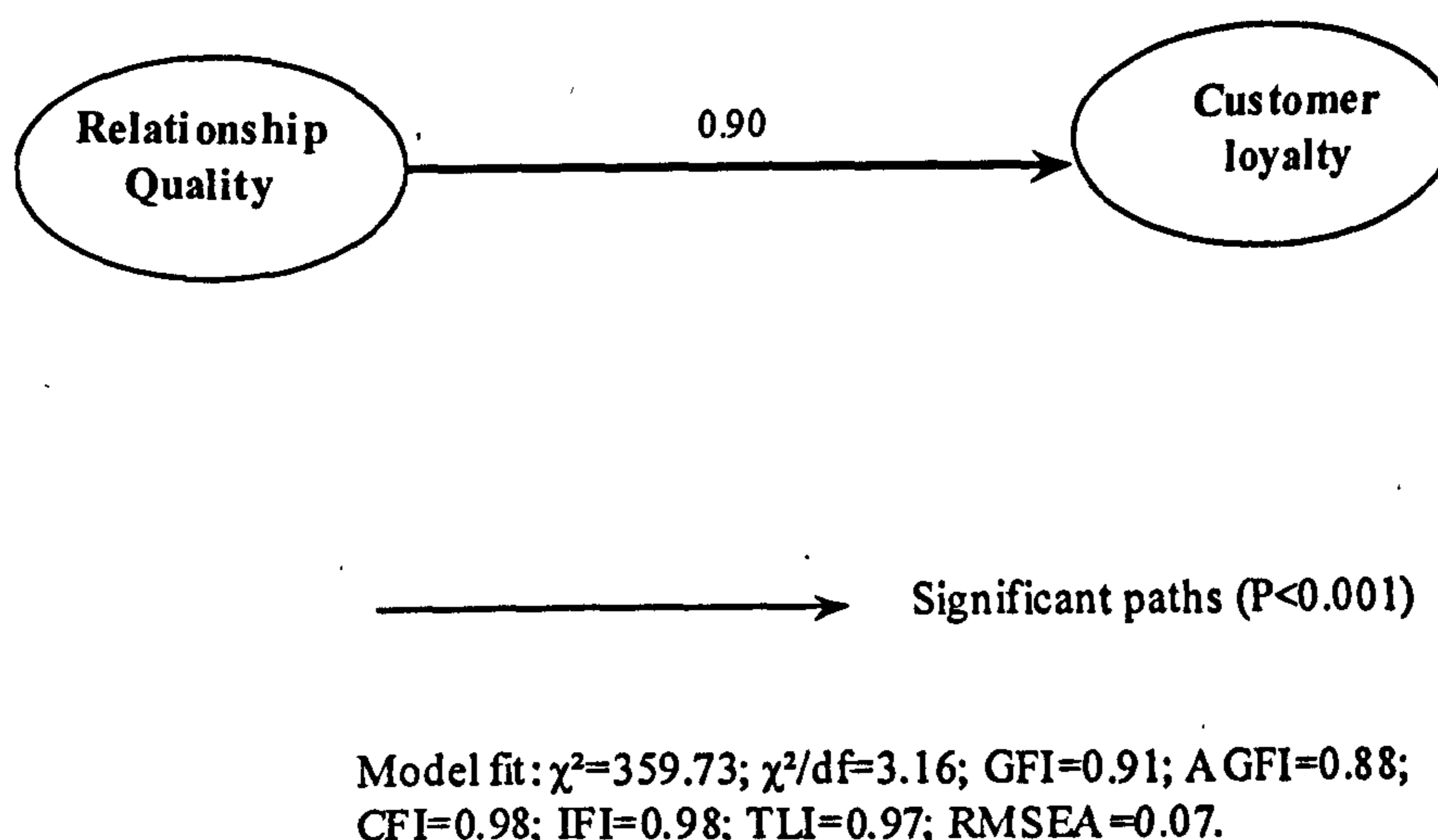


8.3.4 Comparison of the structural results between the alternative model and the proposed model of relationship quality

Figure 8.6: The Proposed Model for Relationship Quality



The proposed model (Figure 8.6) examines the inter-relationships between the dimensions of relationship quality and loyalty, which has the lowest χ^2 (274.85), and this model also has the largest number of estimated parameters and thus, the lowest degrees of freedom and RMSEA value (please see Table 8.11).

Figure 8.7: The Alternative Model for Relationship Quality**Table 8.11: Absolute Fit Measures Between the Proposed Model and the Alternative Model**

Variables	χ^2	DF	χ^2/df	GFI	AGFI	CFI	IFI	RMSEA	TLI
The Proposed Model	274.85	113	2.43	0.94	0.92	0.98	0.98	0.05	0.97
The Alternative Model	359.73	114	3.16	0.91	0.88	0.97	0.97	0.07	0.96

In contrast, the alternative model (Figure 8.7) tests the relationship between relationship quality and customer loyalty by treating relationship quality as an overall measure. It yields χ^2 (359.73) with 114 degrees of freedom ($\chi^2/df=3.16$), which slightly exceeds the recommended level of 3. The important aspect of this change in model fit is that the χ^2 difference between these two models is very significant ($359.73-274.85=84.88$). This indicates that there is erosion in model fit from the proposed model (Figure 8.6) to the alternative model (Figure 8.7). Moreover, the proposed model has the best performance on GFI (0.98) and AGFI (0.98) measure. This further indicates that the proposed model achieves a much better fit than the alternative model. Furthermore, although CFI, IFI and TLI value between these two models are quite close, the proposed model still has the higher

value than the alternative model. Therefore, it can be claimed that the proposed model is the final and the most parsimonious model and represents the best fit for measuring the relationship between relationship quality and customer loyalty until additional constructs can be added, measures refined or causal relationships re-specified.

8.3.5 Summary

In this chapter, the measurement and structural results of relationship quality is evaluated and presented. The modified integrated model (**Figure 8.6**) offers a good fit to the data and it explains a very good portion ($R^2=65\%$) of the variance associated with loyalty accounted for by the dimensions of relationship quality in Internet grocery shopping.

The results highlight the importance of relationship satisfaction that has a strong effect on the formation of customer loyalty in Internet grocery shopping. Although loyalty can be also developed through another route (perceived relational investment → affective commitment → customer loyalty), the effect from affective commitment on loyalty is much weaker than that from relationship satisfaction. Besides, customer loyalty is indirectly influenced by perceived relational investment from the retailer. Unexpectedly, trust plays a very unimportant role in customer loyalty in this research.

Based on the overall model fit, measurement and structural evaluation of the hypothesised and the alternative model, it is found that the proposed hypothesised model achieves better fit than the alternative model statistically. Moreover, the proposed model raises the chance to see the effects of different components of relationship quality on customer loyalty. However, the alternative model does not offer such an opportunity.

In the next chapter, the results of this research are discussed by comparing them with the findings from the existing studies and highlighting how these findings fill in the research gap.

*Chapter 9***DISCUSSION AND CONCLUSIONS****9.0 Introduction**

This chapter discusses the empirical results from the models estimated in Chapter 7.0 and 8.0. The discussions are built upon the theoretical model and hypotheses developed for the study as well as the previous studies in the literature. This chapter begins with a discussion of the initially proposed hypothesised relationships and their implications, followed by a discussion of newly specified paths from SEM analysis. Following from this, the results regarding the initially proposed research questions are discussed respectively, and then the alternative model is compared with the revised model to see which model can achieve the best fit in predicting customer loyalty in Internet grocery shopping. Finally, conclusions are drawn, highlighting this study's difference and contribution to the investigation in Internet grocery shopping.

9.1 Discussion of model estimation and hypotheses tests results

The results of the structural equation modelling analysis based on two models (Part 1 and Part 2) indicate that a total of five hypotheses (H1a: e-service quality → e-satisfaction; H3: relationship satisfaction → trust; H4a: perceived relational investment → relationship satisfaction; H5a: trust → affective commitment; H6: affective commitment → customer loyalty) of the initially hypothesised model (please see **Figure 9.1** below) provide an empirical support for the development of customer loyalty in Internet grocery shopping. In addition, another two pairs of newly specified relationships are identified based on SEM analyses and a new model for relationship quality is proposed. In the following sections each hypothesis

and sub-hypothesis is discussed in turn according to the original model (Figure 9.1), and the newly specified paths are then examined in light of the structural model (Figure 9.2).

Figure 9.1: Original Conceptual Model – Relationship Quality and Customer Loyalty in Internet Grocery Shopping in the UK

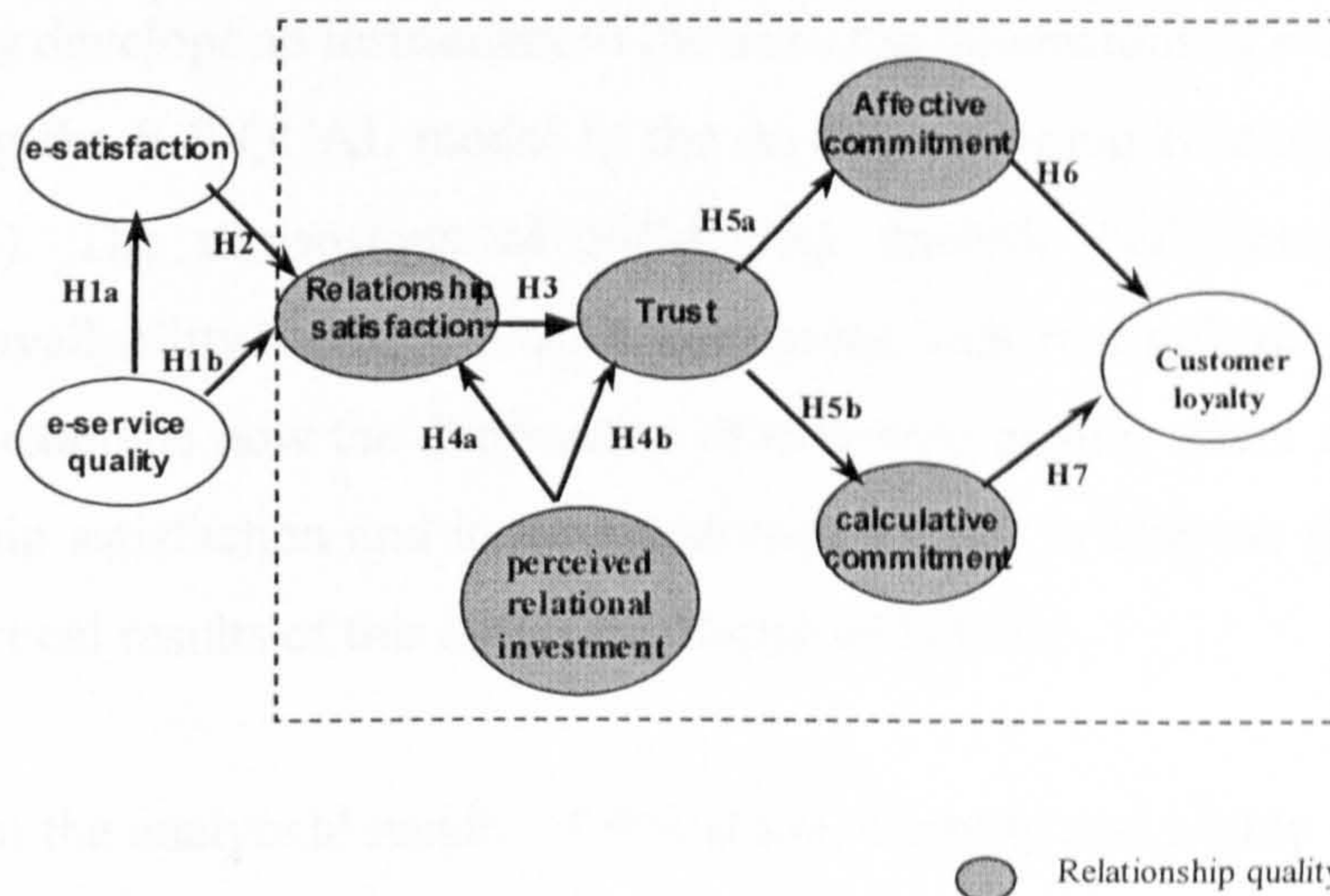
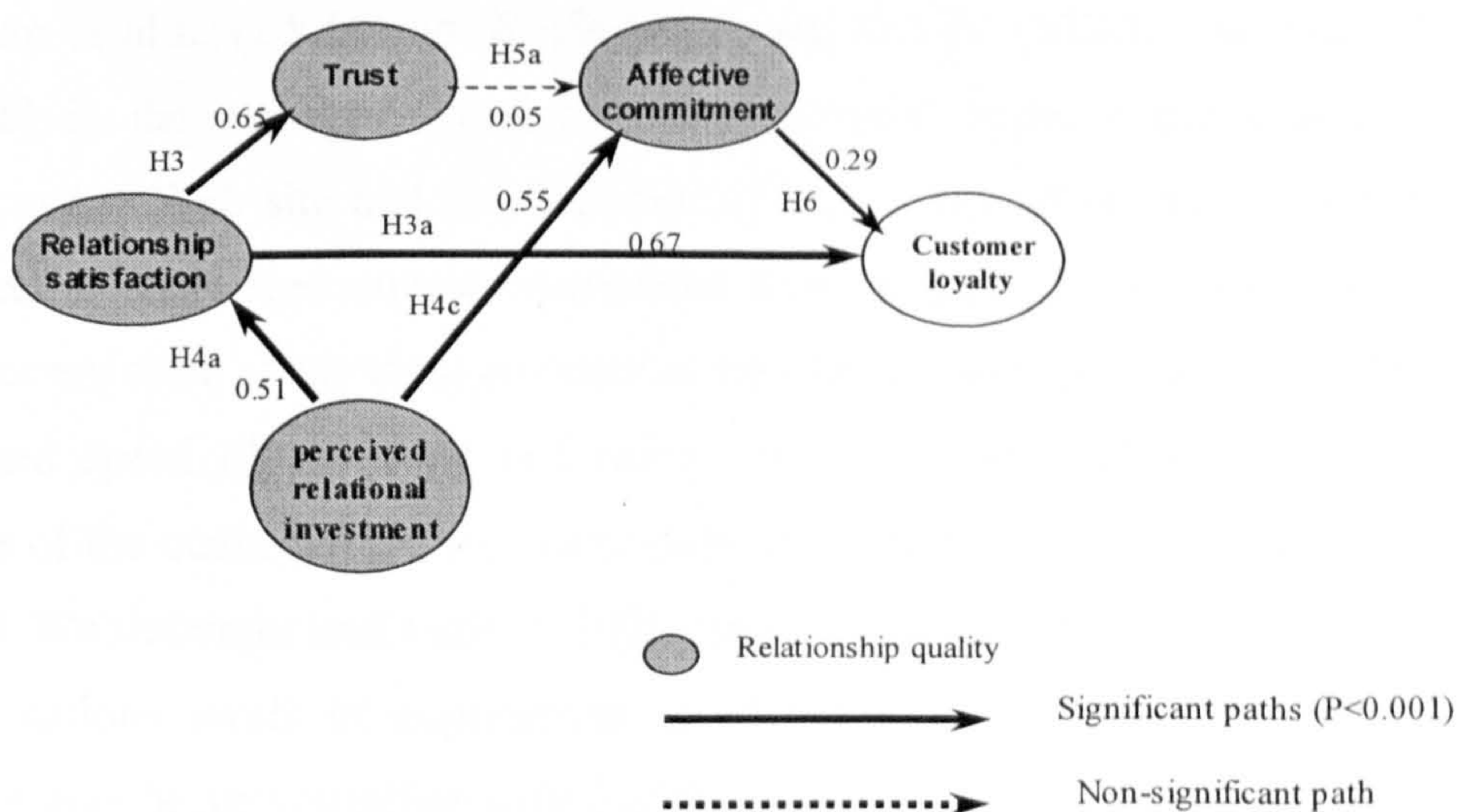


Figure 9.2: Re-specified Structural Model for Relationship Quality



Model fit: $\chi^2 = 274.85$; $\chi^2/df = 2.43$; GFI=0.94; A GFI=0.92; IFI=0.98; TLI=0.97; CFI=0.98; RMSEA=0.05

9.1.1 Initially proposed hypotheses

H1a posited that there is a positive relation between e-service quality and e-satisfaction in Internet grocery shopping.

The relationship between e-service quality and e-satisfaction is found to be statistically significant. E-service quality positively affects e-satisfaction (standardised regression coefficient is 0.58 at $p < 0.001$).

This study develops an instrument to measure the dimensions of e-service quality by modifying the E-S-QUAL model in the on-line shopping context (Parasuraman et al., 2005). The dimensions of E-S-QUAL include “efficiency”, “fulfilment”, “system availability” and “privacy”. Moreover, this research develops a research model to examine how the dimensions of e-service quality affect e-satisfaction and relationship satisfaction and in turn customer loyalty in Internet grocery shopping. The analytical results of this study are discussed below.

First, from the analytical results of this study, a strong and highly significant direct effect shows that “efficiency” (standardised regression coefficient is 0.93 at $p < 0.001$) most strongly affects the e-service quality and e-satisfaction in Internet grocery shopping. “Efficiency” describes the ease and speed of accessing and using the site. This analytical result is different from that of recent e-tailing studies Parasuraman et al's., (2005) and Wolfinbarger and Gilly's (2003), who finds that “fulfilment” is the strongest predictor in customers’ higher-order evaluations pertaining to the Web site and the “efficiency” is the second strongest predictor. This research is conducted among experienced Internet grocery customers, who see Internet grocery store as the most convenient way to do their route shopping. Thus, the ease and speed of accessing and using the site strongly affects customers’ evaluations of the quality of grocery store website. In contrast, Parasuraman et al's., (2005) and Wolfinbarger and Gilly's (2003) research are conducted among people who have various levels of experiences of shopping on on-line. Some of their respondents may be very familiar with the Internet shopping, but some may not be experienced. In that case, “fulfilment” in terms of order delivery and item availability probably is the thing that concerns customers most regarding the service quality provided by the on-line store.

Second, “system availability” (standardised regression weight is 0.88 at $p < 0.001$) is the second important predictor of e-service quality in Internet grocery shopping. “System availability” refers to the correct technical functioning of the site. This result is consistent with Wolfinbarger and Gilly (2003), who find that judgements concerning the quality of an on-line site are most strongly related to website design factors. Wolfinbarger and Gilly's (2003) research includes all the e-commerce website. However, Parasuraman et al., (2005) point out that “system availability” plays a less important role than that of “fulfilment” and “efficiency” in Internet grocery shopping. It should be noted that there exist some conceptual and content overlap between this study and Parasuraman et al., (2005) as the focus of both research is on the Internet grocery shopping. However, there are several important differences from customers' perception towards e-service quality as the scope of respondents selected is quite different in both studies.

Third, the dimension of “fulfilment” is the third predictor of e-service quality and e-satisfaction in this study. Its standardised regression weight is 0.70 (at $p < 0.001$). Although “fulfilment” also has a very strong effect on e-service quality, it is not as strong as “efficiency” and “system availability” do. In comparison, “fulfilment” is the strongest predictor of e-service quality in Parasuraman et al's., (2005) and Wolfinbarger and Gilly's (2003) study. Since the majority of participants of this research have transferred from the same off-line store to the on-line store, the result of this study might be caused by the fact that customers once have got the experience and familiarity with Internet grocery shopping, they will not worry about the order delivery and the item availability (“fulfilment”) as trust has already been established between the retailer and the customer in the same off-line store according to Rafiq and Fulford (2005).

Finally, “privacy” is not a significant predictor of e-service quality in this research and is deleted from the model due to the strong correlation between “fulfilment” and “privacy”. This finding might indicate that “privacy” is not a major issue for experienced on-line grocery shoppers, as they know how the e-tailer will respond them. This result is not surprising because “privacy” also plays least important role in both Parasuraman et al's., (2005) and Wolfinbarger and Gilly's (2003) study.

H1b posited that e-service quality has a direct and positive effect on relationship satisfaction in Internet grocery shopping.

This hypothesis was unable to be tested in SEM analysis due to the deletion of relationship satisfaction from the model. More details regarding the deletion are explained in H2 below. However, it is believed that e-service quality would have a direct and positive effect on relationship satisfaction in Internet grocery shopping for the reasons discussed in H2.

H2 posited that e-satisfaction has a direct and positive effect on relationship satisfaction in Internet grocery shopping.

This hypothesis was unable to be tested in SEM analysis due to the deletion of relationship satisfaction from the model. This problem was caused by the high correlation between e-satisfaction and relationship satisfaction (the correlation coefficient between these two items is 0.87). This condition is called multicollinearity, which arises from the situation where two variables are so highly correlated that they both, essentially, represent the same underlying construct. In reviewing past literature, relationship satisfaction and satisfaction are two distinct conceptualisations (De-Wulf et al., 2001; Roberts et al., 2003; Crosby, 1991). One captures the overall appraisal of his or her relationship with a retailer and leaves the time period of evaluation open (Olsen and Johnson, 2003); the other is based on the evaluation of a service provider's performance on a given occasion/period. Jones and Suh (2000) point out that relationship satisfaction can be viewed as an overall measure of all previous transaction-specific satisfactions given the situation that relationship satisfaction is based on information from all previous experiences with the service provider. Jones and Suh (2000) further suggest that both types of satisfaction can be measured with the same three established semantic differential items (such as satisfied/dissatisfied; favourable/unfavourable; pleased/displeased). This strategy has been applied in many relationship marketing studies (Crosby and Stephens, 1987; 1991; Szymanski and Henard, 2001). Thus, these three semantic differential measures were also adopted for this study. One concern about these measures for both types of satisfaction is that respondents may not distinguish these two concepts very clearly as both constructs are measured by the same items in practice. The same answers given for both types of satisfaction may be the main

reason for the high correlation between these two factors. Since this situation can lead to offending parameter estimates in SEM analysis, relationship satisfaction was eventually deleted from the model. Since several past empirical research (Crosby and Stephens, 1987; 1991; Jones and Suh, 2000) have already identified that customers satisfaction has a strong and direct effect on relationship satisfaction, there is no reason to suspect that such a relationship does not hold in Internet grocery shopping. Thus, it is still believed that e-satisfaction would have a direct and positive effect on relationship satisfaction in Internet grocery shopping if not because of aforementioned reasons.

H3 posited that relationship satisfaction has a positive effect on trust in relationship quality of Internet grocery shopping.

There is a significant causal path linking “relationship satisfaction” and “trust”. A strong and significant standardised regression weight is recorded between these two variables (0.65 at $p < 0.001$). This is indicative of the fact that a customer, who is satisfied with the relationship with an Internet grocery retailer, will be more likely to believe that the retailer can be relied on and the retailers can perform their role effectively and reliably. This result is consistent with Gruen's (1995) study. Gruen (1995) points out that individual's belief is normally derived from experiences between the relational parties. That is the level of customer's satisfactory experience with the relationship from the Internet grocery retailer can result in lower anxiety concerning the transaction during the grocery shopping as trust serves to reduce risk (Roberts et al., 2003).

In working with the structural equation model, R^2 (the coefficient of Squared Multiple Correlation is 0.42) of trust represents the proportion of variance that is explained by its predictor of the variable- namely relationship satisfaction. It can be seen that 42% of the variance associated with trust is accounted for by relationship satisfaction. It also hints that some other variance (the other 58%) may also influence trust as relationship satisfaction does.

In reviewing past literature, it is found that customers who trust and are loyal towards a given brand, are more likely to adopt brand extensions. Rafiq and Fulford

(2005) identify that customer's trust towards the on-line grocery retailer actually is partly built from their off-line store. Unlike the on-line store for other products, customers who have transferred from the off-line to the on-line store with the same retailer, their trust may consist of both on-line and off-line factors. One is on-line satisfactory relationship with the retailer. The other one may come from past satisfactory experience with the same retailer in an off-line context.

H4a posited that perceived relational investment has positive effect on relationship satisfaction in Internet grocery shopping.

Perceived relational investment is observed to be a significant and strong determinant of relationship satisfaction in this study (their standardized regression weight is 0.51 at $p < 0.001$). This result is consistent with De-Wulf et al's., (2001) study that customers tend to be more satisfied with retailers who make deliberate efforts toward them. According to exchange theory (De-Wulf and Schroder, 2003), any behavior that is rewarded will tend to be repeated, whereas behavior that is punished is likely to be curbed. Thus, Internet grocery retailers who make various types of investments in their customers such as monetary and non-monetary are rewarded with increased customers' relationship satisfaction.

H4b posited that perceived relational investment has a positive effect on trust in Internet grocery shopping.

There is no significant causal path found linking perceived relational investment and trust (their standardized regression weight is -1.28 at $p = 0.20$) in this study. Contrary to the expectation, this result is quite different from that of other retailing literature. Selnes (1998) claims that when parties invest in the relationship, that simultaneously increases trust in the other party, as investment helps both parties to reduce the fear that the partner may take advantage or delivering poorer quality services. De-Wulf et al., (2001) have done an investigation in conventional retailing about the investment in consumer relationships. They find that trust has been known to be enhanced from the relational investment. However, the finding from this research suggests although trust is important in the development of high-quality relationships in Internet grocery shopping, the granting of trust is not solely built

through a process of relationship quality development in on-line context, as only 42% of the variance associated with trust is accounted for by relationship satisfaction. The remaining variance of trust is more likely developed from past satisfactory experience in an off-line context. However, this inference may only apply to those people, who have used the same off-line and on-line store. Things may be quite different for those people who use “pure-Internet” grocery store.

H5a posited that there is a positive relation between trust and affective commitment in Internet grocery shopping.

Trust and commitment are the central construct in relationship marketing literature. Hess and Story (2005) point out that affectively committed relationship between two parties is built on the trust. Since affective commitment involves people's emotions and attachment, people are unlikely to be committed unless trust has already been established (Garbarino and Johnson, 1999). Contrary to the previous literature, the results of this study show that trust contributes positively, but very little effect to the affective commitment. The standardised regression coefficient between trust and commitment is 0.05 at $p < 0.001$. It should be noted here that the results of Hypothesis 3 has already indicated that only 42% of the variance associated with trust is accounted for by relationship satisfaction. This is probably the reason why the relationship between trust and affective commitment is not very strong in this study. A part of affective commitment may possibly have already been established in an off-line environment or from other resources.

The results of this study are not trying to say that trust is unimportant as the bridge between relationship satisfaction and affective commitment. However, a combination of relationship satisfaction and trust in an on-line context may only provide a part of the conditions necessary for enduring the relationship characterised by affective commitment. In B2B or inter-organisation relationships a long-term relationship between two parties is characterised by an emotional connection that depends largely on trust, since affective commitment is associated with potential vulnerability and sacrifice due to the large amount of money and efforts involved (Garbarino and Johnson, 1999). In comparison, in Internet grocery shopping customers' affective commitment is less serious which may just build on retailers'

performance cues as indicated by past satisfactory experience and trust in an off-line store or some other benefits they have perceived. For instance, once e-tailers have customers' interest in mind and are responsive to their needs by offering rewards or special services to the customers, that may evoke customers' affective commitment to the e-tailer, customers may become actively involve in doing the grocery shopping in the on-line store and enjoy being a customer of that store. Thus, although trust is an antecedent of affective commitment in Internet grocery shopping, it is not a sole condition for transferring customers' relational orientation towards the Internet grocery store into an enduring affectively committed state. There may exist some other indicators, which lead to affective commitment.

H5b posited that there is a negative relation between trust and calculative commitment in Internet grocery shopping.

There is no significant causal path found between trust and calculative commitment (their c.r. value is 0.49 and $p=0.62$) in this study. The insignificance of the path between trust and calculative commitment is caused by the complete opposite impact of these two constructs. The underlying motive of customers' trust reflects a sense of positive regard for, and attachment to the company, where as calculative commitment emphasises the anticipated termination or switching costs associated with leaving the relationship.

In current relationship marketing literature, it is very hard to find a solid theoretical basis for stating commitment as a uni-dimensional or multi-dimensional construct. Some researchers like Fournier et al. (1998); Fullerton (2003) and Grayson and Ambler (1999); Gruen et al., (2000) have identified that commitment is a complex, multi-dimensional construct that includes at least an affective and calculative component. They find that commitment has an effect on customer loyalty via both feelings of positive affect (affective commitment) and feelings of calculation (calculative commitment). However, others such as Garbarino and Johnson (1999); Pritchard et al., (1999); De-Wulf et al., (2001) and Morgan and Hunt (1994) see commitment as an uni-dimensional construct and focus solely on affectively motivated commitment.

This study takes a multi-dimensional approach for analysing commitment and hopes to identify the different motivations behind two types of commitment and different consequences caused. Putting this objective into practice, it is found that affective commitment and calculative commitment are highly correlated in the SEM model. According to Byrne (2001) and Hair et al., (1998), this problem is caused by multicollinearity, which arises from the situation where two variables are so highly correlated and they both, essentially, represent the same underlying construct. From both practical and theoretical point of view, calculative commitment is deleted, as high correlation (correlation coefficient ≥ 0.80) between two items is not allowed in SEM analysis. This situation occurs probably because respondents may not distinguish both types of commitment and they focus more on the affective aspect of commitment. It is more likely that affective commitment is more important in consumer services than calculative commitment. This may be because customers have very little investment in the Internet grocery service providers.

H6 posited that affective-based commitment is positively related to customer loyalty.

Customer loyalty, as this study conceptualises it in Chapter 2.0, focuses not only on a customer's repeat purchase behaviour, but is also associated with a positive attitude. Loyalty is a primary goal of relationship marketing, and an outcome generated by the quality of the relationship. The results of this research indicate that affective commitment has a positive effect on customer loyalty (the standardised regression weight is 0.30 at $p < 0.001$). This finding is consistent with the previous literature in relationship marketing (Morgan and Hunt, 1994; Garbarino and Johnson, 1999; Bendapudi and Berry, 1997). The results indicates that customers having high levels of affective commitment to the Internet grocery retailer are more likely to say positive things about that store, to recommend and encourage friends shop with certain e-grocery retailer apart from repeated purchases. This indicates that affective commitment not only leads to frequent repurchase patronage, but also makes a positive impact on a customer's attitude. When customers are willing to become advocates for the store and promote the service to others, it can be seen that customers have a favourable attitude towards the company (Zeithaml et al., 1996).

The implication is that if Internet grocery retailers want to have customer advocates, they must accomplish this by nurturing affectively committed customers.

H7 posited that calculative-based commitment is positively related to customer loyalty in Internet grocery shopping.

Similar to Hypothesis 5b, there is no significant causal path found between calculative commitment and loyalty (their c.r. value is -0.46 and $p=0.65$) in this study. From previous literature, calculative commitment is brought forward by a perceived lack of choice or perceived switching costs (Fullerton, 2003). It always accompanies with the consideration of the benefits. Therefore, it is not surprising that the insignificance occurred between calculative commitment and loyalty.

Fullerton (2003) suggests that the impact of affective commitment to the seller on customer loyalty depends on the level of calculative commitment. Both types of commitment are not mutually exclusive. Although Fournier et al., (1998) and Fullerton (2003) implicitly recognise that commitment can have an effect on consumer behaviour via both feelings of positive effect (affective commitment) and feelings of calculation (calculative commitment), calculative commitment is eventually deleted from the initially proposed model due to the conflict between affective and calculative commitment, as these two constructs are highly correlated. When the correlation coefficient is over 0.80 in SEM analysis, corrective action must be taken such as deletion of one construct since it is an offending estimate.

9.1.2 Re-specified paths

H3a Relationship satisfaction has a direct effect on customer loyalty in Internet grocery shopping.

There is a direct, strong and significant correlation recorded between relationship satisfaction and loyalty (its standardised regression coefficient is 0.67 at $p<0.001$). It is generally acknowledged that a key antecedent of loyalty is customer satisfaction (Oliver, 1999; Mittal and Lassar, 1998). The level of satisfaction is likely to have an important effect on the stay-or-leave decision (Crosby et al., 1990;

Jackson, 1985 and Levitt, 1981). However, as previously mentioned satisfaction focuses more on transaction-specific satisfaction, which captures customer's reaction towards a service providers' performance on a given occasion/ period (Olsen and Johnson, 2003).

This research is more interested in the ongoing relationships. Transactional satisfaction is not sufficient to identify the influence of customer satisfaction with the whole relationship towards the Internet grocery retailer (relationship satisfaction). Relationship satisfaction is the central construct for the formation of customer loyalty. It is related to a customer's overall evaluation of a product or service provider and relies on the customer's entire experience of the relationship with the service provider. Although Crosby et al., (1990) discuss the role of relationship satisfaction in predicting customers' behavioural intentions, there has been no research that examines relationship satisfaction and its direct influence on customer loyalty, and the effect can be much stronger than that through trust and affective commitment.

The development of customer loyalty through relationship quality in past research normally follows the following route: the greater the relationship satisfaction between two parties, the greater should be the customer's trust in the service provider. Once trust in the other party is built on the basis of promises in turn affective commitment and loyalty are proceeded (Shamdasani and Balakrishnan, 2000; Hennig-Thurau and Klee, 1997; Wong and Sohal, 2002 and De-Wulf et al., 2001). However, this study advances past literature and extends previous research by demonstrating that relationship satisfaction directly influences customer loyalty and the magnitude of this effect is the strongest in developing customer loyalty in Internet grocery shopping. Although the formation of loyalty can be developed through the other route (relationship satisfaction → trust → affective commitment), this effect on loyalty is relatively weaker.

H4c Perceived relational investment has a direct effect on affective commitment in Internet grocery shopping.

Past relationship marketing research on perceived relational investment has been limited to traditional retailing context and has not included a focus on this

relationship in an on-line retailing sector. The direct and significant impact of perceived relational investment on affective commitment identified in this study (standardised regression coefficient is 0.55 at $p < 0.001$) may be the first one to focus on the role of relational investment in developing customer loyalty in an on-line environment. In personal relationship literature Le and Agnew (2003) point out that the size of the investment is posited to be the antecedent of affective commitment, as investment size contributes to the stability of a partnership. Investments normally refer to those concrete or intangible resources attached to the partnership that would be lost or seriously diminished upon relationship dissolution. In Internet grocery shopping, customers ought to be favourably impressed, if they perceive that an e-retailer devotes resources, efforts and attention aimed at maintaining or enhancing relationships with regular customers (De-Wulf et al., 2001). Such a psychological bonds can be a precursor of affective commitment and predict customers' stay/leave decisions. This finding indicates that the Internet grocery retailer should let customers receive special treatment as benefit, which makes customers concerned about the welfare and investment from the retailer and therefore increase customers' affective commitment in the Internet grocery store.

9.2 Research questions addressed

Customer loyalty is an important goal of almost any profit-oriented business. This study is aimed at investigating the potential role of e-service quality, e-satisfaction and the relationship quality between customers and Internet grocery retailers in influencing customer loyalty in Internet grocery shopping.

The concept of e-service quality is an important tool for delivering superior on-line service. There is an increasing number of studies focusing on the definitions and descriptions of how e-service quality create customer satisfaction and hence competitive advantage in an on-line environment (Parasuraman et al., 2005; Wolfinbarger and Gilly, 2003; Harris and Goode, 2004; Gefen, 2002 *etc*). Various methods have been used such as modification of traditional SERVQUAL dimensions (Parasuraman et al., 1988) or using exploratory approaches to identify customers' real feeling and experiences towards the on-line service.

During the 1990's, as evidence began to emerge that even satisfied customers defect (Jones and Sasser, 1995) and as the benefit of customer loyalty to a company began to be increasingly recognised as a powerful defensive weapon providing a formidable protective barrier against the advances of the competition (Reichheld, 1996), the focus in marketing research began to shift from satisfaction to loyalty. Furthermore, as the actual benefit to a company of investments in quality began to come under question, the focus in marketing research also began to shift to relationship quality (Hennig-Thurau et al., 2002; Roberts et al., 2003; Gruen, 1995 etc).

Roberts et al., (2003) and Fullerton (2005) have pointed out that service quality and customer satisfaction are essential but not adequate in developing customer loyalty. They claim the importance of relationship quality in the formation of customer loyalty. However, empirical research about investigating the effects of the relationships among service quality, customer satisfaction, relationship quality and customer loyalty is still very scarce. It is very crucial as such examination of the relationship may help researchers and practitioners to better understand the customers' perceptions of how these dimensions affect one another and eventually lead to customer loyalty.

In order to fulfil the research gap, this study adds e-service quality, e-satisfaction and relationship quality dimensions as antecedents to the loyalty development model and develops a hypothesised model. The research questions formulated in Chapter one are addressed as follows:

The first research objective of this study is about the dimensions that make up relationship quality in Internet grocery shopping. Relationship quality is found consisting of relationship satisfaction, perceived relational investment, trust, calculative and affective commitment in conventional retailing (Fullerton, 2003; De-Wulf et al., 2001; Crosby et al., 1990; Roberts et al., 2003). Although the original conceptual model of this research has adopted Allen and Meyer's (1990) idea and treated commitment as multi-dimensional (affective commitment and calculative commitment) and hoped in a relationship customers can experience both calculative and affective commitment at different level. The result indicates that no

inter-relationship is found between calculative commitment and other dimensions of relationship quality and the effect of calculative commitment on customer loyalty is insignificant. Thus, it is eventually deleted from the model.

The second key research objective of this study is to assess the potential effect of each dimension of relationship quality upon loyalty in Internet grocery shopping and how they interact with each other. The results indicate that relationship satisfaction is the strongest factor that directly influences customer loyalty. In addition, there is another route (perceived relational investment → relationship satisfaction → trust → affective commitment → loyalty) that loyalty can be developed. However, this route is much weaker than that from relationship satisfaction. Interestingly, trust is defined as the major antecedent of affective commitment and both constructs play a central role in relationship marketing from previous research (Morgan and Hunt, 1994; Wong and Sohal, 2002; Kumar et al., 1994 and Garbarino and Johnson, 1999 etc). Contrary to the expectation, trust plays a rather weak role in determining customer's affective commitment in this study. In comparison, perceived relational investment has a much stronger effect on affective commitment. This result support the findings of Le and Agnew (2003) and Rhatigan and Axsom (2006), who argue that investment contributes to the stability of a partnership and it is the antecedent of affective commitment. This research is the first study to demonstrate the relationship between perceived relational investment and affective commitment in a retailing context and this study is a first attempt to provide insights into the interaction of each dimension of relationship quality in Internet grocery shopping.

The third research question is related to the relationship between e-service quality, e-customer satisfaction and the dimensions of relationship quality. This study shows that the service dimensions "E-S-QUAL" proposed by Parasuraman et al., (2005) can be adapted and most of its sub-dimensions apart from "privacy" still retain some of their convergent, discriminant and predictive validity in the context of Internet grocery shopping. E-S-QUAL is positively related to e-satisfaction. However, it should be noted that this research was initially aimed at testing how the traditional transactional dimensions – e-service quality and e-satisfaction interact with the dimensions of relationship quality and to what extent they influence

customer loyalty in Internet grocery shopping. In the SEM model analysis an unusually high correlation coefficient of 0.87 was found between e-satisfaction and relationship satisfaction (one of the dimension of relationship quality). According to Hair et al., (1998), a correlation between two items exceeding 0.80, can be indicative of multicollinearity and corrective action should be taken. Although past literature has identified that relationship satisfaction and e-satisfaction are distinct conceptualisations (Crosby et al., 1990, 1987) and the scales for measuring both constructs have been validated in number of studies (Jones and Suh, 2000; Szymanski and Henard, 2001 and Crosby et al., 1990, 1987), respondents may not be able to distinguish these two concepts very clearly as both constructs used very similar measures in practice.

Thus, it was decided that e-service quality and e-satisfaction should be separately tested with relationship quality model. However, it is believed that e-service quality and e-satisfaction are the antecedents of relationship satisfaction and they play a central role in the development of relationship satisfaction, as the evaluation of relationship satisfaction is based on customers' experience with the service received (service quality) and their psychological reaction (satisfaction) with the service performance over a give time period.

Finally, an initial and indirect support is found for the fourth research question-what is the relationship between service quality, customer satisfaction and the dimensions of relationship quality? E-service quality has a positive effect on e-satisfaction and both constructs are the antecedents of relationship quality, in turn indirectly influence customer loyalty. Relationship quality has a direct effect on customer loyalty and captures 65% of the variance in customer loyalty.

9.3 Comparison of the proposed research model and the alternative model

In addition to the integrative conceptual model, an alternative model is tested against the proposed model. The two models were compared with their goodness-of-fit statistics. Kelloway (1998 p. 39) suggests, "the focus of assessing model fit almost invariably should be on comparing the fit of competing and theoretically plausible models".

The alternative model examines the relationship between customer loyalty and relationship quality by using the narrow perspective of relationship quality adopted from De-Wulf et al's., (2001); Dorsch et al's., (1998); Shamdasani and Balakrishnan's (2000); Wong and Sohal's (2002) study, defining relationship quality as a global measure. In contrast, the proposed model examines the inter-relationships between the dimensions of relationship quality and loyalty, which has the lowest χ^2 (274.85) and the largest number of estimated parameters and thus the lowest degrees of freedom. Its model fit is: $\chi^2=274.85$; $\chi^2/df=2.43$; GFI=0.94; AGFI=0.92; CFI=0.98; IFI=0.98; RMSEA=0.05; TLI=0.97.

In comparison, the alternative model yields χ^2 (359.73) with 114 degrees of freedom ($\chi^2/df=3.16$), which slightly exceeds the recommended level of 3. The important aspect of this change in model fit is that the χ^2 difference between these two models is very significant ($359.73-274.85=84.88$). This indicates that there is erosion in model fit from the proposed model to the alternative model. Besides, the proposed model has the best performance on GFI (0.98) and AGFI (0.98) measure. This further indicates that the proposed model achieves a much better fit than the alternative model. Furthermore, although CFI, IFI and TLI value between these two models are quite close, the proposed model still has the higher value than that of the alternative model. Therefore, it can be claimed that the proposed model (separately testing the dimensions of relationship quality) is superior to the alternative model (defining the relationship quality as a global measure) in testing the formation of customer loyalty in Internet grocery shopping.

9.4 Theoretical implications

A number of significant theoretical implications can be drawn from the results discussed above. First, this study stems from the successful operationalisation of four-facet measure of relationship quality and develops a conception of relationship quality. This research demonstrates the inter-relationships of each component of relationship quality by considering loyalty as the “critical behavioural outcome” of consumers (Hennig-Thurau et al., 2002). Although this research is not able to test the interaction among e-service quality and e-satisfaction and the dimensions of

relationship quality, it is found that e-service quality has a strong and direct effect on e-satisfaction and it is believed that e-service quality and e-satisfaction are the antecedents of relationship quality in turn indirectly influence customer loyalty in Internet grocery shopping.

Although a number of researchers (Hennig-Thurau and Klee, 1997; Shamdasani and Balakrishnan, 2000; Storbacka et al., 1994; Wong and Sohal, 2002) have repeatedly emphasised the importance of relationship quality in developing customer loyalty, the empirical research about the application of relationship quality into an on-line context remains in its infancy. From the review of existing research it can be seen that relationship quality has been narrowly conceptualised as an overall measure (De-Wulf et al., 2001; Wong and Sohal, 2002; Crosby et al., 1990), when testing the relationship between relationship quality and customer loyalty. These studies do not tell which part of the relationship quality has the greatest effects on customer loyalty due to the ignorance of the interactions among different components of relationship quality.

Second, in most existing studies e-service quality and e-satisfaction have been seen as antecedents of customer loyalty in an on-line environment. Little research has been conducted and considered the impact of relational attributes on the development of customer loyalty in e-tailing studies. The present research, however, is integrative in nature and is one of the first that attempts to capture a more comprehensive view of customer loyalty by investigating its potential determinants including e-service quality, e-satisfaction and relationship quality. The present study extends previous research by proposing and testing a conceptual model that integrates service quality, customer satisfaction and relationship quality as antecedents of customer loyalty from the perspective of the customer, and thereby responds to the call in the literature to more fully specify the relationship between service quality, customer satisfaction, relationship quality and customer loyalty (Roberts et al., 2003 and Fullerton, 2005).

Third, it is not known whether relationship quality would add any additional influences over traditional “evaluative components” (Shamdasani and Balakrishnan 2000 p.401) of service encounters like e-service quality and e-

satisfaction in explaining consumer behavior intentions. Thus, this research fills the research gap by separately testing the interactions between each of the dimensions of the relationship quality, service quality, customer satisfaction and loyalty. The different effect of each dimension in the formation of customer loyalty in Internet grocery is addressed.

Fourth, this study centres on the finding that relationship satisfaction plays a pivotal role in Internet grocery service dynamics and, in particular, in directly and indirectly driving loyalty. While a number of researchers have previously highlighted the importance of relationship quality in developing customer loyalty (Crosby et al., 1990; Palmer and Bejou, 1994; Roberts et al., 2003 *etc*), to date, empirical studies about the links between relationship satisfaction and loyalty have been limited in scope. The results of this study strongly support the view that relationship satisfaction is key and central factor of relationship quality during exchange. In this sense, this finding extends previous on-line research by claiming that relationship satisfaction may be more important than trust in Internet grocery shopping. Trust was seen as the most important factor in developing loyalty and found customers to be deeply concerned about on-line fraud (Harris and Goode, 2004, Gefen, 2000). However, for experienced on-line shoppers trust may be no longer an issue during the purchase.

Fifth, this research finds perceived relational investment exerts a direct influence on customers' affective commitment and indirectly influences customer loyalty in Internet grocery shopping. This result does not support the view of De-Wulf et al., (2001), who argues that perceived relational investment has a positive effect on trust. No relationship is found between trust and perceived relational investment. In this regard, this study contributes a holistic view of Internet grocery service dynamics that incorporates the main factors of relationship quality into a tested framework of service. The results of this research support and build on existing research into loyalty and further extend the generaliseability of such research into the context of Internet grocery service. Therefore, the results help to better understand the service variables in a specific industry and determine the conditions under which service quality, customer satisfaction and the relationship quality drives customer loyalty.

9.5 Managerial implications

In terms of practice, the results of the study also have implications. In the first instance, this study indicates that “efficiency”, “system availability” and “fulfilment” are the critical and important facets of e-service quality in Internet grocery shopping. These three dimensions not only have a strong influence on customers’ overall perceptions about the e-service quality, but also influence their satisfaction towards the website. This result addresses the need that Internet grocers have to place extra emphasis on website attributes pertaining to “efficiency” and “system availability” dimensions as well as item availability and fulfilment. In this regard, it is noteworthy that the “efficiency” deals with the ease and speed of accessing and using the site; “system availability” refers to the correct technical functioning of the site and “fulfilment” is the site’s promises about order delivery and item availability. Thus, earning a high quality image for the website of an Internet grocery store involves with continuing to improve the usability, functioning of the website and the process for order delivery. At the same time, “privacy” is also needed the Internet grocery retailer to pay attention to, although “privacy” may not be a major issue once the relationship has been established between customers and the retailer, it can be very important when customers are relatively new to the Internet grocery shopping.

Further, this study also indicates that relationship satisfaction is the strongest, but not the only, driver of customer loyalty in Internet grocery shopping. Perceived relational investment and affective commitment are also found to have a significant positive influence on customer loyalty. These findings suggest that understanding of customer loyalty in Internet grocery shopping can be greatly enriched by relationship satisfaction. Dissatisfaction of his or her relationship with the on-line grocery retailer may lead to customers making judgement about the whole quality of the relationship in turn jeopardise customer loyalty for Internet grocery shopping. Thus, enhancing customers’ overall purchasing experience for the on-line grocery store and meeting their expectations should be given the priority when developing the relationship with the customer. It seems prudent for Internet grocery retailers to develop strategies, systems, and sites that recognise customers’ concerns in order to achieve relational satisfactory experiences. However, these results lend support to the theory that relationship satisfaction is not the sole determinant of customer

loyalty in Internet grocery shopping, and that focusing on relationship satisfaction alone may result in overlooking other important drivers of customer loyalty. Nevertheless, it is crucial that firms recognise that, in addition to the most influential factor, other less important factors such as perceived relational investment and affective commitment are also critical.

In addition, in terms of the development of customers' affective commitment, the results of the present study also show that there are no significant path between trust and the affective commitment. This is possibly because customer trust towards the Internet grocery store had already been established in an off-line environment (Rafiq and Fulford, 2005). Thus, trust is not a major issue in the development of relationship quality between customers and retailers in an on-line environment. The implication of this finding is that, in the design or alteration of an on-line service offering, Internet grocery retailers should not only consider the on-line dimensions, but also the off-line performance. Both factors will ultimately impact customers' levels of trust. In this regard, it is arguable that the integration of on-line and traditional off-line grocery stores may well prove a productive and complementary approach. However, for the pure-Internet grocery stores trust building in an on-line environment can be very important. As the majority of the respondents of this study have transferred to the on-line grocery store from the off-line store with the same retailer, the results of this study may not hold for the pure-Internet grocery stores, which have to build trust as they have no existing brand franchise.

Moreover, the current study also demonstrates that perceived relational investment not only influences affective commitment directly, but also indirectly via its powerful impact on relationship satisfaction affects customer loyalty. In fact, the path from perceived relational investment to affective commitment is considerably stronger than other path such as trust → affective commitment in loyalty formation. Therefore, practitioners should design policies, procedures, and systems to reward customers on a regular basis while recognising affective commitment is not easily achievable.

9.6 Limitations of the study and direction for future research

Since relationship quality captures 65% of the variance in customer loyalty, it appears that there are other antecedents of loyalty that are not captured in this model. It seems probable that other factors may also exert an influence on loyalty. Further research could investigate what other factors (such as opportunistic behaviour and switching costs) may be the driver of customer loyalty in Internet grocery shopping.

Another shortcoming in this research is common method bias. This study only uses one questionnaire to measure all constructs including e-service quality, e-customer satisfaction, relationship quality and customer loyalty. The strength of the quality of the relationship among those constructs might be somewhat inflated. Future research could investigate the relationship quality between different samples, for instance the sample could include those customers who have and those who have not met service problems or have always had satisfactory experiences and it may help to indicate that customer's different perception towards relationship quality and loyalty. Moreover, another aspect of the study regarding the common method bias is related to the measurement of customer loyalty. The true meaning of loyalty may only be partially captured on self-report questionnaire. Database information such as Internet grocery shoppers' purchase data could be used as input for measuring customers' actual purchasing behaviour, which will strengthen the confidence of the results.

In addition, the scale for measuring relationship satisfaction presented in this study, although have been used and recommended by previous studies (Crosby and Stephens, 1987; 1990; Jones and Suh, 2000), it appears that further research is needed in order to more accurately specify the measure of relationship satisfaction. Since satisfaction and relationship satisfaction have been measured with the same method, customers are easily confused about these two constructs. In order to strengthen the reliability of the scale for both constructs, it is recommended that future studies need to develop distinct measures for both concepts.

Last but not least, although the data collected for this study are based on a large number of Internet grocery shoppers, the majority of the population in the sample are those customers who have transferred from the conventional store to the on-line store with the same retailer, since “pure-Internet” grocery stores still do not have wider nationwide coverage than those traditional “brick-and-mortar” supermarkets. Many differentiating characteristics may exist between “pure-Internet” grocery retailers and the on-line service providers based on conventional supermarkets. Thus, it will be interesting to conduct a research with the only “pure-Internet” grocery stores and explore the customers’ perception towards loyalty.

Finally, this research is conducted exclusively on Internet grocery shoppers in the UK, it is possible that this introduces a bias. For example, the domain of the study is restricted to those UK customers who do their grocery shopping on-line. It is unclear at this stage whether the same pattern will occur in the Internet grocery market in the other culture and whether the results obtained from this sample apply to other population due to the cultural difference. Future research could conduct cross-cultural study on the topic to find out to what extent these results are country-specific or can be extrapolated to other countries.

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Online Survey Questionnaire

Options
Language

English ▾

Edit display options

Info Here you can change the display settings for the printout.

Edit display options:

- Show filters
- Show pretest comments
- Show to-dos
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- Show plausibility checks
- Disable rotation

Information on survey 060403-34750 Main Grocery Shoppers (Intenet) Wave 2]

Survey No.	4142
Author	James Ifill
Staffer	
Start	2006-07-17 00:00:00
End	2006-10-01 00:00:00

Questionnaire

3 [Pages-ID: 85259] [L]

Introduction

Dear Respondent,

Thank you for participating in our *Internet Grocery Shopping Survey*. This research covers a range of issues about customers' experiences, and opinions, and future intention towards Internet grocery stores. Your opinions will be useful in helping Internet grocery stores enhance their service to suit your needs better and provide you with even better service in the future.

The survey should take you no longer than 15 minutes and most questions require just tick-box answers. There are no right or wrong answers. All we are interested in are your perceptions about the service provided by your Internet grocery store, and to identify what you consider an ideal service. As a token of our appreciation for your time and participation, we will give you £1.00 for your completed questionnaire.

This research is purely for academic use within the Business School of Loughborough University. All the responses will be kept *strictly confidential*. If you have any queries regarding this survey, please don't hesitate to contact us at survey@ciao-uk.com.

Many thanks for your assistance. We look forward to receiving your completed questionnaire.

The Ciao Team

4 [Pages-ID: 85260] [L]

Instructions

GENERAL INSTRUCTIONS

Most questions require just tick-box answers. Occasionally, you are required to write an answer in the space provided.

All the questions in the questionnaire refer to your **MAIN** Internet grocery store.

Where questions ask for your opinion, there are no right or wrong answers. All we are interested in are your perceptions about the service provided by your Internet grocery store, or to identify what you consider an ideal service.

Please **COMPLETE ALL THE QUESTIONS**, even if they appear similar.

All the information that you provide will be kept strictly confidential.

If you would like to provide any additional comments regarding your experience with Internet grocery shopping or the questionnaire, please do so in the box provided at the end of the questionnaire.

Thank you very much for your assistance in completing this questionnaire!

S1

Please indicate your main Internet grocery store and your secondary one, if you have one?

	Main	Secondary
Tesco.com	<input type="checkbox"/>	<input type="checkbox"/>
Sainsburys.co.uk	<input type="checkbox"/>	<input type="checkbox"/>
Asda.co.uk	<input type="checkbox"/>	<input type="checkbox"/>
Waitrosedeliver.com	<input type="checkbox"/>	<input type="checkbox"/>
Ocado.com	<input type="checkbox"/>	<input type="checkbox"/>
Foodferry.com	<input type="checkbox"/>	<input type="checkbox"/>
Other website	<input type="checkbox"/>	<input type="checkbox"/>

If you have selected other for your MAIN internet grocery store; please specify here:

If you have selected other for your SECONDARY internet grocery store; please specify here:

I have never shopped in Internet grocery stores

6.1 [Pages-ID 80779] [L]

Screenout

7 [Pages-ID 80706] [L]

S2

How long have you shopped with your main Internet grocery store?

- under a month
- 1-3 months
- 4-6 months
- 7 months-a year
- a year-18 months
- 18 months-2 years
- 2+years

8 [Pages-ID 80787] [L]

Intro

The following questions all refer to your main Internet grocery store.

9 [Pages-ID 80708] [L]

1A

Using the scale provided (where 1 means "strongly disagree" and 7 means "strongly agree"), please indicate your agreement or disagreement with the following statements about your Internet grocery store by ticking the appropriate number....

The website of my Internet grocery store...

	strongly disagree	2	3	4	5	6	strongly agree
	1						7
...makes it easy to get anywhere on the site...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...is well-organized...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...launches and runs right away...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...does not crash...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... has pages that do not freeze after I enter my order information...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...enables me to complete a transaction quickly...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...makes it easy to find what I need...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...enables me to get on to it quickly...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... is simple to use...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...has well-organized information...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...loads its pages fast...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...is always available for business...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10 [Pages-ID 80707] [L]

1B

Using the scale provided (where 1 means "strongly disagree" and 7 means "strongly agree"), please indicate your agreement or

disagreement with the following statements about your Internet grocery store...

My Internet grocery store...

	strongly disagree	2	3	4	5	6	strongly agree
	1						7
...offers a meaningful guarantee...	- C -	- C -	- C -	- C -	- C -	- C -	- C -
...does not share my personal information with other sites...	- C -	- C -	- C -	- C -	- C -	- C -	- C -
...delivers orders when promised...	- C -	- C -	- C -	- C -	- C -	- C -	- C -
...provides a customer helpline number to reach the company...	- C -	- C -	- C -	- C -	- C -	- C -	- C -
...handles product returns well...	- C -	- C -	- C -	- C -	- C -	- C -	- C -
...regularly substitutes items...	- C -	- C -	- C -	- C -	- C -	- C -	- C -
...sends out the items ordered...	- C -	- C -	- C -	- C -	- C -	- C -	- C -
...is truthful about its offering...	- C -	- C -	- C -	- C -	- C -	- C -	- C -
...compensates me when what I ordered doesn't arrive on time...	- C -	- C -	- C -	- C -	- C -	- C -	- C -
...offers the ability to speak to a real person if there is a problem...	- C -	- C -	- C -	- C -	- C -	- C -	- C -
...makes accurate promises about delivery times...	- C -	- C -	- C -	- C -	- C -	- C -	- C -

11 [Pages-ID: 80709] [L]

1C

Using the scale provided (where 1 means "strongly disagree" and 7 means "strongly agree"), please indicate your agreement or disagreement with the following statements about your Internet grocery store...

My Internet grocery store...

	strongly disagree	2	3	4	5	6	strongly agree
	1						7
...quickly delivers what I order...	- C -	- C -	- C -	- C -	- C -	- C -	- C -
...protects information about my Web-shopping behaviour...	- C -	- C -	- C -	- C -	- C -	- C -	- C -
...has in stock the items the company claims to have...	- C -	- C -	- C -	- C -	- C -	- C -	- C -
...takes care of problems promptly...	- C -	- C -	- C -	- C -	- C -	- C -	- C -
...protects information about my credit card...	- C -	- C -	- C -	- C -	- C -	- C -	- C -
...compensates me for problems it creates.....	- C -	- C -	- C -	- C -	- C -	- C -	- C -
...delivers items within a suitable time frame.....	- C -	- C -	- C -	- C -	- C -	- C -	- C -
... picks up items I want to return from my home or business...	- C -	- C -	- C -	- C -	- C -	- C -	- C -
...provides me with convenient options for returning items..	- C -	- C -	- C -	- C -	- C -	- C -	- C -
...has customer service representatives available online...	- C -	- C -	- C -	- C -	- C -	- C -	- C -
...tells me what to do if my transaction is not processed...	- C -	- C -	- C -	- C -	- C -	- C -	- C -

12 [Pages-ID: 80710] [L]

1D

Using the scales below, please rate your Internet grocery shopping experience.

How satisfied are you with the experience you have had with your Internet grocery store?

	Very Dissatisfied	2	3	4	5	6	Very Satisfied
	1						7
Rating	- C -	- C -	- C -	- C -	- C -	- C -	- C -

How pleased are you with the experience you have had with your Internet grocery store?

Very Displeased

Very Pleased

...often informs regular customers like me through brochures... 1 2 3 4 5 6 7

...makes efforts to increase regular customers' loyalty 1 2 3 4 5 6 7

...cares about keeping regular customers... 1 2 3 4 5 6 7

...rewards regular customers for their patronage... 1 2 3 4 5 6 7

...does more for regular customers... 1 2 3 4 5 6 7

For me the costs in time, money and effort to switch from my Internet grocery store are high... 1 2 3 4 5 6 7

In general it would be a hassle to switch my Internet grocery store... 1 2 3 4 5 6 7

It would take lot of time and effort switching my Internet grocery store... 1 2 3 4 5 6 7

16 [Pages-ID 80714] [L]

3A

Using the scale provided (where 1 means "not at all likely" and 7 means "extremely likely"), please indicate your agreement or disagreement with the following statements about your Internet grocery store by ticking the appropriate number.

My Internet grocery store....

	Not likely at all							Extremely Likely
	1	2	3	4	5	6	7	
...consider it your first choice to buy groceries...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...recommend it to someone who seeks your advice...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...say positive things about it to other people...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...encourage friends and relatives to buy groceries from it....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17 [Pages-ID 80715] [L]

3B

Still thinking about your Internet grocery store, how likely is it that you would...

	Not likely at all							Extremely Likely
	1	2	3	4	5	6	7	
...complain to external agencies, such as the Consumer Council, if you experience a problem with your current Internet store...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...continue to buy groceries from it, even if its prices increase somewhat...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...complain to other people if you experience a problem with your Internet grocery store...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...switch to an alternative Internet grocery store if you experience a problem with your current store...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...complain to the store's employees if you experience a problem with your Internet grocery store...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...purchase more groceries from it in the future...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...pay a higher price than alternative Internet grocery store's charge (for the benefits you currently receive from your store)...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18 [Pages-ID 80716] [L]

3C

Thinking further about your Internet grocery store, do you think you will ...

	Not likely at all							Extremely Likely
	1	2	3	4	5	6	7	
...purchase fewer groceries from this Internet grocery store in the future...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...purchase some of your groceries from an alternative Internet store that offers better prices...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19 [Pages-ID 80718] [L]

3D

What percentage of your total expenditure on groceries do you spend at your main Internet grocery store?

	0-14%	15-29%	30-44%	45-59%	60-74%	75-89%	90% or more
Expenditure	- C -	- C -	- C -	- C -	- C -	- C -	- C -

20 [Pages-ID 80717] [L]

3E

Using the scales below, please rate your relationship with your Internet grocery store. experience.

How satisfied are you with the relationship you have had with your Internet grocery store?

	Very Dissatisfied						Very Satisfied
	1	2	3	4	5	6	7
Rating	- C -	- C -	- C -	- C -	- C -	- C -	- C -

How pleased are you with the relationship you have had with your Internet grocery store?

	Very Displeased						Very Pleased
	1	2	3	4	5	6	7
Rating	- C -	- C -	- C -	- C -	- C -	- C -	- C -

How favourably do you rate your relationship with your Internet grocery store?

	Unfavourable						Favourable
	1	2	3	4	5	6	7
Rating	- C -	- C -	- C -	- C -	- C -	- C -	- C -

21 [Pages-ID 80729] [L]

Introduction

Information about you and your general shopping habits

22 [Pages-ID 80719] [L]

Q76

Which retailer loyalty scheme (s) are you a member of ?

Please specify

1	
2	
3	
4	
5	
6	

23 [Pages-ID 80730] [L]

Q77

Which part of the UK do you live in?

- C - Greater London
- C - The Midlands
- C - North East England
- C - North West England
- C - South East England
- C - South West England
- C - Scotland
- C - Wales
- C - Yorkshire
- C - Northern Ireland
- C - Other Please specify

24 [Pages-ID 80731] [L]

Q78

Which conventional supermarket do you normally use as your main grocery shopping store?

- -Tesco
- -Sainsbury's
- -Asda
- -Waitrose
- -Morrison
- -Somerfield
- -Other

25 [Pages-ID: 80732] [L]

Q79

How frequently do you purchase groceries online?

- -every day
- -twice a week
- -once a week
- -twice a month
- -once a month
- -every two months
- -less frequently

26 [Pages-ID: 80733] [L]

Q80

On average how much do you spend on buying groceries at your main Internet grocery store every week?

- -£0-20
- -£21-40
- -£41-60
- -£61-80
- -e.£81-100
- -f.£100+

27 [Pages-ID: 80734] [L]

Q81

Are you...?

- -Male
- -Female

28 [Pages-ID: 80735] [L]

Q82

In which age group do you belong?

- -<25
- -25-40
- -41-55
- -56-60
- -60+

29 [Pages-ID: 80736] [L]

Q83

Of the 10 times you select a store to buy groceries online, how many times do you select your main Internet grocery store.

- -once
- -twice
- -three times
- -four times
- -five times
- -six times
- -seven times
- -eight times
- -nine times
- -ten times

30 [Pages-ID: 80737] [L]

Q84

Are you...?

- -Married

- C -Single
- C -Living with a partner

31 [Pages-ID 80738] [L]

Q85

What is your current employment status?

- C -Full time employment
- C -Part time employment
- C -Full time education
- C -Unemployed
- C -Housewife/husband
- C -Retired
- C -Other Please specify _____

32 [Pages-ID 80739] [L]

Q86

When you buy groceries online, how many people do you shop for?
Please enter a number in each box provided!

Enter 00 if you dont shop for an adult or a child

Adults (number:) — Children (number:)

33 [Pages-ID 80740] [L]

Q87

What is your highest level of education?

- C -Secondary school
- C -College
- C -University

34 [Pages-ID 80741] [L]

Q88

Which band best describes your total annual household income?

- C <£15,000
- C -£15,000-£19,999
- C -£20,000-£24,999
- C -£25,000-£29,999
- C -£30,000-£39,999
- C -£40,000-£49,999
- C -£50,000 or more

35 [Pages-ID 80845] [L]

Comments

If you have any other comments about your Internet grocery shopping experience, please add them here

36 [Pages-ID 80742] [L]

Outro

Thank you for your help in completing this questionnaire.

37 [Pages-ID 80525] [L]

Final page