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**Performance measurement among small-and-medium-sized
UK Internet retailers**

Gunawan

A Doctoral Thesis

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the Degree of Doctor of Philosophy of the Loughborough University**

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Abstract

Internet retailing is one of the fast-growing business sectors in the UK, and this sector is currently entering a more stable development stage. In this stage, the issue of business strategy and performance measurement, often neglected during the dotcom era, is gaining in importance. Although various studies have been done, the investigation of this issue is limited. This study helps to fill this gap by investigating performance measurement and business strategy of Internet retailing business, and their significance in enhancing business performance. A mail questionnaire was used in a survey of UK Internet retailers. The questionnaire contained variables of performance indicators, use of performance measurement, strategic orientation, business performance, and business profile. The survey produced 252 responses of small-and-medium-sized Internet retailers, defined as having less than £10 million of annual online sales turnover. By factor analysis, strategic orientation can be treated as having two dimensions: (1) conservativeness, and (2) aggressiveness; business performance, two: (1) financial, and (2) operational; and performance measurement, one: the number of performance indicators measured. The findings show that UK Internet retailers are likely to concentrate their performance measurement more on financial, market-sales, and web-related indicators rather than customer and process. After controlling for variations of business size, the empirical results reveal that (1) more conservative retailers are likely to measure more performance indicators, (2) retailers using more performance indicators are likely to have better operational performance, and (3) less aggressiveness retailers tend to be associated with better financial performance. This study has provided evidence that strategic orientation is associated with the financial aspect of business performance, and performance measurement with the operational aspect of business performance. The results provide useful insights for Internet retailing managers, especially concerning the importance of performance measurement, and the choice of strategic orientation. More importantly, this study opens up possibilities for further study of performance measurement and business strategy of Internet retailing business.

Key words: Internet, retail, performance, measurement, strategy, e-commerce

Dedication

To my beautiful, passionate, and talented wife, Carolina Anni Rosmala, and my lovely and cheerful children, Kevin Limanta and Regina Limanta. Your love and belief help *make dreams come true*.

To my parents, brothers and sisters, as well as all my former school and university teachers who have contributed to my long journey of education.

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Chapter 1

INTRODUCTION

1.1 Background to study

Internet retailing is one of the fast growing business sectors, and is potentially set to have a profound impact on retailing in the UK. According to Interactive Media in Retail Group (IMRG), the leading industry body of Internet retailing, shopping via the Internet has been the fastest growing area within the retail sector for more than ten years, and has grown 2,600% during the past five years 2001-2006 (IMRG, 2006a). The percentage of Internet retail sales has continued to rise: £14.5 billion in 2004, which represented 7% of all total UK retail sales, to around £26 billion, representing 10%, in 2006 (IMRG, 2005a; 2006b). Additionally, the number of Internet shoppers has also grown, in 2006 approximately 26 million, over half of UK adults, bought goods via the Internet (IMRG, 2006a). Moreover, the Office of National Statistics recently reported (ONS, 2007) that the volume of retail sales in the three months of the Christmas season 2006 (October to December) was 1.4% higher than that in the previous three months, and the highest growth was in non-store retailing (specialist Internet and mail order retailers) at 3.8%. IMRG also reported that British consumers spent £7.66 billion online in the ten-week run-up to Christmas 2006, in which the value increased by 54% over the £4.98 billion spent online during the same period in 2005, and more than double the £3.33 billion during the Christmas period 2004 (IMRG, 2007). The significant increase of online sales during the Christmas season 2006 was also reported by leading high-street retailers, such as Argos (Palmer, 2007), Currys-Dixons-PCWorld group (Hill, 2007), Next (McMahon, 2007), Tesco (Palmer, 2007), and Woolworths (Hill, 2007). Many factors are contributing to the growth in shopping through the Internet and encouraging rapid expansion in the number of shoppers and the volume of their online spending, as stated by James Roper, IMRG's CEO:

“..the take-up of broadband, completely secure payment mechanisms and improving delivery solutions.....and the consumer journey is becoming easier, product ranges are wider, merchants are using clearer images and richer product information, linked selling features add value by drawing attention to relevant accessories, options and associated products.” (IMRG, 2005b)

In this overall growth of Internet retailing, one of the constant major issues for Internet retailers is the understanding of factors contributing to progress and success. Studies across many disciplines (e.g. IS/IT, Marketing, Operations) have been made to provide better understanding and recommendations of various aspects, such as strategy, operations, web features, customer acquisition and maintenance, and marketing of this business. Among other factors, this research is focused to explore business strategy and performance measurement.

Business strategy is associated with a means of how a firm can succeed in achieving its objectives. By formulating a *right* strategy and implementing it in a *right* way, a firm is expected to achieve them. The search for the *right* strategy has been continuously a major issue among academics and practitioners. Some popular classical frameworks of business strategy, such as the ones proposed by Porter (1980) and Miles and Snow (1978), have provided general guidelines on how a firm could achieve competitiveness. However, the understanding of strategy for Internet retailing is limited. In the era of dotcoms, the application of Internet technology into business operations was expected to deliver a new digital economy with new business paradigms, including a new business strategy. During that era, strategy of Internet retailers was directed to achieve a rapid growth and a large visitor-and-customer base by excessive marketing spending. As history indicates that many Internet retailers have collapsed, marking the end of dotcom era, the idea of a new strategy for Internet retailing business is questionable (Porter, 2001).

Performance measurement, which can be viewed as a process to evaluate whether business strategy is successful, is one of the important issues along with business strategy. Measuring performance is a continuous challenge for both managers and researchers, and this area has been at the core of management research for many years (Kennerly and Neely, 2002; Maltz et al., 2003). Performance measurement

plays a critical role in a business because the effective performance measurement could affect the effectiveness of the management process. Performance measurement could facilitate a management team to clarify a firm's strategy and objectives. Some prominent frameworks, such as the Balanced Scorecard (BSC) (Kaplan and Norton, 1992), have received a considerable attention among practitioners with the expectation that its implementation would deliver benefits to the firm.

Similar to strategy, performance measurement in Internet retailing is still immature. During the dotcom era, Internet retailing has grown amazingly within the *irrational exuberance*¹ era in which its evaluation is based on the expectation, such as potential growth and potential efficiencies, rather than actual outcome (e.g. Agrawal et al., 2001; Boyer, 2001; Ring and Tigert, 2001; Starr, 2003). In that period, performance measurement, which measures past achievement, would not be a major issue for Internet retailers. As Internet retailing business currently has been becoming more stable and rationale, Internet retailers need performance measurement that concentrates more on real business health rather than on excessively optimistic prediction.

The need of performance measurement for Internet retailers can be viewed also from their nature as having both aspects of retail business and online business. In measuring its performance, retail business often focuses on financial performance and geographical expansion (Walters, 1994), while online business concentrates on website-related measures. Website-related performance had some weaknesses because of its simplicity in viewing business performance (Betts, 2001). Therefore, Internet retailers need to understand and to have appropriate performance measurement to fit these circumstances as retailing and web-based businesses. In addition, a survey revealed that 96% of click-and-mortar and 100% of dotcoms claimed that they made improvements to their performance measurement systems (Neely et al., 2002). Therefore, further investigation of performance measurement would be significant for this business sector.

¹ From the former Federal Reserve Chairman, Alan Greenspan, speech on 5/12/1996, cited from www.irrationalexuberance.com/definition.htm

As already mentioned, business strategy is a means to achieve a firm's objectives. On the other hand, performance measurement, which could facilitate the clarification of a firm's strategy and objectives, might deliver positive impact on business performance. This raises an issue of whether performance measurement, as well as business strategy, could affect business performance. Although the value of implementing performance measurement, especially in improving business performance, is often predicted, its real achievement is still questionable. Some previous studies of traditional business have tried to investigate this kind of relationship (e.g. Bergeron et al, 2001; Evans, 2004; Hoque, 2004; Morgan and Strong, 2003; Venkatraman, 1989). Though their results were still inconclusive, the relationships between performance measurement and business strategy, performance measurement and business performance, as well as business strategy and business performance, were predicted. So far, there is no study about those relationships in the context of Internet retailing business.

1.2 Problem statement

This research emerged from the lack of knowledge about performance measurement and strategy implemented by Internet retailers. This study fills this gap by investigating performance measurement, business strategy, and their significance among Internet retailers. The main theme of this study emerges from two problems. The first is a lack of knowledge on the current state of performance measurement implemented by Internet retailers. As prior study in this topic is very limited, there is limited knowledge, for example, what and how frequently performance indicators are measured by Internet retailers, whether what they measure would be associated with their business characteristics, and how they use the information obtained from performance measurement. The second is a lack of evidence about the nature of relationship involving performance measurement, business strategy and business performance, particularly in the context of Internet retailing business. There is limited knowledge, for example, of whether measuring performance indicators could improve business performance, what type of business strategy might lead to better business performance, and whether there is a relationship between strategy chosen and performance measurement implemented. This investigation is important,

especially because it could provide evidence and justification about the implication of performance measurement and business strategy in enhancing business performance.

1.3 Significance of study

The investigation of strategy and performance measurement for Internet retailers gets its relevance as this sector is currently entering a more stable development stage, as reported by IMRG (IMRG, 2006a):

“2006 marks 'the end of the beginning' for online shopping. While still an adolescent industry with huge scope for further development and expansion, e-retailing is now well past its embryonic stages: it has evolved into a major marketplace that is working well.”

The significance of this study can be seen from three aspects. Firstly, its potential contribution to Internet retailing study is to be one of the early attempts to investigate performance measurement in this business sector. The findings could enhance the current understanding of this issue. Secondly, the potential contribution to performance measurement and strategic management studies is to provide empirical evidence on how performance measurement, business strategy, and business performance are related to each other. Thirdly, the potential contribution to Internet retailing practitioners, for example, is to review their performance measurement against what other Internet retailers do, to review the way they use the information produced from measuring performance, and to link their business strategy and performance measurement.

1.4 Context of study

This study focuses on Internet retailers in the UK, which has a sophisticated infrastructure highly suitable for supporting the development and progression of Internet shopping activities. Globally, the UK has been a prime mover in the development of Internet retailing, as many retailers have been offering Internet shopping since 1997. During this period, some UK retailers have learnt a great deal about the difficulties of operating online and what is required in order to become

successful. As a result, Internet retailing in the UK has experienced a high growth in terms of volume of sales and number of customers, and is becoming a mainstream shopping-channel. In this study, the term *Internet retailer* refers to traditional store-based retailers, mail order retailers and pure-play retailers², selling goods through the Internet. The number of retailers selling through the Internet has grown rapidly, and currently there is in excess of 1,000 Internet retailers, but it is interesting to note that these businesses vary significantly in size from small start-up businesses to large well-established brand names, such as Amazon.co.uk, Argos.co.uk, Next.co.uk, and Tesco.com. These and other large retailers have been the subject of much case analysis and academic research (e.g. Constantinides, 2004; Dennis et al., 2004; Hackney et al., 2006; Kotha, 1998). However, of the Internet retailers in the UK in terms of number, many are small-and-medium-sized businesses, which this study focuses on. In general, the contribution of small businesses to the economy is indisputable (e.g. Carter and Van Auken, 2006), but they often face difficulties because of resources and fragility (Poon and Swatman, 1999). The existence of those small-and-medium-sized Internet retailers has provided consumers with a wide variety of goods, with some customised, complementing those offered by big Internet retailers. As a study indicated that bankruptcy among small business was likely to be in the retail sector, and a lack of knowledge was one of the contributing factors (Carter and Van Auken, 2006), the study among small-and-medium-sized Internet retailers could have its importance.

1.5 Organisation of study

The thesis is organised in the following way. Chapter 2 reviews the literature related to performance measurement, strategic management, and Internet retailing business. Chapter 3 presents the development of the research model, and the research method used in collecting data. Chapter 4 provides details of the questionnaire development and its implementation in a survey. Chapter 5 reports on the descriptive responses obtained from the survey. Chapter 6 presents the results of factor analysis for major variables. Chapters 7 and 8 describe the result of data analysis for meeting research

² Pure-play retailers, also known as virtual retailers, operate solely through the web and do not operate a physical store-based network.

objectives. Chapter 9 discusses the results of data analysis. Finally, Chapter 10 summarises the major findings, implications, limitation, and suggestions for future studies.

Chapter 2

LITERATURE REVIEW

2.1 Introduction

There are three models for the presentation of literature review in a thesis: (1) the focus down model, (2) the opening out model, and (3) the compromise model (Dunleavy, 2003, p.53). The literature review chapter presented here follows the compromise model, which is organised in one chapter and framed quite closely around the central research question from the start (Dunleavy, 2003, p.61)

This literature review chapter aims to gain a better understanding of performance measurement and its strategic significance in the Internet retailing business. To satisfy this aim, the review is divided into five parts based on a general-to-specific formation. The first part (section 2.2) provides a foundation of this research by presenting a strategic management area as a basis of this study. The second (section 2.3) provides an understanding about performance measurement. The third (section 2.4) investigates the link of performance measurement and business strategy, as well as business performance. The fourth (section 2.5) specifically discusses business format, operations and strategy of Internet retailing business. Finally, the fifth (section 2.6) moves on to the progress of performance measurement in the Internet retailing business. The chapter concludes with a summary of the review and provides a justification for further research. The next section, as the first part, will present the foundation of performance measurement study in strategic management.

2.2 Strategic management

This section aims to provide a better understanding about the basis of performance measurement study in the strategic management literature. Literature in this area concerns the link to how business strategy may influence business performance. The discussion in this section consists of four parts, in which the first discusses the

understanding of business strategy, the second the development of key concepts in strategic management, the third the concept of business performance, and the last the position of performance measurement in the strategic management process.

2.2.1 Business strategy

The use of strategy in a business context came from a military context. The word *strategy* comes from the Greek noun *strategos*, which means ‘a military commander’, and the Greek verb *stratego*, which means ‘to plan the destruction of one’s enemies through effective use of resources’ (Bracker, 1980). The ancient military strategy “The art of war” written during the 6th century BC by General Sun Tzu has been popular in a business context during the 1990s. In a business context, the need for strategy increased after World War II, as business moved from a relatively stable environment into a more rapidly changing and competitive one (Bracker, 1980). This condition indicates that a firm needs to give more attention to its strategy when it operates in a competitive business sector (e.g. many competitors, low entry barriers) and dynamic environment (e.g., changing customer needs, unpredictable demand, changing technology).

By reviewing the definition of strategy from a number of studies, Bracker (1980) identified the following common characteristics of business strategy: *an environmental or situational analysis is used to determine a firm’s posture in its field, and then the firm’s resources are utilised in an appropriate manner to attain its major goals*. This definition precisely indicates that a firm deliberately determines its position and attitude (strategic choices) responding to its business environment, and then uses its resources to achieve its goals. This concept of strategy as a ‘plan’, according to Mintzberg (1978), is referred to as *intended strategy*. Studying intended strategy would be not quite useful because organisations may sometimes not succeed in pursuing the strategy they intended, and they may pursue strategies they never intended (Mintzberg and Waters, 1982). In addition, Mintzberg (1978) proposed a concept of *realised strategy* as a pattern in a stream of decisions. In this realised strategy perspective, a firm’s strategy is considered to have formed if a sequence of decisions has been made consistently (Mintzberg, 1978). As argued by Mintzberg and Waters (1982), by viewing realised strategy as a sequence of decisions, strategy

becomes consistencies in the behaviour of organisations. Based on this concept, there are two ways in which a firm's strategy is formed. First, a firm's strategy makers may formulate a strategy through a conscious process before they make specific decisions (Mintzberg, 1978). Second, a firm's strategy may form gradually, perhaps unintentionally, as a firm's decision makers make their decisions over time (Mintzberg, 1978).

Based on the organisational level, strategy in a business context is classified into two levels: corporate and business. Corporate strategy refers to a choice of where to compete, in which industries and geographic areas, while business strategy refers to a choice of how to compete within a given industry (Hofer, 1975; White, 1986). This research focuses on strategy for an online business; therefore, further discussion will concentrate on the business level rather than the corporate one.

The definition of strategy presented earlier indicates that strategy refers to a broad meaning of a *firm's posture*. Researchers with different perspectives have tried to identify and classify this. By reviewing other researchers' studies, Venkatraman (1989) categorised literature on business strategy under three approaches: (1) narrative, (2) classificatory, and (3) comparative. That study explained that the *narrative* approach attempts to describe the characterisation of the strategy verbally in its holistic and contextual form, and strategy is unique to the organisation, environment, and temporal circumstance. Then, the *classificatory* approach attempts to classify firm strategy in typologies, either conceptual or empirical (Galbraith and Schendel, 1983; Morgan and Strong, 2003; Venkatraman, 1989). Among many typologies developed by researchers, frameworks from Miles and Snow (1978) and Porter (1980) have often been adopted in management research (e.g., Apigian et al., 2005; Slater and Olson, 2000). Miles and Snow's (1978) framework addresses the alternative ways in which organisations define and approach their product-market domains and develop structures and processes to achieve success in them. They distinguished four organisation types: (1) defenders, (2) prospectors, (3) analysers, and (4) reactors, and described each type as having its own strategy for responding to the environment, and a particular configuration of technology, structure, and process consistent with its strategy. Moreover, Porter (1980) viewed strategy as how a firm creates value (i.e., differentiation or low cost), and how it defines its scope of market

coverage (i.e., focused or market-wide). He proposed three generic strategies: (1) overall cost leadership, (2) differentiation, and (3) focus, as a means for a firm to gain competitive advantage (Porter, 1980, 1985). Typology-based strategy provides simple understanding about a firm's strategy, but a firm's strategy might not fall exactly into one category. In this case, for example it is possible for a firm to pursue a mixture of cost leadership and differentiation. The *comparative* approach attempts to evaluate strategy by numerous traits common to all firms (Morgan and Strong, 2003; Venkatraman, 1989). Venkatraman (1989) explained that the focus is less on categorisation into one particular cell of the typology but on measuring the relative emphasis made by a firm along specific orientation of multiple traits (e.g., aggressiveness, defensiveness). For this approach, Venkatraman (1989) used the term strategic orientation.

2.2.2 Key concepts in strategic management

Strategic management refers to the application of strategy to business organisations. Bracker (1980) defined strategic management as the analysis of *internal* and *external* environment of a firm to maximise the utilisation of *resources* in relation to *objectives*. According to Byars et al. (1996), strategic management is *a process by which top management determines the long-run direction and performance of the organisation by ensuring that careful formulation, effective implementation, and continuous evaluation of the strategy takes place*. The important contribution of strategic management to an organisation is that it provides a framework for developing abilities to anticipate and cope with an uncertainty business environment by defining procedure for achieving objectives (Bracker, 1980). This section will present the development of key concepts in the strategic management area.

A traditional strategic management study proposed an environmental analysis and internal assessment during strategic planning and formulation process. A company should determine its strategic objectives by matching its internal *strengths* and *weaknesses* to the external *opportunities* and *threats* (e.g. Chang and Champo-Flores, 1980). This analysis model is known as SWOT in strategic management textbooks (e.g. Stahl and Grigsby, 1992). It does not specify what factors should be

incorporated in this analysis. Therefore, the application of this technique depends highly on the strategic decision makers.

Another classical strategic management study focused on the product-market perspective. An assessment of product/ market dynamics provides a more specific issue than the assessment of internal-external environment. This assessment is usually applied by firms, which produce various products and require different strategies as well. Unit analysis in this case is commonly a corporate level strategy. Some analysis tools are available for strategic decision makers. First, product-market-industry life cycle can be used to explain that products, markets and the entire industries develop, grow rapidly, mature, saturate and decline in a somewhat predictable way (Rowe et. al., 1989; Stahl and Grigsby, 1992). Second, Boston Consulting Group (BCG) matrix can be used to analyse which businesses should grow and which ones should exit (Stahl and Grigsby, 1992). Third, GE Business Screen can be used to analyse business portfolio planning under two variables: industry attractiveness and competitive position (Stahl and Grigsby, 1992). Fourth, learning curve is available to justify the pricing decisions of new products in order to discourage new entrants (Rowe, et. al., 1989; Stahl and Grigsby, 1992). These tools can help strategic decision makers to determine the strategic choice.

Further development of strategic management studies has been contributed by the industrial organisation theory. In this theory, scholars assumed that firm management could influence neither industry conditions nor its own performance, because these are constrained by industry structural forces (Spanos and Lioukas, 2001). Consequently, industrial organisation scholars focused on explaining and evaluating industry rather than on a firm's performance.

Afterwards, the development of strategic management studies was notably contributed by Porter (1980). Porter's competitive strategy framework departs obviously from the traditional industrial organisation theory in two ways (Spanos and Lioukas, 2001). First, the focus is on a firm's performance rather than an industry's performance; and second, the industry structure is neither wholly exogenous nor stable (Spanos and Lioukas, 2001). Porter (1991) argued that firm success is a function of two areas: the attractiveness of the industry, in which the firm competes

and its relative position in that industry. For the first area, the attractiveness of industry is affected by five competitive forces: (1) threat of new entrants, (2) bargaining power of suppliers, (3) bargaining power of buyers, (4) threats of substitute products, and (5) rivalry among existing firms. By examining those forces, a firm could understand the nature of competition in a certain industry and evaluate the probability of successfully competing in that industry before entry. For the second area, a firm's relative position arises because the firm possesses sustainable competitive advantage in comparison with its competitors. Competitive advantage can emerge from two basic types of conditions: cost leadership and uniqueness (Porter, 1985; Porter, 1991). To explain why competitive advantage creates an attractive relative position, Porter (1985) proposed a concept of value chain. In this concept, a firm is viewed as a collection of discrete, but related economic activities, and each activity will add value to the output. In this concept, he identified five primary activities: (1) inbound logistics, (2) operations, (3) outbound logistics, (4) marketing and sales, and (5) service. Every firm will perform all five primary activities to some degree, but it may not emphasise all of them but one or more activities, depending on the nature of its business.

One further theory in strategic management studies is a resource-based view popularised by Wernerfelt (1984). While the competitive strategy perspective emphasises the importance of industrial structure for the firm's strategy and success, the resource-based view focuses on the firm's internal resources (Wernerfelt, 1984). The resource-based view of the firm focuses on the relationships between internal characteristics and performance. Research on this area emphasises the internal resource available and developed within a firm; it studies about the use of assets, skills, abilities and knowledge within firm (Coates and McDermott, 2002). Wernerfelt (1995) acknowledged that Prahalad and Hamel (1990) with their concept of *core competence* have contributed to the diffusion of the resource-based view into practice. Prahalad and Hamel (1990) argued that the real source of a company's sustainable competitive advantage is a management ability to consolidate corporate-wide technologies and production skills into competencies that empower individual businesses to adapt quickly to changing opportunities. This concept suggests that unique firm competencies provide competitive advantage (Coates and McDermott, 2002).

Porter (1991) countered that the resource-based view should not be considered as an alternative theory of strategy. His argument is that resources cannot be separated from the cross-sectional determinants of competitive advantage, or from the conception of a firm as a collection of activities. Moreover, Porter (1991) contended that stress on resources must complement, not substitute for, stress on market position. Porter criticised that resources are not valuable of themselves, but only meaningful in the context of performing certain activities to achieve certain competitive advantages. In later studies, scholars advanced that those two perspectives, competitive advantage and resource-based view, complement each other in explaining firm performance (Amit and Schoemaker, 1993; Peteraf, 1993, Spanos and Lioukas, 2001).

Teece et al. (1997) and Bessant et al. (2001) maintained that it was not sufficient for firms, especially in the high-technology industry, to gain sustained competitive advantage by accumulating technological assets as suggested by the resource-based view. A dynamic capability perspective has been proposed to overcome inadequate explanation of resource-based strategy in explaining global competition in that industry (Teece et al., 1997). Dynamic capabilities are the firm's ability to integrate, build, and reconfigure internal and external competences in order to address rapidly changing environments (Teece et al., 1997). Bessant et al. (2001) contended that competitive advantage achieved by a firm did not depend on its size, position, or depth of knowledge (competence), but rather on its ability to respond and lead in the continually changing environment. In this situation, the capacity of learning is a critical source of competitive advantage (Senge, 1990). One of the recent studies based on the dynamic capability perspective is called agility. The concept of agility is linked to the ability of a firm to respond quickly and flexibly to its environment and to meet the emerging challenges with innovative responses (Bessant et al., 2001). A firm should develop the agility in four dimensions: (1) strategy, (2) process, (3) linkage - with suppliers and customers, and (4) employees (Bessant et al., 2001).

Previous strategic management perspectives mostly view a firm as an autonomous entity. In the real world, firms are embedded in networks that encompass a firm's set of relationships, both horizontal and vertical, with other organisations – be it their suppliers, customers, competitors, or other entities, including relationships across

industries and countries (Gulati et al., 2000). A network perspective has been proposed to understand the strategic behaviour of firms (Gulati et al., 2000). Some established relationships are strategic alliances, joint ventures, and long-term buyer-supplier partnerships. This network of relationships can be explained through two theories: transaction cost economics and resource-based view (Das, 2000). In the transaction cost rationale, a firm's ownership decision focuses on minimising the sum of transaction costs and production costs (Das, 2000). Conversely, the resource-based rationale emphasises value maximisation of a firm through combining and utilising valuable resources (Das, 2000). Between those two theories, Das (2000) argued that the resource-based view has the potential to explain strategic alliances better, because strategic alliances are essentially the result of resource integration among firms.

Furthermore, the development of information and communication technologies has stimulated emergence of a new form of firms, such as extended and virtual enterprises. Extended enterprise refers to the networked organisation. This concept synthesises neatly with theories of knowledge interdependency, competence and technology-centred theories of the firm, and the view of the innovative firm as a learning organisation (Kinder, 2003). Virtual enterprise is a temporary organisation of companies that come together to share costs and skills (competencies) to address business opportunities that they could not undertake individually (Gou, 2003). The emergence of this type of organisations has shaped the concept of strategy and competitive advantage pursued by a firm.

In summary, this section has discussed key concepts in the strategic management area, which explains how a firm can survive and create competitive advantages. Various concepts have been highlighted: the choice of product-market, understanding of industry structure and competitive position, development of internal competence, adaptation to environment change, capacity of learning, and partnerships. These concepts are general and they are likely to be applicable across business sectors, including Internet retailing business. The discussion now moves on to the concept of business performance.

2.2.3 Business performance

An understanding of the concept of business performance is necessary to determine its important aspects to be measured. This discussion covers the scope of business performance and factors affecting it.

Definition and scope of business performance

The previous section has defined business strategy as a firm's posture towards its environment to achieve its goals. A successful strategy is indicated by its ability to achieve an organisation's goals. Khandwalla (1977) used the term organisational performance in referring to how well an organisation achieves its goals, similar to the concept of organisational effectiveness which is popular in organisational theory. Khandwalla (1977) maintained that the term organisational performance is ambiguous, because it is difficult to define exactly the goals of an organisation. The difficulty may come from different goals of stakeholders, where sometimes those goals are competing with each other. Shareholders' goal might be profitability and growth, employees' goal might be salary and facility, managers' goal might be career and bonus, customers' goal might be a good quality product at reasonable price. Therefore, organisational performance depends on which goals are measured. Despite various goals, achieving sustainable competitive advantage can be considered as the ultimate goal of a business, because it determines a firm's survival.

In strategic management studies, researchers have used the term business performance more than organisational effectiveness. Venkatraman and Ramanujam (1986) have clarified the domain of organisational effectiveness and business performance, as illustrated in Figure 2.1 (overleaf).

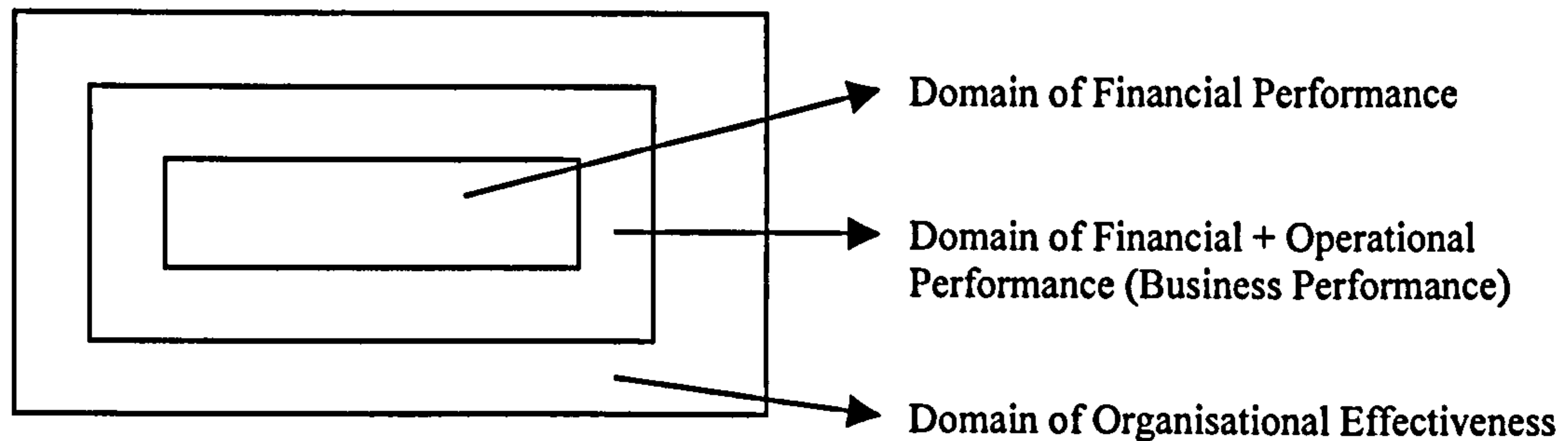


Figure 2.1: Domain of business performance
(Source: Venkatraman and Ramanujam, 1986)

They explained that the narrowest concept of business performance focuses on the outcome-based financial indicators (e.g. profitability, sales growth), which are assumed to represent the economic goals of a firm. Furthermore, a broader concept of business performance focuses on both financial and operational (non-financial) performance indicators (Venkatraman and Ramanujam, 1986). The outer rectangle refers to a domain of organisational effectiveness which includes multiple and conflicting organisational goals of a firm's stakeholders (Venkatraman and Ramanujam, 1986). This classification precisely defines the scope of business performance: financial and operational performance indicators.

In an academic context, researchers have treated business performance as the ultimate dependent variable (Morgan and Strong, 2003). Research on business performance indicates that, in the past, business performance was measured with accounting (financial) measures, such as profitability. The most frequently used measure is return on investment (ROI), which is widely regarded as the ultimate 'bottom line' of business success (Morgan and Strong, 2003). Financial measures have received some criticism because of their inadequate handling of intangibles, and improper valuation of sources of competitive advantage (Bharadwaj et al., 1993; Marr, 2003). Financial measures solely were not sufficient to capture overall firm performance (e.g. Chakravarthy, 1986; Clarke and Watkins, 2003). Operational (non-financial) performance, such as product quality, customer satisfaction, productivity, and market share, have been added to cover a broader conceptualisation of business performance, and these operational measures, as leading indicators, are believed to affect financial performance, as lagging indicators (Clarke and Watkins, 2003; Murphy et al., 1996; Venkatraman and Ramanujam, 1986). For example, Kaplan and Norton (1992) argued that efficient internal business process combined with

satisfied customers leads to financial success. This link indicates that an improvement targeted for financial performance could be promoted through an improvement of the operational business aspect.

In some other studies, Ittner and Lacker (1998) contended that non-financial measures (e.g. customer satisfaction) are leading indicators of financial performance, and Azofra et al. (2003) suggested that the level of non-financial performance is associated with the level of profitability. Similarly, Fink (2006) stated that measures of operational e-commerce, as non-monetary performance, contribute to the overall profitability of the organisation. Collectively, those studies reveal that business performance should be evaluated using multiple dimensions. There are some reasons regarding the multidimensional interest of business performance, for example the emerging interest in the drivers of future growth, and a demand from analysts and investors for more information to understand the underlying accounting-based performance (Morgan and Strong, 2003).

Factors affecting business performance

‘What factors are affecting business performance?’ is one of the intriguing questions among researchers and business practitioners, because the solution enables a firm to achieve superior performance. Stoelhorst and Raaij (2004) have attempted to identify factors contributing to the performance differentials between firms. Based on the organisational economics, strategic management, and marketing disciplines, they proposed five possible sources: (1) positional advantages in product markets, (2) efficient business process, (3) unique or otherwise costly-to-copy resources, (4) innovative capabilities, and (5) a superior learning capability. The first, source of positional advantages in product markets, explains that performance differentials are the result of a firm’s ability to protect superior positions by barriers to competition, such as size and switching costs (Porter, 1980; Stoelhorst and Raaij, 2004). The second source suggests that more efficient business process enables a firm to gain competitive advantage by operating at a lower cost level than its competitors (Stoelhorst and Raaij, 2004). The third, unique or otherwise costly-to-copy resources, suggests that performance differential results from a firm’s ability to develop unique and difficult-to-imitate resource combinations to add value to the products (services)

and to lower costs (Prahalad and Hamel, 1990; Stoelhorst and Raaij, 2004; Wernerfelt, 1984). The fourth, innovation, suggests that performance differential between firms emerges from providing new products or implementing new production/ operation methods (Schumpeter, 1934; Stoelhorst and Raaij, 2004). The fifth, learning capability, suggests that higher order learning processes will create knowledge that enables an organisation to sustain its comparative and competitive advantages (Stoelhorst and Raaij, 2004). These five sources indicate the complexity of factors affecting business performance; therefore, the answer to the question above is not straightforward (Miles and Snow, 1994, p.11).

In another study, White and Hamermesh (1981) also attempted to answer that question using industrial organisation economics, organisation theory, and business policy. From industrial organisation economics, business performance is affected by industry structure (e.g. the number of buyers and sellers, the existence of substitutes, entry barriers, and industry growth) and competitive position (e.g., relative market share) (Porter, 1980; White and Hamermesh, 1981). Furthermore, organisation theory suggests that a fit between the environment (e.g. uncertainty and variety) and the organisation structure (e.g. mechanistic and organic) will affect business performance (White and Hamermesh, 1981). The latter maintained that both theories do not explicitly consider that an organisation is a purposive institution, and management can make a choice to achieve an organisation's goals. They clarified that the business policy area (predecessor of strategic management) introduced the concept of strategy to explain how an organisation pursues a purposive and directive course to achieve its goals. That article explains that strategy can be viewed through industrial organisation theory as the way in which an organisation chooses to respond to its industry structure and competitive position, and through organisation theory as the way an organisation interprets its environment and determines its organisational structure. White and Hamermesh (1981) added that business policy places management preferences and values, corporate pressures, and expectation of environmental change as factors affecting the choice of strategy. Briefly, the concept of strategy is used as a major factor affecting business performance; it represents deliberate choices made by an organisation in responding to its environment, and it reflects internal organisation characteristics.

In summary, the concept of business performance refers to how well a business organisation achieves its goals in achieving sustainable competitive advantage, as indicated by financial and operational-based performance. Business performance is a complex issue, as it is affected by various factors, such as competitive position and internal competencies. The following section discusses performance measurement in strategic management.

2.2.4 Performance measurement in strategic management

This part aims to understand the role of performance measurement in the strategic management process within a firm. The following discussion looks at strategic management as a process conducted within a firm. As a process, strategic management can be divided into three phases: (1) strategy formulation, (2) strategy implementation, and (3) strategy evaluation (Byars, 1996; David, 1995). These three phases are illustrated in Figure 2.2.

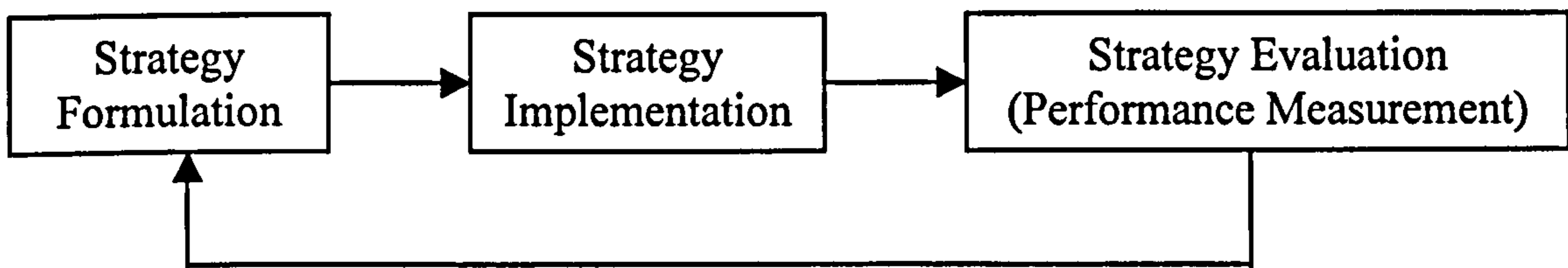


Figure 2.2: Strategic management process

Byars (1996) explains that strategy evaluation involves three activities: (1) establishing standards of performance for the overall organisation and its different units or functional areas, (2) monitoring progress in the execution of the organisation's strategy, and (3) initiating corrective actions to ensure continued commitment to the implementation of the strategy. These three activities represent activities of performance measurement. Hence, performance measurement can be thought as a part of the strategic management process in an organisation.

Strategic management researchers have been interested in investigating the relationship between business strategy and business performance. Business strategy is developed based on a firm's vision, mission and objectives, and it is implemented to achieve the objectives. Successful strategy is a strategy which can achieve a firm's

objectives. How well a firm achieves its objectives represents an underlying concept of business performance. Probably one of the most intriguing questions among researchers and business practitioners is about ‘what kind of business strategy can achieve a firm’s objectives’ or, in other words, ‘what kind of business strategy leads to superior performance’. The reason is that the answer, if available, becomes a road to success for any business. Some studies have attempted to investigate the link between business strategy and business performance (e.g. Morgan and Strong, 2003; Venkatraman, 1989). Some other studies have investigated the link by involving another ‘third’ factor, for example incentive plan characteristics (Rajagopalan, 1996), Total Quality Management (Prajogo and Sohal, 2006), sales force (Slater and Olson, 2000), strategic IT management (Bergeron et al., 2001), technology deployment (Croteau and Bergeron, 2001), IT strategy (Cragg et al., 2002), and market-related dynamism (Homburg et al., 1999). Those studies, among others, indicated the complexity of the relationship between business strategy and business performance, because numerous factors possibly can affect the relationship. Consequently, the solution to the question about successful business strategy is still inconclusive (Parnell, 1997). Morgan and Strong (2003) stated that this limitation might relate to: (1) different theoretical perspectives, (2) different empirical context, (3) different bases in operationalisation and measurement, and (4) different ways of explanation. Despite this limitation, a continuous search towards understanding of business strategy and business performance is critical, as it is all about how a business can survive. This link is illustrated in Figure 2.3.



Figure 2.3: Link between business strategy and business performance

In summary, performance measurement can be seen as a part of the strategy evaluation process to monitor the implementation of strategy. Researchers in strategic management have been interested in the link between business strategy and business performance, either directly or indirectly, through a third factor.

Summary of section 2.2

Strategic management literature indicates the link between business strategy and business performance. Business strategy refers to the position or attitude made by a firm in responding to its environment to achieve its goals, especially sustainable competitive advantage. Business performance refers to how well a firm achieves its goals, and it covers multiple aspects of financial and operational performance. In that link, performance measurement plays its role as a control system in monitoring business performance, and providing feedback to business strategy. Performance measurement is needed as a means to ensure that a firm pursues strategies that lead to the achievement of its goals (Amaratunga and Baldry, 2002). The link among three are illustrated in Figure 2.4.

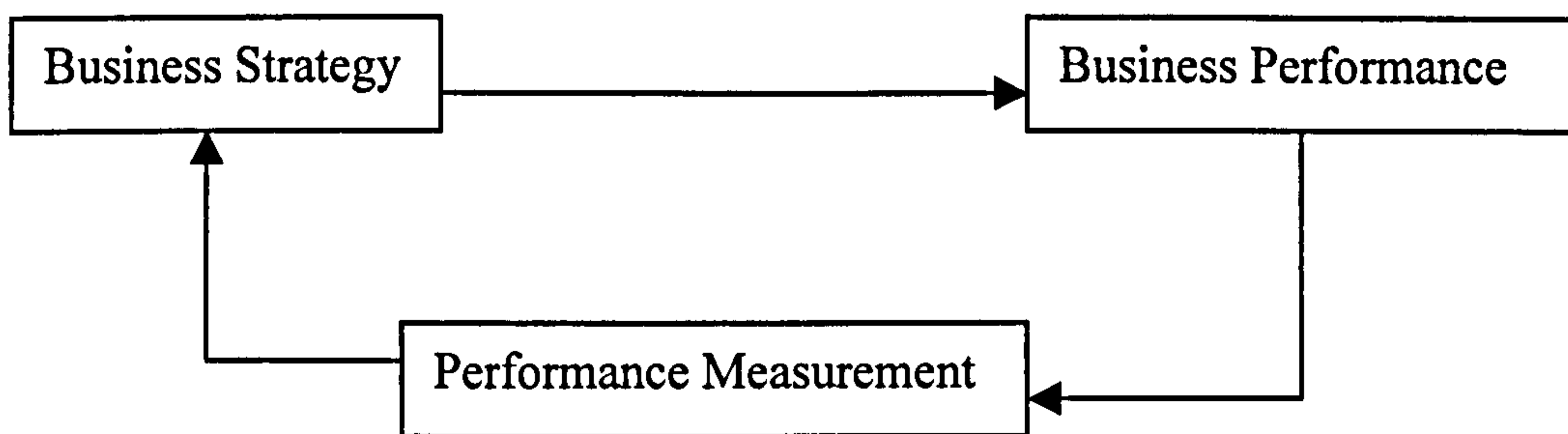


Figure 2.4: Business strategy, business performance, and performance measurement

2.3 Performance measurement

Interest in performance measurement has grown enormously, especially in the 1990s, as indicated by numerous studies on the balanced scorecard (BSC), benchmarking (e.g. articles in *Benchmarking: An International Journal*), and total quality (e.g. articles in *The TQM Magazine*, *Total Quality Management*, *Total Quality Management and Business Excellence*). Studies in this area have contributed to guiding firms to develop performance measurement. The progress of performance measurement has been supported by the great interest among firms in the BSC and the self-assessment of quality performance. A performance framework BSC (Kaplan and Norton, 1992) has contributed to changing the paradigm of performance measurement from accounting-based measures to comprehensive measures, and it has been recognised as the one most widely used by organisations. The increasing

awareness of self-assessment in a quality management framework, such as ISO, EFQM in Europe, Malcolm Baldrige in the USA, and the Deming Prize in Japan, has motivated organisations to measure their performance continuously (Bohoris, 1995). The firms' concern on quality measurement is based on an assumption that quality improvement is a critical way for business survival and the achievement of global competitive advantage (e.g. Bohoris, 1995; Tummala and Tang, 1996). The increasing attention to performance measurement may reflect the increasing motivation among firms to improve their business performance (Hoque, 2004).

Performance measurement is widely discussed in the literature, but the term itself is rarely defined. In this limitation, Neely et al. (1995) attempted to define three related terms. First, they defined *performance measurement* as a process of quantifying the efficiency and effectiveness of action; second, a *performance measure* as a metric used to quantify the efficiency and/or effectiveness of an action; and third, a *performance measurement system* is defined as a set of metrics used to quantify both the efficiency and effectiveness of actions. In those definitions, the term effectiveness refers to the extent to which customer requirements are met, and the term efficiency refers to the extent of how economically the organisation's resources are utilised in providing a certain level of customer satisfaction (Neely et al., 1995). Contrary to Neely et al. (1995) who define a performance measurement system as a set of metrics, Lohman et al. (2004) view a performance measurement system as a system (software, databases and procedures) to execute performance measurement consistently and systematically. Similarly, Mahama (2006) highlights that performance measurement systems serve as an information system.

To understand the concept of performance measurement, this section will discuss performance measurement in four aspects: (1) performance measurement as a management process, (2) performance measurement framework, (3) performance measurement application, and (4) performance measurement as an information system. Each of these is now discussed consecutively.

2.3.1 Performance measurement as management process

Performance measurement historically was developed as a means of monitoring and maintaining organisational control, which is the process of ensuring that an organisation pursues strategies that lead to the achievement of its overall goals (Amaratunga and Baldry, 2002). How an organisation executes performance measurement can be explained through three *generic phases*: design, implementation, and use (Bourne et al., 2000). The article explains that the design phase refers to identifying the key objectives to be measured and designing performance measures (metrics). Furthermore, the article defines the implementation phase as a process in which systems and procedures are arranged to collect and process data regularly. This process is the same as the Lohman et al. (2004) definition of performance measurement systems referred to earlier. Finally, the use phase refers to two aspects: measuring the success of the implementation of the strategy, and challenging the assumption and testing the validity of the strategy (Bourne et al., 2000).

The literature on performance measurement provides guidance to develop a good performance measurement and good performance measures. Good performance measures are those which enable organisations to direct their actions in achieving their strategic objectives (Dixon et al., 1990, cited by O'Mara et al., 1998). Firstly, in relation to the *design process*, performance measurement should be: (1) derived from a firm's strategy and objectives/ goals, (2) developed with involvement of stakeholders, and (3) developed from a multi and interrelated perspective (Kanji, 2002; Neely et al., 1997). Secondly, in relation to the *characteristics*, performance measures should be simple, clear, relevant, consistent, reliable, be based on trends rather than a snapshot, objective (preferred to subjective), be based on quantities that can be influenced or controlled, and enable comparisons (Kanji, 2002; Neely et al., 1997). Thirdly, in relation to the *functions*, performance measures should: (1) be a part of a closed management loop, (2) focus on improvement (rather than simply monitor) and highlight improvement opportunities, (3) provide timely and accurate feedback, (4) be linked to the rewards' system, and (5) encourage the appropriate behaviours (Bourne et al., 2000; Kanji, 2002; Neely et al., 1997). Fourthly, in relation to the *scope*, performance measures should cover a multi and interrelated

perspective and reflect the business process (Kanji, 2002; Neely et al., 1997). Finally, performance measures should be adjustable and relevant to the dynamic business environment (Feurer and Chaharbaghi, 1995).

Performance measurement as a process will facilitate the sharing of vital information among management and staff, and consequently this encourages communication and cooperation between them (Mahama, 2006). In addition, performance measurement can drive improvement through creating awareness among management and staff, and influence behaviour through assessment, reward and discipline (Bititci et al., 2002; Kanji, 2002; Neely et al., 1994).

In summary, performance measurement as a management process is viewed from its development process and its support for internal organisational practices such as facilitating information sharing and creating awareness. The next section discusses performance measurement as a framework.

2.3.2 Performance measurement frameworks

Literature on performance measurement indicates a considerable amount of studies proposing frameworks to develop and implement performance measurement. Folan and Browne (2005) differentiated two types of framework: structural and procedural. Structural frameworks provide key dimensions in which performance measures are developed (Folan and Browne, 2005). Some structural frameworks found in the literature are the Balanced Scorecard (BSC) (Kaplan and Norton, 1992) and Performance Prism (Neely et al., 1995, 1997). Procedural frameworks provide a systematic process for developing performance measures (Folan and Browne, 2005). An example of a procedural framework is an Integrated Performance Measurement System (IPMS) as proposed by Bititci et al. (1997a, 1997b), using a business process view. Another is Quantitative Model for Performance Measurement Systems (QMPMS), which is implemented using cognitive maps, cause and effect diagrams, tree diagrams, and the analytic hierarchy process (Suwignjo et al., 2000). Both structural and procedural frameworks are critical for an organisation in developing performance measurement, because they help in clarifying the scope of performance measurement, specifying important performance dimensions, understanding the

relationship among performance measures, and putting performance measurement into a management process.

The Balanced Scorecard (BSC) has been the most popular performance measurement framework among business practitioners and researchers, and has inspired many studies on the performance measurement area. The BSC, introduced by Kaplan and Norton (1992), is a multidimensional framework that translates a company's strategy into specific measurable objectives, and was proposed to overcome the limitations of using financial measures as the only indicator for measuring organisational performance. The sole use of financial measures has received many criticisms, and it is considered as having failed to provide top management with adequate information about the fundamental health of the organisation (Clarke and Watkins, 2003). Furthermore, as those financial measures were originally designed for an era when tangible assets were dominant, they do not incorporate intangible assets, which have been recognised as a source of sustainable performance (Marr, 2003). Kaplan and Norton (1992, 1993, 1996a) asserted that the BSC is not a substitute, but a complement of financial measures. The BSC framework includes a combination of financial measures (called lagging indicators), indicating results of actions previously taken, and operational measures (called leading indicators), indicating drivers of future performance (Kaplan and Norton, 1996b; Maltz et al., 2003). The BSC guides managers to look at the business from four important perspectives: (1) Financial: "How do we look to shareholders?", (2) Customer: "How do customers see us?", (3) Internal business: "What must we excel at?", and (4) Innovation and learning: "Can we continue to improve and create value?" (Kaplan and Norton, 1992, 1993, 1996b).

In spite of its wide implementation and contributions, the BSC has received some criticisms for its incompleteness because it does not explicitly incorporate the contributions of employees, suppliers, community and regulators, which are considered important for a business organisation to perform well (Maltz et al., 2003). It is also criticised as having no clear *very* long-term measures as a representation of a firm's sustainable success (Maltz et al., 2003). Nevertheless, the BSC has contributed to change a paradigm in evaluating a firm's performance from using common financial measures suitable for all firms to using tailored measures to meet a firm's specific needs and conditions.

Another prominent framework is Performance Prism developed by Neely et al. (2002) who claimed that this framework is built on the strengths and weaknesses of existing frameworks (Kennerly and Neely, 2002). This framework adopts a stakeholder-centric view, and consists of five distinct but linked perspectives of performance: (1) stakeholder satisfaction, (2) strategy, (3) process, (4) capabilities, and (5) stakeholder contributions (Kennerly and Neely, 2002). Similar to the BSC, those five perspectives are described with questions to be considered by managers in developing performance measures (Kennerly and Neely, 2002), as follows.

1. *Stakeholder satisfaction* – Who are our stakeholders and what do they want and need?
2. *Strategies* – What strategies do we have to put in place to satisfy the wants and needs of these key stakeholders?
3. *Processes* – What critical processes do we require if we are to execute these strategies?
4. *Capabilities* – What capabilities do we need to operate and enhance these processes?
5. *Stakeholder contributions* – What contributions do we require from our stakeholders if we are to maintain and develop these capabilities?

Kennerly and Neely (2002) argued that this multidimensional framework has incorporated external measures (stakeholder) and internal measures (strategy, process and capability). Although this framework is more comprehensive than the BSC, it seems that the BSC still provides better explanation of conceptual causal links among perspectives. These conceptual links are important, for example, to justify that improvement in a certain measure (e.g. faster delivery) affects another (e.g. increased customer satisfaction). In addition, the BSC focuses on measuring business performance, which covers financial and operational performance. Conversely, Performance Prism is more suitable for measuring a domain of organisational effectiveness.

Moreover, Moullin (2004) suggested that performance measurement should include both perception measures and performance indicators. In that article, performance indicators refer to objective measures. Moullin (2002) described that perception

measures were obtained directly from service users (e.g. by customer survey), while objective measures were recorded by a firm. Objective measures are important to track a firm's performance against target and to show the degree of improvement achieved, while perception measures are important to identify changing expectation (Moullin, 2004). Moreover, Gish (2002) proposed that performance measurement should cover internal and external metrics. According to Gish (2002), internal metrics measure organisation-specific performance against predetermined targets (e.g. sales), whereas external metrics measure organisation-specific performance relative to the industry or benchmark indicators (e.g. market share, relative cost position). For the latter, performance measurement frameworks, such as BSC could facilitate performance benchmarking (Ahmed and Rafiq, 1998)

In summary, the literature has suggested some valuable lessons to develop performance measurement. Performance measurement should be customised to a firm's specific need; multidimensional, covering results as well as drivers of performance; simple, dynamic, and flexible over time; support improvement; and be linked to the organisation's strategy, goals and objectives (Maltz et al., 2003). A firm needs to have a reasonable number of performance measures (about 15-20), because too few measures fail to provide a comprehensive picture of the firm, whereas too many are confusing (Gish, 2002; Maltz et al., 2003). The next section moves on to discuss performance measurement as an information system.

2.3.3 Performance measurement as information system

Performance measurement as an information system can be discovered from its role in management control systems (Bourne et al. 2000; Henri, 2006; Mahama, 2006). Simons (1991) defined management control systems as *the formalised routines and procedures that use information to maintain or alter patterns in organisational activity*. An information system (IS) is an organised combination of people, hardware (e.g. PCs, servers), software (e.g. Microsoft Office), communication networks (e.g. Internet) and procedures (e.g. instructions of whoever is entering data) that collect data (e.g. product price), transform it into information (e.g. total sales per week), and disseminate information in an organisation (Boody et al., 2005; O'Brien

and Marakas, 2006). In general, how an organisation uses the information system can be classified into three levels (O'Brien and Marakas, 2006):

1. To support business process and operations (e.g. recording customer purchase, tracking the inventory level)
2. To support decision making (e.g. decision on what merchandise is to be added or discontinued)
3. To support business strategies for competitive advantage (e.g. online ordering in a physical store).

This hierarchy indicates that information is used throughout an organisation.

Prior studies indicated that a performance measurement system is considered as an information system (e.g. Bititci et al., 1997b; Keung, 2000) focusing on the performance of an organisation. As previously mentioned, software is one element of information systems. In implementing performance measurement, an organisation may consider using package applications (software) if it deals with complex performance data. Package applications for performance measurement are available in the market from various vendors, for instance Performance Scorecard from Hyperion, Digital Dashboard from Microsoft, Deltaminer 3.8 from MIS, Express Objects from Oracle, EC-EIS from SAP, and Business Objects from Business Objects (Sharif, 2002). As each package is built on a certain framework, for instance Business Objects is based on a quality management framework (Sharif, 2002), a company should select the appropriate package. If performance measurement does not involve complex data, an organisation may use the available software already used for database or spreadsheet.

Literature on Information Systems (IS) indicates that the contribution of IS to business performance does not follow directly and immediately, but it is as a result of the use of IS and change in the organisational process, such as decision-making process (Hamilton et al., 1981a, 1981b). Consequently, the important issue in viewing performance measurement, as an information system, is the use of information obtained from performance measurement. The use of performance measurement refers to how a firm is using the performance-related information to

support its business. Based on Simons's (1991, 1995) work on management control systems, Kald and Nilsson (2000) classified the use of performance measurement into two aspects: diagnostic and interactive. They explained that diagnostic use refers to using the information to monitor organisational outcomes and to correct deviations from preset standards of performance. They further explained that interactive use refers to involvement of the staff and management in using the information, for example to support strategy development and decision-making (Kald and Nilsson, 2000; Nilsson and Kald, 2002).

In another study, Henri (2006) classified four types of use: (1) monitoring, (2) attention focusing, (3) strategic decision-making, and (4) legitimisation. Monitoring refers to the use of information to provide feedback regarding expectations, and to communicate with various stakeholders; attention focusing refers to the use of information to foster dialogue among managers and staff; strategic decision-making refers to the use of information to support the decision-making process, and legitimisation refers to the use of information to justify decisions or actions (Henri, 2006). In addition, managers can use the performance-related information to establish cause-effect relationships and to evaluate the cost and benefits of alternative basis of action (Mahama, 2006). They can also use the information to determine the reward as well as discipline for staff and themselves as well (Bititci et al., 2002; Neely et al., 1994; Kald and Nilsson, 2000; Kanji, 2002).

In considering the use of performance-related information discussed in this section, this type of information system belongs to management support systems, following O'Brien and Marakas' (2006) classification. The management support systems refer to the application of information systems in providing information and support for effective decision-making by managers (O'Brien and Marakas, 2006). For example, the systems display graphics of online sales, which enables managers to analyse sales growth. Another example, the systems can facilitate what-if-analysis of online advertising expenditure against the number of new customers, which helps managers to decide the advertising budget.

In summary, the most important aspect of viewing performance measurement as an information system refers to how the system is supporting management to use the

performance-related information. Management uses the information to support operational to strategic levels. The next section discusses the application of performance measurement in the retailing business.

2.3.4 Performance measurement application

Performance measurement has been widely applied, including in both manufacturing and service sectors, and both profit-seeking and not-for-profit organisations. The focus of its application could be on the overall firm performance as well as on specific organisational functions, such as operations, marketing and R&D. As this research is conducted in the context of Internet retailing business, the review of this section focuses on the application of performance measurement in a store-based retailing business. As discussed later, Internet retailing shares some similarities in its operations with store-based retailing; consequently, the review of performance measurement in store-based retailing could provide some guidance in developing performance measurement for Internet retailing. This section presents the application of performance measurement in store-based and Internet retailing.

Performance measurement in store-based retailing

Store-based retailing is characterised by a store, as a marketplace, where interaction happens between a retailer (through its sales persons) and customers. Consequently, performance measurement of store-based retailing has been focused on measuring store performance. Store performance is evaluated from data collected by a retailer. Among studies on store performance, Ring et al. (2002) described a retailing performance model as a management tool for assessing and improving productivity and financial performance. That article presents performance indicators as developed based on the three major inputs of any retail store: inventory, space, and people. Three productivity ratios (the ratio of an output to an input) are described:

(1) Gross margin per dollar of inventory investment at cost (GMROI)

$$= (\text{Gross margin}) / (\text{inventory cost}) \quad = (\text{Gross margin}) / (\text{net sales}) \times (\text{net sales} / \text{inventory cost})$$

(2) Gross margin dollars per sq. ft of selling space (GMROS)

$$= (\text{Gross margin}) / (\text{selling ft}^2) \quad = (\text{Gross margin}) / (\text{net sales}) \times (\text{net sales} / \text{selling ft}^2)$$

(3) Gross margin dollars per full-time equivalent employee (GMROL)

$$= (\text{Gross margin}) / (\text{FTE employees}) \quad = (\text{Gross margin}) / (\text{net sales}) \times (\text{net sales} / \text{FTE employees})$$

Another study, Grewal et al. (2004), suggested three aspects to evaluate store-based retailing performance: (1) overall performance, (2) merchandising performance, and (3) store performance. They described that overall performance is evaluated by financial ratios, such as net profit margin, asset turnover and return on assets; merchandising performance is evaluated by gross margin and inventory turnover; and store performance is evaluated by sales per square foot and sales per employee per hour. Thus both models proposed by Grewal et al. (2004) and Ring et al. (2002) are similar. Merchandising performance is similar, with productivity ratio based on inventory input, while the store performance is similar, with productivity ratio based on space and people input.

Performance measurement applied in Internet retailing

Performance measurement of Internet retailing has been focused on measuring the 'Internet channel' effectiveness. Consequently, it has focused on measuring web-browsers visiting the online retail site. In this area, the term web metrics (Sterne, 2002) or e-metrics (www.emetrics.org) or web analytics (www.waa.org) has been used. Some popular metrics are hits, page views, visits, and unique visitors (Chaffey et al., 2006; Sterne, 2002). The main characteristic of this measurement is that the data are recorded and generated automatically by web servers. A huge amount of data is collected in the retailer's server logs every day. Log analysis tools, such as WebTrends (www.webtrends.com), are available in the market to help in extracting the useful information from the log files. The information created is called web-metrics. Sterne (2002) maintained that what web metrics are to be measured (or used) depends on the goals of the website. For Internet retailing sites, the basic goal is to sell products to customers. Therefore, it is important for Internet retailers to incorporate metrics that can provide information about their visitors (customers), and then to use the information to sell more products. Further discussion about this is presented in section 2.6.

As the basic purpose of retailing is to sell products to customers, measuring sales is essential for both store-based and Internet retailers. For store-based retailers, performance measurement has been quite established. Their focus of measurement is on the productivity of the store, which is presented as a ratio of its sales to the store space, the number of employees, or inventory costs. On the other hand, for Internet retailers, performance measurement is quite new. The early focus of their measurement is on the web-metrics based on log files, to measure the effectiveness of the Internet channel. As a virtual store, some measures for store-based retailers, such as productivity of store space and possibly productivity of employees, could be inappropriate.

Summary of section 2.3

This section has discussed performance measurement in four aspects. Performance as a management process indicates that performance measurement can support internal organisational practices such as facilitating information sharing and creating awareness. The discussion of performance measurement framework suggests that performance measurement should cover multidimensional aspects. However, performance measurement in the context of Internet retailing is quite new and mainly focused on web-metrics. Furthermore, viewing performance as an information system provides an understanding of how the information obtained from performance measurement can support managerial activities and decision-making. This discussion raises the idea that performance measurement as a process, as well as the information, might lead a firm to perform better. The next section takes a further step in discussing the relationship between performance measurement and business performance, and between performance measurement and business strategy.

2.4 Performance measurement, business strategy, business performance

This section is aimed to understand how performance measurement links to business performance as well as business strategy. This discussion of relationships consists of

two parts: between performance measurement and business performance, and between performance measurement and business strategy.

2.4.1 Performance measurement and business performance

The relationship between performance measurement and business performance refers to the effect of the former on the latter. The effect of performance measurement is important, because implementing it requires a firm's resources, which need to be justified. By considering the benefits and the resources spent, the implementation could be justified (Moullin, 2004). There is a prediction that the implementation of performance measurement could affect business performance (Kaplan and Norton, 1996b). Such implementation would help to clarify expectations, reduce ambiguity, support organisational change, and stimulate employee involvement and learning, which individually and/ or collectively contribute to optimal performance (Amaratunga and Baldry, 2002; Azofra et al., 2003; Kuwaiti and Kay, 2000; Mahama, 2006).

In what way does performance measurement affect business performance? Neely commented that very little investigation had been completed on this issue; partly, because many factors could affect business performance (Powell, 2004). As already mentioned, performance measurement is a process of measuring various aspects of business performance. This measurement process will create awareness of management and staff about the target to achieve, and motivate them to achieve it. Some studies have been directed to reveal the effect of the performance measurement. For example, Evans (2004) reported that the number of performance indicators measured is positively related to the level of customer satisfaction, as well as financial performance. Another study reported a positive relationship between the number of TQM-related measures and TQM success (Taylor and Wright, 2006). This does not mean that the activity of measuring necessarily leads to more success, but only with proper measurements and a feedback loop between activities and achievements, will management be able to identify a focus for enhancing business performance (Lau and Anderson, 1998).

In summary, implementing performance measurement requires considerable resources (e.g. cost of information system), for which this implementation should be subsequently justified. One of the important justifications is to evaluate whether the implementation of performance measurement could affect business performance. This link implies that performance measurement is not a mere tool to monitor business performance and to provide feedback to business strategy, but performance measurement itself directly affects business performance. Figure 2.5 illustrates this link.

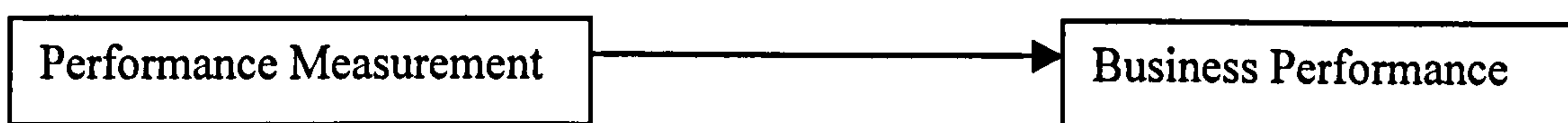


Figure 2.5: Link between performance measurement and business performance

The next section discusses the relationship between performance measurement and business strategy.

2.4.2 Performance measurement and business strategy

The second issue is a link between performance measurement and business strategy. As described by Frigo (2002), a survey on performance measurement revealed that more than a half of the respondents considered their company's performance measures inadequate in communicating strategy. Furthermore, Frigo (2002) predicted that this condition might come from the separation between the process of strategy development and performance measurement. The literature on strategic management explains that performance measurement is a part of the strategic management process (Byars, 1996; David, 1995). In this process, performance measurement belongs to the strategy evaluation phase, of which one of the activities is to monitor progress in the execution of the organisation's strategy. The literature also suggests that performance measurement should be derived from an organisation's strategy (e.g. Kaplan and Norton, 1992; Neely et al., 1997). An underlying premise of the BSC is that organisations should select and align performance indicators carefully to their business needs and strategies (Evans, 2004).

Although the relationship looks solid, it is still less understood because of the complexity of both business strategy and performance measurement. One of the major concerns is “What kind of strategy and what kind of performance measurement are related to each other?”. Hoque (2004) has studied the association between strategic priorities and selection of performance indicators. The result suggested that prospector firms (seeking new market opportunities) are likely to have more performance indicators than defenders (maintaining a stable domain, seeking cost efficiency).

In summary, the relationship between performance measurement and business strategy is predicted, because performance measurement is normatively derived from business strategy. Figure 2.6 illustrates this relationship. However, the nature of this relationship is far from clear to understand what kind of business strategy and what kind of performance measures are related to each other.



Figure 2.6: Link between business strategy and performance measurement

Summary of section 2.4

Departing from a view that performance measurement serves as a control mechanism to provide feedback regarding the execution of business strategy, this section has viewed performance measurement itself as a factor affecting business performance. In addition, this section has also identified that performance measurement (measures) should be derived from business strategy, though this relationship is still vague. The rest of this chapter will discuss performance measurement more specifically in the context of Internet retailing business.

2.5 Internet retailing business

Since its inception in the mid-1990s, Internet retailing business has experienced a rapid growth, outpacing the growth rate of retailing in general (Kim et al., 2006).

Dotcoms' failure during the late 1990s and early 2000s has encouraged practitioners and researchers to find better ways to manage Internet-based business, and a considerable amount of studies have been dedicated to this area (Ngai, 2003). In line with these efforts, this section discusses three critical factors related to business performance and performance measurement: (1) business format, (2) operations, and (3) strategy. Each of these is now presented consecutively.

2.5.1 Business format of Internet retailing

This part discusses the scope and business format of Internet retailing. This issue is important to understand the objectives of Internet retailing business. As already discussed, business strategy and performance measurement are related to a firm's objectives.

The business of Internet retailing (or e-retailing) can be defined as the sale of goods and services via Internet for personal or household use by consumers (Dennis et al., 2004, p.2). This definition shows that Internet retailing means simply retailing activities conducted through Internet channel. The definition of retailing has been long-established in the literature, for example a definition proposed by Wingate (1931), as quoted by Peterson and Balasubramanian (2002), is as follows:

Any individual, firm, or corporation that performs the last step in the marketing of goods from producer to consumer. He buys from wholesaler, commission merchant, or manufacturer and sells direct to consumer. To be significant as a distinct economic unit, the retailer must act as a purchasing agent for the community rather than as a distributing agent for manufacturers.

Peterson and Balasubramanian (2002) have compiled a comprehensive list of retailing definitions from retailing textbooks and dictionaries. Those definitions share a similar meaning that retailing is a set of business activities that adds value to the products or services, or both, sold by a retailer to consumers for their personal or family use (Levy and Weitz, 2004, p.6).

The birth of Internet retailing came from two business sectors. First, it came as a part of a 'new economy', which emerged from the application of Internet technology in a business context. The beginning of pure-play retailers (or dotcoms) can be seen in this category. Second, it came from a traditional retailing business (store or mail

order retailer), which adopted Internet technology as an additional retailing medium (e.g. Doherty et al., 1999). The birth of clicks-and-mortar retailers and home-shopping (catalogue and Internet) retailers can be seen in this category. The later progress of Internet retailing has indicated a trend that some pure-play retailers have added physical retail stores to take advantage of the traditional retailing business (Enders and Jelassi, 2000).

Internet retailing can be viewed from two perspectives: new economy and retail. Firstly, from a new economy paradigm, Internet retailing is a part of Internet-based business, which is popularly known as e-commerce or e-business. There are many definitions and classifications of Internet-based business (or e-commerce or e-business) found in the literature (e.g. Chaffey, 2002; Kao and Decou, 2003; OECD, 2002; Turban et al., 2000; Wilkins et al., 2000; Zwass, 1996). However, the existing definitions are varied, probably because of the complexity of its elements and the different views of researchers. Among various definitions and classifications, a taxonomy shown in Figure 2.7 based on a business model presented by Maccarone (2002) seems to provide clear guidance to situate Internet retailing within the Internet-based business.

1. Internet enablers:

1.1. Infrastructure provider: e.g. ISPs, hardware and software vendors.

1.2. Business complementary service providers: e.g. e-business consultants, venture capitalists.

2. E-business enablers

2.1. Market-based business models

2.1.1. B2B models: e.g. e-auction, e-reverse auction

2.1.2. B2C models

a. Product/ service (or transaction)-based business models: e.g. internet retailer, virtual malls, e-finance service, e-bit vendor (digital products)

b. Attention-based business models: e.g. advertisement and subscription business models

2.2. 'Internal' business models: e.g. e-procurement, e-advertisement, e-marketing

Figure 2.7: Taxonomy of Internet-based business (Maccarone, 2002)

This Maccarone (2002) taxonomy divides the Internet-based business into two: (1) Internet enablers, related to technology and the business support side, and (2) e-business enablers, related to the business side. Internet retailing is a part of e-business enablers. Furthermore, Maccarone (2002) divided e-business enablers into

two business models: (1) market-based, which apply Internet to generate money, and (2) internal, which apply Internet to support business process. Internet retailing belongs to the market-based business models. The taxonomy also indicates that these models are divided into two: (1) B2B models, business to business transaction, (2) B2C models, business to customer transaction (Maccarone, 2002). Internet retailer is a part of B2C. B2C models are then divided into two: (1) product/ service (or transaction) - based business models, in which revenue is generated from selling product/ service, and (2) attention-based business models, in which revenue is generated from subscription, or providing *space* for advertisement of other companies (Maccarone, 2002). Internet retailing to be studied belongs to the product/ service-based transaction model. Using this taxonomy, the position of Internet retailing can be presented in Figure 2.8.

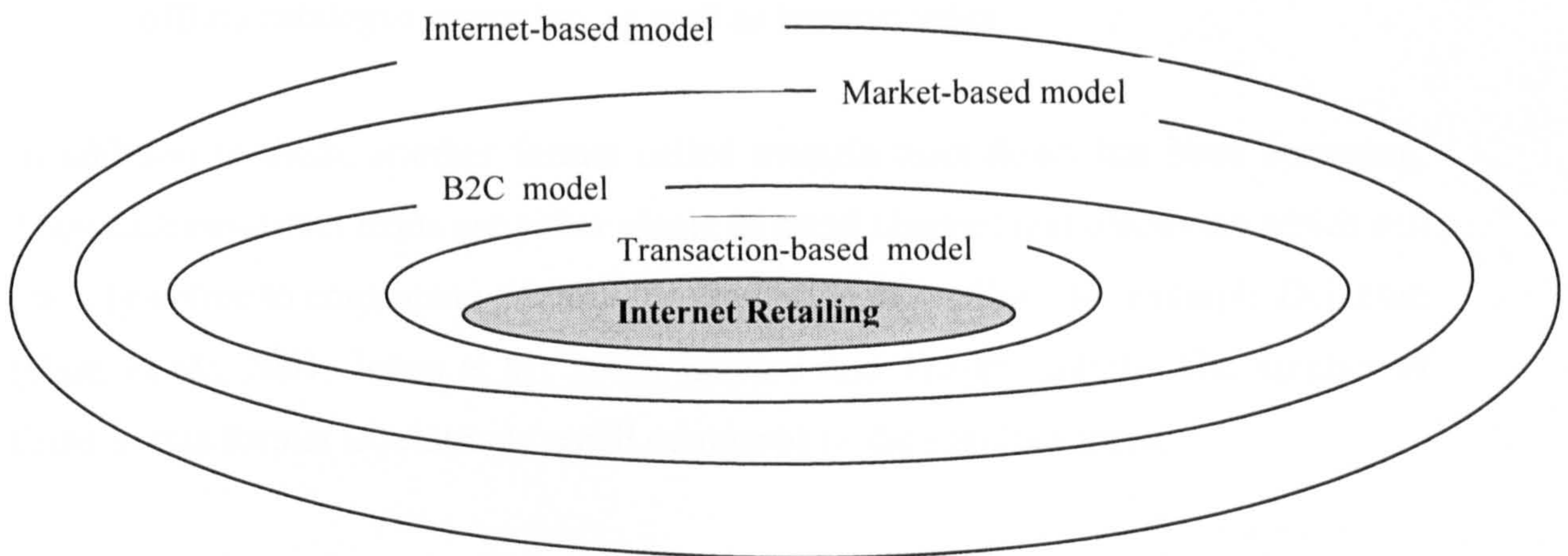


Figure 2.8: Position of Internet retailing

Secondly, from a retailing business perspective, Internet retailing is a new channel for selling products to customers. Other retailing channels have been long established, such as store-based, catalogue mail order, telephone, and television. Recently, mobile technology has been another emerging retailing channel, known as m-shopping or m-commerce (Dennis et al., 2004, pp. 226-243). In the retailing business perspective, Internet retailing emerged from the existing traditional retailers that adopted the Internet to expand their business (e.g. Ellis-Chadwick et al., 2002; Doherty et al., 1999).

There are various ways to classify Internet retailing. This section classifies Internet retailing based on the business models in which Internet sales are conducted. Internet sales can be performed in three main business formats, as follows:

1. Pure-play retailers (Jones et al., 2002; Laudon and Traver, 2002; Liang et al., 2004; Oinas, 2002). These are commonly known as start-ups or virtual merchants. They generate revenue mainly from online sales.
2. Clicks-and-mortar retailers (Chan et al., 2001; Jones et al., 2002; Laudon and Traver, 2002; Liang et al., 2004; Oinas, 2002). These retailers have a network of physical stores as their primary retail channel, and complement it with online sales. Customers are provided with the opportunity to switch to Internet-based shopping and easier delivery or to combine traditional and online shopping.
3. Home-shopping retailers (Laudon and Traver, 2002). These retailers have an offline catalogue operation, as well as Internet sales.

In addition to them, another format called manufacturer-direct has been emerging. Manufacturer-direct firms are either single or multi channel manufacturers which sell directly online to consumers without the mediation of retailers, for example Dell.com (Chan et al., 2001; Jones et al., 2002; Laudon and Traver, 2002). The number of firms in this format is relatively small compared to the previous three.

Another business format called online malls or e-malls (Chan, et al, 2001; Laudon and Traver, 2002) is not regarded as Internet retailing business, because its business is not selling products to customers. Online malls are similar to physical malls, where a company provides facilities and services to a number of store-based retailers (Dennis et al., 2004). An e-mall company provides a web site and e-commerce supporting facilities for a number of Internet retailers. In an e-mall, each cyber store is under its own management. E-mall management is responsible only for creating the cyber sites and supporting services and marketing of the mall.

This study focuses on pure-plays, clicks-and-mortars, and home-shopping retailers. For any of these business formats, this study concentrates on the Internet sales channel only. Therefore, for clicks-&-mortar retailers, this study covers only the

clicks part, and for home-shopping retailers, this study covers only the online sales. This scope limitation is to provide a comparable basis of analysis.

A further issue is raised whether the difference in business format is associated with the difference in purposes of the Internet retailing channel. This channel has been considered as having some potential benefits associated with two aspects: a retailer's cost-saving and a customer's benefit. Cost-saving comes, for example, from inventory handling, online store management, transaction cost, facilities, and staff cost (e.g. Jones, 2002). Customers' benefits represent benefits received by customers such as convenience and price-discount (e.g. Jones, 2002). Enders and Jelassi (2001) identified a number of advantages of the Internet sales channel: wide reach, exhaustive product selections, few infrastructure requirements, unlimited opening hours, and a high degree of scalability. Consequently, it can be thought that, in general, the basic purpose of Internet retailing business is to realise those potential advantages or benefits. For pure-play retailers, that purpose is obvious as it is the ultimate reason of their establishment. For clicks-&-mortar and home-shopping retailers, the establishment of the Internet sales channel could be seen as an expansion of their current business to gain a wider market and more sales. For store-based retailers, the existence of a website might be used for customers to gain information about the products, and then they might purchase in the store instead of through the Internet. Store-based and catalogue retailers that adopt the Internet channel could have some benefits over pure-play retailers, because they own an established brand name and a large customer base (Enders and Jelassi, 2001).

In summary, the basic purpose of Internet retailing is to generate revenue (profit) from selling products to customers. The difference in business formats could be related to the difference in the purpose of Internet sales channel establishment. This difference, then, could be associated with the different focus of business strategy and performance measurement. The next section discusses business strategy of Internet retailing.

2.5.2 Strategy and Internet retailing success

Success is not the goal of an organisation, but it can be viewed as the outcome of achieving the goal in producing/ providing goods or services that are valued by customers and the broader society (Miles and Snow, 1994). Researchers and practitioners have attempted to understand how Internet retailers could be successful. During a dotcom era, academics and consultants suggested companies focused on being the first-mover in order to catch the competitive advantage (Tse and Soufani, 2003). However, the dotcom catastrophe indicated that this strategy was unsuccessful, and the potential advantages had not yet come (Coltman et al., 2002). The reality during the dotcom era indicated that most Internet retailers continued to have high cash burn rate, many of them downgraded their targets, and many of them collapsed (Lee and Brandyberry, 2003). The following three factors have been identified as the possible causes of Internet retailer failure: (1) high start-up cost, slow growth in sales, unprofitable sales, and high customer acquisition costs, (2) inability to meet or exceed customer expectations in fulfilment, and (3) failure to retain existing customers and attract new ones (Tarn et al., 2003). Despite their complexity and difficulty, solving these problems is critical for success.

After the dotcoms catastrophe, the attempt for understanding an appropriate strategy increased. Grewal et al. (2004) distinguished Internet retailing strategy as having two approaches: business models and positioning. The business model approach has been discussed in the earlier section on business format. In this approach, for example, an Internet retailer may take a format as a pure-play or clicks-&-mortar. The positioning approach refers to an Internet retailer's decision regarding products and market (Porter, 2001). Grewal et al. (2004) argued that most of the early entries into the Internet retailing business were positioned as low-priced providers. They also contended that the nature of Internet technology could not effectively support Internet retailers to take a differentiation position.

A further issue is what factors actually drive profitability in the Internet retailing business. Bughin (2001), and Bughin and Zeisser (2001) reported that the right classical positioning business strategy, as contended by Porter (2001), was a driver for profitability. Bughin (2001) reported that two separate successful strategies were

observed from a cluster analysis. The first strategy is a 'niche' market, based on high revenue per customer, but fewer visitors. In this category, Internet retailers focused on high-margin products and segments (Bughin, 2001). The second is a 'reach' strategy, characterised by lower revenue per customer, but a large visitor base (Bughin, 2001). Internet retailers with this strategy had a strong capability to convert visitors into customers, and it was reported that the key success factor for this strategy type was controlling non-labour costs, especially marketing costs (Bughin, 2001). In addition, the study showed that 62% of the sample belonged to a category 'stuck-in-the-middle'. These retailers had slightly better than average cost efficiency, but did not seem particularly effective in generating strong reach, revenue, or conversion capabilities (Bughin, 2001). Porter (2001) asserted that the Internet tends to weaken industry profitability without providing proprietary operational advantage, and he suggested companies should use the Internet as a complement to their traditional ways of competing.

The idea of applying classical business strategy was also supported by Coltman et al. (2002), who argued that basic business principles, such as identifying customer value propositions, and putting in the right people, process and technical resources, are still relevant for Internet retailing. Similarly, La and Kandampully (2002) asserted the appropriateness of traditional marketing process, such as determining market segmentation and maintaining interaction with customers, in the online business environment.

Brynjolfsson and Smith (2000) stated that the Internet would create a nearly perfect market, in which consumers are fully informed of prices and product offerings. In this kind of market, homogeneous goods (e.g. books and CDs) are most likely to experience strong price competition (Bakos, 1998). Karagozoglu and Lindell (2004) maintained that unprofitable operation of many Internet retailers in that product category was caused by low entry barriers, strong competition, and high new customer acquisition costs. Maltz et al. (2005) identified that high-margin Internet retailers were likely to choose niches and establish their reputations by appealing to niche audiences. Conversely, an investigation of early adopters in the Internet retailing business indicated that neither product category nor size determined the retailer's success (O'Keefe et al., 1998).

In summary, this section highlights that business strategy determines the success of Internet retailing. In contrast with the euphoria of a new economy, limited studies indicated that conventional strategy, such as the right positioning, is still relevant to this business.

2.5.3 Internet retailing operations

As discussed earlier, business performance (as well as performance measurement) should cover financial, as well as operational aspects. The earlier discussion on performance measurement framework highlighted the operations as an important aspect to be incorporated in developing performance measures. This section is aimed to identify important activities in the Internet retailing business operation.

Internet retailing as one of the retail channels shares a similar 'retailing' process with store-based retailing. Some studies have attempted to describe the operational process of Internet retailing (e.g. Burt and Sparks, 2003; Enders and Jelassi, 2000; Janenko, 2002). Enders and Jelassi (2000) have compared store-based and Internet retailing processes based on a retailer's perspective, as illustrated:

Store-based retailing process:

Sourcing → Warehousing → *Store-based* sales → Service

Internet retailing process:

Sourcing → Warehousing → *Online* sales → Handling and shipment → Service

The diagram shows that both retailing channels share common activities of sourcing products from suppliers and warehousing. Advancement of Internet technology has enabled a faster and more reliable communication between retailers and suppliers, and an improvement of planning, forecasting, and replenishment (Burt and Sparks, 2003). Despite this similarity, Internet retailers may outsource warehousing to a third party, which is not a common case for store-based retailers. A report from Retail Industry (www.retailindustry.com) indicated that over 40% of pure-play and over 20% of clicks-and-mortar retailers use a third party for providing warehousing service (Vargas, 2001).

Sourcing and warehousing are related to the inventory-replenishment decision. Bailey and Rabinovich (2005) suggested Internet retailers optimise their inventory-replenishment decisions in order to maximise profits. More merchandise in stock (inventory) will entail higher costs, but if merchandise is not in stock when a customer wants it, a retailer will incur lost sales. Internet retailers have an advantage over store-based retailers that Internet retailers might have no inventory, as the products ordered by a customer can be delivered directly 'drop-ship' from a distributor or manufacturer (Bailey and Rabinovich, 2005).

Furthermore, the next process, store-based sales, represents product merchandising and sales service (e.g. payment) performed by retailers. From a customer's view, in this process, customers select a product, pick it, pay for it in a store, and then bring it home. For Internet retailers, online sales are the main function of their business. Online merchandising is a critical issue for this business, as it should translate the complexity of store, as well as product characteristics, into web pages (Burt and Sparks, 2003). Online payment is also a part of the online sales process. Contrary to store-based retailing, Internet retailing performs handling and shipment of products ordered by a customer, which is known as a fulfilment process. In this process, after an online order is received, the information is sent to the fulfilment centre. This centre performs a series of steps to process the order: allocating the inventory for requested items, picking, packaging, and shipping. Literature indicates that fulfilment is considered one of the greatest challenges to Internet retailing (Nicholls and Watson, 2005). Fulfilling orders placed through the Internet for some reasons are different from fulfilling orders placed by other retail channels. First, the demand is unpredictable, as anyone using the Internet is a potential customer, and second, sending thousands of various items to different customers is time-consuming (Tarn et al., 2003). Store-based retailers have no experience of this process, but catalogue (mail order) retailers do have it. Consequently, catalogue retailers are more favourable towards progressing into online sales. Previous research confirmed that on-time delivery is more important than speed (Maltz et al., 2005). Internet retailers may handle the fulfilment of (tangible) products ordered by customers through the following options: (1) from store, (2) from central warehouse, (3) from *own* dedicated picking centre, (4) drop-ship from manufacturers or distributors, and (4)

outsourced to a dedicated fulfilment service, such as UPS and FedEx (Nicholls and Watson, 2005; Vargas, 2004).

The last activity, service, mainly refers to after-sales service, handling of product returns and refunds. In some cases, a retailer needs to respond if customers are not satisfied with the product they bought and they want to return it. For store-based retailers, the process of handling product return and refund is performed in the store. For Internet retailers, the figure reported by Retail Industry revealed that about 22% of pure-plays and 13% of clicks-and-mortar retailers used a third party service to perform this function (Vargas, 2004). In addition to the five processes, Janenko (2000) suggested that Internet retailers should have procedures to protect the security of information and to deal with disruption in the Internet network, because the Internet is vulnerable to hacker and virus attacks.

This study concentrates on the *forward* process, which is online sales, handling and delivery, and after-sales service. These activities are related directly to customers and representing the essence of retailing business operations. These can be simplified into two: (1) online web-based process, and (2) offline fulfilment process. Both should be incorporated in the performance measurement to ensure that the retailer delivers those processes properly. In contrast to store-based retailers, the fulfilment process is critical for Internet retailers, because the process is largely performed by retailers instead of customers. Therefore, Internet retailers should give more attention to the fulfilment-related measures in their performance measurement.

Summary of section 2.5

This section has discussed three aspects of Internet retailing business related to business strategy and performance measurement. The basic purpose of Internet retailing is to generate revenue (profit) from selling products to customers. The difference in business format, especially between pure-play and clicks-&-mortar retailers, could be related to the different focus of business objectives and strategy. In contrast to the paradigm of a new economy, the conventional principle of business strategy could be still appropriate to explain the success of Internet retailing. Regarding business operations, Internet retailers should give careful attention to the

online and fulfilment processes, and incorporate the relevant measures in their performance measurement. The next section presents the progress of performance measurement in the Internet retailing business.

2.6 Performance measurement in Internet retailing business

This section specifically reviews the progress of performance measurement studies in the Internet retailing business. This understanding is important to identify appropriate performance measures for this research.

The importance of performance measurement, as discussed above, lies in its role in the strategic management process within a firm, and its potential effect on business performance. In addition, performance measurement is important for Internet retailing business for several reasons. First, the Internet retailing business faces a dynamic/ volatile market. This business grew amazingly within an 'irrational exuberance' era, with the focus of its performance evaluation on the expectation basis, such as potential growth and potential efficiencies, rather than actual outcome (e.g. Agrawal et al., 2001; Boyer, 2001; Ring and Tigert, 2001; Starr, 2003). Since this business has been becoming more stable and more rational, it needs performance measurement which concentrates more on the evaluation of the real business health. Second, compared to store-based retailers, Internet retailers have less experience in implementing performance measurement. As reported by Neely et al. (2002), a survey among managers revealed that 96% of click-and-mortar and 100% of dotcoms claimed that they required improvements to their performance measurement systems. Third, Internet retailing business needs specific performance measures, as it shares some characteristics of traditional retailing business and online business. In measuring its performance, traditional retail business has focused on the productivity measures such as profit margin per store area and profit margin per sales person (Grewal et al., 2004; Ring et al., 2002; Walters, 1994), while online business has concentrated on the evaluation of web-traffic. Internet retailers need to have an appropriate performance framework according to their characteristics and circumstances. Literature suggests that performance measures should be up-to-date

over time. Rayport and Jaworski (2001, 2003) suggested that, for different stages of life cycle, Internet retailing needs a different focus on its performance measurement.

This section will present the evolution of performance measurement in the Internet retailing business. The evolution is classified into three stages based on the focus of measurement: (1) site popularity, (2) customer online shopping experience, and (3) business performance. Each is presented consecutively in the following sections.

2.6.1 Measuring site popularity - traffic perspective

The first stage of performance measurement in Internet retailing is focused on measuring a site's popularity. This popularity is an indicator of marketing success in introducing the virtual store to the public as potential customers. Web traffic measures or so called web metrics (e.g. Sterne, 2002) have been employed to evaluate site popularity (Karagozoglu and Lindell, 2004). These measures have been used during the early stage of the Internet retailing business growth, in which Internet retailers put a priority on fast growth, rather than profitability. Internet retailers (especially pure-plays) spent a huge amount of marketing expenditure to advertise the existence of their virtual store. The success of this marketing effort is indicated by *busy* web-traffic. Hits, page views and user sessions are the most common measurement of web traffic (Jana and Chatterjee, 2004). A hit is a request from the browser to a server for files, including the HTML page itself, graphics, audio/ video and other supporting files; page views (or page impressions) is the number of pages viewed, not including the supporting files; and user session is a measure of the number of unique users who visited a website during a certain period (Chaffey, 2002; Jana and Chatterjee, 2004). Some software applications are available in the market to measure website traffic, for example Web Trend from Net IQ Corporation, and Super Stats from MyComputers.com (Jana and Chatterjee, 2004). Ranking.com (www.ranking.com) is one among online sources providing information about online popularity of the most visited websites. A previous study suggested that the dynamic and interactive nature, as well as the complexity and extensiveness of a retailer's website, positively affected a site's popularity (Dholakia and Rego, 1998).

Web-traffic measures were employed to predict the potential success of Internet retailers. However, frequent visits are not necessarily reflecting a firm's success, as Betts (2001) reported: "*The sad truth about electronic commerce is that although a web site may receive millions of visitors, only about 3% actually buy anything*". There is also evidence that web-traffic was not a sufficient condition to differentiate profitable and non-profitable Internet retailers (Bughin, 2001). Web-traffic measures are appropriate in a condition when Internet retailers are in the early stage of their growth. As Internet retailers move to a later stage with a new focus, for example to maintain customers, web-traffic measures become incomplete. The next section discusses performance measurement from a customer perspective.

2.6.2 Measuring online shopping experience - customer perspective

The second stage of performance measurement evolution in the Internet retailing business is measuring a customer's online shopping experience. This focus came from the need to satisfy customers and to make them loyal. Loyal customers are expected to make repurchase. Measuring a customer's shopping experience is parallel with measuring service quality in the traditional retailing context. Measuring service quality from a customer's view is important to evaluate the Internet retailer's performance (Torkzadeh and Dhillon, 2002). Service quality is an essential determinant of Internet retailer success, and predicted as more important than low price (Wolfenbarger and Gilly, 2003; Zeithaml et al., 2002). Service quality is related to customer satisfaction and customer loyalty, which subsequently both affect profitability (Bloemer and de Ruyter, 1998; Long and McMellon, 2004; Rafiq and Fulford, 2005). Customer loyalty is critical for Internet retailing because firstly, acquiring customers through the web is costly, and secondly, the competitor is just *a mouse click away* (Semeijn et al., 2005). Many early online transactions are normally unprofitable because of high acquisition cost; only for subsequent transactions, can an Internet retailer generate profits (Srinivasan, 2002).

A customer's shopping experience comes from the interaction between a retailer and a customer. Among the five processes of this business discussed before, online sales, fulfilment, and after-sales service are related to the customer's shopping experience. As those processes represent the main interaction of a customer and a retailer, they

are likely to affect customer satisfaction (Wolfenbarger and Gilly, 2003; Semeijn et al, 2005). After-sales service has both an online aspect, such as a communication with supporting staff and a return policy, and an offline aspect, such as the product return handling. Therefore, those three processes could be categorised into two: online and offline processes.

First, an online process is related to customers' experience regarding their interaction with a retailer's website. Researchers have investigated web-quality from the customers' view. An underlying idea is that the quality of website may influence a person's attitude towards purchasing (van der Heijden and Verhagen, 2004), and may increase customer satisfaction (Feinberg and Kadam, 2002). As a website is used by an Internet retailer to communicate with customers and to facilitate business transactions, the retailer should ensure that the website delivers a positive experience to customers (van der Merwe and Bekker, 2003). Researchers have proposed different frameworks to examine web-quality and its effect on customer satisfaction. Tamimi et al. (2003) suggested four elements: (1) home page, (2) product catalogue, (3) order form, and (4) customer service and support. Szymanski and Hise (2000) suggested four web features as drivers of customer satisfaction: (1) convenience, (2) merchandising, (3) site design, and (4) financial security. Srinivasan et al. (2002) suggested eight web-related features affecting customer satisfaction and loyalty: (1) customisation, (2) contact interactivity, (3) cultivation, (4) care, (5) community, (6) choice, (7) convenience, and (8) character. McKinney et al. (2002) also suggested that web features, categorised into information quality and system quality, affected customer satisfaction. Similarly, Feinberg et al. (2002) suggested that the availability of web attributes, such as chatting facility, mailing address, search engine, links, and company profile, were associated with customer satisfaction. In addition, Huang (2005) suggested that the inclusion of the entertainment aspect of web attribute would encourage customers to stay longer and execute purchase.

Collectively, those studies have highlighted the importance of web-quality in affecting customer satisfaction and loyalty. As the interaction between a retailer and customers is mainly through the web, high quality of web-features is critical to gain customer satisfaction and loyalty. Evaluating web-site quality is important, as Forrester Research reported: "*Poor Web design will result in a loss of 50 per cent of*

potential sales due to users being unable to find what they want, and a loss of 40 per cent of potential repeat visits due to initial negative experience” (van der Merwe and Bekker, 2003).

Second, an offline process mainly refers to fulfilling orders placed over the Internet (e.g. Tarn et al., 2003). An excellent online process will have no meaning if customers do not receive their order as they expect. Semeijn et al. (2005), and Wolfinbarger and Gilly (2003) argued that fulfilment is one of the drivers for customer satisfaction. From a customer’s point of view, good fulfilment means that the product received is the same as its description in the website, and is delivered/received on time, as promised by the retailer. In addition, customers also expect: (1) correct charges debited from credit card, (2) availability of order tracking, and (3) reasonable return policy (Wolfinbarger and Gilly, 2003). Some performance measures of the offline process, which are related to a customer’s shopping experience, are click-to-deliver time (Rabinovich and Bailey, 2004) and percentage of error in goods picked and delivered to customer (Janenko, 2002).

Some studies have put together both online and offline processes into a concept of *e-service quality* as an extension of a *traditional* service quality (e.g. Parasuraman et al., 1988) used for non-Internet-based customers. Wolfinbarger and Gilly (2003) proposed a measurement framework called eTailQ, which consists of four dimensions: (1) website design, (2) fulfilment/ reliability, (3) privacy/ security, and (4) customer service. This framework has incorporated online and offline service experienced by a customer. Semeijn et al. (2005) investigated the effect of both online service quality and offline fulfilment on customer satisfaction and customer loyalty. In a more recent study, Parasuraman et al. (2005) defined e-service quality (e-S-QUAL) broadly to encompass all phases of a customer’s interactions with a web site; it refers to the extent to which a web site facilitates efficient and effective shopping, purchasing, and delivery. The e-S-QUAL scale consists of basic and recovery e-S-QUAL (Parasuraman et al., 2005). The basic e-S-QUAL includes four dimensions: (1) efficiency, (2) fulfilment, (3) system availability, and (4) privacy. The recovery e-S-QUAL contains three dimensions: (1) responsiveness, (2) compensation, and (3) contact; and it is relevant only to customers who have non-routine needs with the sites (Parasuraman et al., 2005).

In summary, performance measurement of Internet retailing has progressed from site popularity to service quality. The evaluation of service quality focuses on customer perception of online web-quality and offline fulfilment process. Delivering excellent process could increase customer satisfaction and loyalty. Customer satisfaction and loyalty measures have been recognised as leading indicators of business performance. As Internet retailing is progressing and becoming more mature, service quality measures alone are incomplete to capture the whole Internet retailer's performance. The next section discusses the search for a more comprehensive framework to measure business performance of the Internet retailing business.

2.6.3 Measuring business performance

The third stage of the performance measurement evolution in the Internet retailing business focuses on measuring business performance. The pursuit for a more comprehensive framework emerged following dotcoms' failure. This attempt is based on a paradigm that, like other business, Internet retailing business should be evaluated more rationally than the other traditional one. As previously discussed, literature suggests that business performance should be evaluated with financial and operational measures. Among a few studies which have integrated financial and operational measures in this area, five are presented in this section.

First, Agrawal et al. (2001) developed an e-performance scorecard to measure a site's success in attracting, converting, and retaining visitors. This framework was developed following dotcoms' failure, and aimed at understanding the key indicators of success. This performance framework views the lifetime customer value as the basis of long-term profitability of Internet retailing, and the model is built on two key aspects: the efficiency of costs and the effectiveness of a site's operation (Agrawal et al., 2001). This e-performance scorecard contained 21 indicators, and it was grouped into three: attraction, conversion, and retention. Some of those indicators are visitor acquisition cost, revenue per transaction, and number of transactions per repeat customer (Agrawal et al., 2001). This model is explicitly a customer-centric performance, though it has integrated cost, revenue, and profit in its measures.

Second, Rayport and Jaworsky (2001, 2003) proposed a comprehensive framework called 'Performance Dashboard' to measure the progress and health of an online business. This model was designed for a traditional business adopting an online business, in which clicks-&-mortar retailer is a part. The model comprises five categories of metrics. First, *market-opportunity metrics* assess the degree to which a firm can accurately estimate the market opportunity. Second, *business model metrics* assess customer perceptions of the benefits that a site offers relative to its competitors (Rayport and Jaworsky, 2001, 2003). Third, *branding and implementation metrics* assess the supply-chain performance, organisational dynamics, and marketing-communication effectiveness. Fourth, *customer interface and outcomes metrics* assess customer satisfaction, average order size, and customer profitability. Fifth, *financial metrics* assess the revenues, costs, and profits (Rayport and Jaworsky, 2001, 2003). This framework has attempted to cover many aspects; as a consequence, it needs a lot of data from various internal and external sources during its implementation. In addition, the framework is a general model for online business rather than a specific one for Internet retailing, as the focus of this research.

Third, Neely et al. (2002) showed the suitability of the Performance Prism framework in the online business context. As discussed in the earlier section, the Performance Prism provides five perspectives to guide managers in developing performance measures: (1) stakeholder satisfaction, (2) strategy, (3) process, (4) capability, and (5) stakeholder contribution. As a comment previously made, this framework is more appropriate to measure organisational effectiveness rather than business performance, because it attempts to cover all stakeholders in presenting a firm's performance. The application of this framework in the online business context has no particular requirements, because of its generality.

Fourth, Chaffey et al. (2006) proposed a performance measurement framework to assess the effectiveness of the Internet retailing channel. The framework consists of five aspects: (1) channel promotion, (2) channel buyer behaviour, (3) channel satisfaction, (4) channel outcomes, and (5) channel profitability. Chaffey et al. (2006) explained that the channel promotion assesses the way customers visit a site, whether from an advertisement they have seen or from a *referral* site. Furthermore, they described that the channel buyer behaviour assesses the site's content, as well as

the time and duration it is visited. The channel satisfaction is used to assess a customer's opinion of the website content and the supporting services, while the channel outcomes assess the results of a customer's visit, such as the number of sales and conversion rate of visitors to purchase (Chaffey et al., 2006). Finally, the channel profitability is used to assess the profitability of the Internet retailing channel (Chaffey et al., 2006).

Fifth, a recent study, by Fink (2006), suggested a framework to measure e-commerce performance based on six different applications of e-commerce in an organisation: (1) Visitor relationship management (VRM), (2) Business-to-customer (B2C) e-commerce, (3) Business-to-business (B2B) e-commerce, (4) Customer relationship management (CRM), (5) Electronic procurement (EP), and (6) Enterprise resource planning (ERP). An Internet retailer must have B2C e-commerce application and may have one or more others, such as CRM and VRM. In relation to B2C application, Fink (2006) proposed five aspects to measure: (1) new customers, (2) existing customers, (3) order delivery cycle time, (4) service requests, and (5) order fulfilment. This framework focuses on measuring performance of e-commerce application rather than performance of online business, especially Internet retailing business.

In summary, those five studies have proposed different frameworks to measure online business performance in a more comprehensive way. However, their application does not specifically focus on financial and operational measures, as suggested by the literature on business performance. In addition, they are not specifically designed for Internet retailing business.

Summary of section 2.6

This section has highlighted the progress of performance measurement for Internet retailing business, though most studies presented here are designed for online business in general rather than specifically for Internet retailing. The literature indicates that the scope of performance measurement has moved from the web-related measures to the more complex measures involving real business performance measures such as profitability.

2.7 Need for further study

Based on the review of literature, this section draws attention to the need for further study in two areas.

1. Current knowledge about performance measurement in Internet retailing business

A considerable amount of studies on performance measurement have been conducted in various business sectors. Literature suggested that performance measurement should be multidimensional, and include both financial and non-financial (operational) measures, in order to cover multiple aspects of business performance. However, the study on performance measurement in the Internet retailing business is limited. Among the few studies in this sector, some have concentrated on issues around web-traffic, web-quality, service quality, and customer satisfaction. As Internet retailing business is becoming mature, a more comprehensive framework to measure business performance is necessary. Furthermore, as Internet retailing business is dynamic, the knowledge about the current state of performance measurement is important. In reality, knowledge in this area is limited. It is unknown, for example, whether Internet retailers still focus on *primitive* performance indicators, such as *hits*, or have already implemented a more complex performance measurement.

2. Significance of performance measurement

Literature indicates that performance measurement is an integral part of the strategic management process within an organisation. In this process, performance measurement serves as a feedback that links business performance to business strategy. An investigation of performance measurement and its significance should incorporate business strategy and business performance. The relationship between business strategy and business performance has been predicted, and a few studies have been conducted. However, the relationship between business strategy and performance measurement is less understood. Some studies predicted that the performance measurement process creates awareness among employees regarding a

firm's goal, facilitates information sharing, and supports decision-making. Therefore, it is possible that the implementation of performance measurement itself could affect business performance. Empirical evidence is necessary to understand the nature of this relationship. It is especially important for Internet retailing business, which is new in the implementation of performance measurement. The investigation may provide justification, whether implementing performance measurement is worthwhile. As stated earlier, the investigation of performance measurement should incorporate business strategy. Internet retailers are still new in their efforts to select appropriate business strategy. An understanding of the successful strategy, its effects on business performance, and its link to performance measurement will be valuable. Further investigation, therefore, is needed. As a response to this need, the next chapter presents a research framework and design.

Chapter 3

RESEARCH FRAMEWORK AND RESEARCH METHOD

3.1 Introduction

This chapter takes a further step in responding to the need for further study summarised in the previous chapter. The discussion will cover the development of research framework and research method.

3.2 Research framework

This section discusses the development of the research framework in four parts. First, research questions and specific research objectives are formulated based on the need for further study. Second, conceptual models are developed. Third, this section discusses each research variable. Finally, predicted relationships are developed into propositions.

3.2.1 Research questions

As discussed at the end of Chapter 2 (section 2.7), two issues about performance measurement in Internet retailing have been selected for further study. Firstly, there is little knowledge of performance measurement implemented by Internet retailers in the UK, and secondly, the significance of performance measurement is less understood. Consequently, two research questions are formulated for this study.

Research Question 1: What is the current state of performance measurement implemented by Internet retailing business?

The answer to this question will inform what performance indicators are currently measured by Internet retailers, and how they use the information obtained from that. As Internet retailing business is dynamic and also becoming more mature, the

knowledge of the current situation is necessary. Knowledge about performance measurement is important as Internet retailers are still new in its implementation. The answer to the research question will inform, for example, the essential performance indicators in the current situation.

Research Question 2: In the Internet retailing business context, to what extent and in what ways are business strategy, performance measurement, and business performance related to each other?

The answer to this question will inform what kinds of business strategy and performance measurement are associated with better business performance. This information is especially important for Internet retailers which are still new in implementing performance measurement and selecting appropriate strategy. The answer also provides justification whether implementing performance measurement is valuable by considering its effect on business performance.

Based on these two research questions, a conceptual model is developed for each of them. The next two sections subsequently present the development of the conceptual models.

3.2.2 Development of conceptual model 1

The first research question focuses on the identification of the current state of performance measurement implemented by Internet retailers. The focus is on the identification of what performance indicators are being measured and how Internet retailers use the information obtained. As Internet retailers have different attributes, it is assumed that there is such kind of relationship between what they are measuring and their business profile. By measuring their performance, Internet retailers obtain information that can be used for various purposes. This aspect represents the use of performance measurement. The development of a conceptual model for this research question covers the development of conceptual relationships between business profile and performance measurement, and between performance measurement and the use of information obtained from it.

Business profile is investigated in four attributes: product category, business size, business format, and maturity. There are other attributes of business profile, such as geographical location and ownership, not investigated because they are assumed as irrelevant to the topic being studied.

1. Product Category → Performance Measurement

So far, there is no prior knowledge about the relationship between product categories sold online and performance measurement implemented by Internet retailers. Literature indicates that certain products, such as books, CDs, and DVDs, are more suitable sold online than the others, such as clothing and perfume (e.g. de Kare-Silver, 2000; Li and Gery, 2000; Liang and Huang, 1998; Vijayasarathy, 2002). The more suitable product categories may attract many Internet retailers, which subsequently results in higher business competition. Internet retailers with those product categories may have more concern in performance measurement in order to be well-informed about their progress. Therefore, it is predicted that there is an association between product category and performance measurement.

2. Business Format → Performance Measurement

Business format refers to the way Internet retailing is operated in a company. As discussed in Chapter 2, three main business formats are pure-play, home-shopping, and clicks-&-mortar. It is questionable whether there is a relationship between business format and performance measurement. Pure-play retailers are relatively new in the retailing business, as they do not emerge from traditional retailers. They might have more concern to measure more performance indicators to track their online business progress, as it is their only retail channel. On the other hand, clicks-&-mortar and home-shopping retailers have previous experiences in the retailing business, and they might have less concern compared to pure-plays in tracking their Internet retailing operation. For them, the success of this Internet channel could be achieved indirectly through the sales increase in their traditional channel. Consequently, it is possible there is a relationship between business format and performance measurement.

3. Business Size → Performance Measurement

Relatively bigger Internet retailers could be associated with a more complex operation because of more product assortments, more orders, and more customers. Internet retailers with one complex operation may have more concern in performance measurement in order to be well-informed about their progress. Therefore, it is possible that there is an association between business size and performance measurement.

4. Maturity → Performance Measurement

The level of maturity could be associated with the life-cycle stages (Rayport and Jaworski, 2002). A more mature business could be associated with a more complex operation. Internet retailers in the later stages of life cycle may need to measure more aspects of business performance. As a comparative illustration, Internet retailers in the early stage may focus on web traffic measures. Consequently, it is possible that there is an association between the level of maturity and performance measurement.

5. Performance Measurement → Use of Performance Measurement

Measuring performance will produce information about the business progress. The more information available, the higher possibility it could support managerial activities and decision-making. Therefore, it is predicted that there is a relationship between performance measurement and the use of information obtained from it to support managerial activities and decision-making.

Based on these relationships, a conceptual model is developed. The model shown in Figure 3.1 is associated with the first research question, which aims to investigate the current state of performance measurement implemented by Internet retailers. This model consists of three main variables: (1) business profile, (2) performance measurement, and (3) use of performance measurement. There are four variables included in the business profile: (1) product category, (2) business format, (2) business size, and (4) maturity. Arrow signs in the model represent relationships between variables. Four relationships (r-1 to r-4) link four variables of business

profile and performance measurement, and another relationship (r-5) links performance measurement and use of performance measurement.

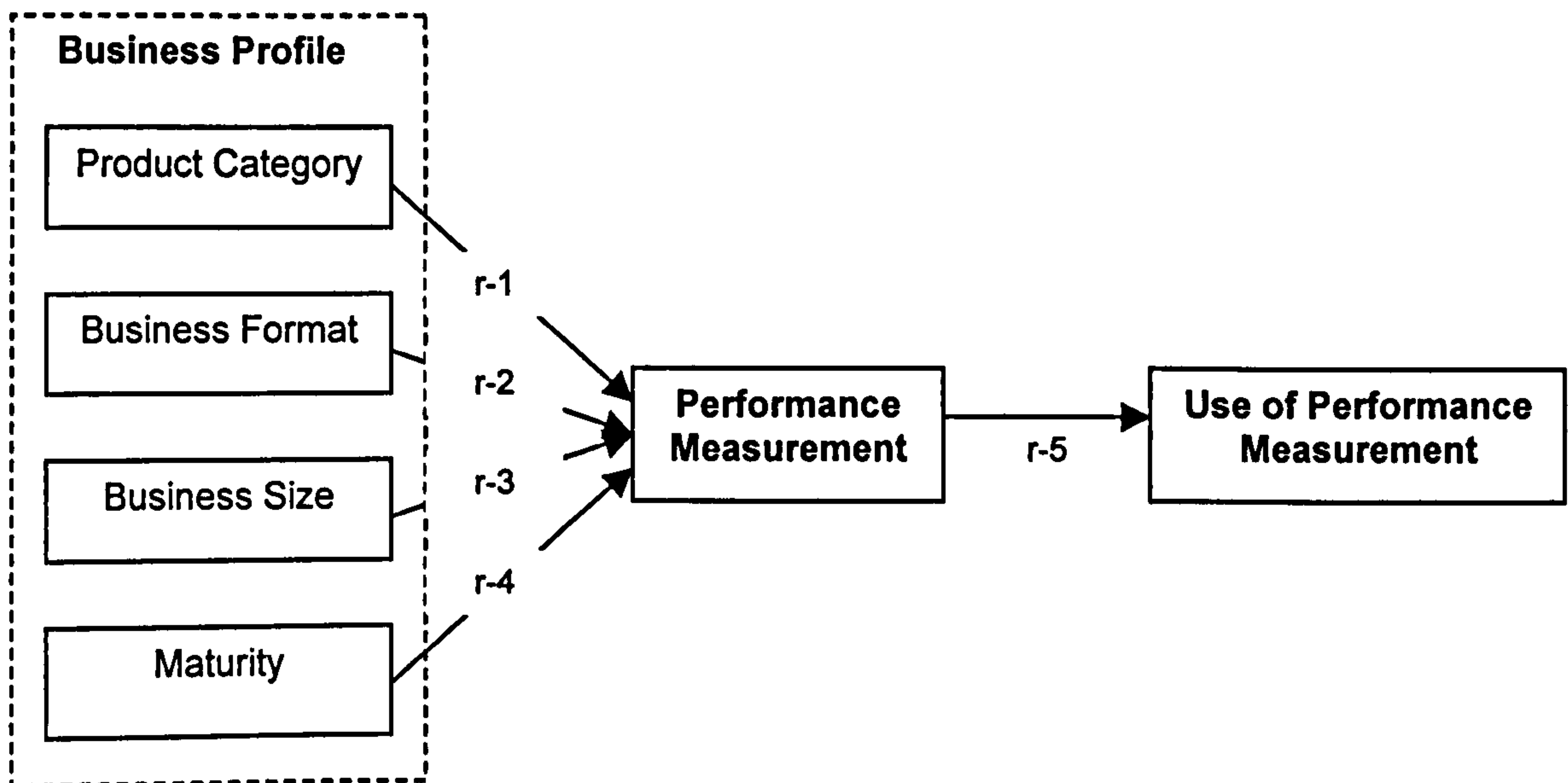


Figure 3.1: First research model

Following the first research question and the conceptual model, four specific objectives are formulated:

1. To describe performance indicators measured by Internet retailers (O-1)
2. To explain whether business profile is associated with performance measurement implemented by Internet retailers (O-2)
3. To describe the way Internet retailers use the information obtained from performance measurement (O-3)
4. To explain whether performance measurement implemented by Internet retailers is associated with the use of information obtained (O-4)

The investigation of the ‘performance measurement’ variable is related to the achievement of objective O-1, and the links between four variables of business profile and performance measurement (r-1 to r-4) are associated with objective O-2. The investigation of the ‘use of performance measurement’ variable is related to the achievement of objective O-3. Finally, objective O-4 is represented by the link connecting performance measurement and the use of performance measurement (r-5).

3.2.3 Development of conceptual model 2

The second research model is focused on the investigation of relationships involving performance measurement, strategic orientation, and business performance. Literature indicates that performance measurement is an integral part of the strategic management process within an organisation. In this process, performance measurement serves as a feedback mechanism that links business performance to business strategy. An investigation of performance measurement, and its significance, should incorporate business strategy and business performance. The relationship between the business strategy and business performance has been predicted, and a few studies have tried to understand it. However, the relationship between business strategy and performance measurement is less understood. Some studies predicted that the performance measurement process creates awareness among employees of a firm's goals, facilitates information sharing, and supports decision-making. Therefore, it is possible that the implementation of performance measurement itself could affect business performance. This idea departs from the existing knowledge that performance measurement plays its role as a control mechanism to provide feedback of business performance to business strategy. Performance measurement itself, together with business strategy, is predicted to affect business performance. Empirical evidence is necessary to understand the nature of this relationship. It is especially important for Internet retailing business, which is new in the implementation of performance measurement. The investigation will provide justification whether implementing performance measurement is worthwhile. As stated earlier, the investigation of performance measurement should incorporate business strategy. Internet retailers are still new in their efforts to select appropriate business strategy. An understanding of the successful strategy, its effects on business performance, and its link to performance measurement will be valuable. Four conceptual links are presented as follows:

1. Strategic Orientation → Performance Measurement

A prior study conducted in manufacturing companies predicted the association between strategic priorities and the selection of non-financial performance indicators (Hoque, 2004). A similar relationship might apply for Internet retailing business.

Therefore, it is possible that there is a relationship between strategic orientation and performance measurement in the context of Internet retailing.

2. Strategic Orientation → Business Performance

As discussed in Chapter 2, the link between business strategy and business performance is a well-established paradigm in the strategic management area. Some studies have attempted to investigate the link directly (e.g. Morgan and Strong, 2003; Venkatraman, 1989), or indirectly by involving a third factor (Bergeron et al., 2001; Cragg et al., 2002; Croteau and Bergeron, 2001; Homburg et al., 1999; Prajogo and Sohal, 2006; Rajagopalan, 1996; Slater and Olson, 2000). However, the results are still uncertain, and none of them is in the Internet retailing business context. Further empirical evidence is necessary to understand the nature of this relationship, especially in the context of Internet retailing.

3. Performance Measurement → Business Performance

The ultimate aim in implementing a performance measurement system is to improve a firm's performance (Kotelnikov, 2005). If an organisation implements its performance measurement in the right way, the information that is generated will tell where the organisation is, how it is doing, and where it is going. The effect of performance measurement on business performance was rarely studied. One of limited studies in this area, Evans (2004), suggested that the number of performance indicators measured was related to the firm's performance. For Internet retailers with little experience in implementing performance measurement, this justification is critical. By measuring more performance indicators, an Internet retailer may obtain better information about its business operation, and it may use the information to improve its business performance. Therefore, it is possible there is an association between performance measurement implemented by Internet retailers and their business performance.

4. (Strategic Orientation and Performance Measurement) → Business Performance

Following those three conceptual relationships, it is predicted that strategic orientation and performance measurement together affect business performance. The examination of this relationship could indicate the real effect of strategic orientation on business performance, as well as performance measurement on business performance. The investigation could possibly show that strategic orientation and performance measurement have different effects on business performance. In summary, it is predicted that there is an association *between* a combination of strategic orientation chosen by Internet retailers and their performance measurement, *and* their business performance.

Based on those four links, a conceptual model is developed (Figure. 3.2).

Research model - 2

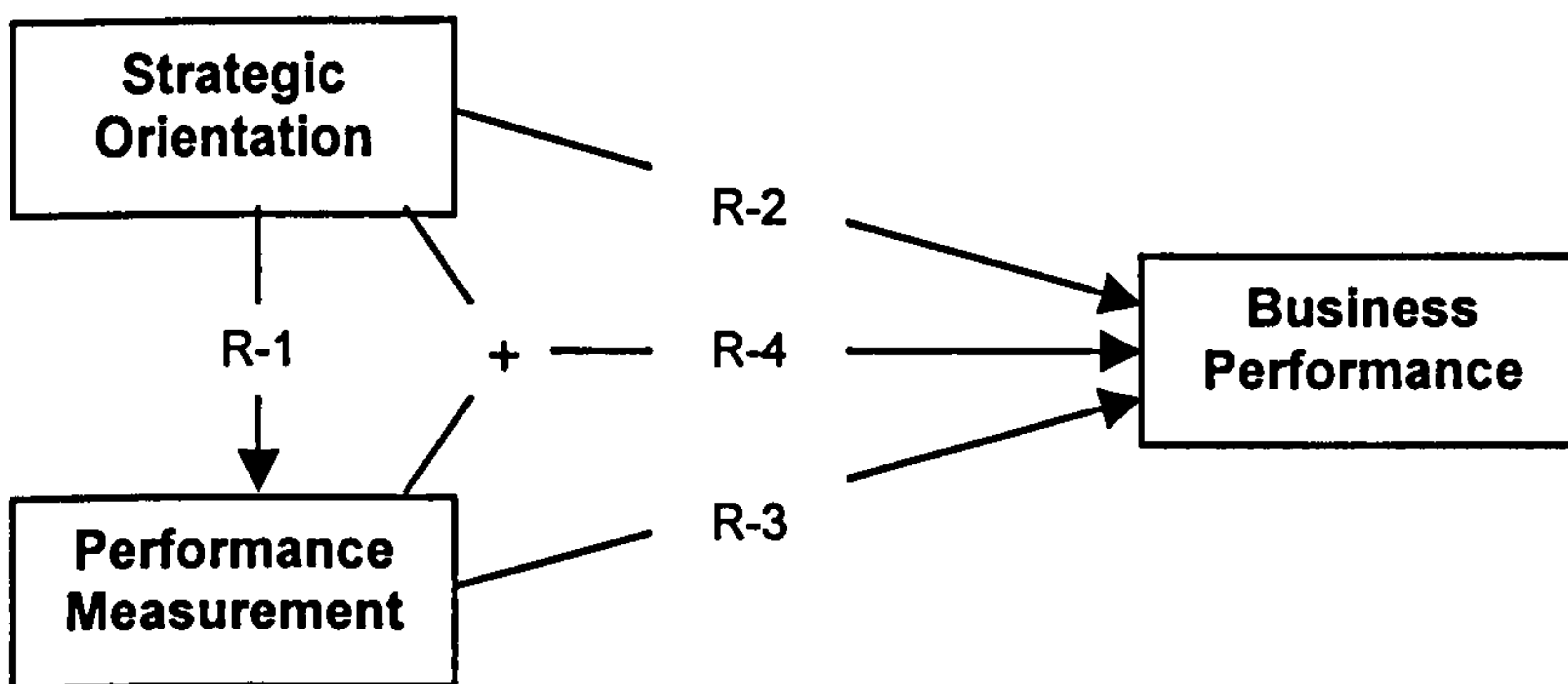


Figure 3.2: Second research model

Figure 3.2 shows a research model for the second research question, which aims to investigate the nature of relationships involving strategic orientation, performance measurement, and business performance. This model consists of three main research variables: (1) performance measurement, (2) strategic orientation, and (3) business performance. The performance measurement variable is basically the same as that in the first research model, but both have different focus of analysis. In the first research model, this variable is investigated as individual performance indicators, or five dimensions (presented shortly), or number of performance indicators, while in

the second model as number of performance indicators. Four arrow signs (R-1 to R-4) represent relationships among these three variables.

Following the second research question and the conceptual model, five specific objectives are formulated:

1. To explain the relationship between business strategy and performance measurement (O-5);
2. To explain the relationship between business strategy and business performance (O-6);
3. To explain the relationship between performance measurement and business performance (O-7);
4. To explain the relationship *between* a combination of performance measurement and business strategy *and* business performance (O-8).

The investigation of the relationship between strategic orientation and performance measurement (R-1) is to satisfy objective O-5, between strategic orientation and business performance (R-2) is to achieve objective O-6, and between performance measurement and business performance (R-3) is to achieve objective O-7. Finally, objective O-8 is indicated by the relationship *between* a combination of strategic orientation and performance measurement *and* business performance (R-4).

The next section presents in detail each of five variables involved in both research models.

3.2.4 Major variables

This section explains five major research variables presented in both research models.

1. Business Profile

Business profile refers to a set of intrinsic attributes of Internet retailers. Those attributes can be used to classify Internet retailers and possibly to be a control

variable in investigating relationships. There are a number of intrinsic attributes of Internet retailing, but this study focuses on four major ones: (1) product category, (2) business format, (3) business size, and (4) maturity. Each of these is described sequentially.

(i) Product category

Previous research indicated that product category is an important attribute in Internet retailing studies. Product category has been predicted to be associated with the suitability for online sales (de Kare-Silver, 2000; Li and Gery, 2000; Liang and Huang, 1998; Vijayasarithi, 2002), strategic positioning (Bughin, 2001), and the adoption rate of Internet channel among traditional retailers (Ellis-Chadwick et al., 2002). It is probable that a more suitable product category, such as entertainment (e.g. books, CDs, DVDs) may attract more Internet retailers.

Despite numerous products sold online, an appropriate classification of product categories was not available for use in this study. Therefore, some efforts have been made to develop it. The development process included three steps. The first was to find a classification from the literature that can be used as a reference. A classification developed by Ellis-Chadwick, Doherty and Hart was adopted (Doherty and Ellis-Chadwick, 2003; Doherty et al., 1999; Ellis-Chadwick et al., 2002; Hart et al., 2000). This classification is based on retailing activities rather than product categories. It incorporates product-based classification (e.g. toys, health and beauty, electrical goods) and retail format (e.g. home shopping/ mail order). Two major categories in that classification, namely home shopping and mixed product, were not suitable for this study because both are not product categories.

The second was to identify product classification used by online shopping directories. Fifteen websites of UK shopping online directories searched using Google were explored. List of product categories from these 15 sites is presented in Appendix A. As this research is focused on Internet retailers selling tangible goods, intangible product categories, such as auction, betting, insurance, finance, Internet service and travel, were excluded. Similar product categories, then, were grouped. Based on these classifications and the one developed by Ellis-Chadwick, Doherty

and Hart, five major groups with 13 specific product categories are produced (Table 3.1).

Table 3.1: Product categories

Major	Specific
1. Food & Drink	1. Grocery
	2. Alcohol and Beverages
2. Clothing & Accessories	3. Clothing and Accessories
	4. Footwear
	5. Jewellery
3. Home & DIY	6. Furnishing
	7. Electrical Goods
	8. DIY and Gardening
4. Leisure & Entertainment	9. Sports Goods
	10. Toys and Hobbies
	11. Books and Stationery
	12. Video / DVD / CD and Software
5. Health & Beauty	13. Health & Beauty

The third step was to test whether this classification can be used to identify products offered by a number of Internet retailers. Fifty Internet retailer sites were selected randomly from the planned sample list, using a random number generator. Products sold in these sites were mapped using that classification (Appendix A). This exploration indicated that Internet retailers could sell one or more product categories. In summary, the classification shown in Table 3.11 is used in this study.

(ii) Business format

Business format refers to a business model in which Internet sales are conducted. This research adopts three business formats, as discussed in Chapter 2: (1) pure-play, (2) clicks-&-mortar, and (3) home shopping. For all of these formats, this research concentrates on the Internet retailing operation part only. For a pure-play retailer, as Internet is the only retail channel, the investigation will refer to the company. However, for clicks-&-mortar and home shopping retailers, the investigation covers only their Internet retailing operations. This selection is made to provide a comparable unit of analysis. Business format is included because it has been mostly used to classify Internet retailing (e.g. Chan et al., 2001; Jones et al., 2002; Laudon and Traver, 2002; Liang et al., 2004; Oinas, 2002).

(iii) Business size

Business size is widely used in many studies, published business directories, and statistical reports from government, to classify firms. However, there is little knowledge on how to determine business size for Internet retailing. In this limitation, this study adopts two conventional indicators: the amount of annual sales, and the number of staff involved in the online business operation. For store-based retailing, annual sales and the number of employees have been used as variables to analyse the productivity of store-performance (e.g. Grewal et al., 2004; Levy and Weitz, 2004; Ring et al., 2004). The Retail Directory published by Hemming Information Services (2005) has used annual sales and the number of employees as attributes of retailers. Similar to other retailing channels, annual sales is assumed relevant to the Internet retailing channel. However, the number of employees involved in the online business operation should be interpreted cautiously as an indicator of business size. As discussed in Chapter 2, some Internet retailers may outsource certain activities, such as warehousing and fulfilment, while the others may do all activities in-house.

(iv) Maturity

Maturity is indicated by the period (age) of online sales operation. The rapid progress of Internet retailing business makes it is possible for an Internet retailer to pass through different stages of a life cycle within a relatively short period. Rayport and Jaworski (2001, 2003) suggested that the maturity of online business could be related to different focus of strategy and performance measurement. For this reason, maturity is included as a variable of business profile.

2. Performance Measurement

This variable is the central theme of this study. Performance measurement, in this study, refers to a range of multidimensional performance indicators measured by an Internet retailer to evaluate its business performance. As there was no appropriate list available, a list of performance indicators was developed for this study. This process involved literature-based development and three phases of pre-test to ensure the validity of its content. In the first step, a number of performance indicators

considered suitable for Internet retailing were drawn from the literature. Previous studies that proposed, investigated or highlighted performance indicators of Internet retailing business (or e-commerce in general) were used as a reference to develop the list. Then those performance indicators were examined, combined, deleted, or modified. Furthermore, the list was refined through three times of pre-testing, which will be discussed in Chapter 4 as a part of the questionnaire development process.

As discussed in Chapter 2, a *structural* framework is essential in developing performance measures (Folan and Browne, 2005; Kaplan and Norton, 1992; Laitinen, 2002; Neely et al., 1995, 1997). A structural framework consisting of five dimensions was developed for this study. First, *financial dimension* refers to a set of performance indicators associated with financial-related measures. These performance indicators provide information to the management about the success of an Internet retailer, in terms of cost of acquiring and retaining customers, cost of fulfilment process, revenue generation, and profitability. The importance of the financial dimension, as the ultimate measure of business success, is formulated explicitly in the balanced scorecard (BSC) model (Kaplan and Norton, 1992). In the online business context, a number of financial measures have been proposed by several studies (e.g. Agrawal et al., 2001; Barsh et al., 2000; Bughin, 2001; Chaffey, 2002; Cotter, 2002; Neely et al., 2002; Rayport and Jaworski, 2003; Vargas, 2002). In a theoretical perspective, the inclusion of the financial dimension is associated with the efficient business process as one of the factors for explaining business performance (Stoelhorst and Raaij, 2004).

Second, *market-sales dimension* refers to a set of performance indicators associated with sales and market-related measures. These performance indicators provide information to the management about the success of Internet retailing, in terms of market coverage and sales. In the online business context, some related indicators have been proposed by several studies (Agrawal et al., 2001; Barsh et al., 2000; Bughin, 2001; Neely et al., 2002). In a theoretical perspective, the inclusion of the market-sales dimension is associated with positional advantage as one of the factors for explaining business performance (Porter, 1980; Stoelhorst and Raaij, 2004; White and Hamermesh, 1981).

Third, *customer dimension* refers to a set of performance indicators associated with customer acquisition and customer retention. This dimension provides information to the management about the success of Internet retailing, in terms of attracting visitors, converting them into customers, and maintaining them for subsequent purchases. In the online business context, various measures of customer dimension have been proposed by several studies (Agrawal et al., 2001; Bughin, 2001; Chaffey, 2002; Cotter, 2002; Neely et al., 2002; Rayport and Jaworski, 2003; Vargas, 2002). In a theoretical perspective, the inclusion of the customer dimension is associated with the resource-based view as one of the factors for explaining business performance (Stoelhorst and Raaij, 2004). Based on this perspective (Prahalad and Hamel, 1990; Wernerfelt, 1984), this dimension is aimed to measure an Internet retailer's ability to develop unique resources and competencies to attract visitors and to maintain them for subsequent purchases.

Fourth, *web dimension* refers to a set of performance indicators associated with web-traffic and web-quality. This dimension provides information to the management about the success of Internet retailing in managing an online web process. In the online business context, various measures of web dimension have been proposed by several studies (e.g. Agrawal et al., 2001; Bughin, 2001; Neely et al., 2002; Rayport and Jaworski, 2003; Srinivasan et al., 2002; Szymanski and Hise, 2000; Tamimi et al., 2003). Web dimension represents the measurement of an online part of Internet retailing operations, as discussed in Chapter 2. In a theoretical perspective, the inclusion of web dimension is associated with the resource-based view as one of the factors for explaining business performance (Stoelhorst and Raaij, 2004). Based on this perspective (Prahalad and Hamel, 1990; Wernerfelt, 1984), the web dimension is aimed to measure an Internet retailer's ability to develop unique resources and competencies in managing its web site.

Fifth, *process dimension* refers to a set of performance indicators associated with fulfilment process and after-sales service. This dimension provides information to the management about the success of Internet retailing in managing an offline process. In the online business context, various measures of process dimension have been proposed by several studies (e.g. Janenko, 2002; Neely et al., 2002; Rabinovich and Bailey, 2004; Tamimi et al., 2003). In a theoretical perspective, the inclusion of

process dimension is associated with the resource-based view as one of the factors for explaining business performance (Stoelhorst and Raaij, 2004). Based on this perspective (Prahalad and Hamel, 1990; Wernerfelt, 1984), this dimension is aimed to measure an Internet retailer’s ability to develop unique resources and competencies in managing the fulfilment and after-sales service processes. Table 3.2 presents these five dimensions and 30 performance indicators.

Table 3.2: List of performance indicators

Dimension	Sub-dimension	Indicators	References*)
1. Financial	Profitability	Profit margin	3, 4, 5, 10, 14
		Revenue per customer	1
		Revenue per transaction	1
	Cost efficiency	Acquisition cost	1, 5, 6, 8, 10, 14
		Customer maintenance cost	1, 8
		Cost of fulfilment	3, 14
2. Market	Sales	Total sales	1, 3, 8
		Sales value per transaction	1
		Ratio of sales overseas	16
	Market	Market share	8
		Number of orders (transactions)	1
		Number of customers	1, 4
3. Customer	Customer acquisition	Conversion rate visitor to registration	5
		Conversion rate visitor to purchase	5, 6, 8, 14
		Number of newsletter subscribers	10, 15
	Customer retention	Customer churn rate	1, 10
		Repeated sales per each customer	1, 8, 14
		Customer extension	15
4. Web	Web traffic	Number of visits	1, 10
		Unique visitors	4, 10
		Page views	5
	Web quality	Web-site’s usability	2
		Web-site’s information quality	2
		Web-site’s service-interaction quality	2
5. Process	Timeliness	On-time delivery (promised vs. actual)	7, 8, 9, 13
		Online enquiry-to-response time	7
		Return notification-to-refund time	7, 13
	Accuracy	Percentage of error in goods picked and delivered to customer	7, 8
		Percentage of error in delivery destination	7, 8
		Percentage of error in charge made to customer	7, 13

*) References are presented in the next page

References:

- | | |
|-----------------------------|---------------------------------|
| 1. Agrawal et al. (2001) | 9. Rabinovich and Bailey (2004) |
| 2. Barnes and Vidgen (2002) | 10. Rayport and Jaworski (2003) |
| 3. Barsh et al. (2000) | 11. Srinivasan et al. (2002) |
| 4. Bughin (2001) | 12. Szymanski and Hise (2000) |
| 5. Chaffey (2002) | 13. Tamimi et al. (2003) |
| 6. Cotter (2002) | 14. Vargas (2002) |
| 7. Janenko (2002) | 15. Suggestion from pre-test |
| 8. Neely et al. (2002) | 16. Developed |

As the basic function of Internet retailing is selling products to customers, the model of performance measurement covers the main aspects related to this function. This model adopts the concept of business performance (financial and operational performance) rather than organisational effectiveness, as discussed in Chapter 2. Consequently, this model does not specifically incorporate performance measures related to employees, suppliers, or community. The model adopts a cause-effect approach, as recommended by Kaplan and Norton (1996). Financial dimension is thought to be an ultimate success indicator of an Internet retailer. The achievement on the financial dimension is caused by the success in developing market and generating sales. Subsequently, the achievement in this aspect comes from the success in attracting and maintaining customers. The success in this customer aspect could be attributed to the success of an Internet retailer in providing an excellent online web process, as well as offline fulfilment process to customers. Financial and market-sales dimensions represent financial performance, and the other three operational (non-financial) performance.

3. Use of Performance Measurement

As discussed in Chapter 2, the implementation of performance measurement produces information which can be used to support business practices (Boody et al., 2005; Bourne et al., 2000; Henri, 2006; Mahama, 2006; O'Brien and Marakas, 2006; Simons, 1991). This study adopted and adapted measures used by Nilsson and Kald (2002), and Kald and Nilsson (2000), to investigate the use of performance measurement to support managerial activities. Table 3.3 presents ten activities categorised into four dimensions.

Table 3.3: Use of performance measurement in managerial activities

Dimension	Activity
1. Strategy assessment	1. To assess implementation of business strategy
	2. To identify possible needs to change business strategy
	3. To anticipate future direction of business
2. Benchmarking-Improvement effort	4. To compare (benchmark) with other retail channels within own company
	5. To compare (benchmark) with direct competitors
	6. To facilitate improvement of business operation
3. Performance appraisal	7. To assess performance of management and/ or staff
	8. To determine reward for management and/ or staff
4. Reporting	9. To provide report to shareholders
	10. To provide report to company/ head-office

Source: Adapted from Nilsson and Kald (2002) and Kald and Nilsson (2000)

Based on Simons (1991, 1995), Nilsson and Kald (2002), and Kald and Nilsson (2000), those four dimensions can be explained as follows. First, *strategy assessment*: the information obtained from performance measurement is used to assess the implementation of business strategy, as well as to identify possible needs of reformulating business strategy. Second, *benchmarking- improvement effort*: the information obtained from performance measurement is used to facilitate a comparison analysis against competitors (benchmarking) and to foster improvement of business operation. Benchmarking refers to learning, discovering and identifying new ways to improve performance. By doing benchmarking, an Internet retailer could learn from others, and identify new ways to improve its performance. Third, *performance appraisal*: the information obtained from performance measurement is used to assess performance of management and/ or staff, as well as to determine their rewards. Performance appraisal is likely to create awareness of management and staff regarding the company's performance targets. Fourth, *reporting*: the information obtained from performance measurement is used to make a report for shareholders or the company/ head office. The activity of making reports itself may have no relation with improving business performance. However, the necessity to provide the report might increase accountability in the management team to do so.

Furthermore, the value of performance measurement can be viewed from its support in various types of decision made. Henri (2006) highlighted the use of performance measurement to support decision-making and to justify the decisions or actions taken. This research investigates the use of performance measurement in supporting

five types of decision: (1) strategy decisions, (2) top level management decisions, (3) operational decisions, (4) pay-reward decisions, and (5) other personnel decisions.

In summary, the use of performance measurement refers to the use of information obtained from measuring a range of performance indicators to support managerial activities and decision-making.

4. Strategic Orientation

The difference of characteristics among Internet retailers may have impact on the differences of business strategy pursued. Prior studies suggested that classical principles of business strategy (e.g. positioning) are appropriate for Internet retailing (Bughin, 2001; Porter, 2001). For this reason, this research adopts a classical strategy framework named Strategic Orientation of Business Enterprise developed by Venkatraman (1989). In this framework, strategy is identified in terms of the relative emphasis made by a firm along several strategic orientation dimensions. As there is little information about strategy implemented by Internet retailers, the investigation of multiple traits could be appropriate to cover the variety of strategies implemented by Internet retailers. This study adopts and adapts the six dimensions of strategic orientation developed by Venkatraman (1989), with the stance adopted by an Internet retailer regarding each as follows:

1. *Aggressiveness*: Relates to resources allocation to improve its market position at a relatively faster rate than its competitors do.
2. *Analysis*: Relates to overall problem solving posture, in which the retailer searches deeper for the roots of problems and generates the best possible solution alternatives.
3. *Defensiveness*: Relates to the emphasis on cost reduction and efficiency seeking methods.
4. *Futurity*: Relates to temporal considerations in its key strategic decisions, in terms of emphasis on effectiveness (longer-term) versus efficiency (shorter-term) considerations.

5. *Proactiveness*: Relates to the opportunity to participate in emerging industries, and the continuous search of prospective market.
6. *Riskiness*: Relates to the various resource allocation decisions.

Those six dimensions comprise 29 indicators, presented in Table 3.4.

Table 3.4: Strategic orientation

Dimension	Item
Aggressiveness	1. We often sacrifice profitability to gain market share
	2. We often cut prices to increase market share
	3. We often set prices below competition
	4. We often seek market share position at the expense of cash flow and profitability
Analysis	5. We emphasise effective coordination among different functional areas
	6. Our information systems provide support for decision making
	7. When confronted with a major decision, we usually try to develop through analysis
	8. We use several planning techniques
	9. We use the outputs of management information and control systems
	10. We commonly use human resource planning and performance appraisal of senior managers
Defensiveness	11. We occasionally conduct significant modifications to retail operation technology
	12. We often use cost control systems for monitoring performance
	13. We often use operation management techniques
	14. We often emphasise service quality through use of quality circles
Futurity	15. Our criteria for resource allocation generally reflect short-term considerations*
	16. We emphasise basic research to provide us with future competitive edge
	17. Forecasting key indicators of operations is common
	18. Formal tracking of significant general trends is common
	19. We often conduct 'what if' analyses of critical issues
Proactiveness	20. We are constantly seeking new opportunities related to present operations
	21. We are usually the first to introduce new services, products, or brands in the market
	22. We are constantly on the look out for businesses that can be acquired
	23. Competitors generally pre-empt us by expanding capacity ahead of us*
	24. Operations in later stages of life cycle are strategically eliminated
Riskiness	25. Our online business operations can be generally characterised as high-risk
	26. We seem to adopt a rather conservative view when making major decisions*
	27. New projects are approved on a 'stage-by-stage' basis rather than with 'blanket' approval*
	28. We have a tendency to support projects where expected returns are certain*
	29. Our online business operations have generally followed the 'tried and true' paths*

Note:

Item 11: Retail operation technology replaces manufacturing technology

Item 14: Service quality replaces product quality

* reverse scored

Source: Adapted from Venkatraman (1989)

This strategic orientation model has been used in several studies (e.g. Bergeron et al., 2001; Morgan and Strong, 2003; Ragu Nathan et al., 2001; Tan and Litschert, 1994). It is important to note that Bergeron et al. (2001) found that the riskiness dimension was not reliable. Therefore, the result regarding this dimension should be interpreted cautiously. In addition, the proactiveness dimension should be seen carefully as well. This dimension could be appropriate, for example in the case of a store-based retailer planning to enter online business. As this study has already focused on the online business, the issue about the opportunity to participate in an emerging industry (e.g. Internet sales channel) might not be relevant. Although there is a doubt about proactiveness and riskiness, all six dimensions are adopted in this research to retain the completeness of this model.

5. Business Performance

This study investigates business performance in five items corresponding to five dimensions of performance indicators. The rationale is that business performance is reflected by achievement in the performance indicators measured. As not all performance indicators in the list are measured by Internet retailers, this study examines business performance based on the respondent's perception of several common indicators which are likely applicable to any Internet retailer. Those five measures are as follows:

1. Profitability, representing Financial dimension
2. Sales growth, representing Market dimension
3. Customer retention, representing Customer dimension
4. Superiority of fulfilment process, representing Process dimension
5. Quality of web store, representing Web dimension

The rationale to include those five measures can be illustrated as follows. A good quality of web store may attract customers to buy products online. If a retailer is able to provide a good fulfilment process, customers will be satisfied and buy more/ other products. It may, then, increase the company's sales, and lead to profit. Table 3.5 presents some studies which used those five performance measures. For the first

three measures, studies cited were conducted in the traditional business, while for the other two, in the Internet retailing business.

Table 3.5: Business performance measures

Measure	Source
1. Profitability	Bergeron et al., 2001; Cragg et al., 2002; Croteau and Bergeron, 2001; Karagozoglu and Lindell, 2004; Lumpkin and Dess, 2001; Venkatraman, 1989; Wang, 2003
2. Sales growth	Bergeron et al., 2001; Cragg et al., 2002; Croteau and Bergeron, 2001; Hoque, 2004; Karagozoglu and Lindell, 2004; Lumpkin and Dess, 2001; Morgan and Strong, 2003; Venkatraman, 1989; Wang, 2003
3. Customer retention	Morgan and Strong (2003)
4. Superiority of fulfilment process	Trocchia and Janda (2003)
5. Quality of web store	Trocchia and Janda (2003)

Some measures, such as profitability and sales growth, are measured as a single item (e.g. Cragg et al., 2002) or multiple items (e.g. Venkatraman, 1989). Some studies have used profitability and sales growth to measure business performance of traditional business (e.g. Bergeron et al., 2001; Cragg et al., 2002; Croteau and Bergeron, 2001; Lumpkin and Dess, 2001; Venkatraman, 1989; Wang, 2003). These two measures are also considered appropriate for Internet retailing, because they are generic. The history of dotcoms indicates that profitability was ignored during its boom era in the second half of the 1990s. As Internet retailing has been progressing and becoming more rational (e.g. Agrawal et al., 2001; Bughin, 2001), profit margin (profitability) has improved to be positive (Vargas, 2002). In their study among e-commerce firms, Karagozoglu and Lindell (2004) have used sales growth and profitability as measures for business performance.

Customer retention, quality of web store, and superiority of fulfilment process are incorporated to cover an operational performance aspect, which is considered as the determinant of a financial performance aspect. Customer retention is a major concern in Internet retailing, because high customer retention potentially reduces marketing costs and increases profits. Morgan and Strong (2003) have used customer retention as one of the measures for business performance in high-tech firms. Quality of web store is critical for Internet retailing, because it is to be the main interface between a retailer and its customers (Burt and Sparks, 2003). A poor quality of web store, in terms of its features, facilities, product offering, and other attributes, will hinder a

customer to buy online (Feinberg and Kadam, 2002; van der Heijden and Verhagen, 2004; van der Merwe and Bekker, 2003). Furthermore, the quality of fulfilment process is also critical for the success of Internet retailing (e.g. Janenko, 2000; Nicholls and Watson, 2005). A bad experience of fulfilment process could affect customers to not make subsequent purchases in a certain online store. The last two measures are important as critical success factors of online retailing (Chen and Leteney, 2000; Trocchia and Janda, 2003).

The relationships among those five measures can be explained as follows. A good quality of web-store will attract customers to buy products online. If a retailer provides an excellent fulfilment process, customers will purchase online again. This will increase sales, and subsequently lead to better profitability.

3.2.5 Propositions

Major variables identified in the earlier section are multiple measures. Business strategy is examined using six dimensions, performance measurement five dimensions, and business performance five measures. This section summarises predicted conceptual relationships, as discussed earlier, to be empirically investigated. The relationships are formed as propositions instead of hypotheses. According to Zikmund (2003), a proposition is a statement concerned with the relationships among concepts, while a hypothesis is a proposition empirically testable. The term proposition is considered more general than hypothesis.

1. Business profile – Performance measurement

The investigation is basically for an exploratory purpose to understand how the difference in business profile might be related to performance measurement. As discussed earlier, some relationships are predicted. Firstly, Internet retailers selling a more popular product category (e.g. entertainment) may have more concern in performance measurement, and they measure more performance indicators than those selling a less popular product category (e.g. food). More popular product category means a product category which is sold by many Internet retailers. Secondly, it is possible that pure-play retailers will measure more performance

indicators than their counterpart clicks-&-mortar retailers. Thirdly, relatively bigger Internet retailers may measure more performance indicators than will smaller ones. Finally, more mature Internet retailers may need to measure more performance indicators than less mature ones. It is thus expected that the number of performance indicators measured by Internet retailers is related to the difference in their business profile.

Proposition 1:

The number of performance indicators measured by Internet retailers is related to their business profiles: product category, business format, business size, and maturity.

2. Performance measurement – Use of performance measurement

As discussed earlier, measuring more performance indicators will produce more information about business progress; the more information available, the higher possibility it can support managerial activities and decision-making.

Proposition 2:

Internet retailers, which measure more performance indicators, will be more intensive in using the information to support managerial activities and decision-making.

3. Strategic orientation – Performance measurement

This part aims to investigate the relationship between strategic orientation and performance measurement. Current knowledge on this relationship is limited. A prior study conducted in manufacturing companies predicted the association between strategic priorities and the selection of non-financial performance indicators (Hoque, 2004). It is expected that a similar relationship applies in Internet retailing business. For example, an Internet retailer which puts higher emphasis on analysis (problem solving) traits possibly measures more performance indicators in order to track problems as well as improvement efforts. In addition, an Internet retailer which puts

higher emphasis on defensiveness traits may measure more performance indicators, especially on financial-related measures, to track its achievement in minimising costs. Consequently, the predicted relationship between strategic orientation and performance measurement is presented in the following proposition:

Proposition 3:

The choice of strategic orientation made by an Internet retailer is related to the number of performance indicators measured.

4. Strategic orientation – Business performance

An Internet retailer which puts a higher emphasis on the aggressiveness traits (e.g. to gain a bigger market share) could be less concerned with current profitability. Therefore, aggressiveness is possibly related negatively to financial performance. In addition, an Internet retailer which puts a higher emphasis on the analysis traits possibly will achieve better financial and operational performance, because of its efforts in tracking and solving business problems. Furthermore, it could be predicted that an Internet retailer which puts a higher emphasis on defensiveness traits will achieve better financial performance because of its efforts in minimising costs. In summary, the predicted relationship between strategic orientation and business performance is presented in the following proposition:

Proposition 4:

The choice of strategic orientation made by an Internet retailer is related business performance.

5. Performance measurement – Business performance

This part aims to investigate the relationship between the level of performance indicators measured and the level of business performance. This investigation is important to understand the possible direct effect of performance measurement on business performance. The latter has not been studied, except in a limited study by Evans (2004) which suggested that more performance indicators measured was

related to higher firm's performance. For Internet retailers with little experience in implementing performance measurement, this kind of justification will be critical. By measuring more performance indicators, an Internet retailer may obtain better information about its business operation, and it may use the information to improve its business performance, especially operational performance. The improvement targeted for operational performance could be easier to achieve than that for financial performance, because operational performance, to some extent, is under a firm's control. In summary, the predicted relationship between performance measurement and business performance is presented in the following proposition:

Proposition 5:

The number of performance indicators measured by an Internet retailer is related to the level of its business performance.

6. (Strategic orientation and Performance measurement) – Business performance

This part aims to investigate a joint effect of performance measurement and strategic orientation on business performance. This investigation will be relevant if the previous three relationships (propositions) hold. This examination will indicate the possible real effect of strategic orientation on business performance, as well as performance measurement on business performance. The investigation is predicted to show that strategic orientation and performance measurement have different effects on business performance. Previous studies on traditional business found that strategic orientation was related to financial-related performance such as profitability and sales growth (Morgan and Strong, 2003; Tan and Litschert, 1994; Venkatraman, 1989). Consequently, it is predicted that the effect of strategic orientation is more on financial rather than operational performance. On the other hand, performance measurement normally provides information that can be used especially to improve business operation. Consequently, it is expected that the effect of performance measurement is more on operational rather than financial performance. In summary, this relationship is presented in the following proposition:

Proposition 6:

The choice of strategic orientation and the level of performance indicators measured have different effects on business performance.

In summary, this section has discussed the research framework. Based on two research questions, two research models are developed. Altogether, both models comprise five major variables and nine relationships. The next section presents the development of the research method.

3.3 Research method

This section discusses the selection of research method, which refers to techniques or procedures used to collect and analyse data (Blaikie, 2000). The selection is affected by several factors, such as purpose of the study (e.g. exploratory, descriptive, hypothesis testing), unit of analysis (e.g. individuals, organisations), temporal aspect of data collection (e.g. cross-sectional, longitudinal), and study location (Sekaran, 2003, pp.117-118). The discussion starts from the philosophical approach of social research and moves into the technical approach of collecting data. This section covers four aspects: methodology, survey research, sampling process, and key informant.

3.3.1 Methodology

Methodology deals with logic of enquiry and of how new knowledge is generated and justified (Blaikie, 2000). In social research, research methods could be viewed as falling into a continuum of inquiry paradigms. At the one end is a positivist paradigm and the other end is an interpretivist paradigm. Positivist research is sometimes referred to as quantitative research, as well as scientific research. This paradigm is based on the notion that research can be objective, the researcher is independent, and the results are valid, reliable and replicable (Pather and Remenyi, 2004). Here, the researcher is concerned with gaining knowledge using quantitative methods to test hypothetical-deductive generalisations (Amaratunga et al., 2002). At the start of the research process, the researcher needs to formulate hypotheses for subsequent

verification, in order to generate causal explanations and fundamental laws (Amaratunga et al., 2002). Research methods associated with this positivist paradigm include experiments, surveys, simulation, and forecasting, where quantitative data are the norm. Analysis methods using statistical or mathematical procedures are frequently used, and conclusions drawn from the research setting could be used to provide evidence to support or reject hypotheses.

Interpretivist research is sometimes referred to as phenomenological research and qualitative research. Phenomenological inquiry uses qualitative and naturalistic approaches to understand inductively and holistically human experience in context-specific settings, and this approach tries to understand and explain a phenomenon, rather than search for external causes or fundamental laws (Amaratunga et al., 2002). Research methods associated with this approach include action research, ethnographic study, interviews, and participant observation, where qualitative data (e.g. analysis of text, conversation) are the norm. Statistical techniques are seldom used and conclusions are drawn for the specific context.

To determine which paradigm is close to this research, one needs to understand the characteristics of this research. This research is developed based on some prior knowledge, and several propositions have been developed for verification. In addition, the object (unit of analysis) of this research is firms rather than individuals. This study takes place in a context where there are a considerable number (more than one thousand) of Internet retailers in the UK. For these conditions, this research is close to positivist research rather than interpretivist. As presented earlier, research methods in this type include experiments, simulation, forecasting, and surveys (Remenyi et al., 1998). Experiment is performed when a researcher is able to control or manipulate a certain 'independent' variable and observe the result on another 'dependent' variable. In the context of this research, this method is not suitable because the manipulation of an independent variable could not be performed. Simulation involves representing a situation by creating an artificial setting in which individual or group behaviour can be observed (Bryman and Bell, 2003). It is also inappropriate for this research, because this research seeks an actual practice, rather than an artificial model. Forecasting involves the use of regression and time series analysis to make predictions about the future events. This method is inapplicable for

this research. Survey research (in a narrow definition) is a research technique in which data are gathered from a sample of people by use of a questionnaire or interview (Zikmund, 2003). This method is a popular and common technique in business and management research, and it is appropriate under the context and objective of this research. The following section discusses the survey research and the selection of an appropriate data collection method.

3.3.2 Survey research

According to de Vaus (2002), survey research can be defined using a narrow or broader approach. The definition of survey research is frequently referred to the narrow approach. The narrow approach defines survey research as synonymous with quantitative data collected from a probability sample by means of a questionnaire or structured interview (de Vaus, 2002; Zikmund, 2003). Therefore, it is associated with sample surveys. De Vaus (2002) argued that method of data collection (e.g. mail questionnaires) or sampling do not define the characteristics of the survey. The broader approach views surveys as representing a design for research that is based on a particular logic of *data collection* and *analysis* for drawing conclusions (de Vaus, 2002). First, regarding data collection, data are collected about the same variables for a set of cases and constructed into a structured data set. Structured questionnaires are widely used in surveys because they ask each person the same questions in the same way (de Vaus, 2002). Second, regarding method of analysis, surveys are aimed firstly to describe the characteristics of a set of cases and/ or secondly to identify causes of phenomena and to develop models of behaviour (de Vaus, 2002). Survey analysis adopts a passive approach to making causal explanations and the analysis is based on examining variation in the dependent variable, as *presumed effect*, and independent variable, as *presumed cause* (de Vaus, 2002). Although survey research is often used to explain causal relationships, it can, in fact, show only the strengths of statistical association between variables (May, 2002).

In this study, survey is referred to the classical narrow definition as a sample survey. The data collected in the survey are called primary data because they are gathered for the research project being conducted. Practically, surveys aim to describe or explain the characteristics or opinions of a population using a representative sample (May,

2002). Surveys provide quick, inexpensive, efficient, and accurate means of assessing information about the population (Zikmund, 2003). A survey research has its basis in the positivist research paradigm, and it follows a common process in the testing and development of a theory by which hypotheses should be formulated (May, 2002).

Survey research can be classified on a temporal basis into two: cross-sectional and longitudinal (e.g. Zikmund, 2003). Cross-sectional surveys are used to gather information on a population at a single point in time. Longitudinal surveys gather data at different points in time, thus allowing analysis of response continuity and changes over time. As previously stated in the research objectives, this study is to explore performance indicators being measured by Internet retailers, but not how their performance indicators are changing over time. Therefore, a cross-sectional survey would be appropriate. Such a survey enables a comparison of variables (e.g. performance indicators measured) across various types of Internet retailers (e.g. business formats). In addition, this study is to investigate business performance achieved and common traits of business strategy implemented by Internet retailers. Business performance is likely to be an impact of strategies implemented sometime in the past rather than the current ones. This might imply that the investigation of business strategies over time is necessary. However, as business strategies have normally a long-term perspective, they are unlikely to change frequently. In this research, business strategy is to be identified as common and continuing strategic traits (see Table 3.4), which are operationalised with sentences starting with, for example, (1) we often, (2) we are usually, and (3) we are constantly. This identification could be made as a cross-sectional survey, as prior studies that used the same instrument did (e.g. Bergeron et al., 2001; Morgan and Strong, 2003; Ragu Nathan et al., 2001; Tan and Litschert, 1994). The results could be used to explore the potential effects of strategies on business performance. In summary, the cross-sectional survey is adopted as it could serve the conditions and objectives of this research.

Based on the object being examined, survey research can be classified into two: consumer survey and industrial (or business) survey. In the consumer survey, the questions focus on the respondents, while in the industrial survey, the questions

focus on the company which respondents belong to, rather than the respondents themselves. This research is directed to investigate Internet retailers as a company (or business unit), therefore it belongs to the industrial survey.

In surveys, data can be collected through two different types of questionnaire: (1) interview and (2) self-administered questionnaire. Interview can be classified into personal face-to-face and telephone interviews (Zikmund, 2003). Personal interview has some advantages, such as (1) the opportunity for feedback, (2) probing complex answers, (3) flexible duration, and (4) complete response to questionnaires (Zikmund, 2003). Personal interview has also some disadvantages, such as (1) because of no guarantee for anonymity, respondents might be reluctant to provide confidential information to another person, (2) it is generally more expensive than mail and telephone surveys regarding geographic location and number of respondents, (3) demographic characteristics of the interviewer (e.g. gender, age) are predicted to affect the result (Zikmund, 2003). Telephone interview has advantages, such as (1) fast data collection, and (2) wide geographical coverage, as well as disadvantages, such as (1) high refusal rate to participate, and (2) limited duration of interview (Zikmund, 2003).

The target of this research is Internet retailers throughout the UK. To cover a number of companies located in various places, face-to-face interview would be very costly. Therefore, this technique would be inappropriate for the main survey. This research deals with some complex and probably sensitive issues, such as performance indicators, strategic orientation, and business performance. The nature of the questions and the limited duration of telephone interview also make this method inappropriate for this research.

In a self-administered questionnaire, respondents themselves complete the questionnaire. Among several media to send and return a questionnaire, two are dominant: (1) conventional mail survey, and (2) Internet-mediated survey (Zikmund, 2003). The following paragraphs will discuss the Internet-mediated survey first and then the mail survey.

Internet-mediated survey can be divided into two: (1) e-mail survey and (2) web-based survey. In an e-mail survey, a self-administered questionnaire is distributed and returned by e-mail. The major advantages of e-mail survey are (1) speed of distribution, (2) quick response time, and (3) lower costs. The broad differences in the capabilities of respondents' computer and e-mail software could limit the type of questions and the layout of the e-mail questionnaire (Zikmund, 2003). One major issue in implementing e-mail survey is unsolicited e-mail which the recipient often treats as spam (Hewson et al., 2003). For security awareness, this kind of e-mail is normally deleted. Consequently, the survey will produce a low response rate. Another concern is about confidentiality and anonymity of respondents, because e-mail responses typically carry the respondent's e-mail address (Hewson et al., 2003). In addition, the use of e-mail questionnaire for the *main survey* of this study is hindered, because a list of respondents' individual e-mail addresses is not available.

In a web-based survey, the questionnaire is posted on a website. This method has some advantages regarding speed, cost effectiveness, visual appeal, interactivity, accurate real-time data capture, personalised questioning, and anonymity (Zikmund, 2003). Although this method is able to overcome some limitations of mail and e-mail surveys, there are limitations of this method regarding online security, online privacy, and availability of Internet access (Zikmund, 2003). Compared to e-mail survey, anonymity is less concerned in this method. As reported by Kaye and Johnson (1999), in a survey on attitudes to political information on the Web, about 90% of respondents gave their e-mail address, suggesting that, in some cases at least, anonymity is not a major concern to respondents (cited by Hewson et al., 2003). In applying this method, respondents need to be invited to participate in the survey and to be informed about the URL address where the questionnaire is posted. For this research, the invitation through e-mail is limited, because the list of respondent e-mails is not available. Although the invitation through a letter or post card is possible, it requires extra process for a recipient to answer the questionnaire. This makes this method less beneficial compared to a well-established mail survey which respondents are familiar with. Therefore, the use of this method for the main survey is hindered.

Mail questionnaire is a classical method in doing survey research. As any other method, mail questionnaires have strengths and weaknesses. According to May (2002), their main strengths are as follows:

1. Mail questionnaires have a lower cost than survey through face-to-face interviews.
2. Anonymity of mail questionnaires is useful if the study is dealing with sensitive issues.
3. Respondents can take their own time to fill in the questionnaire and think about their responses.
4. Mail questionnaires can lead to less bias as opposed to face-to-face interviews.
5. Mail questionnaires may cover a wider geographical area at a lower cost.

Furthermore, May (2002) summarised the weaknesses of mail questionnaires, as follows:

1. The need to keep questions simple and straightforward, as the researcher has no control over how respondents are interpreting the questions.
2. There is no possibility of probing beyond the answers that respondents give.
3. There is no control over who answers the questionnaire.
4. The response rate could be low, and the possible bias of the final sample cannot be checked.

In this research, some efforts have been made to reduce those weaknesses. To develop simple and understandable questions, a series of pre-tests and refinements have been conducted (see Chapter 4). To obtain the right persons answering questionnaire, a careful identification of key informants to whom the questionnaire is sent has been done (see next section). To increase the response rate, questionnaire design and incentive method have also been considered (see Chapter 4).

One of the major issues in a mail survey is non-response bias. If persons who respond differ substantially from those who do not, the results do not directly allow the researcher to explain how the entire sample would have responded, and it is an important step before the sample is generalised to the population (Armstrong and

Overton, 1977). There are two common recommended solutions to deal with non-response bias: (1) to reduce the non-response itself, and (2) to estimate the effects of non-responses (Armstrong and Overton, 1977). Considering the advantages and disadvantages of survey methods, this study adopts a mail-questionnaire survey.

In summary, based on the objectives and conditions, this research resembles a positivist research. Among several methods usable in this paradigm, survey is selected. From a temporal basis, this survey is a cross-sectional one, and from the object being investigated, this survey is an industrial one. This research adopts a self-administered questionnaire to collect data, and the questionnaire is distributed through postal mail. In conducting this survey, a sample of Internet retailers is required. The next section discusses a process to generate the sample.

3.3.3 Sampling process

Sampling is a process of using a small number of items or parts of a larger population to make conclusions about the whole population (Zikmund, 2003). Before discussing the sample, the target population needs to be defined. The target population of this research is Internet retailers in the UK selling tangible products, not services, not digital products. The exclusion of those selling services and digital products is to provide the same basis of investigation among the sample. As an illustration, the issue about fulfilment (picking, packing, delivery) is critical for Internet retailers selling tangible products, but not for those selling services or digital products. For some Internet retailers, their website domain name '.co.uk' indicates that those retailers are based in the UK. However, for some companies with domain name '.com', the information about their registered address, which might be available in their website, is used as an indicator to determine whether those retailers are based in the UK.

After defining the target population, the following step is to determine the sample. Unfortunately, a sample frame of the target population is not available. One possible reason is that Internet retailing business is very dynamic and this sector has a low entry barrier. New entrants may arrive and some existing companies might leave. Their existence is indicated only by their presence in the world-wide-web. On the

other side, developing a comprehensive directory needs time. Therefore, these could be possible reasons regarding the void of a comprehensive Internet retailing directory.

Dealing with this problem, the most sensible solution is to use multiple sources to generate a sample for this study. In this attempt, three different sources are employed: (1) established traditional retail directory, (2) industrial body of Internet retailing, and (3) online directory of Internet shopping. An Internet retailer could belong to one or more sources. Therefore, these three sources can be illustrated as in Figure 3.3.

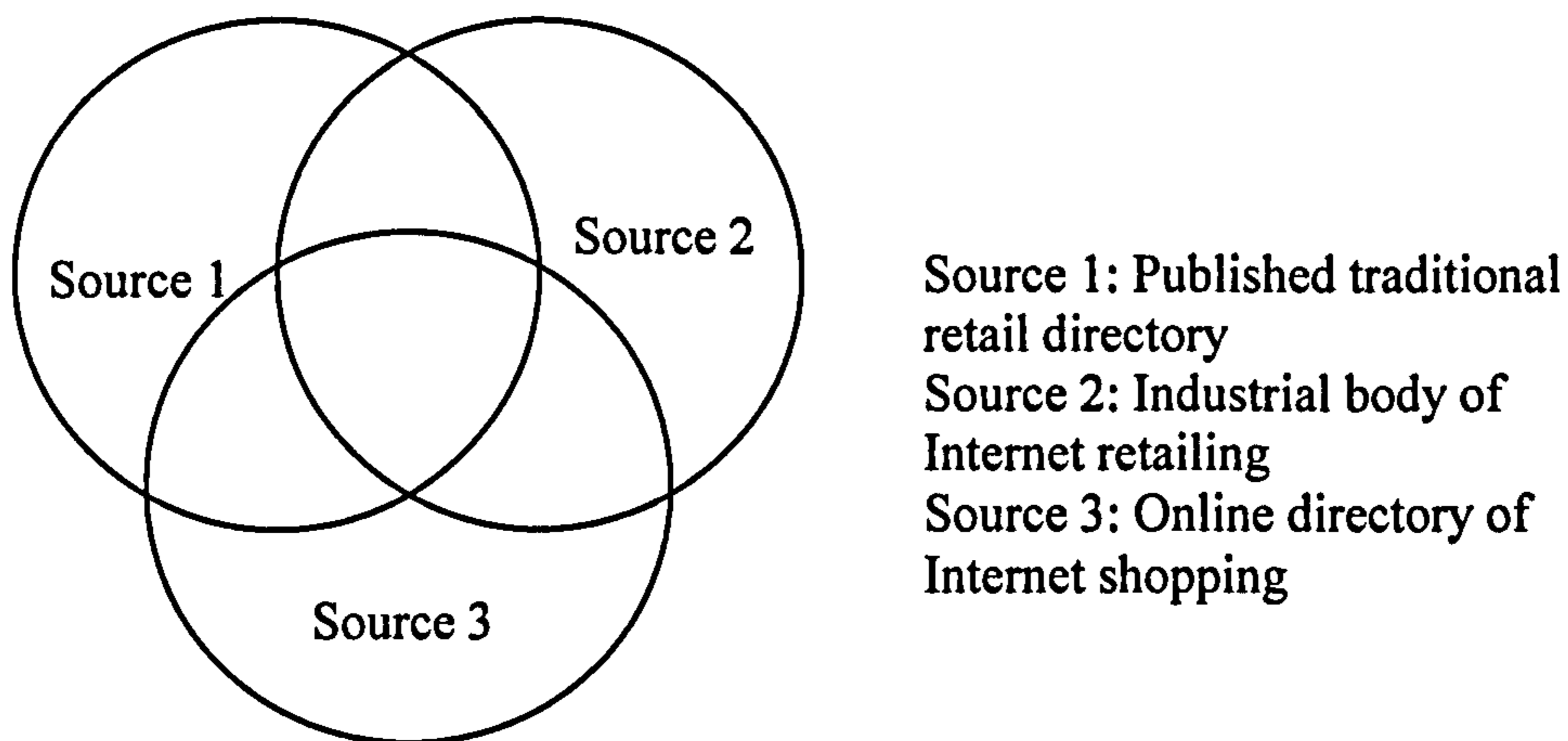


Figure 3.3: Three sources of planned sample

Source 1: Established traditional retail directory

The choice of an established traditional retail directory is aimed to cover Internet retailing business which emerged from the existing traditional business. An annual retail directory, published by Hemming Information Services (2005), is selected because it contains a comprehensive list of UK retailers, and it has been used by other studies (e.g. Doherty and Ellis-Chadwick, 2003). In the last few years, this directory shows a ‘computer mouse’ symbol and a URL address for retailers providing online shopping. Data of retailers with the symbol are recorded into a database. Furthermore, each of the retailers in the list is evaluated as to whether its site is active and it meets criteria defined for the target population.

Source 2: Industrial body

The choice of industrial bodies for Internet retailing is based on the assumption that an Internet retailer is likely to join a certain industrial body. In this business context, an industrial body refers to an organisation that provides an accreditation for its members based on a certain scheme. This accreditation provides a guarantee for consumers to do shopping online with confidence in the accredited Internet retailers. Two prominent accreditation bodies have been identified: TrustUK and ISIS-IMRG.

As presented in its website, TrustUK (www.trustuk.org.uk) is an industry self-regulatory body developed by the Consumers Association and the Alliance for Electronic Business. TrustUK is a non-profit organisation endorsed by the UK Government to enable consumers to buy online with confidence. TrustUK does not approve Internet retailers directly, but its approval scheme is provided for trade associations/ subscriber bodies, whose members/ subscribers are bound by an online code of practice. Information on TrustUK website indicates that there are four major trade associations/ subscriber bodies: (1) Association of British Travel Agents Ltd (www.abtanet.com), (2) Direct Marketing Association (www.dma.org.uk), (3) WebTraderUK (www.webtraderuk.org.uk), and (4) SafeBuy (www.safebuy.org.uk).

The first, Association of British Travel Agents Ltd, is not to be a focus of this research because its scope is on travel agents rather than Internet retailer selling of tangible goods. The second, Direct Marketing Association, does not provide a list of its members, rather its accreditation scheme is established in the WebTraderUK. WebTraderUK and Safebuy provide a list of Internet retailers who obtain the accreditation. The number of Internet retailers registered in WebTraderUK is much smaller than in Safebuy. Therefore, this research will use the list provided by Safebuy. As presented in its website, Safebuy is a scheme designed to give better confidence to Internet shoppers in making purchases online. All retailers which are members of the scheme have to adhere to a code of practice which should ensure a comfortable shopping experience.

The second prominent industrial body named Interactive Media Retail Group (IMRG) was established in 1990. As presented in its website (www.imrg.org), IMRG

is a membership organisation dedicated to advancing the Internet retail industry. The code of practice for Internet retailers is established through the Internet Shopping Is Safe (ISIS) certification scheme. As presented in its website, the ISIS merchant certification scheme and its associated 'Safe Shops List' aim to foster consumer confidence in online shopping and to raise industry standards.

For both sources, data of Internet retailers are recorded into a database. Furthermore, each of them is evaluated whether its site is active and meets criteria defined for the target population.

Source 3: Online directory of Internet shopping

The choice of online directory of Internet shopping aimed to cover an updated list of Internet retailers provided by some commercial websites. There were more than 75 UK online shopping directories identified. Using the most popular search engines Yahoo-UK (www.yahoo.co.uk) and Google-UK (www.google.co.uk), the search was initiated using search words 'secure online shopping directory', and it was specified as 'UK sites only'. The keyword 'online shopping directory' was used, because it has been identified that the term was mostly used by Internet retailing directories. The keyword 'secure' is used because the aim is to identify directories listing only secure retail sites. The first one hundred sites obtained from searching using Google as well as Yahoo were examined one by one. Criteria used to select the directory sites are as follows:

1. The site is active.
2. The directory provides a statement or explanation about listing secure sites only.
3. The directory provides a *direct* link (not a link to another directory) to Internet retailers in the list. When the link to a certain Internet retail site is open, the web browser should display the retailer URL instead of the directory's URL address.
4. The directory covers an assortment of product categories.
5. The directory is accessed from the first level of its URL address (e.g. www.shopsafe.co.uk).

In addition, ‘Yahoo Directory’ was used to find retailing directories. This search produced 23 directories, and each was evaluated using those five criteria.

Furthermore, the results obtained from searching those three sources were combined. As shown in Table 3.6, there are 13 sites met those five criteria.

Table 3.6: Secure online sites

No	Google	Yahoo	Yahoo Directory	Sites	Secure statement
1.	√	√	√	www.shopsafe.co.uk	reviewed (strong)
2.	√	√	√	www.kudoshops.com	reviewed (strong)
3.	√	√		www.safe-shopper.co.uk	reviewed (strong)
4.	√	√	√	www.1stopshopping.co.uk	title
5.	√	√		www.i-stores.co.uk	title
6.		√		www.shoppingrolley.net	title
7.	√			www.1st4ukshopping.co.uk	reviewed
8.		√		www.1shopsuk.co.uk	reviewed
9.		√		www.completetwork.co.uk	reviewed
10.		√		www.iuk-shopping.co.uk	reviewed
11.		√		www.super-shoppingonline.co.uk	list secure
12.		√		www.24-7index.co.uk	list secure
13.			√	www.1stopshopping.co.uk	title

To reduce the number of directories, two pragmatic criteria have been applied. First, there is a strong statement about listing secure sites, and second, the directory is listed in the three sources used: Google, Yahoo, and Yahoo Directory. Among those 13 directory sites, only two meet those criteria: shopsafe.co.uk and kudoshops.com. As presented in their website, both directories present the statement of security issues as follows:

1. **Shopsafe.co.uk:** “We list only the secure UK online shops so you can shop on the Internet with confidence. ... We’ve checked the security, delivery, range of goods and prices of the online shops and have over 2000 shops listed “.
2. **Kodoshops.com:** “You can shop online at over 1,000 online UK shops that we have reviewed and rated. Our online shopping guide only lists shops in the UK that offer a total, secure shopping service”.

So far, five sources to develop the sample have been identified:

1. Retail Directory 2005 (Hemming Information Services, 2005)
2. Interactive Media Retail Group (www.imrg.co.uk)
3. Safebuy.org.uk
4. Shopsafe.co.uk
5. Kudoshops.com

Furthermore, each URL address (site) in those sources was examined through the following criteria:

1. The site is active.
2. The site (retailer) sells tangible products.
3. The online ordering facility is available, which is often indicated by a 'basket' symbol.
4. The company is registered in the UK or has a UK postal address.
5. The transaction is using the currency British pound (£).
6. The site provides online payment through credit/ debit card and/ or Internet payment provider (e.g. PayPal, WorldPay).

The following step was to record the contact address of each potential Internet retailer in the list. The following criteria applied:

1. From the Retail Directory 2005, postal address, e-mail, telephone, and contact person are compiled as long as the data are available.
2. From the other four sources, postal address, telephone, e-mail, as well as contact person, if available, are collected from the URL address of each site.
3. If the postal address is not available, the record is removed from the list.
4. If more than one site has the same postal address, only one is compiled.

This last step produced 1417 Internet retailers to be used as the planned sample for the survey.

Furthermore, a question might be raised whether this planned sample represented the target population. First, this sampling process has been conducted comprehensively by integrating multiple sources. Therefore, it was expected the sample would represent the target population. Second, the information from IMRG could be used to get a figure of this business sector. As presented in its site, IMRG claimed that its members accounted for approximately two-thirds of UK online retail, but it is not clear whether two-thirds of total online sales or of total number of Internet retailers. As IMRG collects sales data from its members, it is probable that the number was related to the total online sales. The sample developed in this study contained 'more' than IMRG members subjected to the criteria of target population used in this study. Therefore, it was expected that this planned sample would be appropriate for this study.

After generating the list of Internet retailers, the next section presents an attempt to identify key informants to whom the questionnaire would be sent.

3.3.4 Key informants

A questionnaire should be distributed to the right person (key informant) in a company to obtain appropriate responses. In the context of this research, key informants should have knowledge and/ or be able to give their perceptions on the following issues:

1. Strategic orientation of their online business
2. Performance indicators used to evaluate their online business performance
3. How well their online business performs
4. How the information produced from performance measurement is used for managerial purposes
5. General information, such as annual turnover, number of staff, and year of establishment of online business.

The appropriate respondents, in general, would be persons who are responsible for managing Internet retailing operation. The formal position (title) of these persons may vary among organisations. It might depend on the firm's size. For small firms,

with a simple organisational structure, the responsibility for managing online business could be embedded in the responsibility of the managing director. For big firms with a complex organisational structure, the responsibility for managing online business could be in the hands of the e-commerce manager.

Furthermore, the formal position of persons who are responsible for managing online business may depend on the format of the Internet retailing operation within a firm, which might take various formats. Internet retailing operation could be as the whole company (dotcoms), a division/ department, a business unit, or just an additional selling channel of the existing business. For dotcoms, the managing director will take responsibility for the Internet retailing operation as the only retailing channel of this company. If Internet retailing is operated in a separate division or business unit, a formal management position might be created (e.g. e-commerce director, head of Internet orders). If Internet retailing is operated as an additional retailing channel of the existing business, this responsibility might be attached to existing positions (e.g. IT Manager, Marketing Manager).

To obtain a better understanding of the formal position of a person who is responsible for online business, the list of Internet retailers collected from the Retail Directory 2005 was investigated. This investigation revealed that a specific title of e-commerce manager is rarely used. Among 458 Internet retailers, only 11 firms have specific titles related to online business operation, as shown in Table 3.7.

Table 3.7: Specific title of person in charge for Internet retailing

Company	Website	Title
1. Berry Bros & Rudd Ltd	www.bbr.com	E-commerce Director
2. La Redoute UK Ltd	www.redoute.co.uk	Head of E-Commerce
3. N Brown Group Plc	www.nbrowngroup.com	E-Business General Manager
4. Rigby And Peller	www.rigbyandpeller.com	Head of Internet Operations
5. HMV UK Ltd	www.hmv.co.uk	E-commerce Director
6. J Sainsbury Plc	www.j-sainsbury.co.uk	Head of Online
7. Laura Ashley By Post	www.lauraashley.com	Head of Mail Order & E-Commerce
8. Heffers Online Bookshop	www.heffers.co.uk	Online & Mail Order Manager
9. Richer Sounds Plc	www.richersounds.com	IT & E-Commerce Director
10. FirstLuggageDirect	www.firstluggagedirect.com	IT & E-Commerce Director
11. Toys R Us	www.toysrus.co.uk	Marketing & E-Commerce Director

The table indicates that there are various titles for a person in charge of Internet retailing operation, and these might indicate the way Internet retailing business is managed in a company. Titles in no. 1 to 6 show that responsibility for the Internet retailing operation has been assigned to a specific person. Titles in no. 7 and 8 show that the responsibility is given to the person in charge of the mail order operation. Titles in no. 9 and 10 show responsibility is with the IT directors, and title in no. 11 shows responsibility for the Internet retailing operation assigned to the marketing director. This investigation reveals that a few retailers created a specific position for the person who is responsible for Internet retailing operation. However, most retailers do not have this kind of position. For these retailers, the responsibility for that operation could be integrated into formal existing positions, such as managing director, general manager, IT director/ manager, marketing director/ manager, and mail order director/ manager.

Another effort to identify key informants has been made through a phone survey. Fifty retailers were selected randomly from the sample. These companies were contacted by telephone, on 28/04/05, 03/05/05 and 04/05/05. A question was asked about the formal position of the person in charge of the online business operation; of the contacts, 40 were answered personally and 10 others by *an answering machine*. For the latter, no message was left because it would be less appealing for those companies to call back and answer the question. Among the 40 personal responses, 31 provided the answer about position, 5 could not give information, 2 asked to send e-mail, 1 needed further consultation, and 1 responded not sure about the position. Table 3.8 (overleaf) summarises the result of 31 responses about the position of the person in charge of online business operation.

The first six titles, CEO, Director, General Manager, Managing Director, Manager, Owner, and Proprietor, indicate that the responsibility for the online business operation is in the hands of the top management position in the company. The table indicates that around a half (15 out of 31) of companies have put responsibility for the online business operation with the top management position. Furthermore, seven (23%) put the responsibility on either IT or Marketing Manager. One company has an explicit title of online business manager. Six companies do not have a specific

title for the person in charge. Among those six, three companies explained that their online business operations were managed by other companies (outsourcing).

Table 3.8: Person in charge of online business operations

Position	Frequency
1. CEO	2
2. Director	4
3. General Manager	1
4. Managing Director	5
5. Manager	1
6. Owner/ Proprietor	2
7. IT Manager	3
8. Joint Marketing Manager and IT Manager	1
9. Marketing Director/ Manager	3
10. Online Business Manager	1
11. Retail Operation Director	1
12. Website Administrator	1
13. No specific position title for online business	3
14. No specific position title for online business (e-commerce is done by another company)	3
Total	31

Source: Telephone survey

The results of this investigation can be summarised as follows. Firstly, retailers may have a specific title for the online business operation responsibility, which is e-commerce manager or other similar titles. Secondly, retailers may integrate the responsibility for the online business operation with an existing management position. For small firms, managing director or other similar title is likely to be the person in charge. For big firms, IT director or marketing director is possibly that person. Consequently, in this survey, if a specific title related to online business is available, the questionnaire is sent to that person (title). Otherwise, the questionnaire is sent to the Managing Director.

3.4 Summary

This chapter has discussed the research objectives, research models, research variables and relationships. It has also discussed the selection of an appropriate research method and the development of the sample. The next chapter discusses the questionnaire development and survey implementation.

Chapter 4

QUESTIONNAIRE DESIGN AND DATA COLLECTION

4.1 Introduction

This chapter firstly discusses how the research variables described in the previous chapter were operationalised and incorporated into a questionnaire. The focus of discussion includes the wording of instructions and the selection of scale. This chapter secondly discusses the distribution of the questionnaire in a pilot study and main survey. At the end, the chapter addresses non-response bias.

4.2 Questionnaire development process

As discussed in the previous chapter, the mail survey was selected as a main research technique for this study. Therefore, some efforts have been directed to designing the questionnaire. According to Leung (2006), there are two main objectives in designing a questionnaire: (1) to obtain accurate relevant information for the survey, and (2) to maximise the proportion of subjects answering it. To achieve both objectives, researchers need to consider what questions to ask, the way to ask the questions, the order of the questions, the layout of the questionnaire, and the ways to administer the questionnaire (Leung, 2006). In addition, researchers also need to establish a relationship with target respondents, explain the purpose of the survey, and remind those who have not responded (Leung, 2006). Those are carefully considered and implemented in this study.

Regarding the questionnaire design process, Churchill and Iacobucci (2004) suggest a nine-step procedure as follows:

1. Specify information to be sought
2. Determine type of questionnaire and method of administration
3. Determine content of individual questions
4. Determine form of response to each question

5. Determine wording of each question
6. Determine sequence of questions
7. Design physical characteristics of questionnaire
8. Re-examine steps 1-7 and revise if necessary
9. Pre-test the survey and revise where needed.

They explained that although the procedure is presented sequentially, in practice it can be modified through some iteration and looping. This procedure is adopted in this study as a guideline for developing the questionnaire. Each of those steps is now discussed sequentially.

Step 1: Specify what information to be sought

The information to be sought should be related to the research questions, objectives and models. As discussed in Chapter 3, this survey is to investigate five main elements: (1) business profile with four variables, (2) business strategy, (3) performance measurement, (4) use of performance measurement with two variables, and (5) business performance.

Step 2: Determine type of questionnaire and method of administration

As discussed in Chapter 3, this survey adopts a mail questionnaire. In this method, a printed questionnaire is distributed to target respondents by mail. For this method, it is sensible to use a structured type of questionnaire (Churchill and Iacobucci, 2004). In addition, this survey is categorised as an industrial (or business or organisational) survey. The characteristic of this survey is that respondents are asked to report information on an organisation instead on themselves personally. Although respondent opinions and some personal characteristics may be required, the purpose of this survey is to understand the organisation for which the respondent serves as a representative (Dilman, 2000).

Step 3: Determine content of individual questions

In developing effective questions, Churchill and Iacobucci (2004) suggested researchers to ask the following questions:

Is the question necessary? The purpose of each question should be carefully considered so that the variables are adequately measured and no unnecessary questions are asked.

Are several questions needed instead of one? Some variables are operationalised by asking two questions. Business size is investigated with two questions: annual sales turnover and the number of employees. The question about performance measurement consists of two parts, which are to identify performance indicators measured and their frequency of measurement. The question about the use of performance measurement also consists of two parts, which ask about the use of information in supporting decision-making and managerial activities.

Step 4: Determine form of response to each question

There are three types of response format, which could be used in formulating a question: (1) open-ended, (2) closed-ended, and (3) scale-response (Dilman, 2000; Frazer and Lawley, 2000). Open-ended questions are ones in which no answer choice is provided (Dilman, 2000). These are suitable where precise information is required, but to list all possible answers would be difficult or lengthy (Frazer and Lawley, 2000). Closed-ended questions are ones in which the respondent is offered a choice of alternative answers (Dilman, 2000). According to Frazer and Lawley (2000), these can be categorised as either single (one response is required), dichotomous (two alternatives are provided), or multichotomous (several alternatives are provided). Scale-response questions are ones, which require a scale to measure the attributes of the construct (Frazer and Lawley, 2000). They are normally referred to as attitude measurement, because they are used to measure the respondent's attitude towards particular issues (Oppenheim, 1966). As this survey is targeted on top management, who have limited time to respond to the questionnaire, the second and third formats are applied as they are easy and quick to fill in. Using these formats, more questions can be asked within a given length of time. From the researcher's perspective, they are easy to code and record, and to analyse the results quantitatively. To reduce the rigidity of these formats, a space for comments is provided at the end of the questionnaire for respondents to express their opinion.

Step 5: Determine wording of each question

There are several basic principles of question wording suggested by the literature: (1) choose simple over specialised words, (2) choose as few words as possible to create questions, (3) ask for only one piece of information at a time, (4) avoid negatives if possible, (5) ask the appropriate level of details, (6) develop response categories that are mutually exclusive, (7) avoid double-barrelled questions, and (8) avoid leading questions (Churchill and Iacobucci, 2004; Dilman, 2000; Leung, 2001). Question wording should ensure that every respondent will be answering the same thing. In this study, there has been careful choice of words, and three phases of pre-test (Section 4.3) have been conducted to develop good question wording.

Step 6: Determine sequence of questions

The whole questionnaire consists of a series of question. There are some general rules in arranging the questions, for example (1) go from general to particular, (2) go from easy to difficult, (3) go from factual to abstract, (4) start with closed format questions, and (5) start with questions relevant to the main subject (Leung, 2001). Dilman (2000) emphasised that the questions should be arranged from most relevant to least relevant to the respondent, because there was evidence that the relevance of the questionnaire topic has a major impact on the response rate. Churchill and Iacobucci (2004) contended that the first few questions should be simple, interesting, and in no way threatening, in order for the respondents not to refuse to complete the rest of the questionnaire. Moreover, more complex or strategic sensitive questions should be placed near the end of the questionnaire in order to make the respondents less likely to quit after they have answered earlier questions (Dilman, 2000). Based on careful consideration and the findings of pre-test, the questionnaire is structured into five groups: (1) business profile, (2) performance measurement, (3) use of performance measurement, (4) business performance, and (5) strategic orientation. The first group of questions is business profile, as they are easy to answer. The most important question, which is performance measurement, is placed after it to indicate the main topic of this survey. The next section is the use of performance measurement, because it refers directly to the performance measurement section. Business performance and strategic orientation could be considered as sensitive-like

questions. Business performance is placed first because it is shorter and easier to answer than strategic orientation.

Step 7: Design physical characteristics of questionnaire

Physical characteristics of a questionnaire can affect the respondent's willingness to participate in the survey (Churchill and Iacobucci, 2004). An attractive and neat questionnaire with an appropriate introduction, instructions, and well-arranged questions will make it easier for respondents to answer the questions. Principles in designing the layout of the questionnaire have been applied, and a pre-test has been conducted to develop an appropriate physical appearance of the questionnaire.

The length of questionnaire is an important aspect of its physical characteristics. There is no general agreement about the optimal length of questionnaire because it depends on the survey objectives and the characteristic of respondents. However, literature suggests that short, simple questionnaires usually receive higher response rate than long complex ones (Dilman, 2000; Frazer and Lawley, 2000). Shorter questionnaires seem easier and take less time to complete, and they are less likely to cause respondents to refuse to participate (Churchill and Iacobucci, 2004). In this survey, the selection of most relevant variables and the design of the questionnaire appearance have been made to ensure the questionnaire is having an acceptable length. As supported by the result of the pre-test, the final questionnaire is printed on three-folded A4 size paper.

Step 8: Re-examine steps 1-7 and revise if necessary

Three phases of pre-test and several revisions have been made during the questionnaire development process.

Step 9: Pre-test the survey, revise where needed

The need to pre-test a mail questionnaire is emphasised in the literature (Churchill and Iacobucci, 2004; Dilman, 2000; Hunt et al., 1982). Pre-test is basically aimed to identify errors and to refine the questionnaire. Because of its importance and

complexity, the pre-test conducted in this study is specifically discussed in the next section.

4.3 Pre-testing questionnaire

In this study, the pre-test was conducted in three phases throughout the questionnaire development process. It was aimed to test and to gain feedback regarding the content, instruction, and layout of the questionnaire. Table 4.1 presents the pre-tests conducted. Each phase is now discussed consecutively.

Table 4.1: Pre-test schedule

Pre-test	Time	Informant
First-phase	July 2004	8 academics
Second-phase (1 st round)	October 2004	2 Internet retail managers
Second-phase (2 nd round)	November 2004	4 Internet retail managers 1 store retail manager
Third-phase	June-July 2005	2 store retail managers 1 mail-order retail manager 1 IT Director 4 academics 6 PhD students

4.3.1 First phase

The first phase of pre-test was concentrated on the performance measurement as the main research element. This element contains a list of performance indicators. The preliminary list was developed from the literature and pre-tested to gather comments about its content. This pre-test was conducted internally among academics in the Business School, Loughborough University, in July 2004. Personal interviews were conducted with eight academics from various disciplines in order to cover comments from various perspectives, as performance measurement itself has multiple perspectives. Some feedback obtained has been used to refine the list of performance indicators, for example: (1) to add 'total sales' and 'customer extension', and (2) to exclude 'sales per employee'. The initial list of performance indicators for this pre-test is presented in Appendix B.

4.3.2 Second phase

This second phase of pre-testing process was focused on three main research elements: (1) performance measurement, (2) use of performance measurement, and (3) business performance. This pre-test involved the use of electronic communication: e-mail, telephone, and fax. It was conducted in two rounds, which are now discussed consecutively.

First round

This round was conducted for two purposes: (1) to identify whether the instructions of the three major elements stated earlier are understandable, and (2) to investigate appropriate communication channels to contact respondents. The questions used in this pre-test are presented in Appendix C1. This pre-test was conducted in October 2004, with the following procedures. First, target respondents were determined randomly from the planned sample list, using the 'random generation' function of Microsoft Excel. Second, e-mails with pretest questions placed in the body text were sent to 15 Internet retailers. Third, two consecutive e-mails were sent to each of nine Internet retailers. The first e-mail contained a request for giving comments, and informed that the content of this request would be sent as an attachment file in the following (second) e-mail. Fourth, an e-mail was sent to an Internet retailer asking permission to send a request for pre-test to the company's e-commerce manager. Fifth, telephone contacts were made with six Internet retailers, asking for: (1) permission to send a request for pre-test, (2) the name of the intended person, and (3) the method of sending the questions, whether fax or e-mail.

However, only two responses (www.arco.co.uk and www.justchampagne.co.uk) were received from this stage. There are some possible explanations regarding this poor response. First, this kind of pre-test, which asked to give comments about the instructions, could be inappropriate. Respondents might be familiar with answering a questionnaire, but not with giving comments on the instructions. Second, the communication channel used to contact companies might be inappropriate. Some requests, which were sent through e-mail or a company's online enquiry form, were replied to automatically, saying that the enquiry had been received by the company, but the actual reply did not follow. These might indicate that those companies are

not pleased to help. Regarding the attachment file of the pre-test, a company might delete it because of Internet security concerns. In addition, one e-mail sent to ask permission produced a good reply for giving permission to send the pre-test question in the e-mail body text. Therefore, this last method could be potential.

Second round

This stage of pre-test was conducted in November 2004, with the purpose of seeking feedback regarding the content and instructions of the questionnaire. Considering the findings of the previous round, this one was conducted by sending an enquiry through e-mail to ask permission for help in pre-testing the questionnaire. The questionnaire was printed in a full version. Three groups of informant were targeted: (1) Internet retailing practitioners in the UK, (2) Internet retailing practitioners in Indonesia, and (3) store-based retail practitioners in the UK. For the first target group, requests for permission were sent by e-mail to 10 UK Internet retailers selected randomly from the planned sample list. Six replies were received, in which three gave permission to send the questionnaire, and the others directed this enquiry to the right person. For the second target group, e-mail enquiries for asking permission were sent to four Internet retailers based in Indonesia. Two retailers gave permission to send a questionnaire. For the third group, an enquiry was sent personally to the General Manager of big 'W'/ Woolworths store in Loughborough.

In total, five retail managers from the following companies gave their comments:

1. 'crotchet.co.uk', an Internet retailer based in the UK, selling classical music CDs.
2. 'tinet.co.uk', an Internet retailer based in the UK, selling food products and phone card.
3. 'bearbookstore.com', an Internet retailer based in Indonesia, selling books.
4. 'Balicom.org', an Internet retailer based in Indonesia, selling computer products.
5. Big 'W'/ Woolworths store in Loughborough.

The majority of informants commented that instructions in the questionnaire are understandable. The suggestions obtained from this pre-test and the questionnaire used are presented in Appendices C2 and D. Among suggestions obtained, business profile should be placed in the first section, strategic orientation in the second, and

the rest come afterwards. It was also suggested to use a Likert scale 1 to 5 instead of 1 to 7. Some additional performance indicators were suggested, for example sales value per transaction, number of transactions growth, and number of newsletter subscribers. Based on the findings of this pre-test and careful consideration, the questionnaire was refined further.

4.3.3 Third phase

The purposes of this pre-test were: (1) to check whether the draft of the questionnaire was understandable, logically structured, and easy to answer, (2) to estimate the time to complete the questionnaire, and (3) to identify an appropriate incentive method. This pre-test was conducted on June - July 2005 in Loughborough, and targeted for the following groups:

1. Retailing practitioners: This group was selected to obtain comments from people who resembled the real respondents of the survey.
2. IT practitioners: This group was selected because for some retailers, online business operation was under the IT manager's responsibility.
3. Academics: The target was academics of the Business School, Loughborough University, with specialisation in retailing or information systems.
4. PhD students: The target was PhD students of the Business School, Loughborough University, who had conducted a questionnaire survey in their study. They would be able to give comments based on their own experience.

The selection of participants was by using a convenience sampling approach. Furthermore, in this pre-test, a four-page questionnaire was printed on A3 size paper, and the following six questions were presented to the target respondents.

1. q.1: Are all questions in the questionnaire clear?
2. q.2: Are all questions arranged in logical order?
3. q.3: Are items in each question arranged in logical order?
4. q.4: Are the questions easy to answer?
5. q.5: How long do you think it would take you to answer the questionnaire?
6. q.6: Do you feel the lucky draw of cash prize £300 will motivate people to participate in this survey?

Their comments were sought through interviews and/ or written forms. In total, the following 15 people participated in this pre-test.

1. Three assistant managers of Woolworths Loughborough. As a part of their task, those managers are responsible to promote 'in-store ordering', as a system that enables customers to place an online order from the store.
2. One senior manager of Selective, Loughborough. Selective is a mail order retailer, and it currently enters Internet selling through its website www.selective.co.uk.
3. One IT Director of Marconi Communication Ltd.
4. Six PhD students of the Business School, Loughborough University.
5. Four academics of the Business School, Loughborough University.

Most of the participants stated that the questions were clear and easy to answer; the order of questions as well as items in each question were logical. The participants estimated that the time to complete the questionnaire was between 5 and 40 minutes. Furthermore, there were different opinions about the proposed lucky draw of £300 cash prize. Some participants predicted that it would be an effective stimulus for some busy managers. Some said that the amount of value was worthless, especially for managers of big companies. Another said that if a person is willing to fill in the questionnaire, he or she will do it regardless of the prize. The other commented that there is no difference in the effect of the prize, either £100 or £300. Having considering these comments, it was decided to continue applying the lucky draw as an incentive method, with several modifications in its implementation. First, the question, which asks whether respondents want to be included in a lucky draw or not, is deleted. It is stated in the questionnaire that all completed questionnaires entitle a lucky draw of the cash prize. Second, the amount of money was reduced from £300 to £200. This reduction was aimed to lower the perception that the responses are driven by the monetary incentive. Third, the question asking for the respondents' contact address for a lucky draw purpose is combined with that for sending the summary of findings. The questionnaire and the details of findings of this pre-test are presented in Appendices E and F.

4.4 Questionnaire content and structure

The questionnaire is structured into five sections, as presented in Table 4.2. The table indicates the number of questions, as well as the number of items in each question.

Table 4.2: Structure of questionnaire

Section	Theme	Number of questions
A	Business Profile	5 questions
B	Performance Indicator Measured	1 question: 30 items
C	Use of Performance Measurement Results	2 questions: 10 and 5 items
D	Business Performance	1 question: 5 items
E	Strategic Orientation	1 question: 29 items

Questions were grouped by topic and placed in a logical order to build a sense of continuity. The first section is business profile, as it is easy to answer. The most important part, which is performance measurement, was placed after that to indicate the main topic of this survey. The following section is the use of performance measurement, as it referred directly to the performance measurement section. Business performance and strategic orientation could be considered as sensitive-like questions. Business performance is placed first because it is shorter and easier to answer than strategic orientation.

To obtain accurate responses and to facilitate data analysis, the appropriate measurement scales should be selected for each question. This survey uses a combination of closed-ended and scale-response questions. For the latter, this study adopts Likert and numerical scales. Likert scale is a measure of attitudes ranging from very positive to very negative, designed to allow respondents to indicate how strongly they agree or disagree with carefully constructed statements. Respondents generally choose from five alternatives: strongly agree, agree, uncertain, disagree, and strongly disagree; and the weights of 1, 2, 3, 4 and 5 are usually assigned to the answers, though those are normally not printed in the questionnaire. Various words are often used to indicate various responses, as in the following examples:

1. agreement: strongly agree – strongly disagree
2. frequency: very frequently – never
3. importance: very important – unimportant
4. quality: excellent – extremely poor
5. likelihood: to a great extent – not at all.

Numerical scale is a measure of attitudes that has numbers as response options and utilises bipolar adjectives. If the scale items have ten response positions, it is called a 10-point numerical scale. Both Likert and numerical scales are used to assume the responses as interval-scale data (Zikmund, 2003).

4.4.1 Section A: Business profile

Internet retailing business could be classified in a number of attributes. This study focuses on four attributes: (1) product category, (2) business size, (3) business format, and (4) maturity. Closed-ended questions are applied for all questions of business profile. The full version of those questions, as well as the whole questionnaire itself, is presented in Appendix G. Each attribute is now presented in turn.

1. Product category

As seen in Chapter 3, a classification of product category has been developed for this study. The question about product category has been pre-tested in the second and third phases of pre-test. After a series of pre-tests and revisions, the question used in the final questionnaire is designed to identify one main product category and one or more subsidiary ones by ticking the appropriate options. In addition, to cover any other product category, a blank space is provided at the end of the list. Finally, this product category variable is identified using the following question:

Which of the following categories best describes the product range of your online business? Please tick one box only in the 'main category' column and all the boxes that apply in the 'subsidiary category' column.

Main category		Subsidiary category
<input type="checkbox"/>	Grocery	<input type="checkbox"/>
<input type="checkbox"/>	Alcohol and Beverages	<input type="checkbox"/>
<input type="checkbox"/>	Clothing and Accessories	<input type="checkbox"/>
...
<input type="checkbox"/>	<i>Other. Please specify:</i>	<input type="checkbox"/>
	

2. Business size

During the development process of a planned sample list (Chapter 3), it was identified that the size of Internet retailing business varies from very big to very small. Some are family-run businesses, such as www.basketsgalore.co.uk (gift baskets), www.cleareraudio.com (audio cables), and www.benjies-direct.com (chocolates); some medium businesses, such as www.uk-digital-camera.co.uk (digital cameras), www.outdoortoycompany.co.uk (outdoor toys), and www.funny-gifts.co.uk (gifts); some big business, such as www.rgbdirect.co.uk (electronics); and some very big business, such as www.debenhams.com (Debenhams department store), and www.carphonewarehouse.com (phones).

However, it seems that the majority of them are small and medium-sized businesses. This deduction is based on the variety of products sold, the statement about the size, or the complexity of organisational functions, which could be drawn from each site. It is also supported that some big companies, such as Littlewoods, Currys, Dell computer, British Telecom, and Orange, are not listed in the planned sample, because their postal address is not presented in their websites.

In this study, business size is identified through two questions concerning the amount of annual sales turnover and the number of employees involved in the online business operation. A classification used by the Inter Departmental Business Register of National Statistics (IDBR, 2004) is adopted. For annual sales turnover, IDBR used the following classification range in £ thousands: (0 – 49), (50 – 99), (100 – 249), (250 – 499), (500 – 999), (1000 – 4999), and (5000 +). For employment size, it used the following classification: (0 – 4), (5 – 9), (10 – 19), (20 – 49), (50 – 99), (100 – 249), (250 +) people. In order to acquire the possibility of big size Internet retailing business in the sample, both scales are expanded. For this purpose, a similar classification in the Retail Directory is used to cover bigger scales of business. For annual turnover size, this directory used the following classification range in £ millions: (0 – 0.5), (0.5 – 1), (1 – 5), (5 – 10), (10 – 20), (20 – 50), (50 – 100), and (100 +). For employment size, it used the following classification: (1 – 25), (26 – 50), (51 – 100), (101 – 250), (251 – 1000), and (1001 +) people. Combining these two sources, the following size bands for annual sales turnover and employment are used for the survey.

Turnover size band

- Less than £50 thousand
- £50 – 99 thousand
- £100 – 249 thousand
- £250 – 499 thousand
- £500 – 999 thousand
- £1 – 4 million
- £5 – 9 million
- £10 – 19 million
- £20 – 49 million
- £50 – 99 million
- £100 million or more

Employment size band

- Fewer than 5 people
- 5 – 9 people
- 10 – 19 people
- 20 – 49 people
- 50 – 99 people
- 100 – 249 people
- 250 – 1000 people
- More than 1000 people

To provide an approximate real figure of turnover and employment size of Internet retailing business, an exploratory investigation of the online FAME database was conducted. Two big and two small Internet retailers were selected. The first, ASOS.com Ltd (www.asos.com) was a top three on-line clothing store in the UK, as stated in its website. From the FAME database, the number of its employees was 38, and its annual sales turnover about £6.6 million, in 2003-2004. The second, Amazon.co.uk Ltd (www.amazon.co.uk) is a leading Internet retailer in the UK. From the FAME database, the number of its employees was 381, and its annual sales turnover about £27 million, in 2002. The third, Racketzone.Ltd (www.racketzone.com) according to the FAME database, had two employees, and its annual sales turnover was around £3 thousand, in 2003-2004. The fourth, Chimpee Ltd., which sells gifts, according to FAME database, had annual turnover around £1.7 thousand. This exploration indicated that the annual sales turnover of Internet retailers varies from a few thousand pound to a few million. In addition, the employment size varies from a few to several hundreds of people.

The questions on annual sales turnover and employment have been pre-tested in the second and third phases. Finally, business size is investigated through the following two questions:

Approximately how much are the annual sales turnover of your online business?

Please tick one box only.

- Less than £50 thousand
- £50 – 99 thousand
- £100 – 249 thousand
-

Approximately, how many people does your company currently employ in your online business? *Please tick one box only.*

- Fewer than 5 people
- 5 – 9 people
- 10 – 19 people
-

3. Business format

Internet retailing is operated in different formats based on its existence within a company. As discussed in the previous chapter, three main formats are widely recognised: (1) pure plays, (2) clicks-&-mortar, and (3) home shopping. For all of them, this study focused on the online business part. As presented in Chapter 3, the planned sample contains companies that sell through Internet. Therefore, the question was designed to identify their additional retail channel. The questions of business format have been pre-tested in the second and third phases. The final question is as follows:

In addition to trading online, does your company do business through the following sales channels?

- | | | |
|----------------------|------------------------------|-----------------------------|
| Fixed location store | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Mail/ Phone order | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

4. Maturity

Maturity is associated with the length of Internet retailing business establishment. This study adopts a classification used by the Inter-Departmental Business Register (IDBR, 2004) as follows:

- Less than 2 years
- 2 – 4 years
- 5 – 10 years
- More than 10 years

The questions of maturity have been pre-tested in the second and third phases. Finally, maturity is investigated through the following question:

How many years has your online business been established? *Please tick one box only.*

- Less than 2 years
- 2 – 4 years
- 5 – 10 years
- More than 10 years

4.4.2 Section B: Performance measurement

The section on performance measurement is the main part of this survey. Three phases of pre-test were conducted to develop an appropriate instruction and content, as discussed earlier. In the second phase of pre-test, the instruction was to identify the criticality of each performance indicator. In the third phase, it was to identify performance indicators measured, the frequency, and details of measurement. After subsequent revisions, the question was to identify performance indicators measured and the frequency of measurement. The responses to this question are considered as having a categorical scale, and the question is categorised as closed-ended. A blank space is provided at the end of the list to cover any other performance indicator. Finally, performance measurement is investigated through the following question:

Please indicate for the following performance indicators which ones are measured for your online business; and for those which are measured, please indicate how frequently. *Please circle one option of frequency for each performance indicator measured.*

Performance indicators	Does your company measure this indicator?		If 'Yes', how frequently is it measured?				
			Daily	Weekly	Monthly	Quarterly	Annually
1. Number of orders (transactions)	No	Yes	D	W	M	Q	A
2. Number of customers	No	Yes	D	W	M	Q	A
3. Total sales	No	Yes	D	W	M	Q	A
4.							

The response for each item is considered as having a categorical scale. The full version of this question, as well as the whole questionnaire itself, is presented in Appendix G.

4.4.3 Section C: Use of performance measurement

As discussed in Chapter 3, the use of performance measurement is investigated through two aspects: (1) managerial activities, and (2) decision types. The instructions have been developed and pre-tested in the second and third phases, and refined. The use of performance measurement to support managerial activities is operationalised by asking the frequency at which the information obtained from measuring performance indicators is used to support managerial activities. A Likert scale is adopted with the following descriptors: never – occasionally – half the time – often – always. A numerical scale of 1 to 5 is assigned to the descriptors in order to create in the respondents' mind that the answer has a range of values. Consequently, it is possible to treat the responses as having a metric scale.

Finally, this variable is investigated through the following question:

Please indicate how frequently the information obtained from measuring performance indicators is used for the following managerial activities. *Please circle one number for each item.*

Managerial activities	Never	Occasionally	Half the time	Often	Always
1. To assess implementation of business strategy	1	2	3	4	5
2. To identify possible needs to change business strategy	1	2	3	4	5
3. To anticipate the future direction of the business	1	2	3	4	5
4.					

The full version of this question is presented in Appendix G. Furthermore, the use of performance measurement to support decision-making is operationalised by asking the extent to which the information obtained from measuring performance indicators is used in those five types of decision. A Likert scale is adopted with the following descriptors: not at all – a few – about half – most – all. A numerical scale of 1 to 5 is assigned to the descriptors in order to create in the respondents' mind that the answer has a range of values. Consequently, it is possible to treat the responses as having a metric scale.

Finally, this variable is operationalised through the following question:

Please indicate the extent to which the information obtained from measuring performance indicators is used in the following types of decision. *Please circle one number for each type of decision.*

Types of decision	Not at all	A few decisions	About half	Most decisions	All decisions
1. In strategy decisions	1	2	3	4	5
2. In top level management decisions	1	2	3	4	5
3. In operational decisions	1	2	3	4	5
4.					

The full version of this question as well as the whole questionnaire itself is presented in Appendix G. It is irrelevant whether managerial activity or decision-making should come first in the questionnaire. For a layout design reason, decision-making came first because it occupies smaller space.

4.4.4 Section D: Business performance

Business performance can be assessed using an objective or subjective approach. Croteau and Bergeron (2001) explained that an objective approach refers to financial data provided by a firm, whereas a subjective one is based on the perception of the respondent. Previous studies indicated that subjective measures could accurately reflect objective ones (e.g. Croteau and Bergeron, 2001; Lumpkin and Dess, 2001; Morgan and Strong, 2003). A subjective measurement approach has been used in various studies (e.g. Bergeron et al, 2001; Cragg et al., 2002; Croteau and Bergeron, 2001; Evans, 2004; Hoque, 2004; Morgan and Strong, 2003; Tan and Litschert, 1994).

This survey adopts the subjective approach because the majority of retailers in the sample are considered small firms. Small firms are generally privately held and their managers are usually reluctant to disclose objective financial information to outsiders (Dess and Robinson, 1984). The instruction has been developed, pre-tested in the second and third phases, and refined. In the second phase of pre-test, the instruction proposed by Khandwalla (1977) was adopted. The instruction asked for the relative business performance against industry average or comparable competitor. This established instruction has been used in some studies (e.g. Cragg et al., 2002; Ismail

and King, 2005). However, the pre-test finding indicated that this type of instruction was problematic because of the difficulty in determining the competitors. The question, therefore, was modified by adopting an instruction used by Karagozoglu and Lindell (2004). They investigated e-commerce firm performance by assessing respondent satisfaction with regard to a set of measures. This type of instruction was used with 5-point scale, and pre-tested in the third phase. Normally, the response of business performance is higher on the positive side. To obtain a finer response, finally a 10-point numerical scale is used, anchored with 'very dissatisfied' at one end and 'very satisfied' at another (e.g. Karagozoglu and Lindell, 2004). The use of this scale is supported by the result of the third phase of pre-test. The responses can be considered as having a metric scale. As discussed in Chapter 3, business performance is identified through five measures. The final question on business performance is as follows:

Please rate the extent to which you are satisfied with your online business performance in each of the following measures. *Please circle one number for each item.*

Performance	Very dissatisfied	←-----→										Very satisfied
1. Profitability		1	2	3	4	5	6	7	8	9	10	
2. Sales growth		1	2	3	4	5	6	7	8	9	10	
3. Customer retention		1	2	3	4	5	6	7	8	9	10	
4.												

The full version of this question, as well as the whole questionnaire itself, is presented in Appendix G.

4.4.5 Section E: Strategic orientation

As discussed in Chapter 3, the question of strategic orientation is adopted from the instrument developed by Venkatraman (1989). Strategic orientation is investigated by asking the extent to which respondents agree or disagree with each item of strategic orientation (e.g. Morgan and Strong, 2003). A Likert scale is adopted with the following descriptors: strongly disagree – disagree – not sure – agree – strongly agree. This question was pre-tested in the second and third phases, and minor revisions about wording were made. For the similar reason presented earlier, a numerical scale of 1 to 5 is assigned to each descriptor.

Strategic orientation is investigated with the following question.

Please indicate the extent to which you agree or disagree with each of the following statements that applies to your online business. *Please circle one number for each statement.*

Online business orientation	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
1. We often sacrifice profitability to gain market share	1	2	3	4	5
2. We often cut prices to increase market share	1	2	3	4	5
3. We often set prices below competition	1	2	3	4	5
4.					

The full version of this question, as well as the whole questionnaire itself, is presented in Appendix G.

4.5 Survey implementation

This section presents the implementation of the survey. The presentation covers four parts: pilot test, main survey, response rate, and non-response bias. Each is now presented consecutively.

4.5.1 Pilot test

The pilot test was targeted for 150 Internet retailers selected from the planned sample list. The selection process followed the following procedure. Firstly, the list of Internet retailers was sorted alphabetically based on their domain names (URL addresses). The domain name rather than the company name was chosen, because the URL address is unique. Secondly, the first 75 sites with domain names starting with 'a' (e.g. www.amplebosom.com) and the same starting with 'b' (e.g. www.bags123.com) were drawn from the list. Altogether, these 150 retailers were targeted for the pilot test.

The pilot test was done by mailing those 150 Internet retailers. Each envelope contained an introductory letter, a copy of the questionnaire, a comment sheet, and an addressed envelope. Two different versions of mail were employed. In the first version, the comment sheet and questionnaire were split. The questionnaire was printed on white A3-size paper (double A4-size), and a comment sheet on coloured A4-size paper. In the second version, the questionnaire and comment sheet were put together and printed on a white triple A4-size paper. Around a half of the target

group starting with 'a' domain names was assigned the first version, and the second half the second version. The same procedure was applied for the target group starting with 'b' domain names.

The mailing was done first-class on 17 and 18 August 2005. Two weeks after the mailing, 14 responses were received. A second, *follow-up* mailing was used to increase responses. The result of this pilot study was as follows:

- Number of mailed questionnaires : 150
- Number of returned and completed questionnaires : 26
- Number undelivered : 6
- Number of companies declining participation : 2

The description of those 26 responses is as follows:

- 11 (42%) replies from first version of the questionnaire
- 15 (58%) replies from second version of the questionnaire.
- 14 (54%) replies from first mailing
- 12 (46%) replies from second mailing
- 20 (77%) replies providing contact address

The results indicate that a response rate of 18% (from 26/(150-6)) is considered appropriate to execute the main survey. As the second version of the questionnaire produced higher responses than the first, it was decided to use the former for the main survey. The results also indicate that follow-up mailing seems effective to increase response rate. It is surprising that the majority of respondents were willing to give their contact address to receive the copy of findings, together with their inclusion in the lucky draw.

The preliminary analysis of those responses indicated that the respondents could understand and complete the questionnaire. There was no modification made to the questionnaire for the main survey. Therefore, the responses of this pilot test can be added to those of the main survey for data analysis.

4.5.2 Main survey

The main survey was conducted using the same procedure as implemented in the pilot test. In this procedure, a first mailing was followed by a second one, two weeks after the first. The first mailing was done on 22 – 29 September 2005, and the second 10 – 17 October 2005.

Each mail contained an introductory (or reminder) letter, a copy of the questionnaire, and a first class business reply envelope. The questionnaire was printed on white triple A4-size paper. All mailings were sent first class. The first response was received on 26 September 2005. Each response received was dated and numbered.

In this survey, other reminder methods such as sending post-cards, calling by telephone or sending e-mails were not used. Sending a post-card will cost the same as sending a mail. Contacting the company by telephone was not done because the company's telephone lines are dedicated for business purposes, such as ordering and customer service. In addition, as the majority of the targeted respondents are anonymous, a request to speak to those persons would become a disadvantage because of an impersonal start. Furthermore, contacting companies through e-mail was not done for the same reason. It is apparent that respondents who provided a contact address (for sending the copy of the results) wrote personal e-mail account with their company domain name rather than business e-mail account, which starts with sales@, info@ or enquiries@.

4.5.3 Response rate

Table 4.3 presents a summary of responses for this main survey and pilot test.

Table 4.3: Summary of responses

Stage	Despatched	Response	Undelivered	Not participating	Response rate *
Pilot test	150	26 (17.3%)	6 (4%)	2 (1.3%)	18.1%
Full survey	1267	238 (18.8%)	34 (2.7%)	6 (0.5%)	19.3%
Total	1417	264 (18.6%)	40 (2.8%)	8 (0.6%)	19.2%

*) Excluding undelivered mail

In total, there are 264 responses received in this survey. The level of response rate, which is around 19%, is acceptable, accepting the condition that top managers of

small and medium-sized companies undertake a broad range of tasks and face time pressures in day-to-day management of their companies (Karagozoglu and Lindell, 2004). In addition, this survey indicated that 215 respondents (81% of the responses) wished to receive the summary of findings (together with inclusion in the lucky draw). Surprisingly, 112 respondents (42%) were willing to participate in further research. This might be reflecting their interests in this research topic.

The last two responses were received after data analysis had commenced. Consequently, they were unfortunately excluded. The next section discusses the issue of non-response bias.

4.5.4 Non-response bias

Non-response bias is a critical issue in a mail survey. If persons who respond differ substantially from those who do not, the results do not directly allow researchers to infer how the entire sample would have responded. It is a critical issue before the sample is generalised to the population (Armstrong and Overton, 1977). There are several methods in estimating non-response bias, for example (1) comparison with known values for the population, (2) subjective estimates, (3) and extrapolation (Armstrong and Overton, 1977). Among them, the extrapolation method is often used. Time trend is one of the extrapolation methods. This time trend method is based on the assumption that persons responding later are more like non-respondents (Armstrong and Overton, 1977). This method is applied by comparing certain characteristics of groups which respond early and late. If the groups do not differ in their characteristics, it is assumed that there are no systematic differences in their responses, suggesting that non-response bias is not a significant factor.

This method is adopted in this study to analyse non-response bias based on the timing of the responses received. Two groups of respondents were selected. The first group consisted of the first 30 responses received (from the main survey), and the second group consisted of the last 30 responses. The intermediate responses were excluded to clearly distinguish early and late respondents. The groups were compared on three major research variables: (1) performance indicators (whether measured or not), (2) strategic orientation, and (3) business performance. As this analysis was comparing ordinal data between two independent groups, a Mann-

Whitney test was used. The results indicated that only two among 64 items are statistically significant. Significant means that there is difference between early and late groups, while not significant means that two groups are not different. Consequently, the results can be interpreted that persons who did not respond were not different from those who responded. This result might suggest that the information obtained from the actual sample could therefore be generalised to the planned sample.

4.6 Summary

This chapter discussed the procedure by which the questionnaire was developed, a process which involved a literature-based development and a series of pre-tests. This chapter also discussed the way the questionnaire was administered for a pilot test and main survey. The responses received and the issue of non-response bias have been also addressed. The next chapter will present the description of responses.

Chapter 5

DESCRIPTIVE PROFILE OF RESPONSES

5.1 Introduction

This chapter is aimed to provide basic understanding of responses obtained from the survey. The presentation will cover three aspects: (1) company profile, (2) responses for some variables, and (3) respondent profile.

5.2 Business profile of responding companies

This section presents the attributes of Internet retailers participating in the survey. The presentation will cover individual attributes of business profile and the relationship between attributes.

5.2.1 Individual attributes

Profile of Internet retailers was investigated with four attributes: (1) product category, (2) business size, (3) business format, and (4) maturity. The descriptive findings of those attributes are presented in turn. Business size will be presented first because the selection of the actual sample is made.

1. Business size

The survey investigated business size from the amount of annual sales turnover and the number of employees involved in the Internet retailing operation. Eleven categories of annual sales were used in the questionnaire, and the findings are presented in Table 5.1.

Table 5.1: Annual sales turnover – survey results

Annual sales category	Frequency	Percentage
< £50 thousand	49	19%
£50 - 99 thousand	35	13%
£100 - 249 thousand	42	16%
£250 - 499 thousand	34	13%
£500 - 999 thousand	35	13%
£1 - 4 million	43	16%
£5 - 9 million	14	5%
£10 -19 million	1	0%
£20 - 49 million	7	3%
£50 - 99 million	0	0%
£100+ million	2	1%
Total	262	100%

The table shows that the frequency distribution is concentrated more in smaller categories of annual sales turnover. There are only 10 Internet retailers with annual sales turnover over £10 million, two with over £100 million.

Furthermore, Table 5.2 presents the findings of investigating the number of employees involved in the Internet retailing operation. The table show that 69% of the responding companies have fewer than five employees. This indicates that in terms of employment size, most of the Internet retailers are considered as very small businesses. The findings reveal that there is no company with 250 or more employees. By the nature of online retailing operation, this business sector is not a labour-intensive operation.

Table 5.2: Employment size – survey results

Number of employees	Frequency	Percentage
< 5	179	69%
5 – 9	48	18%
10 – 19	18	7%
20 – 49	10	4%
50 – 99	3	1%
100 – 249	3	1%
Total	261	100%

An important issue in *sample* survey research is about the representativeness of the actual sample. To address it, the actual sample should be compared with another known wider sample. Unfortunately, there are no representative data available about

the amount of annual sales turnover and the number of employees for Internet retailers. As an alternative approach, the actual sample is compared to the figure of mail order retailers. According to the Standard Industrial Classification of Economic Activities 2003 (ONS, 2003), mail order retailers (called retail sale via mail order house) is categorised under a class 52.61. Internet retailing has no specific category but it is also placed under that class. This categorisation is reasonable, as Internet retailers have similar characteristics to mail order retailers. Both are categorised as non store-based retailers, both display their merchandise through *catalogue* (printed or web-page), and both perform fulfilment of the orders. Therefore, it is expected that the figure for mail order retailers could be useful to understand that of Internet retailers. Tables 5.3 and 5.4 present annual sales turnover and employment size for class 52.61, as reported by the Inter Departmental Business Register (IDBR, 2004).

Table 5.3: Annual sales of mail order houses (class 52.61)

Annual sales category	Frequency	Percentage
< £50 thousand	760	26%
£50 – 99 thousand	580	20%
£100 – 249 thousand	690	24%
£250 – 499 thousand	325	11%
£500 – 999 thousand	230	8%
£1 – 4 million	230	8%
£5 + million	100	3%
Total	2,915	100%

Source: IDBR (2004)

Table 5.4: Employment size of mail order houses (class 52.61)

Number of employees	Frequency	Percentage
< 5	2,285	79%
5 – 9	350	12%
10 – 19	135	5%
20 – 49	65	2%
50 – 99	30	1%
100 – 249	15	1%
250 +	20	1%
Total	2,900	100%

Source: IDBR (2004)

The frequency distribution shown in Table 5.3 has some similarities to that in Table 5.1. Both distributions are concentrated in the smaller categories of annual sales turnover, and the highest percentage of distribution is in the category of *less than £50*

thousand. The similar case also appears for Tables 5.4 and 5.2. Both frequency distributions are concentrated in the smaller categories of employment size, and the highest concentration is in the first category of *fewer than 5 people*, with 69% for the actual sample and 79% for IDBR data. In summary, this comparison might indicate that the actual sample represents the actual figure of Internet retailers.

The survey results indicate that only 10 Internet retailers (4%) have annual sales turnover of £10 million or over, with two more than £100 million (Table 5.3). Internet retailers in big categories of annual sales might act differently compared to those in small categories. As a consequence, both categories might result in different findings. However, the number of companies obtained from the survey for big categories is not enough to draw conclusions about big business size, and this small number can possibly distort the result. For this reason, those 10 companies are excluded from further analysis. This study, therefore, focuses on Internet retailers with annual sales of less than £10 million, which could be called small and medium-sized Internet retailers. The revised frequency distributions of annual sales turnover and employment size are presented in Tables 5.5 and 5.6, and Figures 5.1 and 5.2.

Table 5.5: Annual sales turnover – revised survey results

Annual Sales	Frequency	Percentage
£0 - < £50 thousand	49	19%
£50 - <100 thousand	35	14%
£100 - <250 thousand	42	17%
£250 - <500 thousand	34	13%
£500 - <1,000 thousand	35	14%
£1 - <5 million	43	17%
£5 - <10 million	14	6%
Total	252	100

Table 5.6: Employment size – survey result

Number of employees	Frequency	Percentage
< 5	179	71%
5 - 9	47	19%
10 - 19	16	6%
20 - 49	8	3%
50 - 99	1	0.4%
Total	251	100%

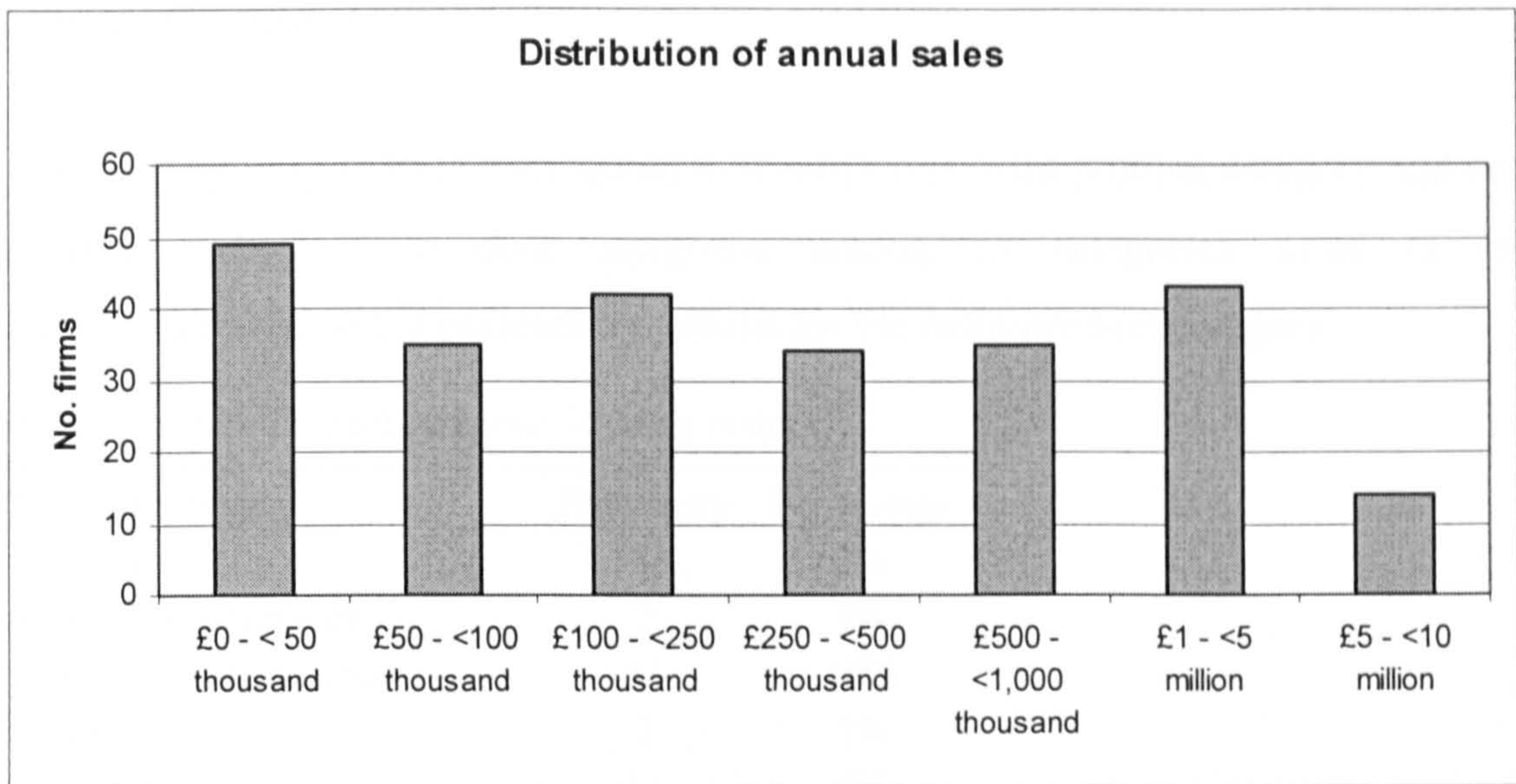


Figure 5.1: Frequency distribution of annual sales

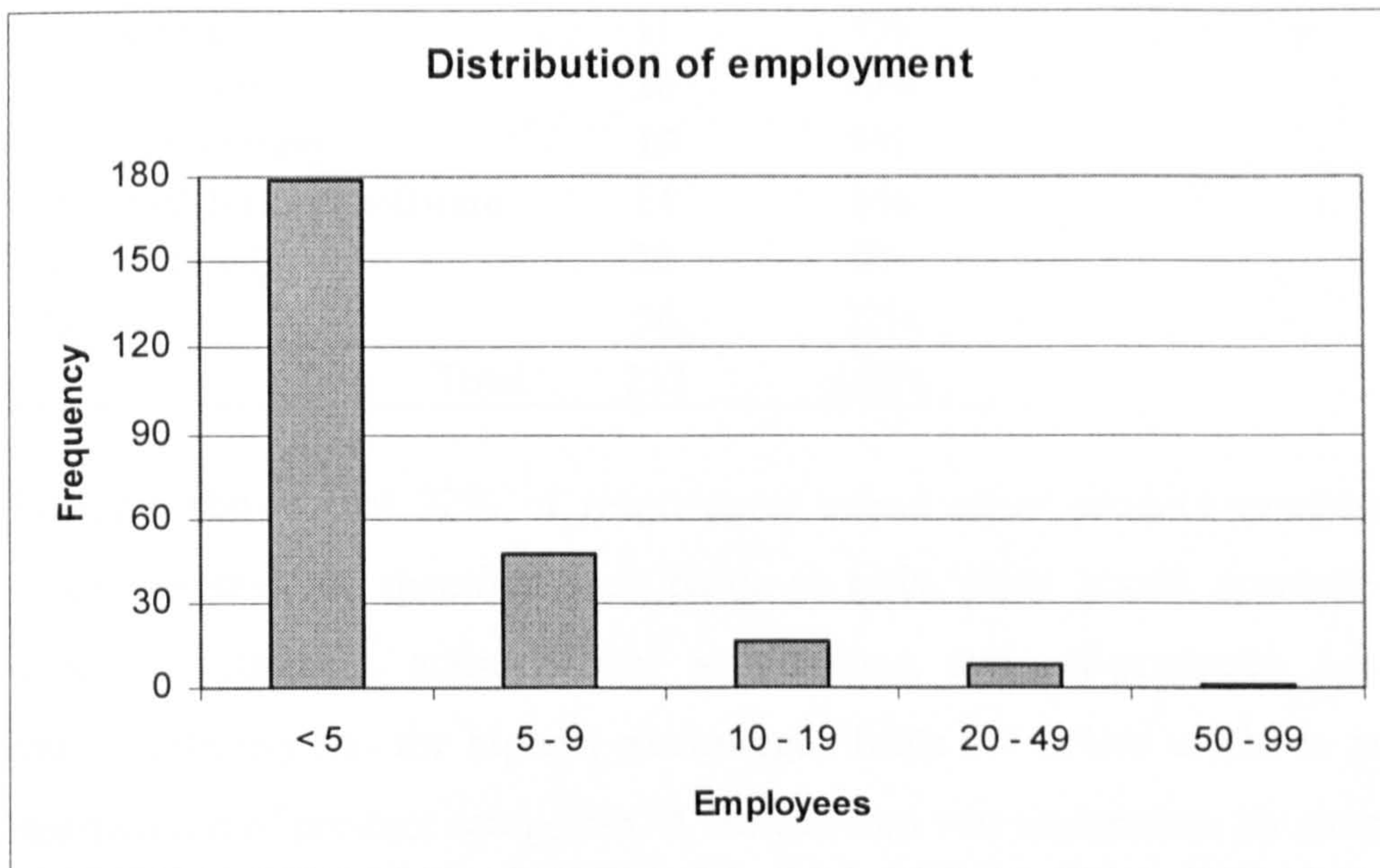


Figure 5.2: Frequency distribution of employees

Figure 5.1 seems more evenly distributed than Figure 5.2. As discussed in Chapter 3, the number of employees might not be a good indicator of business size. Some Internet retailers may outsource certain activities, while the others may not. Consequently, those with outsource will have fewer employees than those that do not. In summary, annual sales turnover is considered better to represent business size than the number of employees.

2. Product category

In the survey, respondents were asked to identify one main product category and one or more subsidiary product categories among 13 categories listed in the questionnaire. Table 5.7 presents the results for the main product category.

Table 5.7: Main product category – survey results

Product category	Frequency	Percentage
Grocery	6	2%
Alcohol & beverages	2	1%
Clothing & accessories	41	16%
Footwear	3	1%
Jewellery	14	6%
Furnishing	11	4%
Electrical goods	19	8%
DIY & gardening	16	6%
Sports goods	11	4%
Toys & hobbies	26	10%
Books & stationery	10	4%
Video/ DVD/ CD & software	14	6%
Health & beauty	23	9%
Other	56	22%
Total	252	100%

The table shows that 22% of respondents select *other* product category. For this choice, respondents specified such items as gifts, party goods, computer supplies, musical instruments, audio cables, art-graphics, and pet-products. As this *other* product category has the highest percentage, Table 5.7 is less useful in presenting a classification of product categories. A further step was undertaken by simplifying the responses obtained from main product category, subsidiary product category, and product described as ‘other’, into five major groups (as described in Chapter 3). The revised distribution of this classification is presented in Table 5.8.

Table 5.8: Major product category – survey results

Product category	Frequency	Percentage
1. Leisure and entertainment	96	38%
2. Home and DIY	64	25%
3. Clothing and accessories	60	24%
4. Health and beauty	23	9%
5. Food and drink	9	4%
Total	252	100%

The top category is leisure-and-entertainment, which consists of, for example, video/ DVD/ CD and software, books, toys, and sports goods. These findings confirm the literature that products in this category are appropriate for online shopping, in which they attract many Internet retailers. The second place is home-and-DIY, which covers, for example, furnishing, DIY and gardening, and electrical goods. The third is clothing-and-accessories, which covers, for example, clothing, footwear, and jewellery. Those three main product categories represent 88% of Internet retailers surveyed. Furthermore, only a small portion of the responding companies sells health-and-beauty products (9%), and food-and-drink (3%). Health-and-beauty products are less popular in online trading for some possible reasons. Customers may need a trial for cosmetic products, and high street stores of cosmetic product can be found easily. Sale of medicines is highly regulated in the UK. A limited range can be sold by retail stores (OTC – over the counter). Prescription-only medicine can only be sold in a pharmacy. Food-and-drink products are also less popular in the online shopping because of their perishability.

3. Business format

The survey investigated whether Internet retailers also sell their products through store and mail order channels. The findings are presented in Table 5.9.

Table 5.9: Business format – survey result

Business format	Frequency	Percentage
Internet only	45	18%
Internet + mail order	108	43%
Internet + store	9	4%
Internet + mail order + store	90	36%
Total	252	100%

The table shows that 18% of companies rely solely on Internet channel, 40% (from 4% + 36%) have retail outlets, and 79% (from 43% + 36%) conduct mail order. This figure indicates that the Internet shopping channel is a complement to the traditional channels, which are store-outlet and catalogue mail order. Especially, the finding might indicate that most of the Internet retailers are mail order. The easier adoption of the online shopping facility currently may encourage retailers to go online to reach a wider potential market. The opposing view is also possible, in which pure-plays

retailers complement their Internet channel with mail order and store-based channels. The finding that most of the responding companies are mail order retailers might support the previous presentation that the distribution of the actual sample resembles that of class 52.61 *mail order house* (IDBR, 2004). By considering that the majority of responding companies are mail order, and the similarities between online sales and mail-order, those 4 categories are simplified into two: (1) Internet retailers without store presence, and (2) Internet retailers with store presence. This new grouping is presented in Table 5.10. The table shows that about 60% of responding companies are Internet retailers without store presence. This might indicate that the fast growth of Internet retailing in the UK was contributed by existing mail order retailers and new ventures. This might also provide evidence that the growth of Internet retailers without store presence has exceeded that with store presence, and the significant shift in the retailing industry towards online shopping.

Table 5.10: Business format – revised survey result

Business format	Frequency	Percentage
Without-store presence	153	61%
With-store presence	99	39%
Total	252	100%

4. Maturity

The survey investigated the maturity of Internet retailers through their time of establishment. The findings presented in Table 5.10 show that more than 80% have been in operation between 2 and 10 years. In addition, the findings reveal that 14% of Internet retailers are quite new. As Internet retailing business started emerging in the mid-1990s, it is reasonable that there is only a very small portion (2%) with more than 10 years of establishment.

Table 5.11: Maturity of online business – survey result

Online business establishment	Frequency	Percentage
< 2 years	35	14%
2 - 4 years	104	42%
5 - 10 years	105	42%
> 10 years	6	2%
Total	250	100%

As there is only a relatively small proportion of retailers in the first category (< 2 years) and the fourth (> 10 years), four categories of online business establishment were simplified into two. The first two categories were combined into one group representing *less mature* Internet retailers, in which their online businesses have been established for less than five years. The other two categories were merged into another group representing *more mature* Internet retailers, online businesses established for more than 5 years. The former group could indicate Internet retailers established after the dotcom crisis (year 2000), while the latter before that. Table 5.12 presents this revised grouping. The figure might be interpreted that the actual sample has a comparable proportion of *less mature* and *more mature* businesses.

Table 5.12: Maturity of online business – revised survey result

Maturity	Frequency	Percentage
Less mature (< 5 years)	139	56%
More mature (> 5 years)	111	44%
Total	250	100%

5.2.2 Relationship between attributes

This part examines the relationships among business size, business format and maturity. The relationships are analysed using cross-tabulation because of its simplicity in demonstrating the presence or absence of a relationship.

1. Business size – Business format

Table 5.13 presents the output of cross-tabulation between business size and business format. The table shows that for smaller categories of business size (less than £250 thousand), Internet retailers without-store presence have higher percentages than those with-store presence. Conversely, for bigger categories (£250 thousand - £10 million), there are higher proportions for with-store presence than for without-store presence. This finding may suggest that Internet retailers without-store presence are likely to be smaller than those with-store presence.

Table 5.13: Cross-tabulation – business size and business format

Business size		Business format		Total	
		Without-store	With-store		
£0 – < 50 thousand	Count	35	14	49	
	% within business format	23%	14%	19%	
£50 – <100 thousand	Count	26	9	35	
	% within business format	17%	9%	14%	
£100 – <250 thousand	Count	29	13	42	
	% within business format	19%	13%	17%	
£250 – <500 thousand	Count	19	15	34	
	% within business format	12%	15%	13%	
£500 – <1,000 thousand	Count	16	19	35	
	% within business format	10%	19%	14%	
£1 – <5 million	Count	21	22	43	
	% within business format	14%	22%	17%	
£5 – <10 million	Count	7	7	14	
	% within business format	5%	7%	6%	
		Count	153	99	252
		% within business format	100	100	100

2. Business size – maturity

Table 5.14 (overleaf) presents the output of cross-tabulation between business size and maturity. The table indicates that smaller Internet retailers were likely to be less mature, while bigger ones were likely to be more mature. In other words, this finding tells that the longer the online establishment, the more annual sales turnover might be acquired. The finding is sensible, as annual sales turnover is expected to grow over time.

Table 5.14: Cross-tabulation – business size and maturity

Business size		Maturity		Total
		Less mature	More mature	
£0 – < 50 thousand	Count	39	10	49
	% within maturity	28%	9%	20%
£50 – <100 thousand	Count	24	11	35
	% within maturity	17%	10%	14%
£100 – <250 thousand	Count	22	20	42
	% within maturity	16%	18%	17%
£250 – <500 thousand	Count	11	23	34
	% within maturity	8%	21%	14%
£500 – <1,000 thousand	Count	19	14	33
	% within maturity	14%	13%	13%
£1 – <5 million	Count	20	23	43
	% within maturity	14%	21%	17%
£5 – <10 million	Count	4	10	14
	% within maturity	3%	9%	6%
Count		139	111	250
% within maturity		100%	100%	100%

3. Business format – maturity

Table 5.15 presents the output of cross-tabulation between business format and maturity. The table indicates that less mature Internet retailers are likely to be without-store presence, while more mature ones are likely to be with-store presence.

Table 5.15: Cross-tabulation – maturity and business format

Maturity		Business format		Total
		Without-store	With store	
Less mature	Count	91	48	139
	% within business format	59%	49%	56%
More mature	Count	62	49	111
	% within business format	41%	51%	44%
Count		153	97	250
% within business format		100%	100%	100%

The table shows that among less mature Internet retailers, about 60% are without store presence and about 40% with-store presence. This fact again shows that new

entrants in this sector are slightly dominated by non-store-based retailers. For more mature retailers, the proportion for both groups is about the same.

5.3 Descriptive response for selected variables

This section presents descriptively responses for some selected variables, to provide more understanding about the responding companies. This presentation covers two dimensions of strategic orientation, business performance, and the use of performance measurement in decision-making. This section does not include performance measurement variable, which will be discussed in more detail in Chapter 7.

5.3.1 Strategic orientation

The descriptive results of the first two dimensions of strategic orientation: aggressiveness and analysis, are presented consecutively.

1. Aggressiveness

Aggressiveness refers to the stance adopted by an Internet retailer on its resources allocation to improve its market position at a relatively faster rate than its competitors (Venkatraman, 1989). Four items for this dimension were investigated in the survey, and the result is presented in Table 5.16.

Table 5.16: Aggressiveness dimension – survey results

	strongly disagree	disagree	not sure	agree	strongly agree	Total
SO-Agg_1	44 (18%)	90 (36%)	18 (7%)	84 (33%)	15 (6%)	251 (100%)
SO-Agg_2	44 (17%)	84 (33%)	10 (4%)	95 (38%)	19 (8%)	252 (100%)
SO-Agg_3	41 (16%)	89 (35%)	16 (6%)	90 (36%)	16 (6%)	252 (100%)
SO-Agg_4	62 (25%)	117 (47%)	28 (11%)	35 (14%)	9 (4%)	251 (100%)

Note:

SO-Agg_1 : We often sacrifice profitability to gain market share

SO-Agg_2 : We often cut prices to increase market share

SO-Agg_3 : We often set prices below competition

SO-Agg_4 : We often seek market share position at the expense of cash flow and profitability

The result shows that responses are distributed to the left side (disagree) as well as right side (agree). This figure may indicate that some Internet retailers have higher aggressiveness behaviour, while the others lower.

2. Analysis

Analysis refers to the stance adopted by an Internet retailer on overall problem solving posture, in which the retailer searches deeper for the roots of problems and generates the best possible solution alternatives (Venkatraman. 1989). Six items for this dimension were investigated in the survey, and the results are presented in Table 5.17.

Table 5.17: Responses for analysis dimension – survey results

	strongly disagree	disagree	not sure	agree	strongly agree	Total
SO-Ana_1	12 (5%)	21 (9%)	102 (42%)	92 (38%)	18 (7%)	245 (100%)
SO-Ana_2	6 (2%)	18 (7%)	35 (14%)	150 (60%)	42 (17%)	251 (100%)
SO-Ana_3	5 (2%)	21 (8%)	48 (19%)	146 (58%)	30 (12%)	250 (100%)
SO-Ana_4	8 (3%)	44 (18%)	68 (27%)	111 (44%)	19 (8%)	250 (100%)
SO-Ana_5	10 (10%)	42 (17%)	53 (21%)	124 (50%)	18 (7%)	247 (100%)
SO-Ana_6	77 (32%)	81 (33%)	46 (19%)	37 (15%)	2 (1%)	243 (100%)

Note:

- SO-Ana_1 : We emphasise effective coordination among different functional areas
- SO-Ana_2 : Our information systems provide support for decision making
- SO-Ana_3 : When confronted with a major decision, we usually try to develop through analysis
- SO-Ana_4 : We use several planning techniques
- SO-Ana_5 : We use the outputs of management information and control systems
- SO-Ana_6 : We commonly use human resource planning and performance appraisal of senior managers

The responses of the first five items are concentrated on the right side (agree), which means that the majority of Internet retailers have high analysis behaviour. The result of the sixth item (SO-Ana_6) indicates that Internet retailers are less likely to use human resource planning and performance appraisal of senior managers. This finding is sensible, as the majority of Internet retailers have fewer than five employees, as presented earlier.

5.3.2 Business performance

In the survey, respondents were asked to indicate their level of satisfaction regarding their online business performance in five items: profitability, sales growth, customer retention, superiority of fulfilment process, and quality of web-store. Table 5.18 present the results, in which the original 10-point scale of responses is simplified into five categories. This table shows that the responses are concentrated on the '7 – 8' category. This finding confirms the prediction in Chapter 3 that respondents are likely to give positive responses on business performance.

Table 5.18: Business performance – survey results

Performance	"1-2"	"3-4"	"5-6"	"7-8"	"9-10"	Total
Profitability	18 (7%)	49 (19%)	64 (25%)	98 (39%)	23 (9%)	252 (100%)
Sales growth	17 (7%)	38 (15%)	69 (27%)	90 (36%)	38 (15%)	252 (100%)
Customer retention	14 (6%)	34 (14%)	78 (31%)	97 (39%)	26 (10%)	249 (100%)
Superiority fulfilment	8 (3%)	11 (4%)	72 (29%)	95 (38%)	61 (25%)	247 (100%)
Quality web store	10 (4%)	17 (7%)	52 (21%)	128 (51%)	43 (17%)	250 (100%)

5.3.3 Use of performance measurement – types of decision

The survey investigated the use of performance measurement in supporting various types of decision made by Internet retailers. Table 5.19 presents the results.

Table 5.19: Types of decision – survey results

Type of decision	not at all	a few decisions	about half	most decisions	all decisions	Total
TD-strategy	15 (6%)	37 (15%)	39 (16%)	108 (44%)	48 (19%)	247 (100%)
TD-top level mgt	20 (8%)	40 (16%)	41 (17%)	100 (41%)	45 (18%)	246 (100%)
TD-operational	15 (6%)	33 (13%)	39 (16%)	110 (45%)	48 (20%)	245 (100%)
TD-pay reward	129 (52%)	45 (18%)	27 (11%)	27 (11%)	18 (7%)	246 (100%)
TD-other personnel	98 (40%)	60 (25%)	38 (16%)	30 (12%)	18 (7%)	244 (100%)

Note:

- TD-strategy : In strategy decisions
- TD-top level mgt : In top level management decisions
- TD-operational : In operational decisions
- TD-pay reward : In pay-reward decisions
- TD-other personnel : In other personnel decisions

The table indicates that the majority of Internet retailers used the information obtained from performance measurement to support strategy, top-level management, and operational decisions. Conversely, they were less likely to use the information to

support pay-reward and other personnel decisions. This confirms response SO-Ana_6 of analysis behaviour, as presented earlier. This finding is sensible, because the majority of responding companies have fewer than five employees.

5.4 Respondent profile

The questionnaires were sent mostly to Managing Directors. The actual person who answered the questionnaire could be someone else in the company. To identify the actual respondents, the questionnaire included two questions on respondent profile. The first asked the respondent about position in the company, and the second his/ her business experience, either in retailing or online business. The result of respondent positions is presented in Table 5.20.

Table 5.20: Respondent position – survey results

Respondent position	Frequency	Percentage
Owner/ Managing Director/ CEO	197	83%
Manager/ Senior Manager	34	14%
Others	5	2%
Total	236	100%

The table shows that the majority of respondents (83%) are owners, or Managing Directors, or CEOs. As presented earlier, the responding companies are considered as small and medium-size businesses. In these companies, it is common that the owners also serve as Managing Director or CEO. In the *others* position, respondents specified such positions as web developer, web editor, and web marketing coordinator. In general, this finding indicates that the respondents are key persons in the company and competent to provide information about it.

Furthermore, the result of respondent experience in the retailing or online business sector is presented in Table 5.21. The result indicates that around a half of the respondents have 1 – 5 years of experience, and the other half over 5 years. The table also shows that one among five respondents has long enough experience in this business (more than 10 years).

Table 5.21: Respondent experience – survey result

Respondent experience	Frequency	Percentage
1 - 5 years	128	55%
6 - 10 years	60	26%
> 10 years	46	20%
Total	234	100%

Based on the respondent profiles, there should be confidence that the responses obtained from this survey came from the appropriate people. Their responses are likely to represent the real figure of companies being investigated. This fact may indicate the validity of responses obtained in this survey.

5.5 Summary

This chapter was aimed to provide descriptive information about the responses obtained from the survey. Based on the annual sales turnover, this study is focused on Internet retailers with annual sales turnover less than £10 million, which can be categorised as small and medium-sized businesses. The annual sales turnover is used as a measure of online business size. Relatively bigger Internet retailers (in a context of small and medium-sized businesses) are likely to have store presence and be more mature, while smaller ones to be without-store presence and less mature. Overall, the characteristics of responding companies are in a comparable proportion between less mature and more mature, as well as between with-store and without-store presence. This balanced figure might increase the confidence that the actual sample covers the real condition of Internet retailing business. After the discussion of the characteristics of responding companies, the next chapter moves on to discuss the major research variables.

Chapter 6

PRELIMINARY DATA ANALYSIS

6.1 Introduction

In order to facilitate more simple analysis and interpretation, the amount of original data from the survey should be transformed into a more manageable number. This chapter mainly aims to obtain good variables to be used for further analysis. It presents the results of factor analysis for four main research variables: performance measurement, use of performance measurement, business performance, and strategic orientation. Factor analysis is a technique for identifying groups of a set of *variables*. This technique is often used to reduce a data set to a more manageable size. Factor analysis works by investigating correlation coefficients between pairs of variables. A group of correlated variables within a data set represents a factor. Two most popular techniques (called *extraction* techniques) of factor analysis are principal component analysis (PCA) and common factor analysis (CFA). This study used PCA rather than CFA because PCA is commonly used as a variable reducing scheme and conceptually less complex than CFA. A more detailed description of factor analysis technique is presented in Appendix I.

This chapter will also discuss an effort to find a good control variable. The selection will be made among three variables of business profile: business format, maturity, and business size.

6.2 Factor analysis for Performance measurement

The survey investigated whether Internet retailers measured each of 30 performance indicators listed in the questionnaire. As discussed in Chapter 3, those performance indicators could be grouped into five categories (dimensions), in which each of them has six performance indicators. For each dimension, the number of performance indicators measured was added up to create five variables: (1) PI-market, (2) PI-financial, (3) PI-web, (4) PI-customer, and (5) PI-process. Table 6.1 illustrates the

data set of these five variables. Each cell has a value between 0 and 6. The higher the number, the more performance indicators are measured.

Table 6.1: Illustration of performance measurement data

	PI-market	PI-financial	PI-web	PI-customer	PI-process
Case-1	4	4	2	1	1
Case-2	4	1	3	1	0
Case-3	4	4	6	5	4
Case-4	4	4	4	1	3
Case-5	5	4	5	1	2
...

Factor analysis is, then, performed to identify whether these five dimensions can be grouped into a smaller number based on the correlation among them.

1. Appropriateness of data

Before factor analysis is performed, the appropriateness of data should be investigated from (1) correlation matrix, (2) Kaiser-Meyer-Olkin test of sampling adequacy (KMO), and (3) Bartlett's test of sphericity (BTS). Table 6.2 presents the correlation matrix for five PI dimensions. The matrix indicates a substantial number of correlations greater than 0.3. The determinant of the correlation matrix has value 0.245, which is greater than the required value 0.00001. This result suggests that there is no problem about multicollinearity for these data.

Table 6.2: Correlation matrix – Performance measurement

Items	PI-market	PI-financial	PI-web	PI-customer	PI-process
PI-market	1.000	0.542	0.381	0.494	0.285
PI-financial		1.000	0.391	0.557	0.446
PI-web			1.000	0.420	0.430
PI-customer				1.000	0.401
PI-process					1.000

Determinant = 0.245

As presented in Table 6.3, KMO test has a score 0.803, which is greater than the required minimum value 0.5. According to Hair's (1998) classification, the score obtained falls into the range of being *meritorious*. The table also indicates that the BTS output is highly significant ($p < 0.001$). This result means that the correlation matrix is not an identity matrix.

Table 6.3: KMO and BTS – Performance indicator

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.803
Bartlett's Test of Sphericity	
Approx. Chi-square	349.029
df	10
Sig.	0.000

Based on those criteria, there should be confidence that the data are appropriate for factor analysis.

2. Number of factors

The main important decision to be made in conducting factor analysis is about the number of factors to extract. For this purpose, firstly the scree plot in Figure 6.1 is investigated. The chart seems to start to flatten out at the second component. Therefore, following the scree test criterion, only one component should be retained.

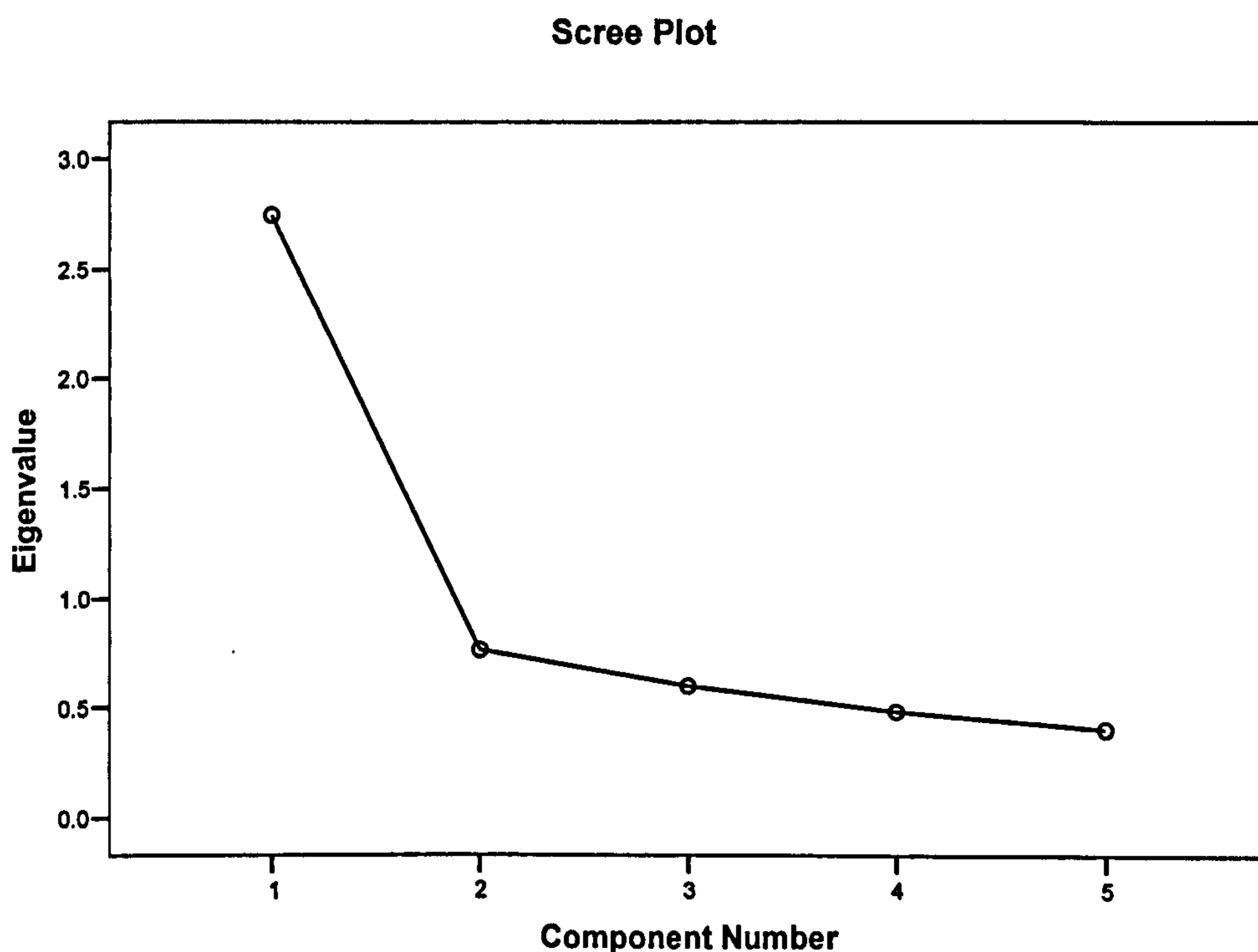


Figure 6.1: Scree plot – Performance indicator

Secondly, the eigenvalue and variance, as shown in Table 6.4, are examined. As there is only one component with eigenvalue greater than 1, Kaiser's criterion suggests that one component should be retained. This single component accounts for 55% of variance, which is actually less than the recommended minimum value 60%.

Retaining two components will increase the percentage of variance to 70%. The second component has eigenvalue 0.767, which is considerably less than 1. Kaiser's criterion is accurate when there are less than 30 variables and communality after extraction is greater than 0.7, or when the sample size exceeds 250 and the average communality after extraction is greater than 0.6 (Appendix I). For these data, the average communality is 0.550, which is less than the recommended minimum value 0.6, and the sample size is 252. The ratio of factor to items is $1/5 = 0.2$, which meets the criterion of less than 0.3. These conditions can possibly indicate that one component is appropriate.

Table 6.4: Eigenvalue and variance – Performance indicators

Component	Eigenvalue	% of Variance	Cumulative %
1	2.748	55%	55%
2	0.767	15%	70%
3	0.600	12%	82%
4	0.483	10%	92%
5	0.402	8%	100%

Although the statistical examination leads to one component, the final decision should be made on the sensible judgment. Factor analysis was, therefore, conducted by setting the number of components as one and two, and the results were compared. Table 6.5 presents the comparison of the results.

Table 6.5: Performance indicator – comparison

Component Correlation Matrix

Component	1	1	2
1		1.000	0.488
2			1.000

	Component Matrix	Pattern Matrix	
	1	1	2
PIs market	0.734	0.940	-0.158
PIs financial	0.806	0.739	0.163
PIs web	0.696	0.133	0.718
PIs customer	0.786	0.704	0.178
PIs process	0.676	-0.057	0.912

(continued)

Table 6.5(continued)

Reliability analysis (conducted for items with factors loadings in bold)

	1	1	2
Cronbach's α	0.780	0.759	0.593
No. Items	5	3	2

Table 6.5 firstly presents the component correlation matrix obtained from oblique rotation by retaining two components. Both components are correlated with a correlation coefficient 0.488, which is *not a negligible* value. Therefore, oblique rotation is more appropriate than orthogonal for these data. Table 6.5 secondly presents factor loadings for retaining one and two components. Factor loadings are clearly split into two groups consisting of three and two items. Table 6.5, finally, presents the result of reliability analysis. For one component, the value of Cronbach's α is high (0,780), which means that this component has a good reliability. For two components, the first component has a good reliability, but the second has Cronbach's α less than 0.6 as a recommended minimum value. By considering this comparison table and the meaning of components obtained, the number of factor for performance indicators is decided as one.

3. Description

Performance measurement refers to the extent to which an Internet retailer measures a range of multidimensional performance indicators to evaluate its business performance. As suggested by factor analysis, performance measurement can be considered as a single variable for further analysis. This single variable represents the number of performance indicators measured by an Internet retailer. Table 6.6 presents descriptive statistics of this variable. The mean score indicates that, on average, Internet retailers measured 15 performance indicators.

Table 6. 6: Performance indicator – descriptive statistics

Variable	N	Minimum	Maximum	Mean	S.D.
PI	252	0	30	15.440	6.282

6.3 Factor analysis for Use of Performance Measurement

This part discusses the result of factor analysis for two variables: managerial activities and decision type.

6.3.1 Managerial Activities

The survey investigated 10 items of Managerial Activities. Factor analysis is, then, performed to identify whether these ten items can be grouped into a smaller number based on the correlation among them.

1. Appropriateness of data

Before factor analysis is performed, the appropriateness of data should be investigated from (1) correlation matrix, (2) KMO, and (3) BTS. Table 6.7 presents the correlation among ten items of managerial activities. The matrix shows that there is a substantial number of correlations greater than 0.3. The determinant of the correlation matrix is 0.002, which is greater than the required minimum value 0.00001. This result suggests that there is no problem about multicollinearity for these data.

Table 6.7: Correlation matrix – Managerial activities

Items	MA-assess	MA-change	MA-future	MA-bench-in	MA-bench-ex	MA-improve	MA-perform	MA-reward	MA-report	MA-company
MA-assess	1.000	0.857	0.697	0.458	0.414	0.569	0.429	0.389	0.280	0.319
MA-change		1.000	0.806	0.454	0.454	0.596	0.455	0.411	0.286	0.280
MA-future			1.000	0.431	0.486	0.618	0.452	0.408	0.267	0.254
MA-bench-in				1.000	0.597	0.372	0.369	0.318	0.291	0.400
MA-bench-ex					1.000	0.548	0.448	0.345	0.290	0.265
MA-improve						1.000	0.625	0.477	0.283	0.300
MA-perform							1.000	0.774	0.401	0.412
MA-reward								1.000	0.365	0.384
MA-share									1.000	0.588
MA-company										1.000

Determinant = 0.002

Table 6.8 shows that the KMO test score is 0.829, which is greater than the necessary minimum value 0.5. According to Hair's (1998) classification, the score falls into the range of being *meritorious*. Furthermore, BTS is highly significant ($p < 0.001$). This result suggests that the correlation matrix is not an identity matrix.

Table 6.8: KMO and Bartlett's test – Managerial activities

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.829
Bartlett's Test of Sphericity	
Approx. Chi-square	1409.936
df	45
Sig.	0.000

Based on those criteria, there should be confidence that the data are appropriate for factor analysis.

2. Number of factors

The main decision to be made is about the number of factors to extract. As shown in Figure 6.2, the scree plot *possibly* flattens out at the third component. Following the scree plot criterion, two components could be retained.

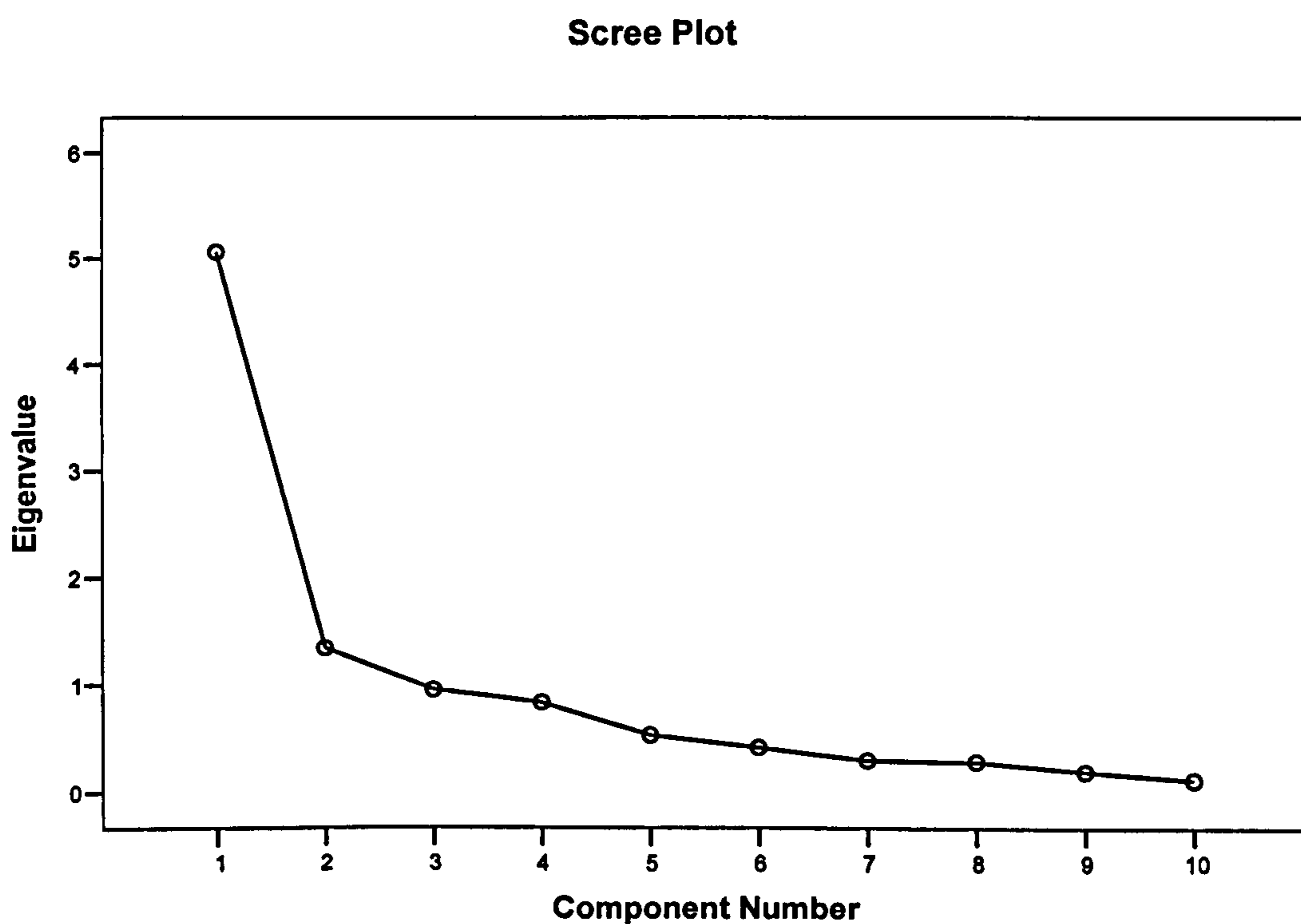


Figure 6.2: Scree plot – Managerial activities

Table 6.9 presents eigenvalue and variance of 10 possible components. According to Kaiser's criterion, two components should be retained, as there are only two components with eigenvalues greater than 1. These two components account for 64% of variance, which is greater than the recommended minimum value 60%. As presented earlier, Kaiser's criterion is accurate for certain conditions (Appendix I). For these data, the average communality is 0.639, and the sample size is 235 (exclude listwise), which might be considered close to 250. The ratio of factor to items is $2/10 = 0.2$, which meets the criteria of less than 0.3. Based on these considerations, Kaiser's criterion could be accurate.

Table 6.9: Eigenvalue and variance – Managerial activities

Component	Eigenvalue	% of Variance	Cumulative %
1	5.054	51%	51%
2	1.340	13%	64%
3	0.947	9%	73%
4	0.831	8%	82%
5	0.527	5%	87%
6	0.416	4%	91%
7	0.296	3%	94%
8	0.281	3%	97%
9	0.192	2%	99%
10	0.116	1%	100%

The scree test, Kaiser's, as well as percentage of variance criterion, might suggest two components for these data. As the final decision should be based on the sensible judgment, factor analysis was conducted by setting the number of factors as one, two, and three; then the results were compared, and are presented in Table 6.10 (overleaf). The table firstly presents the component correlation matrix obtained from oblique rotation for retaining two and three components. The matrix indicates that correlations between components are *non-negligible*. Therefore, oblique rotation is more appropriate than orthogonal for these data. The table then presents factor loadings for retaining one, two and three components. Pattern matrix for two components shows that the rotation process produced two distinct groups of factor loadings, in which one has six items and the other four items. Pattern matrix for three components shows that the rotation process has produced three groups of factor loadings, consisting of six, two, and two items, consecutively. However, there are

two *cross-loading* scores, which are higher than 0.4. This figure may suggest that the grouping of ten components into three should be seen cautiously. Table 6.10, finally, presents the results of reliability analysis. The values of Cronbach's α are high. By considering this comparison table and the meaning of components obtained, the number of components for Managerial Activities variable is decided as two.

Table 6.10: Comparison – Managerial activities

Component Correlation Matrix

Component	1	2	1	2	3
1	1.000	0.462	1.000	0.351	-0.382
2		1.000		1.000	-0.260
3					1.000

Factor loadings

	Component Matrix	Pattern Matrix		Pattern Matrix		
	1	1	2	1	2	3
MA-assess BS	0.788	0.899	-0.076	0.870	-0.042	-0.036
MA-change BS	0.818	0.959	-0.112	0.916	-0.096	-0.067
MA-future direction	0.792	0.922	-0.100	0.868	-0.111	-0.107
MA-bench internal	0.653	0.490	0.261	0.586	0.470	0.241
MA-bench external	0.685	0.584	0.184	0.605	0.258	0.026
MA-improvement	0.780	0.709	0.154	0.584	-0.047	-0.421
MA-assess perfm	0.758	0.341	0.593	0.145	0.167	-0.798
MA-reward	0.685	0.256	0.602	0.049	0.147	-0.837
MA-report share	0.531	-0.085	0.828	-0.053	0.791	-0.165
MA-report comp/ho	0.554	-0.071	0.840	-0.024	0.834	-0.120

Reliability analysis (conducted for items with factor loadings in bold)

	1	1	2	1	2	3
Cronbach's α	0.884	0.875	0.789	0.875	0.721	0.870
No. Items	10	6	4	6	2	2

3. Description

The result of factor analysis suggested that the use of performance measurement to support managerial activities could be simplified into two dimensions. The first contains six items related to strategy and improvement. Therefore, this dimension is named strategic activities (MA-strategy). The score of this variable is obtained by adding up the scores of six corresponding items. The higher the score of MA-

strategy, the more frequently an Internet retailer uses the information obtained from performance measurement for strategic-related activities. The second dimension contains four items related to personnel and administration issues. Therefore, this dimension is named administrative activities (MA-administration). The score of this variable is obtained by adding up the scores of four corresponding items. The higher the score of MA-administration, the more frequently an Internet retailer uses the information obtained from performance measurement for administration-related activities. The descriptive statistics of these two dimensions are presented in Table 6.11. The mean scores indicate that, on average, Internet retailers use the information more frequently for strategic than administrative purposes.

Table 6.11: Descriptive statistics – Managerial activities

Dimension	N	Minimum	Maximum	Mean	S.D.
MA-strategy	246	1	5	3.139	0.950
MA-administration	245	1	5	2.039	1.050

6.3.2 Types of Decision

The survey investigated five items of Type of Decision. Factor analysis is performed to identify whether these five items can be grouped into a smaller number based on the inter-correlation among them.

1. Appropriateness of data

The appropriateness of data is examined from correlation matrix, KMO, and BTS. As shown in Table 6.12, the correlation matrix indicates that all correlations are greater than 0.3. The determinant of this matrix is 0.054, which is greater than the recommended minimum value 0.00001.

Table 6.12: Correlation matrix – Type of decision

Items	TD-strategy	TD-top level mgt	TD-operational	TD-pay reward	TD-other personnel
TD-strategy	1.000	0.744	0.697	0.394	0.445
TD-top level mgt		1.000	0.726	0.481	0.532
TD-operational			1.000	0.428	0.459
TD-pay reward				1.000	0.760
TD-other personnel					1.000

Determinant = 0.054

Table 6.13 indicates that the KMO score is 0.782, which is greater than the recommended minimum value 0.5. According to Hair's (1998) classification, the value falls into the range of being '*middling*'. The table also indicates that the result of BTS is highly significant ($p < 0.001$), which means that the correlation matrix is not an identity matrix. Finally, based on those three criteria, there should be confidence that the data are appropriate for factor analysis.

Table 6.13: KMO and Bartlett's test – Type of decision

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.782
Bartlett's Test of Sphericity	
Approx. Chi-square	698.671
df	10
Sig.	0.000

2. Number of factors

The decision about the number of factors to extract is the main issue in conducting factor analysis. For this purpose, the scree plot (Figure 6.3) and the eigenvalue-variance (Table 6.14) are used. The figure shows that the scree plot starts to flatten out at the third component. Therefore, following the scree test criterion, two components should be retained.

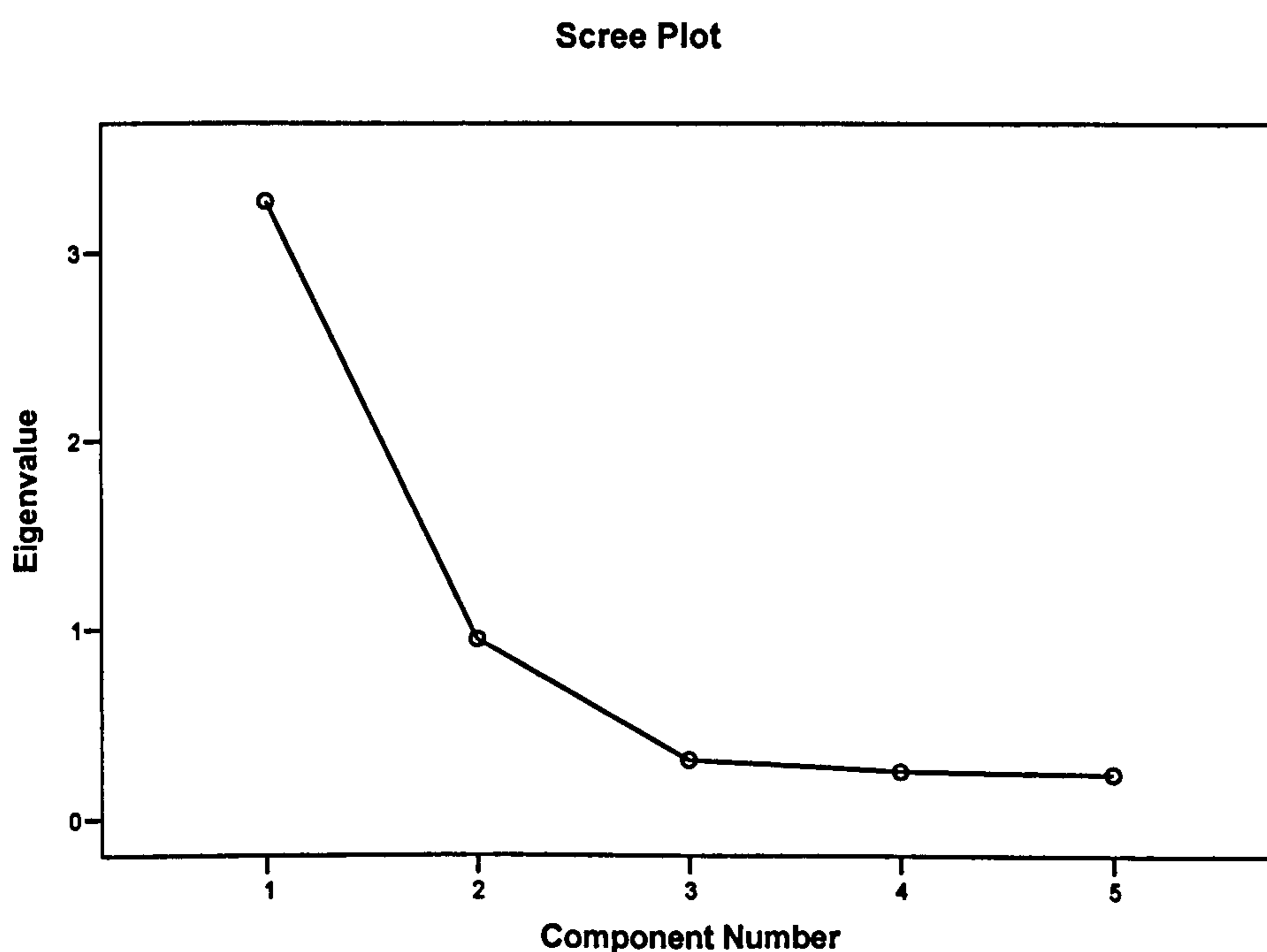


Figure 6.3: Scree plot – Type of decision

Table 6.14 indicates that only one component has eigenvalue greater than 1. Kaiser's criterion suggests that only one component should be retained. This single component accounts for 65% of variance. As presented earlier, Kaiser's criterion is accurate when there are fewer than 30 variables and communality after extraction is greater than 0.7, or when the sample size exceeds 250 and the average communality after extraction is greater than 0.6. The sample size of these data is 243 and average communality is 0.655. The ratio of factor to items is $1/5 = 0.2$, which meets the criterion of less than 0.3. These conditions may possibly suggest that Kaiser's criterion is less accurate for these data.

Table 6.14: Eigenvalue and variance – Type of decision

Component	Eigenvalue	% of Variance	Cumulative %
1	3.274	65%	65%
2	0.941	19%	84%
3	0.306	6%	90%
4	0.246	5%	95%
5	0.233	5%	100%

As the final decision about the number of factors should be based on the sensible judgment, factor analysis was then conducted by setting the number of factors as one and two; the results were compared, and are presented in Table 6.15.

Table 6.15: Comparison – Type of decision

Component Correlation Matrix

Component	1	1	2
1	1.000	1.000	0.526
2			1.000

Factor loadings

	Component Matrix		Pattern Matrix	
	1		1	2
TD-strategy	0.820		0.938	-0.061
TD-top level mgt	0.872		0.856	0.097
TD-operational	0.827		0.897	-0.005
TD-pay reward	0.743		-0.035	0.960
TD-other personnel	0.779		0.050	0.908

Reliability analysis (conducted for items with factor loadings in bold)

	1	1	2
Cronbach's α	0.865	0.886	0.862
No. Items	5	3	2

The table firstly presents the component correlation matrix obtained from oblique rotation for retaining two components. Both components are correlated with a correlation coefficient 0.526, which is *not a negligible* value. Therefore, oblique rotation is used rather than orthogonal for the data. Table 6.15 then presents factor loadings for retaining one and two components. Pattern matrix for two components shows that the rotation process produces two groups of factor loadings, in which each has three and two items. Finally, the table presents the result of reliability analysis. The values of Cronbach's α are considerably high. By considering this comparison table and the meaning of components obtained, the number of components for Type of Decision is decided as two. The decision of two components is also supported by the descriptive presentation of this variable in Chapter 5.

3. Description

The result of factor analysis suggested that the use of performance measurement to support various types of decision could be considered as having two dimensions. The first dimension contains strategy, top-level management, and operational decisions. Therefore, this dimension is named strategic decision (TD-strategy). The score of this variable is obtained by adding up the scores of three corresponding items. The higher the score in TD-strategy means an Internet retailer uses the information obtained from performance measurement in a greater number of strategy-related decisions. The second dimension contains pay-reward and personnel decisions. Therefore, this dimension is named personnel decision (TD-personnel). The score of this variable is obtained by adding up the scores of two corresponding items. The higher score in TD-personnel means the more that an Internet retailer uses the information obtained from performance measurement in personnel-related decisions. The descriptive statistics of these two dimensions are presented in Table 6.16. The mean scores indicate that, on average, Internet retailers use the information more on strategic than personnel decisions.

Table 6.16: Descriptive statistics – Types of decision

Dimension	N	Minimum	Maximum	Mean	S.D.
TD-strategy	247	1	5	3.525	1.044
TD-personnel	246	1	5	2.124	1.226

6.4 Factor analysis for Business Performance

The survey investigated five items of business performance. Factor analysis is performed to identify whether these five items can be grouped into a smaller number based on the correlation among them.

1. Appropriateness of data

The appropriateness of data is examined from the correlation matrix, KMO, and BTS. As presented in Table 6.17, the correlation matrix shows that there is a substantial number of correlations greater than 0.3. The matrix has a determinant 0.184, which is greater than the required minimum value 0.00001. This result suggests that there is no problem about multicollinearity for these data.

Table 6.17: Correlation matrix – Business Performance

Items	BP-profitability	BP-sales growth	BP-customer retention	BP-fulfilment	BP-quality web
BP-profitability	1.000	0.489	0.415	0.319	0.319
BP-sales growth		1.000	0.479	0.281	0.454
BP-customer retention			1.000	0.592	0.550
BP-fulfilment				1.000	0.618
BP-quality web					1.000

Determinant = 0.184

As shown in Table 6.18, the KMO score test is 0.754, which is greater than the recommended minimum value 0.5. According to Hair's (1998) classification, the score falls into the range of being '*middling*'. The result of BTS is highly significant ($p < 0.001$), which means that the correlation matrix is not an identity matrix.

Table 6. 18: KMO and Bartlett's Test – Business performance

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.754
Bartlett's Test of Sphericity	
Approx. Chi-square	408.451
df	10
Sig.	0.000

Based on those three criteria, there should be confidence that these data are appropriate for factor analysis.

2. Extraction and rotation

Similar to the previous section, the number of factors to extract should be determined. For this purpose, the scree plot (Figure 6.4) and the eigenvalue scores (Table 6.19) are examined. The scree plot starts to flatten out possibly at the second or third component. Therefore, following the scree test criterion, one or two components might be retained.

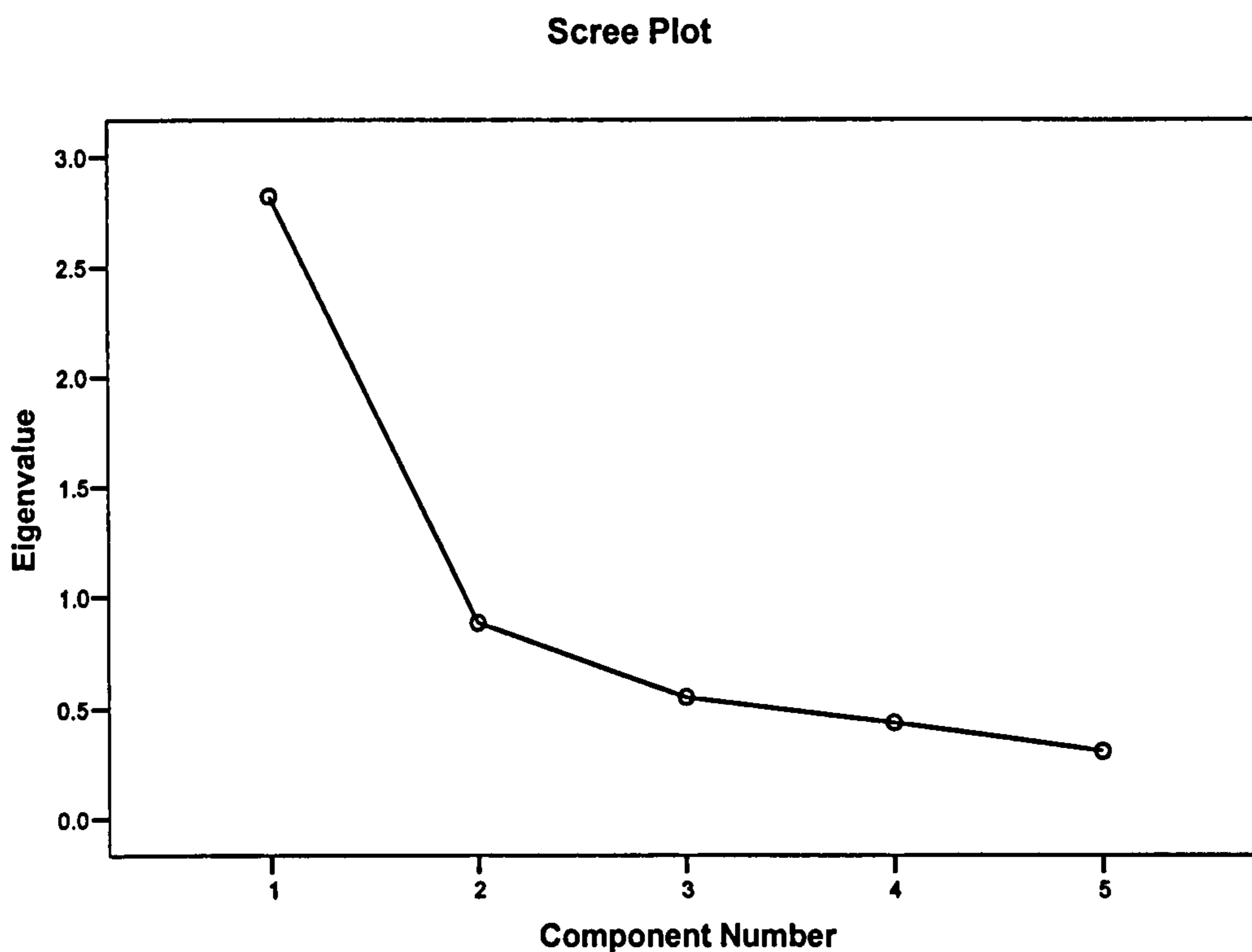


Figure 6.4: Scree plot – Business performance

Table 6.19: Eigenvalue and variance – Business performance

Component	Eigenvalue	% of Variance	Cumulative %
1	2.820	56%	56%
2	0.885	18%	74%
3	0.553	11%	85%
4	0.435	9%	94%
5	0.307	6%	100%

Table 6.19 suggests that only one component should be retained following Kaiser's criterion. As presented earlier, Kaiser's criterion is accurate when there are fewer than 30 variables, and the average communality after extraction is greater than 0.7, or

when the sample size exceeds 250, and the average communality after extraction is greater than 0.6. The average communality of these data is 0.564, and the sample size is 245 (exclude listwise). The ratio of factor to items is $1/5 = 0.2$, which meets the criterion of less than 0.3. These could indicate that Kaiser's criterion is less accurate. If selecting only one component, this accounts for only 56% of variance, which is less than a recommended minimum value 60%. For two components, 74% of variance will be captured. Therefore, this examination suggests that one or two components might be retained.

As the final decision about the number of factors should be based on the sensible judgment, factor analysis was conducted by setting the number of factor as one and two. Table 6.20 presents the comparison of results.

Table 6.20: Comparison – Business performance

Component Correlation Matrix

Component	1	1	2
1		1.000	0.457
2			1.000

Factor loadings

	Component Matrix	Pattern Matrix	
	1	1	2
BP-profitability	0.651	-0.039	0.878
BP-sales growth	0.708	0.073	0.820
BP-customer retention	0.823	0.684	0.255
BP-fulfilment	0.762	0.955	-0.139
BP-quality web	0.798	0.826	0.057

Reliability analysis (conducted for items with factor loadings in bold)

	1	1	2
Cronbach's α	0.801	0.809	0.672
No. Items	5	3	2

For retaining two components, the component correlation matrix from oblique rotation indicates that the correlation coefficient, 0.457, is *not negligible*. Therefore, oblique rotation is more appropriate than orthogonal for the data. Factor loadings are presented in the second part of the table as a component matrix for one component and pattern matrix for two components. The pattern matrix shows two distinct groups of factor loadings, which consist of three and two items, consecutively. Finally, the

table presents the result of reliability analysis. The value of Cronbach's α is high (0.801) for one component. For two components, the values of Cronbach's α are 0.809 and 0.672. As Cronbach's α depends on the number of items, the value of 0.672 is acceptable for a component consisting of only two items. By considering this comparison table and the meaning of components obtained, the number of components for Business Performance is decided as two.

2. Description

Business performance refers to how well an Internet retailer is doing. Based on the result of factor analysis, business performance could be treated as two dimensions. The first dimension contains profitability and sales growth, which are both related to financial performance. Therefore, this dimension is named financial performance (BP financial). The higher financial performance means the higher perceived performance in profitability and sales growth. The second dimension contains customer retention, superiority of fulfilment process, and quality of web-store. These are related to non-financial or operational performance. Therefore, this dimension is named operational performance (BP operational). The higher operational performance means the higher perceived performance in customer retention, superiority of fulfilment process, and quality of web-store. Naming of those two factors is consistent with the domain of business performance suggested by Venkatraman and Ramanujam (1986).

6.5 Factor analysis for Strategic Orientation

Factor analysis for the strategic orientation variable was conducted for 29 items. As discussed in Chapter 3, these items were predicted to compose six dimensions of strategic orientation.

1. Appropriateness of data

The early step in conducting factor analysis is to examine the appropriateness of data. For this purpose, a correlation matrix should be examined. As there are 29 items, the matrix will have a size 29 x 29, which is not practicable to display.

Alternatively, Table 6.21 presents the number of correlation coefficients which are greater than 0.3, for all 29 items. For each item, the table presents the number of correlations with all other items (second column), and the number of correlations with other items within the corresponding dimension (third column).

Table 6.21: Number of correlations – Strategic orientation

Items	"r>0.3" all *)	"r>0.3" within dimension *)	Items	"r>0.3" all *)	"r>0.3" within dimension *)
Aggressiveness			Futurity		
SO-Agg_1	4	3	SO-Fut_1	0	0
SO-Agg_2	3	3	SO-Fut_2	6	3
SO-Agg_3	3	3	SO-Fut_3	10	3
SO-Agg_4	3	3	SO-Fut_4	7	3
Analysis			SO-Fut_5	6	3
SO-Ana_1	1	0	Proactiveness		
SO-Ana_2	5	3	SO-Pro_1	2	1
SO-Ana_3	6	4	SO-Pro_2	2	2
SO-Ana_4	9	4	SO-Pro_3	0	0
SO-Ana_5	7	4	SO-Pro_4	1	1
SO-Ana_6	8	3	SO-Pro_5	0	0
Defensiveness			Riskiness		
SO-Def_1	3	1	SO-Ris_1	1	0
SO-Def_2	11	3	SO-Ris_2	0	0
SO-Def_3	11	2	SO-Ris_3	1	1
SO-Def_4	5	2	SO-Ris_4	2	2
			SO-Ris_5	1	1

Note: *) correlation with itself is not counted

Table 6.21 shows that proactiveness and riskiness items have a small number of correlations (greater than 0.3) within their corresponding dimensions, as well as with all other items. These small numbers are supported by the low reliability scores of Cronbach's α , which are 0.343 for proactiveness and 0.386 for riskiness (Note: the SPSS output is not reported). Consequently, items in these two dimensions are excluded from further analysis. Furthermore, Table 6.21 shows that three items of aggressiveness have correlations (greater than 0.3) only among items within this dimension. This figure may suggest that this dimension is less related to other dimensions. In addition, one item of futurity dimension (SO-Fut_1) has no correlation with other items. In summary, as there are enough correlations among items, factor analysis can be performed for these data.

Furthermore, factor analysis is run again for 19 items, excluding items in proactiveness and riskiness dimensions. As shown in Table 6.22, the KMO score is 0.848, which is greater than the recommended minimum value 0.5. According to

Hair's (1998) classification, the score falls into the range of being *meritorious*. The result of Bartlett's test is highly significant ($p < 0.001$), which means that the correlation matrix is not an identity matrix.

Table 6.22: KMO and Bartlett's Test – Strategic orientation

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.848
Bartlett's Test of Sphericity	
Approx. Chi-square	1716.753
df	171
Sig.	0.000

Based on those three criteria, there should be confidence that these data are appropriate for factor analysis.

2. Number of factors

This part discusses the decision regarding the number of factors. Figure 6.5 shows the scree plot of the data.

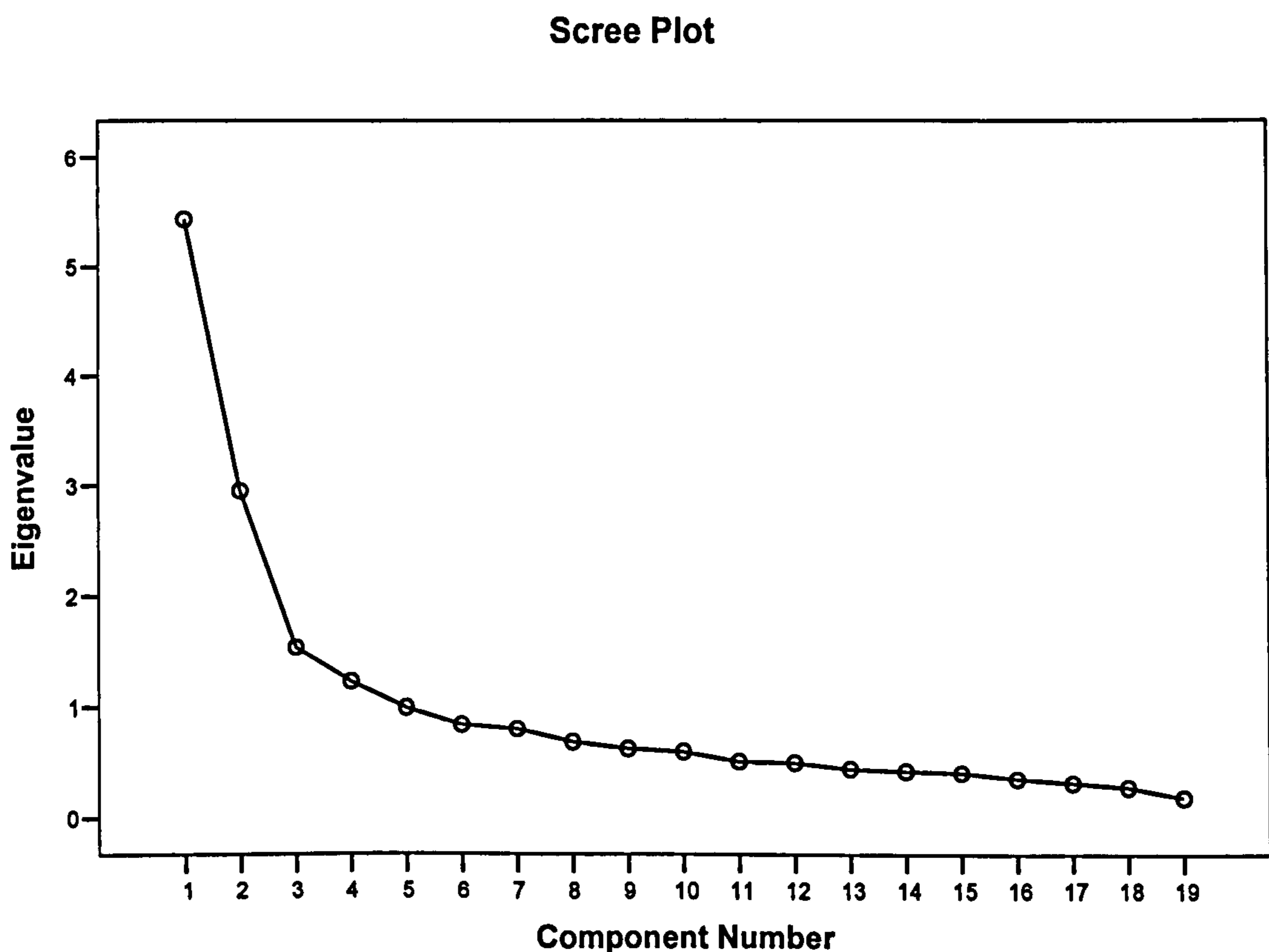


Figure 6.5: Scree plot – Strategic orientation

The scree plot *possibly* shows that it starts to flatten out at the third component; therefore, two components might be retained. Table 6.23 indicates that four components have eigenvalue greater than 1. According to Kaiser's criterion, four components should be retained. The percentage of variance for two components is 44%, while for four components 59%. The average communality is 0.586. In summary, there are two options, whether four or two components should be retained.

Table 6.23: Eigenvalue and variance – Strategic orientation

Component	Eigenvalue	% of Variance	Cumulative %
1	5.429	29%	29%
2	2.951	16%	44%
3	1.535	8%	52%
4	1.222	6%	59%
5	0.986	5%	64%
6	0.831	4%	68%
7	0.794	4%	72%
8	0.679	4%	76%
9	0.619	3%	79%
10	0.592	3%	82%
11	0.504	3%	85%
12	0.494	3%	88%
13	0.438	2%	90%
14	0.417	2%	92%
15	0.401	2%	94%
16	0.348	2%	96%
17	0.311	2%	98%
18	0.271	1%	99%
19	0.180	1%	100%

As the final decision about the number of factors should be made on the sensible judgment, factor analysis was conducted by setting the number of factor as two and four. Table 6.24 (overleaf) compares the results.

Table 6.24: Comparison – Strategic orientation

Component Correlation Matrix						
Component	1	2	1	2	3	4
1	1.000	0.102	1.000	-0.021	-0.282	0.373
2		1.000		1.000	-0.097	0.081
3					1.000	-0.435
4						1.000

Factor loadings						
	Rotated Component Matrix		Pattern Matrix			
	1	2	1	2	3	4
SO-Agg_1	0.064	0.839	0.105	0.848	-0.029	0.003
SO-Agg_2	0.017	0.887	-0.008	0.878	-0.072	0.018
SO-Agg_3	-0.144	0.788	-0.060	0.789	0.115	0.028
SO-Agg_4	-0.049	0.834	0.068	0.847	-0.002	-0.081
SO-Ana_1	0.443	-0.002	0.458	0.038	-0.145	-0.017
SO-Ana_2	0.542	0.119	0.708	0.200	0.055	0.053
SO-Ana_3	0.619	-0.122	0.758	-0.034	0.149	0.174
SO-Ana_4	0.692	-0.174	0.627	-0.124	-0.139	0.130
SO-Ana_5	0.669	-0.132	0.808	-0.046	-0.065	-0.008
SO-Ana_6	0.638	-0.010	0.252	-0.036	-0.615	0.004
SO-Def_1	0.508	0.056	0.263	0.056	-0.119	0.285
SO-Def_2	0.723	0.020	0.235	-0.017	-0.654	0.095
SO-Def_3	0.733	-0.041	0.331	-0.064	-0.724	-0.054
SO-Def_4	0.522	0.037	-0.178	-0.062	-0.817	0.097
SO-Fut_1	-0.257	-0.280	0.198	-0.208	0.461	-0.118
SO-Fut_2	0.591	0.100	-0.109	0.027	-0.037	0.833
SO-Fut_3	0.691	0.063	0.071	0.015	-0.033	0.787
SO-Fut_4	0.641	0.099	0.053	0.053	0.029	0.799
SO-Fut_5	0.518	-0.086	0.064	-0.118	0.004	0.597

Reliability analysis (conducted for items with factor loadings in bold)						
	1	2	1	2	3	4
Cronbach's α	0.869	0.871	0.760	0.871	0.768	0.765
No. Items	14	4	5	4	3	4

For two components, the examination of the component correlation matrix indicates that both components are weakly correlated. Therefore, varimax rotation method (orthogonal) is be used instead of direct oblimin (oblique). For four components, the matrix shows that components 1, 3, and 4 have some degree of correlation among them, but component 2 is less related to others. As some correlations exist, direct oblimin (oblique) is used. Factor loadings are presented in the second part of the

table as a rotated component matrix for two components, and pattern matrix for four components. The rotated component matrix clearly shows two groups of factor loadings. The first group consists of four items from aggressiveness, and the second consists of 14 items from analysis, defensiveness, and futurity. One item, SO-Fut_1, has a low factor loading score for both groups.

Furthermore, the pattern matrix of four components indicates that most items set in the *expected* four dimensions: aggressiveness, analysis, defensiveness and futurity. The matrix shows that two items (SO_Ana-6 and SO_Fut-1) do not attach to the expected dimensions, and one item (SO_Def-1) has a low factor loading. As shown in the component correlation matrix, component 2 from retaining two factors is the same as component 2 from retaining four factors. Component 1 obtained from retaining two factors mostly represents components 1, 3 and 4 from retaining four factors. This finding is consistent with the component correlation matrix, which indicates that those three components are correlated with each other. Venkatraman (1989) who developed this strategic orientation instrument reported that aggressiveness was not significantly related to analysis, defensiveness, and futurity. Furthermore, Venkatraman explained that analysis, defensiveness, and futurity reflected a more balanced perspective of strategic orientation in contrast to aggressive market share-seeking behaviour.

The third part of Table 6.24 presents the result of reliability analysis. Cronbach's α scores for two components are around 0.87, which are considerably high. Cronbach's α scores for four components are also relatively high.

By considering the comparison table, the correlation between factors obtained, the reliability analysis, and the meaning of components obtained, the number of components for Strategic Orientation is decided as two. These two factors firstly will provide more simple analysis and interpretation of the results (parsimonious principle) than four factors. Secondly, as a firm's strategic orientation is a combination of its strategic behaviours, more simple combination, as well as interpretation, can be obtained from two *weakly* correlated factors than four correlated ones. Although not reported, analysis using for factors was checked.

3. Description

The result of factor analysis suggested that strategic orientation could be considered as having two dimensions. The first consists of analysis, defensiveness, and futurity traits. This dimension is named conservativeness-oriented strategy (SO conservativeness) because the related items represent conservative strategic traits of a firm. As presented in Chapter 3, *analysis-oriented strategy* refers to the traits of overall problem-solving stance; *defensiveness* refers to the traits of efficiency-seeking method; and *futurity* refers to the traits of temporal considerations in strategic decisions. As a combination of three aspects of strategic behaviour, conservative behaviour is associated with rational and careful companies. The higher the score of conservativeness-oriented strategy means the more conservative an Internet retailer is in its strategic choice. The second dimension covers aggressiveness traits, therefore it is named aggressiveness-oriented strategy (SO aggressiveness). *Aggressiveness* refers to the stance adopted by an Internet retailer in its allocation of resources for improving market positions at a relatively faster rate than the competitors in its chosen market. The higher the score of aggressiveness means the more aggressive an Internet retailer is in its strategic choice.

As aggressiveness and conservativeness can be seen as two independent dimensions, an Internet retailer may have any combination scores of them. Figure 6.6 presents a scatter plot representing a combination of aggressiveness and conservativeness-oriented strategies. The figure seems randomly distributed as there is no discernable pattern. This means that a firm's strategic choice can be any combination of aggressiveness and conservativeness. To obtain a simple grouping of the combination, the plot is divided into four areas by splitting aggressiveness and conservativeness scores into two: low and high based on their mean scores. These four areas can be considered as four different strategic types. Table 6.25 presents the distribution of these four types: (1) High Aggressiveness – High Conservativeness, (2) Low Aggressiveness – Low Conservativeness, (3) High Aggressiveness – Low Conservativeness, and (4) Low Aggressiveness – High Conservativeness..

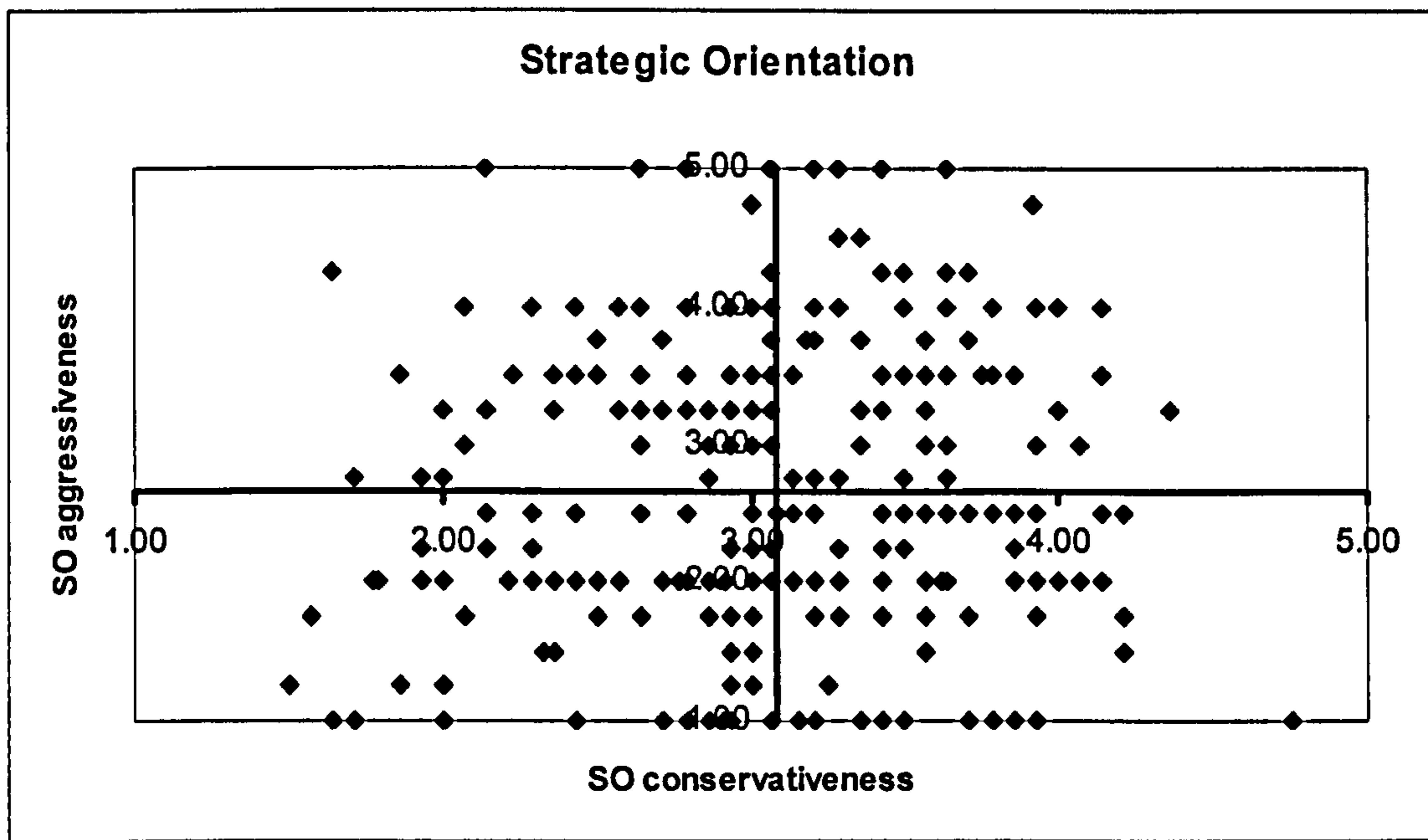


Figure 6.6: Scatter plot of strategic orientation

Table 6.25: Four types of strategic orientation

Types	Frequency	Percentage
Low Conservativeness – Low Aggressiveness	71	28%
Low Conservativeness – High Aggressiveness	53	21%
High Conservativeness – Low Aggressiveness	65	26%
High Conservativeness – High Aggressiveness	63	25%
Total	252	100%

Note: The term 'low' and 'high' are associated with below or above mean scores

4. Further interpretation

This additional section discusses further the findings on strategic orientation in order to understand why some dimensions are identified and some others are not. Among six dimensions of the Strategic Orientation of Business Enterprise (STROBE) construct (Venkatraman, 1989), the analysis indicated that only four were observed as distinctive dimensions. The aggressiveness dimension was observed as the expectation. The other three: analysis, defensiveness, and futurity, were also observed as unique dimensions, but they were then collapsed into the conservativeness dimension because of their inter-correlations. Each of these four dimensions is now discussed in turn, and then the rationale of assigning the conservativeness dimension is presented.

The aggressiveness dimension, which refers to the stance adopted by a business in its allocation of resources for improving market positions at a relatively faster rate than the competitors in its chosen market (Venkatraman, 1989), was observed as a unique strategic dimension of Internet retailers. The aggressiveness traits are indicated, for example, by cutting price and sacrificing profitability to gain market share (Venkatraman, 1989). Internet retailers covered in this analysis are mostly small and less mature (56% less than 5 years of establishment). For these firms, seeking many customers and orders are the key for their survival. Therefore, some Internet retailers possibly sacrificed profitability in the short-run to develop bigger customer-base. This action is also supported by a life-cycle model of Internet retailing (Rayport and Jaworski, 2001). The model suggests that in its early stage, a firm needs to gain customers before it can make profit in the later stage.

The first component of conservativeness, the analysis dimension, which refers to the traits of overall problem solving posture, was also found as a distinctive strategic orientation for Internet retailers. Analysis traits are indicated, for example, by using information systems to support decision making, making analysis for major decisions, and using planning techniques (Venkatraman, 1989). As Internet retailers are relatively immature, various problems (e.g. Internet transaction and delivery) need to be solved. Managers are likely to do analysis to solve those problems.

The second component of conservativeness, the defensiveness dimension, which is manifested in terms of emphasis on cost reduction and efficiency seeking method (Venkatraman, 1989), was also identified as a unique strategic orientation of Internet retailers. Controlling cost is to be the main concern for any retailer. First, a lower cost can be translated as a lower price for customers. The existence of price-comparison sites (e.g. kelkoo.co.uk) enables online customers to compare prices from several retailers for certain goods they want to buy. Therefore, low price could be an important key for acquiring orders. Secondly, controlling cost can be translated as higher profit for the firm. In a transparent market competition, price could be beyond a firm's control, as the firm is *forced* to give a comparable price. Therefore, lower cost (more efficient) in operation could be an important key for profitability.

The third component of conservativeness, the futurity dimension, which refers to the temporal considerations reflected in key strategic decisions, in terms of the relative

emphasis on effectiveness (longer-term) considerations versus efficiency (shorter-term) considerations (Venkatraman, 1989) was also observed as a unique strategic orientation of Internet retailers. A company with futurity traits is indicated, for example, by its using forecasting, tracking of business trend, and conducting 'what if' analysis (Venkatraman, 1989). As the Internet retailing business is quite new and volatile, managers need to be aware of what might happen to their business in the future.

As presented in Chapter 6, factor analysis indicated that analysis, defensiveness, and futurity are correlated with each other, but not with aggressiveness. This result is consistent with the findings of Venkatraman (1989), who developed this instrument. His study reported that aggressiveness was not significantly related to analysis, defensiveness, and futurity. Analysis, defensiveness, and futurity were considered as having a more balanced perspective of strategic orientation, in contrast to aggressive market share-seeking behaviour (Venkatraman, 1989). Rather than treating those three correlated dimensions individually, factor analysis has shown that the three could be collapsed into a single factor. Combining these three dimensions could provide a simpler framework to understand the strategic orientation of small-and medium-sized Internet retailers. Combining several dimensions was also adopted by Tan and Litschert (1994), who used Venkatraman's strategic orientation. Tan and Litschert (1994) combined futurity, proactiveness and riskiness into one dimension. Aggressiveness being separated from those three dimensions could be explained by the fact that Internet retailers may have high aggressiveness, regardless of their emphasis on the other three. These two dimensions could explain that the strategic orientation adopted by Internet retailers has two independent traits: conservativeness and aggressiveness-oriented strategies. After discussing the four dimensions observed in this study, this section moves on to the absence of proactiveness and riskiness.

The statistical analysis indicated that proactiveness and riskiness were not identified as unique dimensions of strategic orientation. The reliability test showed that items composing proactiveness and riskiness were unreliable, because they had low reliability scores (with Cronbach's alpha 0.355 and 0.371). Reliability is an assessment of the degree of consistency between multiple measurements of a

variable (Hair et al., 1998). A low reliability score is obtained if correlations among items composing a certain variable are low. The low score might happen because of: (1) a poor instrument, or (2) the items composing the variable might not fit the business context being investigated. For the first possibility, Venkatraman (1989), who created the instrument, suggested replicating and refining it in other research contexts. This instrument has been used and reported in some studies, such as Bergeron et al. (2001), Morgan and Strong (2003), Ragu-Nathan et al. (2001), and Tan and Litschert (1994). As its use in those studies indicated reasonable results, the issue of poor instrument is probably not significant. Therefore, further discussion is focused on the second possibility about its relevance in the Internet retailing context.

Proactiveness refers to proactive behaviour in relation to participation in emerging industries, continuous search for market opportunities, and experimentation with potential responses to changing environmental trends (Venkatraman, 1989). Some items composing proactiveness might not be relevant to the context of this study. The item of *'looking out for businesses that can be acquired'* might not be relevant because the sample mostly comprises small businesses. They might not ever think about acquisition of other companies. The item of *'operations in later stages of life cycle are strategically eliminated'* might not fit the context of companies being studied. The life cycle stage might be not discernible, as Internet retailers may go from introduction stage to growth stage, and then to mature stage in a short period. Another item *'we are usually the first to introduce new services, products, or brands in the market'* might be not relevant because as (mostly) small Internet retailers, they do not normally introduce new products, services or brands in the market. Therefore, respondents might have been confused with those items and would not be able to respond consistently.

Riskiness refers to the extent of risk reflected in various resource allocation decisions, as well as choice of products and markets (Venkatraman, 1989). Some items composing riskiness are possibly irrelevant. The item *'new projects are approved on a stage-by-stage basis rather than with blanket approval'*, and *'we have a tendency to support projects where the expected returns are certain'* might puzzle respondents because they might not implement any projects in their business. The item *'our operations have generally followed the tried and true paths'* might also not

be relevant for Internet retailers because they may outsource some of their online operations, and they do not take a part in *tried and true* process. Therefore, respondents might have been confused by those items and would not be able to respond consistently.

The findings of this study can be compared to these of prior ones which used this STROBE instrument. Morgan and Strong (2003) identified all six dimensions in the sample of medium-and-large high technology industrial manufacturing firms. Bergeron et al. (2001) identified five dimensions, except riskiness, in their sample of small manufacturing and service firms. Considering the finding of both studies and the study reported here, it might be possible that the difference in the results is related to the firms or business sectors being investigated.

6.6 Control variable

Researchers often examine whether the relationship of variables being investigated is affected by business profile. In this kind of investigation, business profile serves as a control variable. A control variable can only have an impact on the relationship between two variables if it affects both independent and dependent variables (Bryman and Cramer, 2004). Statistical analysis for comparing mean score was performed between business profile variables (business size, business format, maturity) and the main research variables (strategic orientation, performance indicators, business performance).

Table 6.26 (overleaf) presents the result of t-test between business format and the main research variables. Two dimensions of strategic orientation, as well as business performance obtained from factor analysis are used in this analysis. The table shows that business format is associated only with PI. Therefore, business format is not appropriate to be used as a control variable.

Table 6.26: Business format and main research variables – t-test

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	T	df	Sig. (2-tailed)
PI	0.447	0.504	2.587	250	0.010
SO conservativeness	0.000	0.992	0.805	250	0.422
SO aggressiveness	1.600	0.207	1.250	250	0.213
BP financial	0.588	0.444	-1.086	250	0.279
BP operational	0.003	0.955	0.857	250	0.392

Furthermore, Table 6.27 presents the result of t-test between maturity and main research variables. The table shows that maturity is associated with only SO aggressiveness. Therefore, maturity is not appropriate to be used as a control variable.

Table 6.27: Maturity and main research variables – t-test

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	T	df	Sig. (2-tailed)
PI	0.047	0.829	-0.272	248	0.786
SO conservativeness	0.049	0.825	0.397	248	0.692
SO aggressiveness	0.261	0.610	2.427	248	0.016
BP financial	0.184	0.669	-0.403	248	0.687
BP operational	1.894	0.170	-0.384	248	0.701

Table 6.28 presents the result of ANOVA between business size, as measured by annual sales turnover, and main research variables. The table shows that business size is associated with performance indicator (PI), strategic orientation (SO conservativeness), and business performance (BP financial). Therefore, business size as measured by annual sales turnover is appropriate to be used as a control variable.

Table 6.28: Business size and main research variables – ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
PI	980.871	6	163.478	4.488	0.000
SO conservativeness	9.075	6	1.513	4.094	0.001
SO aggressiveness	2.981	6	0.497	0.449	0.845
BP financial	86.529	6	14.422	3.975	0.001
BP operational	15.098	6	2.516	0.815	0.559

Business size has seven categories of annual sales turnover. An analysis using these seven categories as a control variable will produce results which are too complex to interpret. To facilitate a more simple analysis and to provide a better explanation, the scale of business size needs to be transformed. There are two possible options: (1) creating mid-point values of each range, and (2) calculating logarithmic transformation of the mid-point values. Table 6.29 presents the new scales of both options.

Table 6.29: Scale of business size

Annual sales (A.S.)	Mid-point A.S.	ln(mid-point A.S.)
£0 - < £50 thousand	£25,000	10.127
£50 - <100 thousand	£75,000	11.225
£100 - <250 thousand	£175,000	12.073
£250 - <500 thousand	£375,000	12.835
£500 - <1,000 thousand	£750,000	13.528
£1 - <5 million	£3,000,000	14.914
£5 - <10 million	£7,500,000	15.830
Total		

The mid-point scale is illustrated in Figure 6.7, and the logarithmic scale in Figure 6.8.

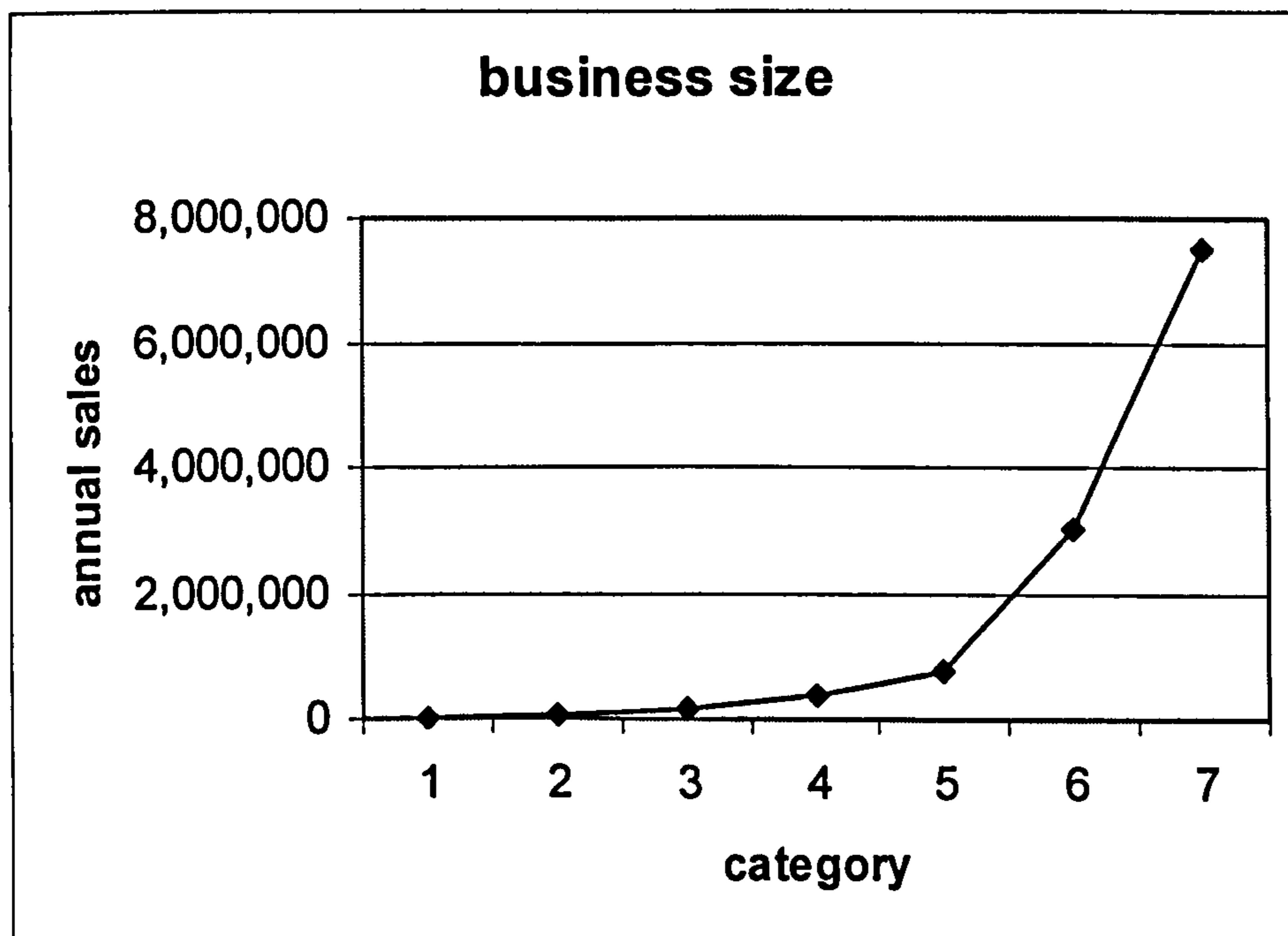


Figure 6.7: Mid-point annual sales category

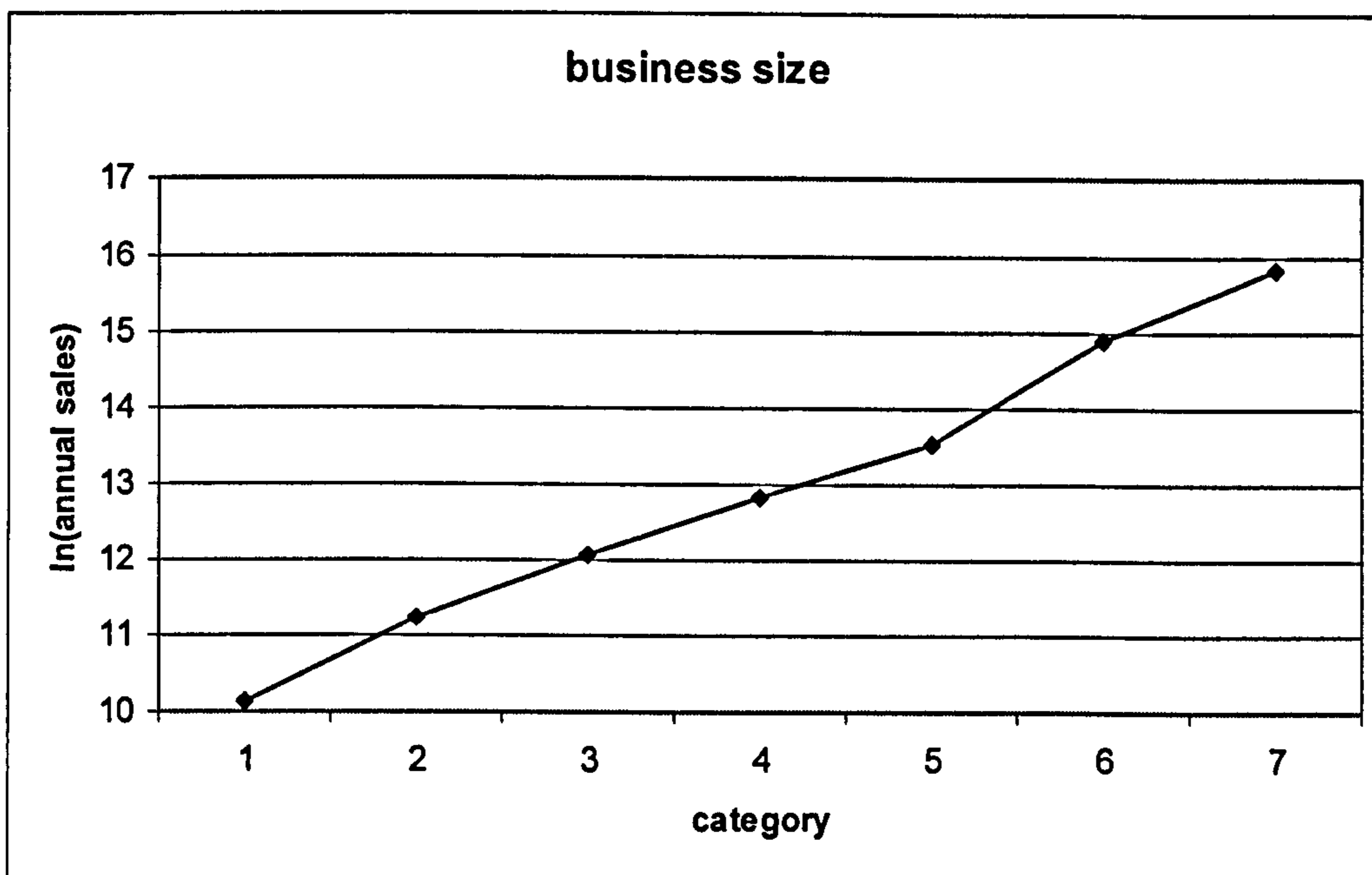


Figure 6.8: Logarithmic scale of annual sales category

Figure 6.7 shows that the graph has an exponential form. The use of the mid-point scale is problematic, because smaller values will be incomparable to bigger ones. To overcome this problem, statisticians suggested transforming the non-linear data into *natural logarithmic* scale (e.g. Field, 2005; Hair, 1998). As shown in Figure 6.8, logarithmic transformation for the mid-point of annual sales turnover is linear. Therefore, this logarithmic scale is used as a measure of business size, and it can be treated as metric data. Some other studies have used the natural logarithmic transformation for business size (e.g. Datta and Guthrie, 1994, Haleblan and Finkelstein, 1993; Li and Simerly, 1998).

6.7 Summary

This chapter was aimed to obtain good variables for further analysis. Factor analysis has been performed for major research variables to obtain a more manageable number of factors. Based on the result of factor analysis and the meaning of factors obtained, good variables have been produced. Performance measurement has one factor, which represents the number (level) of performance indicators measured. The use of performance measurement in managerial activities consists of two dimensions: strategic and administrative-related activities. The use of performance measurement in decision-making consists of two dimensions: strategic and personnel decisions.

Business performance has two dimensions: financial and operational performance. Strategic orientation firstly can be analysed as two variables: aggressiveness and conservativeness; and secondly as four strategic types. Based on the variables obtained, further analysis to meet the research objectives can be performed appropriately.

Chapter 7

CURRENT STATE OF PERFORMANCE MEASUREMENT

7.1 Introduction

This chapter presents the results of statistical analysis for answering the first research question: '*What is the current state of performance measurement implemented by Internet retailing business?*'. As seen in Chapter 3, four specific objectives have been formulated for that question, as follows:

1. To describe performance indicators measured by Internet retailers
2. To explain whether business profile is associated with performance measurement implemented by Internet retailers
3. To describe the way Internet retailers use the information obtained from performance measurement
4. To explain whether performance measurement implemented by Internet retailers is associated with the use of information obtained

The result of statistical analysis for each objective is now discussed in turn.

7.2 Performance indicators measured

The survey investigated whether each of 30-performance indicators listed in the questionnaire was measured, and how frequently. This section aims to describe the findings in detail. This presentation is not in contradiction with the results of factor analysis presented in the previous chapter, in which performance measurement was treated as a single variable. Performance measurement as a single variable is used for the analysis of relationships. The presentation in this section is divided into four aspects: (1) five dimensions of performance indicators, (2) number of Internet retailers measuring each performance indicator, (3) frequency of measurement, and (4) number of performance indicators measured.

7.2.1 Performance indicator dimensions

Performance indicators investigated in the survey are conceptually categorised under five dimensions: (1) financial, (2) market/ sales, (3) customer, (4) web, and (5) process. As presented in Chapter 3, each dimension has equally six performance indicators. The result for each dimension is now presented consecutively.

1. Financial dimension

Table 7.1: Financial dimension – survey result

Financial	N	Measured	D	W	M	Q	A	Missing	
(F-1) Profit margin	252	218	87%	41	30	95	27	24	1
(F-2) Revenue per transaction	248	170	69%	56	31	57	21	5	0
(F-3) Fulfilment cost	250	138	55%	18	19	63	16	22	0
(F-4) Revenue per customer	249	137	55%	28	18	59	24	7	1
(F-5) Acquisition cost	250	113	45%	16	22	57	12	5	1
(F-6) Customer maintenance cost	251	28	11%	1	4	14	6	3	0
Total	804			160	124	345	106	66	3
				20%	15%	43%	13%	8%	0%

Note: N: total response, D: daily, W: weekly, M: monthly, Q: quarterly, A: annually.

Table 7.1 presents the findings on six performance indicators for the financial dimension. The findings indicate that the majority of Internet retailers measured profit margin and revenue per transaction. Profit margin was mainly measured on a monthly basis, and revenue per transaction on a daily as well as monthly basis. Profit margin has been recognised as the ultimate performance measure for any business. The awareness of profit margin might indicate that Internet retailers currently have paid more attention to the real business performance compared to those during the dotcom era. Revenue per transaction (total sales revenue / number of transactions) as an aggregate measure is important because it is associated with cost efficiency and profit generation. Retailers would expect higher value of revenue per transaction.

Furthermore, the table shows that revenue per customer, fulfilment cost, and acquisition cost were measured by around half of Internet retailers. Revenue per customer is the average amount of sales per customer (total amount of sales / total customers). This indicator could tell the success of marketing efforts and maintaining customers. Fulfilment cost is mainly related to costs of picking, packing, and delivery. Retailers, to some extent, have control over these costs, and how well they

are able to keep the costs low could affect their competitiveness. Acquisition cost is the average cost to acquire one customer (marketing costs/ total customers). Measuring this indicator would be critical, as online customer base is volatile. Further investigation indicates that this importance applies for both less mature and more mature Internet retailers (chi-squared test is non-significant at $p>0.05$).

Customer maintenance cost (maintenance cost/ total customers) was measured by only a small portion of Internet retailers (28 retailers or 11%). This finding seems surprising because it might be an indication that Internet retailers were not interested in keeping their customers. Further investigation indicates that among 28 retailers, 11 (39%) are with store presence, and 17 (61%) without store presence. This finding possibly reveals that as Internet retailers without store presence have a weaker customer base compared to those with store presence, the former possibly had more concerns to maintain their customers. Maintaining online customers is mainly done by sending a newsletter to each registered customer. The survey indicates that around a half of the Internet retailers (presented later in the customer dimension) measured the number of newsletter subscribers. These findings might suggest that though Internet retailers had less interest in measuring customer maintenance cost, they paid more attention to measuring newsletter subscriber as a major channel for maintaining online customers.

2. Market/ sales dimension

Table 7.2: Market/ sales dimension – survey result

Market/ sales	N	Measured		D	W	M	Q	A	Missing
(M-1) Total sales	252	242	96%	117	45	63	12	4	1
(M-2) Number of orders	251	241	96%	142	47	40	7	4	1
(M-3) Number of customers	251	209	83%	84	44	56	16	8	1
(M-4) Sales value per transaction	250	198	79%	63	43	70	16	4	2
(M-5) Ratio of sales overseas	250	107	43%	15	13	34	31	12	2
(M-6) Market share	248	34	14%	4	3	12	7	8	0
Total		1031		425	195	275	89	40	7
				41%	19%	27%	9%	4%	1%

Note: N: total response, D: daily, W: weekly, M: monthly, Q: quarterly, A: annually.

Table 7.2 presents the findings of six performance indicators for the market/ sales dimension. The first three indicators: total sales, number of orders, and number of customers are basic measures that can be used to calculate some derived measures,

such as revenue per transaction and revenue per customer. Therefore, nearly all of the Internet retailers measured those three indicators. The majority also measured sales value per transaction. Sales value per transaction is aimed to provide information of individual transactions. This indicator is similar to the value of the shopping basket in store-based retailing. As the value of the shopping basket is related to products purchased, analysing sales value per transaction is also aimed to monitor best-selling (as well as worst selling) products and additional products bought by customers. Increasing the value of shopping basket is less likely to be achieved through increasing product prices rather than, for example, through providing better product assortment and better offer (e.g. free delivery for a certain limit of order or a discount for buying a combination of products). As normally, product assortment is always changing, monitoring individual sales value per transaction is necessary for further decisions of product assortment.

The table shows that 43% of Internet retailers measured the amount of sales coming from overseas customers. This finding might be interpreted that at least 43% of retailers have served overseas customers (European Union and/ or international). From the retailers' perspective, there could be no big difference in processing orders for overseas or local customers. However, retailers might have some strategic reasons or regulation constraints (e.g. VAT) that could affect their decisions to open their online store to a worldwide market. The finding is surprising from the view that overseas customers have recognised those relatively small Internet retailers (as the analysis is limited to small and medium-sized businesses) and entrusted their buying to them. Internet retailers that measured ratio of sales overseas might be associated with the product category sold. Table 7.3 presents a cross-tabulation between this indicator and product category. The results show that Internet retailers selling clothing-&accessories and leisure-&entertainment products were likely to measure the ratio of sales overseas indicator. On the other hand, those selling home-&DIY products were less likely to measure the indicator. Probably because of the size, products in clothing-&accessories and leisure-&entertainment categories are more feasible for overseas delivery than home-&DIY products. Chi-squared test indicated that the relationship between product category and the indicator is significant ($\chi^2(4)=18.948, p<0.001$).

Table 7.3: Product category and ratio of sales overseas

Product category		Ratio of sales overseas		Total
		Not measured	Measured	
Food & drink	Count	6	3	9
	% within sales overseas	4%	3%	4%
Clothing & accessories	Count	25	35	60
	% within sales overseas	17%	33%	24
Home & DIY	Count	50	14	64
	% within sales overseas	35%	13%	26%
Leisure & entertainment	Count	49	46	95
	% within sales overseas	34%	43%	38%
Health & beauty	Count	13	9	22
	% within sales overseas	9%	8%	9%
	Count	143	107	250
	% within sales overseas	100%	100%	100

Moreover, Table 7.2 indicates that only a small portion of Internet retailers measured market share. As the actual responding companies are small and medium businesses (annual sales less than £10 million), their individual market share is too small in the whole Internet retailing business sector. For this reason, they might be less interested in the market share. Measuring market share might be associated with business size; relatively bigger Internet retailers (in a context of small and medium-sized businesses) would be expected to have bigger interest in their market share than smaller ones. A cross-tabulation/ chi-squared test was conducted, and the result is presented in Table 7.4. Seven categories of business size are collapsed into two groups: less than £1 million and £1 - 10 million of sales in order to obtain a simple description (see section 7.3.3 for the rationale). The results show that smaller (<£1 million) Internet retailers were likely not to measure market share, and relatively bigger ones (£1 - <10 million) to measure it. The chi-squared test indicates that the difference is significant ($\chi^2(1)= 12.902, p<0.001$). The result can be interpreted that as Internet retailers covered in this study are relatively small, they might have less concern for measuring market share. Small value of market share (e.g. 0.01%) is also volatile with the changing of the value of total market.

Table 7.4: Market share and business size

Business size		Market share		Total
		Not measured	Measured	
< £1 million	Count	173	18	191
	% within PI	81%	53%	77%
£1 - <10 million	Count	41	16	57
	% within PI	19%	47%	23%
Total	Count	214	34	248
	% within PI	100%	100%	100%

3. Customer dimension

Table 7.5: Customer dimension – survey result

Customer	N	Measured		D	W	M	Q	A	Missing
(C-1) Conversion rate visitor to purchase	250	142	57%	34	29	58	17	3	1
(C-2) Number of newsletter subscribers	252	135	54%	17	22	64	25	6	1
(C-3) Repeated sales per customer	252	126	50%	15	16	52	22	18	3
(C-4) Conversion rate visitor to registration	248	82	33%	18	17	29	13	5	
(C-5) Customer churn (withdrawal) rate	250	63	25%	17	10	23	7	5	1
(C-6) Customer extension (buy another product category)	252	35	14%	11	4	13	5	2	
Total		583		112	98	239	89	39	6
				19%	17%	41%	15%	7%	1%

Note: N: total response, D: daily, W: weekly, M: monthly, Q: quarterly, A: annually.

Table 7.5 presents the descriptive findings of six performance indicators for the customer dimension. Around half of Internet retailers measured conversion rate visitor to purchase, number of newsletter subscribers, and repeated sales per customer, mostly on a monthly basis. The top three indicators in this dimension were measured less compared to those in the market and financial dimensions. Conversion rate visitor to purchase is an indicator of how successful an Internet retailer is able to transform a visitor to generate sales for the company. As only a small portion of visitors normally execute purchase, monitoring this indicator will inform how successful an Internet retailer is to attract visitors to purchase. The number of newsletter subscribers is also an important indicator, because a newsletter is a less costly marketing channel for Internet retailers to reach their customers *individually*. As acquiring customers is costly, receiving repeated sales from existing customers is to be an important success criterion.

Conversion rate visitor to registration, customer churn (withdrawal) rate, and customer extension (buy another product category) were measured by less than a third of Internet retailers. This finding could indicate that these indicators were less important than the previous three. Conversion rate visitor to registration (total visitors/ visitors registered) measures the success of a site to attract visitors to register. Some sites may not ask visitors (before they actually buy) to register. For these sites, registration is required when a visitor makes the first purchase. These conditions might explain that only a third of Internet retailers measured conversion rate visitor to registration. Customer churn (withdrawal) rate provides insight into the growth or decline of the customer base, as well as the average length of participation in the service. The finding that only a quarter of Internet retailers measured this indicator is surprising. Further investigation was made to test whether this finding is related to business size. Relatively bigger retailers were expected to have more interest in measuring churn-rate because they might have a bigger customer base. Cross-tabulation in Table 7.6 indicates that relatively bigger retailers were more likely to measure churn-rate than smaller ones (37% compared to 18%). On the other hand, smaller retailers were likely not to measure churn-rate (82% compared to 63%). These findings might be extended and interpreted that small Internet retailers are less interested in measuring churn-rate compared to big ones. As the actual sample comprises small and medium Internet retailers, the majority of them might not measure it.

Table 7.6: Churn-rate and business size

Business size		Churn-rate		Total	
		Not measured	Measured		
< £1 million	Count	153	40	193	
	% Within PI	82%	63%	77%	
£1 - <10 million	Count	34	23	57	
	% Within PI	18%	37%	23%	
		Count	187	63	250
		% Within PI	100%	100%	100%

Table 7.5 shows that only 14% of Internet retailers (35 companies) measured customer extension (buy another product category). This finding might suggest that Internet retailers were not interested in this measure. Further investigation indicated that there is no difference across five product categories. In relation to business

format, 25 (or 71%) of those retailers are Internet retailers without store presence and 21 (60%) are less mature.

4. Web dimension

Table 7.7: Web dimension – survey result

Web	N	Measured	D	W	M	Q	A	Missing
(W-1) Number of visits	252	210 83%	72	65	56	12	3	2
(W-2) Page views	251	185 74%	65	46	55	15	1	3
(W-3) Unique visitors	252	182 72%	67	49	52	12	1	1
(W-4) Website's usability	252	152 60%	36	26	42	34	12	2
(W-5) Website's information quality	251	149 59%	40	21	43	31	13	1
(W-6) Website's service-interaction quality	247	95 38%	23	16	28	18	9	1
Total		973	303 31%	223 23%	276 28%	122 13%	39 4%	10 1%

Note: N: total response, D: daily, W: weekly, M: monthly, Q: quarterly, A: annually.

Table 7.7 presents the descriptive findings of six performance indicators for the web dimension. The top three indicators are web-traffic measures. The figures indicate that web-traffic indicators were still popular, as they were measured by more than 70% of Internet retailers. Firstly, the findings may reflect that those measures are still important to Internet retailers. Secondly, those measures are popular because they can be measured automatically by software. Further analysis was made to examine whether this finding is related to business format. Internet retailers without store presence were expected to have more interest in measuring web-traffic because their web-store represents their presence in the business. Cross-tabulation analysis was performed and the results are shown in Table 7.8.

Table 7.8: Web traffic and business format

Business format		No. visits		Page view		Unique visitors		
		No	Yes	No	Yes	No	Yes	
No store	Count	19	134	33	119	34	119	
	% within PI	45%	64%	50%	64%	49%	65%	
With store	Count	23	76	33	66	36	63	
	% within PI	55%	36%	50%	36%	51%	35%	
Total		Count	42	210	66	185	70	182
		% within PI	100%	100%	100%	100%	100%	100%
			$\chi^2(1)= 5.061,$ $p<0.05$		$\chi^2(1)= 4.179,$ $p<0.05$		$\chi^2(1)= 5.992,$ $p<0.05$	

No: not measured, Yes: measured

The table indicates that Internet retailers without store presence were likely to measure all three indicators of web-traffic. Chi-squared tests for those three indicate that the relationships between business format and those three indicators are significant.

The other three performance indicators are web-quality measures. The results indicate that these are also important for Internet retailers because on average more than a half have measured them. Web-quality can be measured, for example, by analysing feedback from customers and conducting online web-survey of customers. As measuring web-quality needs more efforts than web-traffic, there are fewer retailers which measured web-quality than web-traffic. The finding probably indicates a lack of knowledge among Internet retailers of web-quality measurement. Further analysis was made to examine whether retailers which measured web-quality, are associated with their business format. The results of the chi-squared test were not significant.

5. Process dimension

Table 7.9 (overleaf) presents the findings of six performance indicators for the process dimension. For all six indicators, the number of retailers measuring each of them is less than a half. This means that Internet retailers were less interested in measuring their operations. The top two indicators, on-time delivery and the percentage of error in goods picked and delivered to customers, can be seen as the most important in the process dimension. These indicators are important because both are keys of customer satisfaction with online shopping. Picking the right goods is specific for Internet retailers, but not for store-based retailers. Though online orders are processed automatically, Internet retailers could possibly make some errors in picking the right goods. On-time delivery depends on when the goods are despatched (retailer responsibility) and when they reach customers (courier company responsibility). The finding is surprising, as only about 40% of Internet retailers measured it. Furthermore, percentage of error in charge made to customers is only measured by a fifth of Internet retailers. The advancement in IT has been able to largely eliminate the error in a payment process. In comparing the five dimensions, the process dimension is the least frequently measured. In the online selling process,

ordering and payment are largely automated, while delivery is mainly undertaken by external parties (e.g. Royal Mail). Consequently, Internet retailers might not pay much attention to the process-related indicators.

Table 7.9: Process dimension – survey result

Process	N	Measured	D	W	M	Q	A	Missing
(P-1) On-time delivery (promise vs. actual)	251	109 43%	40	39	22	4	2	2
(P-2) Percentage of error in goods picked and delivered to customer	252	103 41%	38	28	29	6	1	1
(P-3) Percentage of error in delivery destination	252	85 34%	33	27	17	5	3	0
(P-4) Online enquiry-to-response time	252	79 31%	44	21	11	2	1	0
(P-5) Return notification-to-refund time	251	68 27%	27	18	20	2	0	1
(P-6) Percentage of error in charge made to customer	252	56 22%	28	13	10	1	2	2
Total	500		210 42%	146 29%	109 22%	20 4%	9 2%	6 1%

Note: N: total response, D: daily, W: weekly, M: monthly, Q: quarterly, A: annually.

Relatively bigger Internet retailers (in a context of small and medium-sized businesses) would be expected to give more attention to measuring three measures of accuracy (P2, P3, and P6) because they handle more orders than smaller ones. The cross-tabulation in Table 7.10 (overleaf) indicates that relatively bigger Internet retailers were more likely to measure indicators of accuracy in their operations than were smaller ones.

The result might be extended and interpreted that, as the actual sample is small and medium-sized Internet retailers, they are less interested in measuring those three indicators of process accuracy.

Table 7.10: Process accuracy – business size

Business size		Error goods		Error delivery		Error charge	
		No	Yes	No	Yes	No	Yes
< £1 million	Count	126	69	137	58	159	36
	% within PI	85%	67%	82%	68%	81%	64%
£1 - <10 million	Count	23	34	30	27	37	20
	% within PI	15%	33%	18%	32%	19%	36%
Count		149	103	167	85	196	56
% within PI		100%	100%	100%	100%	100%	100%
		$\chi^2(1) = 10.746,$ p<0.005		$\chi^2(1) = 6.129,$ p<0.05		$\chi^2(1) = 7.054,$ p<0.01	

No: not measured, Yes: measured

Summary of section 7.2.1

Internet retailers have concentrated on measuring various aspects of their performance. Especially, they are likely to measure more performance indicators of financial, market/ sales, and web dimensions, and fewer indicators of customer and process dimensions.

7.2.2 Number of retailers

This section presents the same findings as presented in the previous section, but from a different perspective. This presentation focuses on the number of Internet retailers measuring each of the performance indicators. The more a performance indicator measured could be interpreted, the more important it is. Table 7.11 (overleaf) shows details of measurement of each performance indicator by retailers.

Based on the percentage range of responses, those 30 performance indicators are divided into four groups: 0% – 25%; >25% – 50%; >50% – 75%; and >75% – 100%. The top level (>75% – 100%) consists of four market/ sales indicators, one financial indicator, and one web indicator. As they were measured by the majority of retailers, they can be considered as the most important performance indicators currently measured by Internet retailers. They can be thought of as generic performance indicators. In the second level (>50% – 75%), nine performance indicators are also important, as more than a half of Internet retailers measured them. In this level, two *conventional* measures: page views and unique visitors stay on the top. As discussed earlier, these web-traffic indicators were measured possibly because of importance or easiness to measure. Overall, the findings show that measures of market, financial, and web stay on the upper levels. The figures confirm the findings in the previous section that Internet retailers currently have focused their performance measurement on market, financial and web aspects.

Table 7.11: Number of retailers measuring performance indicators

Rank	Performance Indicator	N	Percentage
>75% – 100%			
1	(M-1) Total sales	242	96%
2	(M-2) Number of orders	241	96%
3	(F-1) Profit margin	218	87%
4	(W-1) Number of visits	210	83%
5	(M-3) Number of customers	209	83%
6	(M-4) Sales value per transaction	198	79%
>50% – 75%			
7	(W-2) Page views	185	74%
8	(W-3) Unique visitors	182	72%
9	(F-2) Revenue per transaction	170	69%
10	(W-4) Website's usability	152	60%
11	(W-5) Website's information quality	149	59%
12	(C-1) Conversion rate visitor to purchase	142	57%
13	(F-3) Fulfilment cost	138	55%
14	(F-4) Revenue per customer	137	55%
15	(C-2) Number of newsletter subscribers	135	54%
>25% – 50%			
16	(C-3) Repeated sales per customer	126	50%
17	(F-5) Acquisition cost	113	45%
18	(P-1) On-time delivery (promise vs. actual)	109	43%
19	(M-5) Ratio of sales overseas	107	43%
20	(P-2) Percentage of error in goods picked and delivered to customer	103	41%
21	(W-6) Website's service-interaction quality	95	38%
22	(P-3) Percentage of error in delivery destination	85	34%
23	(C-4) Conversion rate visitor to registration	82	33%
24	(P-4) Online enquiry-to-response time	79	31%
25	(P-5) Return notification-to-refund time	68	27%
26	(C-5) Customer churn (withdrawal) rate	63	25%
0% – 25%			
27	(P-6) Percentage of error in charge made to customer	56	22%
28	(C-6) Customer extension (buy another product category)	35	14%
29	(M-6) Market share	34	14%
30	(F-6) Customer maintenance cost	28	11%

7.2.3 Frequency of measurement

This section focuses on the frequency at which performance indicators were measured. As given in Table 7.12, the result of the survey indicates that Internet retailers mostly measured performance indicators on a daily, weekly, and monthly

basis. Table 7.13 presents the top three performance indicators based on the frequency of measurement: daily, weekly, monthly, quarterly, and annually.

Table 7.12: Frequency of measurement

Frequency of measurement	Percentage
Daily	31%
Weekly	20%
Monthly	32%
Quarterly	11%
Annually	5%

Table 7.13: Frequency of measurement

Rank	Performance Indicator	N
Daily		
1	(M-2) Number of orders	142
2	(M-1) Total sales	117
3	(M-3) Number of customers	84
Weekly		
1	(W-1) Number of visits	65
2	(W-3) Unique visitors	49
3	(M-2) Number of orders	47
Monthly		
1	(F-1) Profit margin	95
2	(M-4) Sales value per transaction	70
3	(C-2) Number of newsletter subscribers	64
Quarterly		
1	(W-4) Website's usability	34
2	(W-5) Website's information quality	31
3	(M-5) Ratio of sales from overseas	31
Annually		
1	(F-1) Profit margin	24
2	(F-3) Fulfilment cost	22
3	(C-3) Repeated sales per customer	18

Table 7.13 shows that the top three performance indicators measured on a daily basis are market/ sales indicators. The number of orders/ transactions and total sales may represent basic success indicators of daily Internet sales operation (as well as any

other retail operation). Table 7.13 also shows that a small number of retailers measured the top three performance indicators on a quarterly and annual basis. These figures reveal that Internet retailers were likely to measure their performance on a daily, weekly, and monthly basis.

7.2.4 Number of performance indicators

This section concentrates on how many performance indicators were measured by Internet retailers. The presentation of the number of performance indicators measured is supported by the result of factor analysis, which indicates a single factor of performance measurement. Figure 7.14 presents the frequency distribution for the number of performance indicators measured.

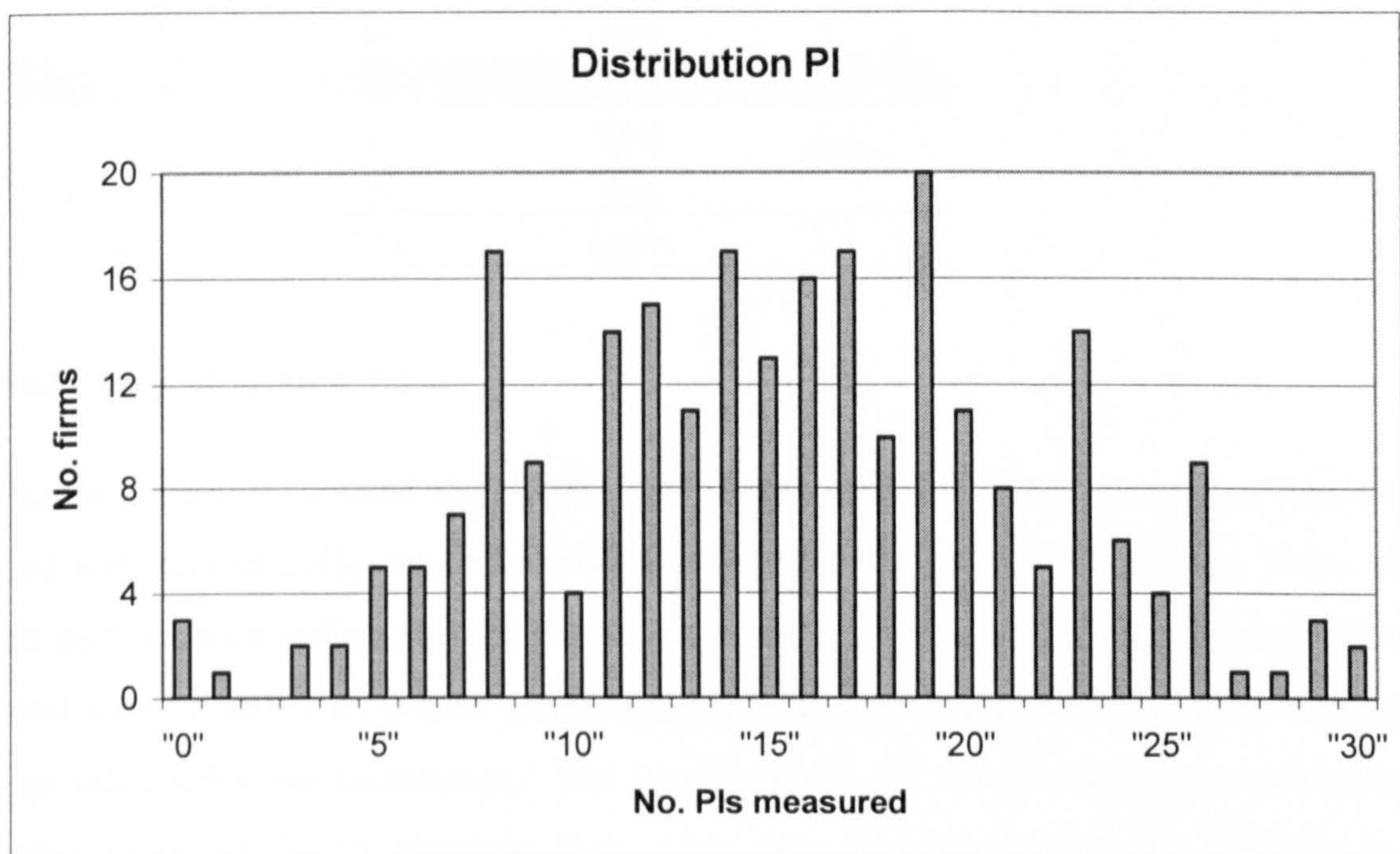


Figure 7.1: Distribution of PIs measured

The survey found that three companies measured no performance indicator, and respondents stated that there was no specific performance measure for their online operation. The distribution shown in Figure 7.1 is concentrated in the middle area of 10 – 20 performance indicators. On the right hand side, two retailers measured all 30 indicators.

In the survey, 15 respondents (6%) specified between one and five *other* indicators, such as source of visitors, time spent on site, sales revenue by product, global

enquiries, pay per click advertising, packaging cost per order, carriage cost per order, percentage fulfilled by each supplier, turnaround time by supplier, online marketing campaign, and fraudulent transactions. These indicators are not included in the calculation of the number of performance indicators measured (Figure 7.1) because each was mostly specified by only one retailer.

Table 7.14 presents the number of performance indicators, simplified in five categories. The result seems evenly distributed. About 85% of Internet retailers measure 7 – 24 indicators. The table also shows that a third of the retailers measure 13 – 18 indicators, a third measure fewer, and another third measure more.

Table 7.14: Number of PIs measured

No. PIs	N	Percentage	Proportion
0 – 6	18	7%	1/3
7 – 12	66	26%	
13 – 18	84	33%	1/3
19 – 24	64	25%	1/3
25 – 30	20	8%	
Total	252	100%	1

Summary of section 7.2

Internet retailers focused their performance measurement more on market, financial and web-related indicators, than customer and process-related indicators. There are six performance indicators which were measured by the majority of Internet retailers: total sales, number of orders, profit margin, number of visits, number of customers, and sales value per transaction. The investigation also reveals that Internet retailers were more likely to measure their performance indicators daily, weekly, and monthly, rather than quarterly and annually.

7.3 Performance measurement and business profile

This section presents the investigation of the relationship between performance measurement and five attributes of business profile (Objective 2).

7.3.1 Performance measurement – product category

This section presents the statistical findings on the relationship between performance measurement and product category. Table 7.15 presents the mean scores of performance indicator (PI) for five product categories, and Figure 7.2 shows the error bar charts. Both show that clothing-&accessories, leisure-&entertainment, and home-&DIY have slightly higher mean scores than food-&drink and health-&beauty. However, the differences are not obvious, as the standard deviation values shown in Table 7.15 are quite big.

Table 7.15: Descriptive – PI and product category

Product category	N	Mean	S.D.
Food & drink	9	15.000	5.292
Clothing & accessories	60	16.417	6.035
Home & DIY	64	15.281	6.467
Leisure & entertainment	96	15.573	6.394
Health & beauty	23	12.957	6.071

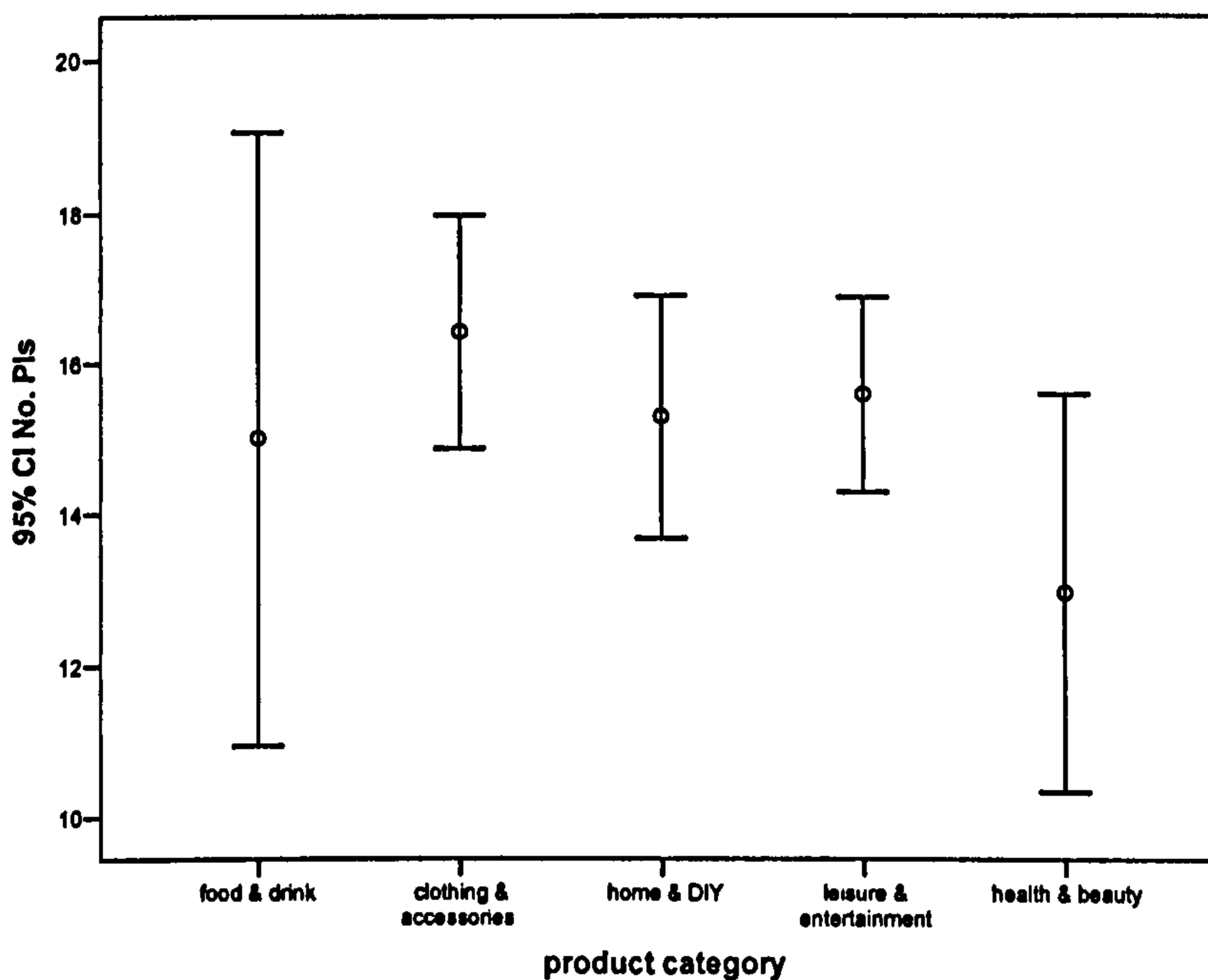


Figure 7.2: Error bar chart – PI and product category

In order to confirm this prediction, ANOVA test has been conducted to investigate whether there is a statistical difference in the level of performance indicators measured among five product categories. The result indicates no significant difference ($F(4,247) = 1.299; p > 0.05$). Overall, this investigation suggests that the

level of performance indicators measured is not related to what product category is sold by Internet retailers.

The investigation of individual performance indicators indicates that a strong significant relationship (chi-squared test significant at $p < 0.001$) with product category appears for the 'ratio of sales overseas' indicator. As discussed in the earlier section, this indicator is more likely to be measured by Internet retailers selling clothing-&-accessories and leisure-&-entertainment products than those selling home-&-DIY products.

7.3.2 Performance measurement – business format

This section presents the analysis of the relationship between performance measurement and business format. Table 7.16 presents the mean scores of performance indicator (PI) for two business formats, and Figure 7.3 shows the error bar charts. Both show that Internet retailers without store presence have higher mean score of PI than those with store presence.

Table 7.16: Descriptive – PI and business format

Business format	N	Mean	S.D.
Without store presence	153	16.255	6.013
With store presence	99	14.182	6.510

To confirm this prediction, further analysis using t-test was conducted to examine whether the difference exists statistically. The result indicates that the difference is significant ($t(250) = 2.587$, $p < 0.01$). In summary, the analysis tells that, on average, Internet retailers without store presence measured more performance indicators than those with store presence.

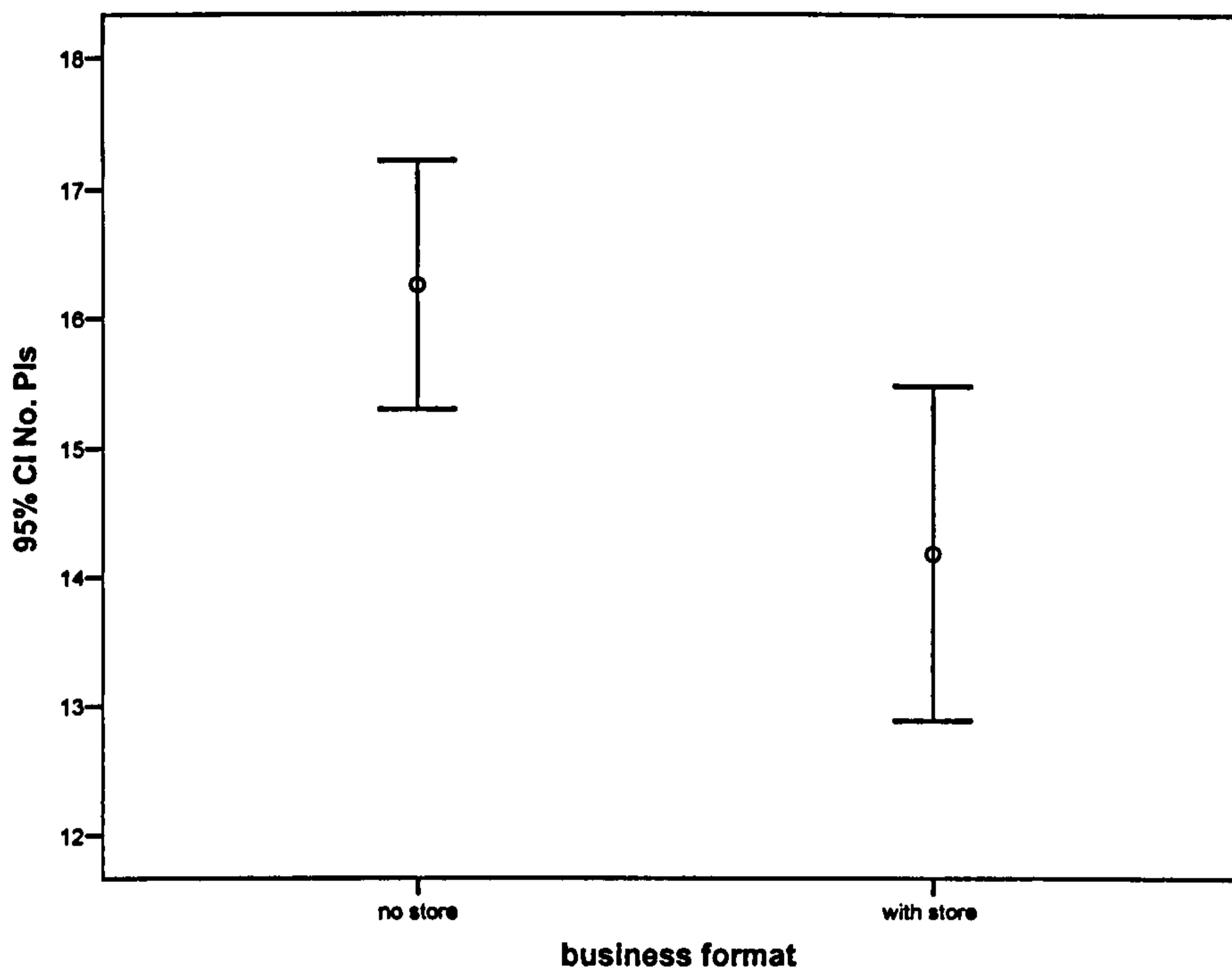


Figure 7.3: Error bar chart – PI and business format

Further investigation of individual performance indicators has been made using odds ratio, as a part of the chi-squared test (Field, 2005). Odds ratio is normally calculated from a *cross-tabulation* table 2 x 2. This ratio is calculated with the following formula:

$$\frac{(\text{number without store presence measuring PI} / \text{number without store presence not measuring PI})}{(\text{number with store presence measuring PI} / \text{number with store presence not measuring PI})}$$

The ratio tells us that Internet retailers without store presence were 'x' times more likely to measure PI than those with store presence. As an example, the calculation of odds ratio for acquisition cost is presented. Table 7.17 presents a cross-tabulation of acquisition cost against business format.

Table 7.17: Cross-tabulation – acquisition cost and business format

Business format		acquisition cost		Total
		not measured	measured	
Without store presence	Count	72	79	151
With store presence	Count	65	34	99
	Count	137	113	250

$$\text{Odds ratio for acquisition cost} = (79/72) / (34/65) = 1.097 / 0.523 = 2.098$$

The result tells us that Internet retailers without store presence are 2.098 times more likely to measure acquisition cost than are those with store format. The odds ratios for all 30 indicators are presented in Table 7.18.

Table 7.18: Odds ratio – PI and business format

No.	Performance Indicator	Odds ratio
1	(F-1) Profit margin	3.907
2	(W-1) Number of visits	2.134
3	(F-5) Acquisition cost	2.098
4	(C-3) Repeated sales per customer	2.028
5	(W-3) Unique visitors	2.000
6	(P-4) Online enquiry-to-response time	1.908
7	(W-2) Page views	1.803
8	(C-6) Customer extension (buy another product category)	1.738
9	(C-5) Customer churn (withdrawal) rate	1.731
10	(F-4) Revenue per customer	1.714
11	(F-2) Revenue per transaction	1.654
12	(P-5) Return notification-to-refund time	1.626
13	(C-2) Number of newsletter subscribers	1.401
14	(P-3) Percentage of error in delivery destination	1.394
15	(F-3) Fulfilment cost	1.369
16	(P-1) On-time delivery (promise vs. actual)	1.367
17	(M-4) Sales value per transaction	1.273
18	(C-4) Conversion rate visitor to registration	1.268
19	(P-6) Percentage of error in charge made to customer	1.215
20	(W-6) Website's service-interaction quality	1.213
21	(W-4) Website's usability	1.207
22	(P-2) Percentage of error in goods picked and delivered to customer	1.186
23	(C-1) Conversion rate visitor to purchase	1.164
24	(M-5) Ratio of sales from overseas	1.098
25	(W-5) Website's information quality	1.055
26	(M-2) Number of orders	1.043
27	(F-6) Customer maintenance cost	1.007
28	(M-3) Number of customers	0.729
29	(M-6) Market share	0.713
30	(M-1) Total sales	*

*) result not accurate, one cell having expected count less than 5

The results can be interpreted as follows. Firstly, Internet retailers without store presence were more likely to measure profit margin (4 times), acquisition cost (2 times), and repeated sales per customer (2 times) than those with store presence. Secondly, Internet retailers without store presence were about 2 times more likely to measure web-traffic indicators, namely (1) number of visits, (2) unique visitors, and

(3) page views than those with store presence. Overall, these findings indicate that performance indicators measured by Internet retailers are to some extent related to their business format.

7.3.3 Performance measurement – business size

This section presents the statistical findings on the relationship between performance measurement and business size, as measured by annual sales. To obtain a simple description, seven categories of business size were collapsed into two or three categories. By observing error bar charts, two-category provides better distinction of PI than three-category. In this two-category, business size is indicated by the amount of annual sales less than £1 million, and between £1 million and £10 million. Table 7.19 presents the mean score of PI for each group, and Figure 7.4 shows the error bar chart. Both indicate that relatively bigger Internet retailers (in a context of small and medium-size businesses) measured more performance indicators than smaller ones.

Table 7.19: Performance indicator and business size

Business size	N	Mean	S.D.
< £1 million	195	14.569	6.021
£1 - <10 million	57	18.421	6.296

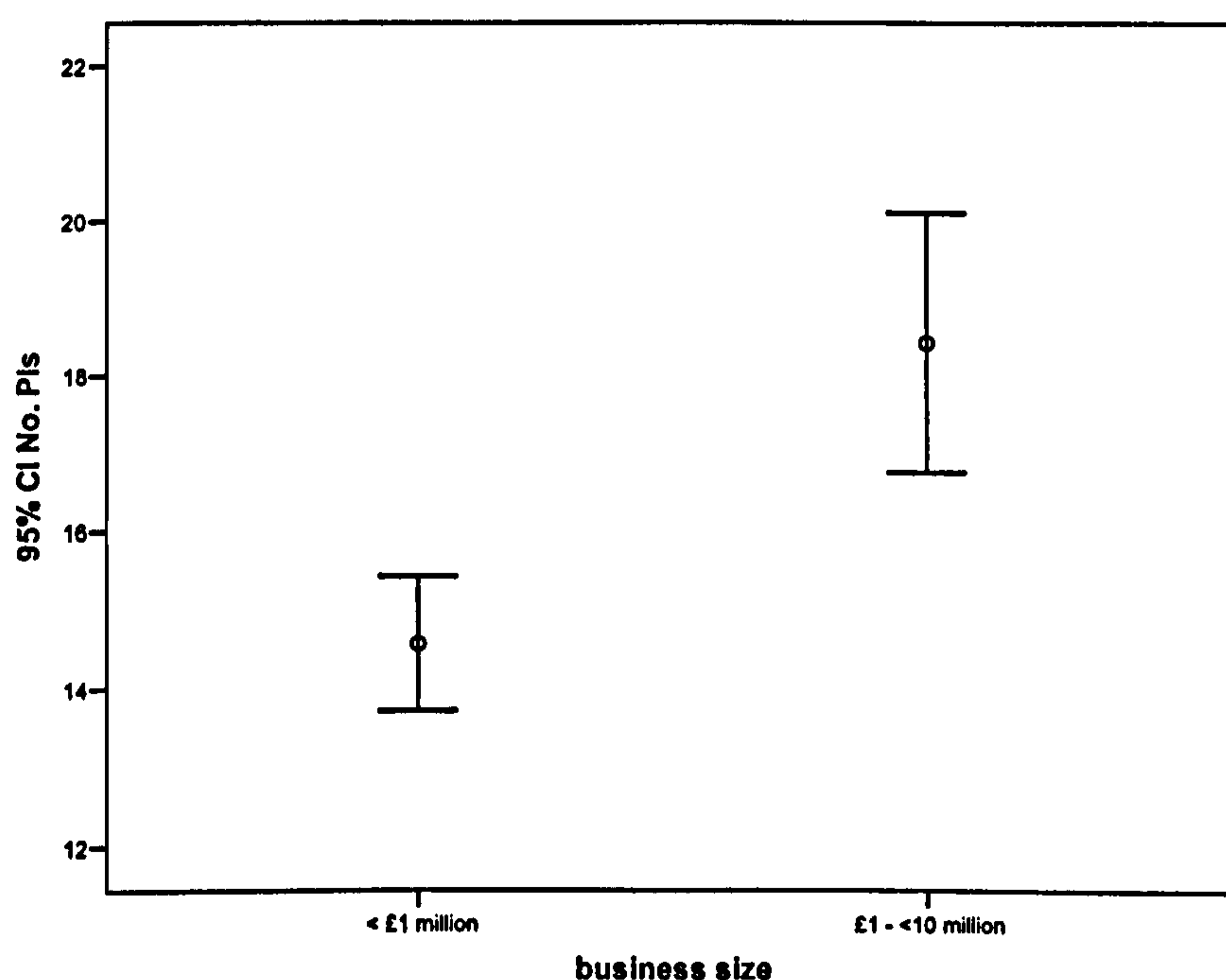


Figure 7.4: Error bar chart – PI and business size

To confirm this prediction, further analysis using t-test was conducted to examine whether the difference exists statistically. The result indicates that the difference is significant ($t(250)=4.205, p<0.001$). In summary, relatively bigger Internet retailers measured more performance indicators than smaller ones.

Further investigation of individual indicators is made using odds ratio. The following formula is applied for the analysis.

$$\frac{(\text{number of bigger IR measured PI} / \text{number of bigger IR not measured PI})}{(\text{number of smaller IR measured PI} / \text{number of smaller IR not measured PI})}$$

The results are presented in Table 7.20. They should be interpreted cautiously for some reasons. First, the number of retailers for two groups has a big difference (57 and 195). This causes some cross-tabulation to be inaccurate because one or more cells have expected value less than 5 (as a requirement for chi-squared test). Second, the grouping of business size into two *relative* categories is over simplified. Odds ratio will compare bigger and smaller companies, which actually is not similar to comparison earlier performed for the *exact* two categories of business format. Despite these limitations, the odds ratio in Table 7.20 (overleaf) could show some interesting findings.

First, relatively bigger Internet retailers were more likely to measure market share and sales value per transaction. Second, relatively bigger Internet retailers were about 2 to 4 times more likely to measure all six financial indicators than smaller ones. Third, relatively bigger retailers were about two times more likely to measure the accuracy of process (error in goods picked and delivered, delivery destination, and charge made) than smaller ones.

Overall, this investigation indicates that performance indicators measured by Internet retailers are to some extent related to their business size.

Table 7.20: Odds ratio – PI and business size

No.	Performance indicator	Odds ratio
1	(M-4) Sales value per transaction	4.274
2	(F-2) Revenue per transaction	4.226
3	(M-6) Market share	3.751
4	(F-1) Profit margin	3.402
5	(F-3) Fulfilment cost	3.168
6	(C-1) Conversion rate visitor to purchase	2.916
7	(P-2) Percentage of error in goods picked and delivered to customer	2.699
8	(C-5) Customer churn (withdrawal) rate	2.588
9	(F-6) Customer maintenance cost	2.490
10	(P-6) Percentage of error in charge made to customer	2.387
11	(F-4) Revenue per customer	2.304
12	(F-5) Acquisition cost	2.133
13	(P-3) Percentage of error in delivery destination	2.126
14	(C-6) Customer extension (buy another product category)	1.994
15	(W-6) Website's service-interaction quality	1.838
16	(C-2) Number of newsletter subscribers	1.831
17	(W-3) Unique visitors	1.814
18	(P-1) On-time delivery (promise vs. actual)	1.773
19	(W-1) Number of visits	1.563
20	(P-5) Return notification-to-refund time	1.480
21	(C-4) Conversion rate visitor to registration	1.478
22	(W-2) Page views	1.446
23	(W-5) Website's information quality	1.443
24	(W-4) Website's usability	1.421
25	(P-4) Online enquiry-to-response time	1.378
26	(M-3) Number of customers	1.302
27	(C-3) Repeated sales per customer	1.255
28	(M-5) Ratio of sales overseas	1.058
29	(M-2) Number of orders	*
30	(M-1) Total sales	*

*) Results are not accurate as one cell has expected count less than 5

7.3.4 Performance measurement – maturity

This section presents the analysis of the relationship between performance measurement and maturity. The descriptive statistics table (Table 7.21) and error-bar charts (Figure 7.5) are presented. Both indicate that the mean scores of performance indicator for less mature and more mature are about the same.

Table 7.21: Performance indicator – business format: descriptive

Business format	N	Mean	S.D.
Less mature	139	15.331	6.289
More mature	111	15.550	6.353

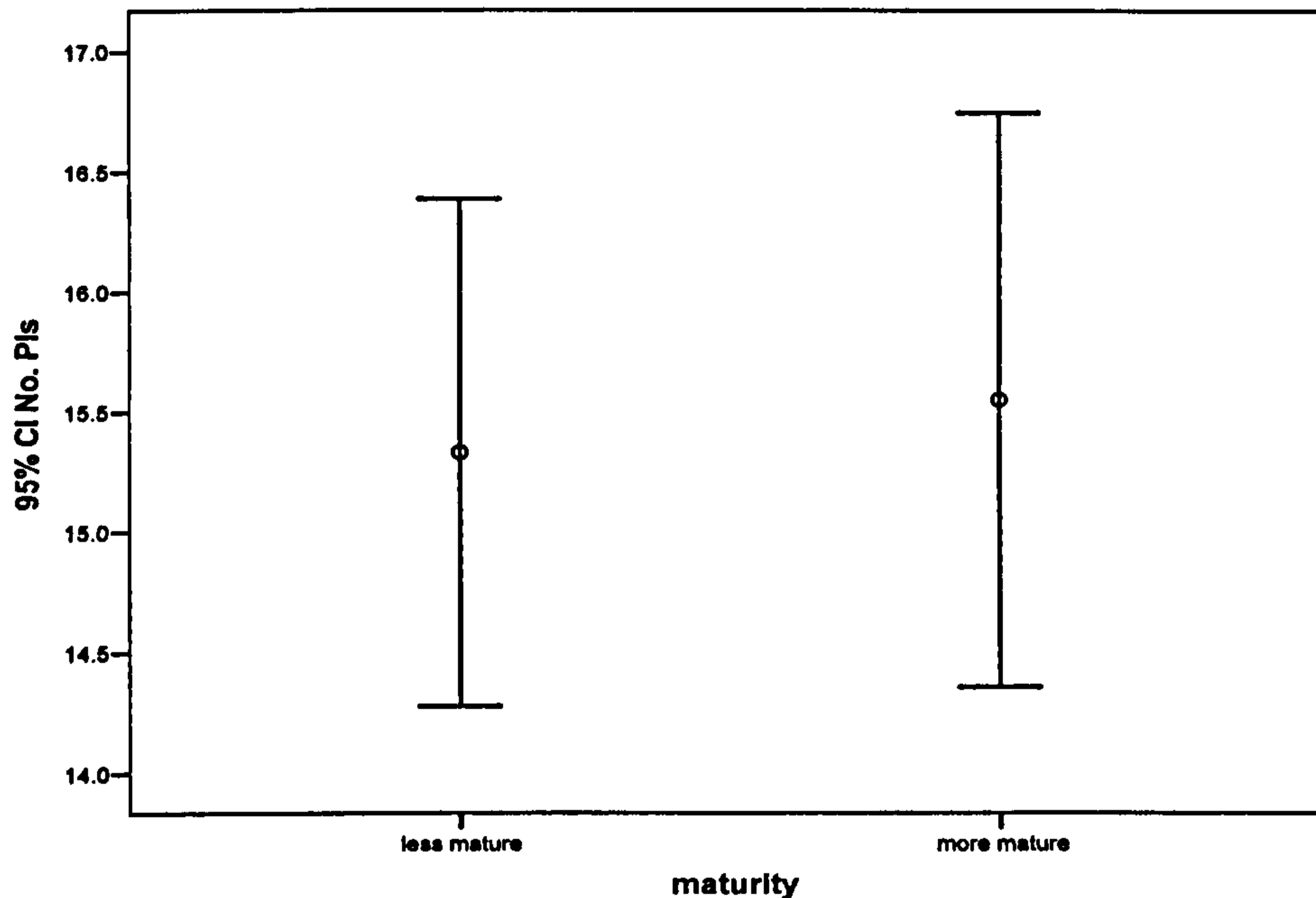


Figure 7.5: Error bar chart – PI and maturity

To confirm this prediction, further analysis using t-test was conducted. The result indicated non-significant relationship ($t(248) = 0.272, p > 0.05$). In summary, this finding suggests that the number of performance indicators measured is statistically not different between less mature and more mature Internet retailers. Further investigation of individual performance indicators indicates no *strong* significant relationship.

Summary of section 7.3

Statistical analysis indicates that there are some associations between the level of performance indicators measured and business profile. Internet retailers without store presence were likely to measure more performance indicators than those with store presence. Similarly, relatively bigger Internet retailers were likely to measure more performance indicators than smaller ones. The analysis also indicated that the level of performance indicators measured was not different among Internet retailers classified by product categories, as well as between more mature and less mature.

7.4 Use of performance measurement

This section presents how Internet retailers use the information obtained from performance measurement (Objective 3). As discussed in Chapter 6, factor analysis produced two factors for Managerial activities, as well as Types of decision. Each is now discussed.

7.4.1 Managerial activities

The variable of use of performance measurement (UPM) represents how frequently Internet retailers use the information obtained from measuring performance to support strategy-related activities (MA strategy) and administration-related activities (MA administration). To obtain a simple description, each variable is split into two categories: less frequently and more frequently. The summated scores of MA strategy and MA administration, less than 3, are assigned to the less frequently category, while equal to or greater than 3 to be more frequently one. In the questionnaire, the score 3, as a mid-point, represents *half the time*. The frequency distribution of both categories is presented in Table 7.22 and Figure 7.6.

Table 7.22: Managerial activities

MA strategy	Frequency	Percentage	MA administration	Frequency	Percentage
less frequently	88	36%	less frequently	184	75%
more frequently	158	64%	more frequently	61	25%
Total	246	100%	Total	245	100%

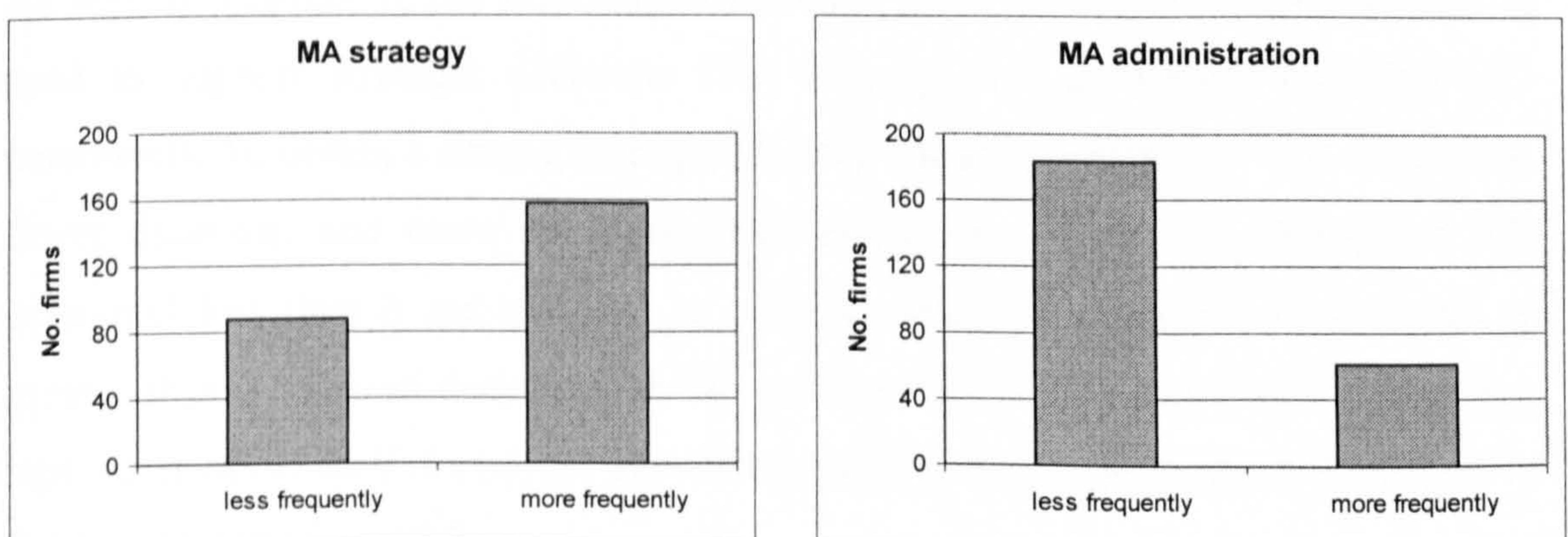


Figure 7.6: Managerial activities

Both table and figure clearly show a contrast between MA strategy and MA administration. Around two-thirds of Internet retailers used the information obtained from performance measurement *more frequently* to support strategy-related activities. In contrast, only a quarter of Internet retailers used the information *more frequently* to support administration-related activities. The figures also appear in Table 7.23 which presents a cross-tabulation between MA strategy and MA administration. The table indicates that 40% of Internet retailers use the information more frequently for strategy-related activities and less frequently for administration-related.

Table 7.23: Cross-tabulation – Managerial activities

		MA administration		
		less frequently	more frequently	
MA strategy	less frequently	Count	85	3
		Percentage	35%	1%
	more frequently	Count	99	58
		Percentage	40%	24%
		Total	245	

Table 7.23 also shows that Internet retailers were unlikely to use the information more frequently for administration-related activities and less frequently for strategy-related activities. Overall, the findings indicate that Internet retailers were likely to use the information obtained from performance measurement more for strategy-related activities than administration-related activities.

7.4.2 Types of decision

As seen in Chapter 6, the information obtained from performance measurement is used to support strategic decisions (TD strategy) and personnel decisions (TD personnel). To obtain a simple description, each variable is split into two categories: fewer decisions and more decisions. The average scores of TD strategy or TD personnel less than 3 are assigned to a fewer decisions category, while equal or greater than 3 to more decisions. In the questionnaire, the score 3, as a mid-point, represents *about half decisions*. The distribution of both categories is presented in Table 7.24 and Figure 7.7.

Table 7.24: Types of decisions

TD strategy	Frequency	Percentage	TD personnel	Frequency	Percentage
fewer decisions	61	25%	fewer decisions	176	72%
more decisions	186	75%	more decisions	70	28%
Total	247	100%	Total	246	100%

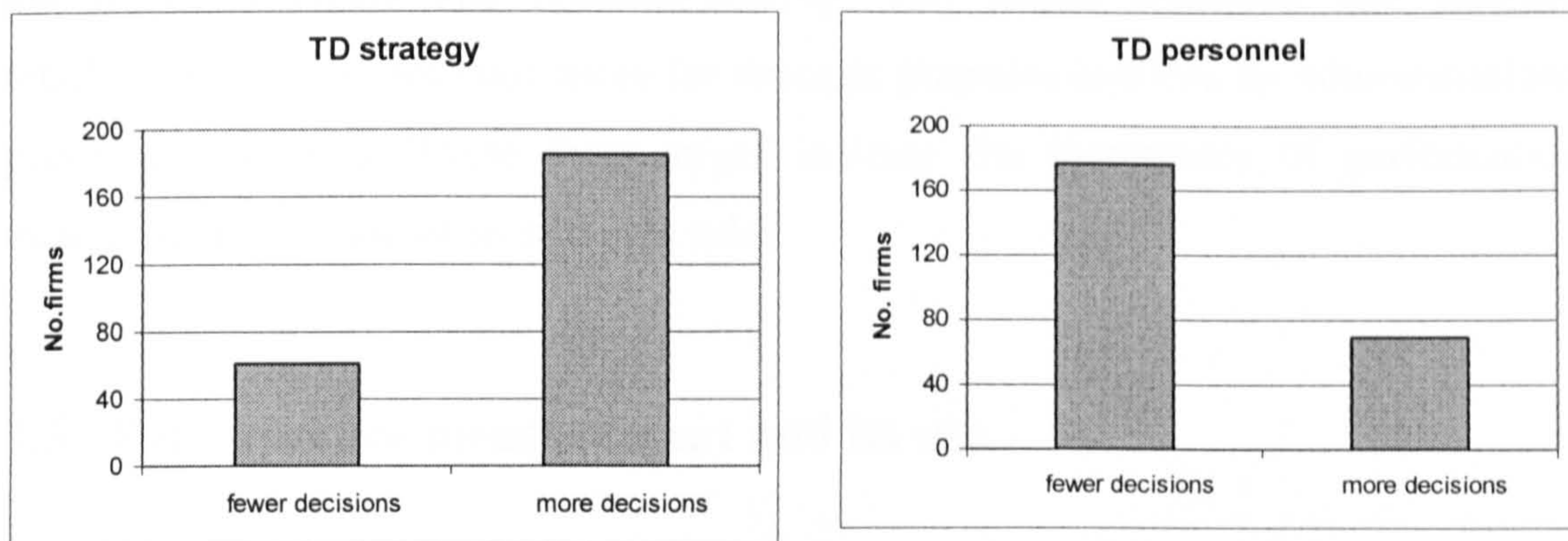


Figure 7.7: Types of decision

Both table and figure clearly show a contrast between TD strategy and TD personnel. Around three-quarters of Internet retailers used the information obtained from performance measurement *more frequently* to support strategy-related activities, but only a quarter used it *more frequently* to support administration-related activities. These facts also appear in Table 7.25, which presents a cross-tabulation between TD strategy and TD personnel. The result indicates that 40% of Internet retailers used the information more frequently for strategy-related activities and less for personnel-related activities.

Table 7.25: Cross-tabulation – Types of decisions

		TD personnel	
		fewer decisions	more decisions
TD strategy	fewer decisions	Count	59
		Percentage	24%
	more decisions	Count	117
		Percentage	48%
Total			246

The finding on Types of Decision is similar to that on Managerial Activities. Overall, the results suggest that Internet retailers were likely to use the information obtained

from performance measurement more to support strategic decisions than personnel decisions.

Summary of section 7.4

Performance measurement produces information that can be used to support managerial activities and decision-making. The results indicated that Internet retailers used the information more for strategic purposes and less for administration/personnel purposes. These facts might indicate the importance of performance measurement because of its strategic roles.

7.5 Performance measurement and its use

This section presents the investigation of the relationship between performance measurement and its use (Objective 4). The relationship between a single factor of Performance Indicator (PI) and four variables of use of performance measurement (UPM) is analysed individually using bivariate Pearson correlation. The purpose is to investigate whether the level of performance indicators measured is associated with the use of information obtained. The output of Pearson correlations in Table 7.26 shows that PI is correlated positively and significantly ($p < 0.001$) with all four variables of UPM. The findings suggest that the more performance indicators measured, the more the information obtained is used to support strategic as well as administration/personnel purposes.

Table 7.26: Correlation – PI and UPM

	MA strategy	MA administration	TD strategy	TD personnel
Pearson Correlation	0.585	0.491	0.469	0.381
Sig. (2-tailed)	0.000	0.000	0.000	0.000
N	246	245	247	246

In addition, Tables 7.27 and 7.28 present the mean scores of PI for four categories of Managerial Activities as well as Types of Decision. Internet retailers using the information more frequently for strategic-related activities (the last two groups) measured more performance indicators. Similarly, Internet retailers using the information to support more strategic decisions (the last two groups) also measured more performance indicators. Table 7.27 shows that the highest mean score of PI

belongs to Internet retailers using the information more frequently for strategy and administration-related activities. Similarly, the highest mean score of PI belongs to Internet retailers that used the information to support more strategy and personnel decisions (Table 7.28). Overall, the findings suggest that Internet retailers measuring more performance indicators also used the information obtained more intensively.

Table 7.27: Descriptive – PI and Managerial activities

Managerial Activities	N	Mean	S.D.
less MA strategy - less MA administration	85	11.188	4.936
less MA strategy - more MA administration	3	14.333	3.512
more MA strategy - less MA administration	99	16.899	5.289
more MA strategy - more MA administration	58	19.534	5.570
Total	245	15.510	6.175

Table 7.28: Descriptive – PI and Types of decision

Types of Decision	N	Mean	S.D.
fewer TD strategy - fewer TD personnel	59	11.153	5.623
fewer TD strategy - more TD personnel	1	15.000	.
more TD strategy - fewer TD personnel	117	16.171	5.245
more TD strategy - more TD personnel	69	18.333	6.352
Total	246	15.569	6.223

Internet retailers using the information more frequently for managerial activities, on average measured eight more performance indicators than those using it less frequently. A further question is what performance indicators differentiate between those two groups. For this purpose, the percentage of each performance indicator measured is calculated for both groups. Table 7.29 presents the top five performance indicators with the biggest differences between both groups. The table shows that, for example, cost of fulfilment was measured by 79% of Internet retailers using the information more frequently for managerial activities, but it was measured by only 29% using it less frequently. The results might be interpreted that those five performance indicators are likely to differentiate between both groups.

Table 7.29: Managerial activities – percentage difference

Performance Indicator	more strategy – more administration	less strategy – less administration	Difference
Cost of fulfilment	79%	29%	50%
Percentage of error in delivery destination	57%	11%	46%
Percentage of error in goods picked and delivered to customer	62%	19%	43%
Acquisition cost	65%	25%	40%
Revenue per transaction	88%	49%	38%

Similarly, Table 7.30 presents the results for types of decision.

Table 7.30: Types of decision – percentage difference

Performance Indicator	more strategy – more personnel	fewer strategy – fewer personnel	Difference
Acquisition cost	63%	21%	43%
Cost of fulfilment	67%	26%	41%
Percentage of error in delivery destination	49%	14%	36%
Conversion rate visitor to purchase	70%	34%	36%
Revenue per transaction	81%	46%	35%

Tables 7.29 and 7.30 indicate four identical performance indicators. In total, six performance indicators could be seen as differentiating between Internet retailers using the information more and less for managerial activities/ decision-making. Those six performance indicators could be illustrated as the following sequence:

(1) Acquisition cost → (2) Conversion visitor to purchase → (3) Revenue per transaction → (4) Fulfilment cost → (5, 6) Errors in goods and delivery

The first four indicators are related to the efficiency of online business operations because they are related to the utilisation of resource (costs) to generate revenue (sales). The last two are related to the critical measures of the fulfilment process because those refer to delivering the right goods to the right customers. Internet retailers using the information less for managerial activities/ decision-making were likely to lack those six critical measures of online business operations. The interpretation of these findings should be that the majority of Internet retailers in both groups measured *common* indicators such as total sales, number of orders, number of customers, number of visitors, and profit margin.

Summary of section 7.5

Internet retailers using the information more intensively to support managerial activities and decision-making were likely to measure more performance indicators. This finding might indicate that the more information obtained, the more it will be used. More intensive users of the information were interested in measuring the efficiency of their operations, such as acquisition cost, conversion rate, and fulfilment cost, as well as the accuracy of their operations to deliver the right goods to the right customers.

7.6 Summary

This chapter has presented the figures for performance measurement implemented by Internet retailers. The findings suggest that, currently, Internet retailers have measured a number of performance indicators to evaluate their performance from market, financial, customers, web, and process aspects. Internet retailers focused their performance measurement more on financial, market and web indicators, but less on customer and process. The high interest in financial and market indicators might denote that Internet retailers currently have measured their business performance in a more rational way than did those during the dotcom era.

Internet retailers without store presence, on average, measured more performance indicators than those with store presence. Further investigation revealed that Internet retailers without store presence are about twice as likely to measure web-traffic indicators than those with store presence. In addition, Internet retailers without store presence gave greater attention to measuring profit margin. These findings might indicate that as Internet selling is the main channel for Internet retailers without store presence, they had more concerns in measuring their virtual store performance. For those with store presence, the success of their Internet channel might go through the increase of sales and profit from their physical stores.

Relatively bigger Internet retailers (in a context of small and medium-sized businesses) were likely to measure more performance indicators than smaller ones. Further investigation of individual performance indicators revealed that relatively bigger Internet retailers were more likely to measure financial indicators than smaller

ones. In addition, the former were also more likely to measure performance indicators of process accuracy than the latter. Bigger size could be associated with more customers served, more suppliers, more orders, more product varieties, and more complex other operations. Therefore, relatively bigger Internet retailers might need more information from various aspects of business performance in order to keep their business in the right direction.

The analysis indicated that the more performance indicators measured, the more likely Internet retailers used the information to support managerial activities and decision-making. Internet retailers used the information obtained more for strategic purposes and less for administration/ personnel. This finding might imply that performance measurement has played a strategic role in the business. This significant role leads to the prediction that, firstly, performance measurement might be associated with business strategy, and secondly, it might affect business performance. These issues are presented in the next chapter.

Chapter 8

ANALYSIS OF RELATIONSHIP

8.1 Introduction

This chapter presents the results of the analysis for answering the second research question: “In the Internet retailing business context, to what extent and in what ways are business strategy, performance measurement, and business performance related to each other?”. As shown in Chapter 3, there are four specific relationships to be investigated:

1. Business strategy and performance measurement;
2. Business strategy and business performance;
3. Performance measurement and business performance;
4. A combination of performance measurement and business strategy *and* business performance.

This chapter presents statistical analysis for each relationship. In addition, the effect of business size as a control variable in the relationships being investigated is also presented.

8.2 Strategic Orientation and Performance Measurement

This section aims to investigate the link of strategic orientation and performance measurement. The investigation of the relationship is conducted between two dimensions of strategic orientation and the level of performance indicators measured. The analysis consists of two parts: (1) between four types of strategic orientation (SO) and the level of performance indicators (PI), and (2) between two dimensions of strategic orientation and the level of performance indicators.

8.2.1 Four types of SO and PI

As presented in Chapter 6, strategic orientation adopted by Internet retailers can be viewed as four types, as a combination of aggressiveness and conservativeness-oriented strategies. The relationship between four types of SO and PI is analysed using ANOVA. The purpose is to investigate whether there is a difference in PI across four different types of SO.

Before performing the ANOVA test, it is useful to look at the descriptive statistics table and error-bar charts. Table 8.1 displays the mean PI scores for four types of SO. The result shows clearly that the first two (Lcon - Lagg and Lcon - Hagg) have lower mean PI scores than the other two (Hcon - Lagg and Hcon - Hagg). The error bar chart in Figure 8.1 shows clearly the difference observed from the descriptive statistics. Therefore, ANOVA test was expected to denote the difference in PI across these four types of SO.

Table 8.1: Descriptive: SO – PI

SO 4 types	N	Mean	S.D.
Lcon – Lagg	71	11.493	5.174
Lcon – Hagg	53	12.698	4.762
Hcon – Lagg	65	18.892	6.026
Hcon – Hagg	63	18.635	5.090

L: Low, H: High, con: conservative, agg: aggressiveness

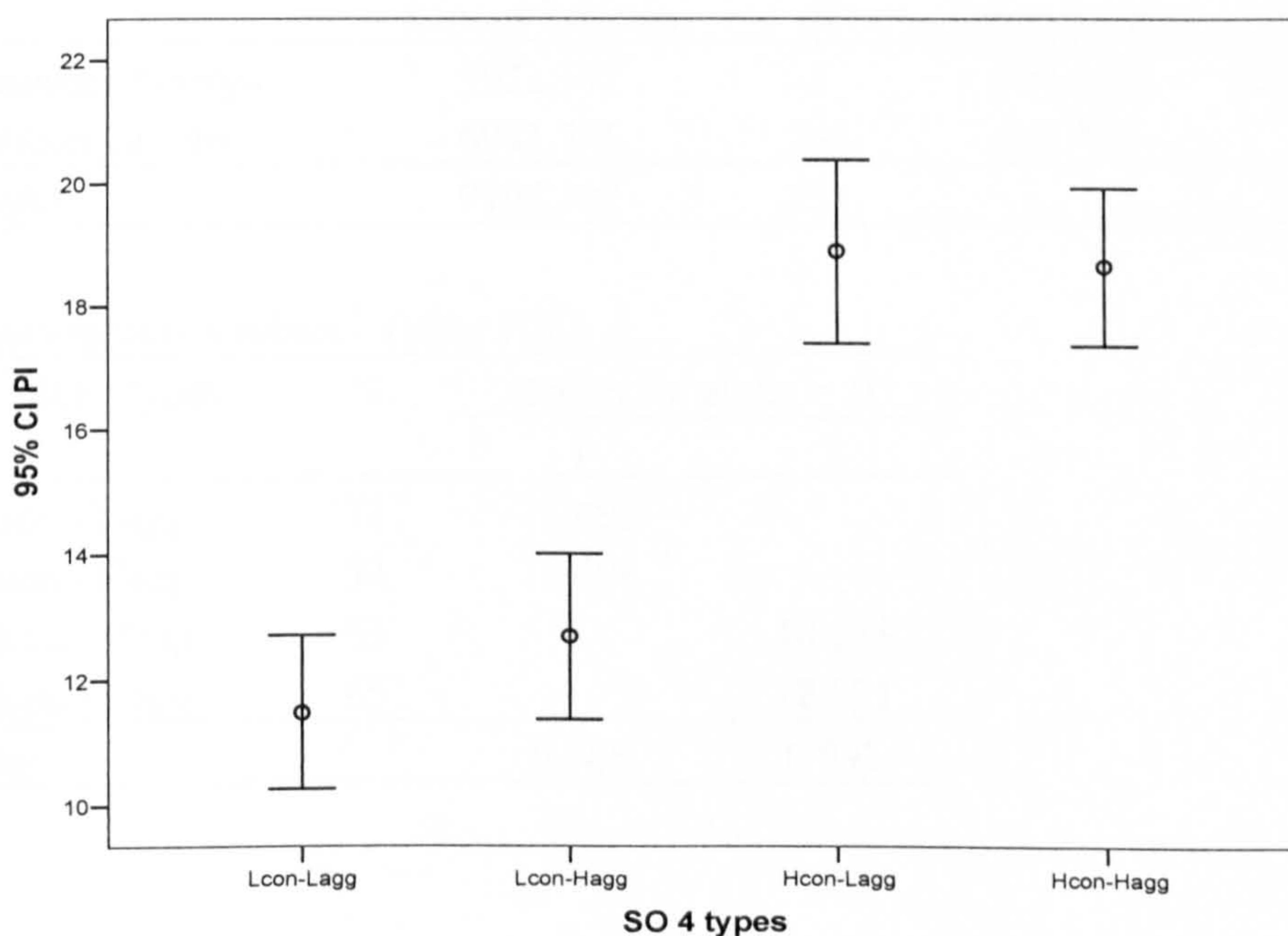


Figure 8.1: Error-bar chart: SO – PI

The output of the ANOVA test is shown in Table 8.2. Levene's test tells about the homogeneity of variance assumption, in which the four SO types have approximately equal variances on PI. The result of the test is not significant ($p > 0.05$), which means the homogeneity of variance assumption is not violated. The ANOVA examines whether the variance *between groups* is statistically greater than *within groups*. As shown by F-ratio, the test result is significant $F(3,248) = 34.592$; $p < 0.001$. This means that the level of PI is found to be different across four types of SO. To identify in which groups the difference exists, a post-hoc Tukey-test is conducted. The *homogeneous subset* table clearly shows that (Lcon–Lagg) and (Lcon–Hagg) belong to one group, while (Hcon–Lagg) and (Hcon–Hagg) belong to another group. This result specifies that Internet retailers with high conservativeness-oriented strategy (Hcon–Lagg and Hcon–Hagg) significantly measured more performance indicators than those with low conservativeness-oriented strategy (Lcon–Lagg and Lcon–Hagg). This result indicates that the level of performance indicators is associated with conservativeness, but not aggressiveness.

Table 8.2: ANOVA: SO 4 types and PI

Test of Homogeneity of Variances

Levene Statistic	df1	df2	Sig.
0.981	3	248	0.402

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2922.342	3	974.114	34.592	0.000
Within Groups	6983.766	248	28.160		
Total	9906.107	251			

Homogeneous subset - Tukey HSD

SO 4 types	N	Subset for alpha = .05	
		1	2
Lcon - Lagg	71	11.493	
Lcon - Hagg	53	12.698	
Hcon - Hagg	63		18.635
Hcon - Lagg	65		18.892
Sig.		0.585	0.993

8.2.2 Two dimensions of SO and PI

The relationship between two dimensions of strategic orientation (SO) and performance indicator (PI) is analysed using multiple regression. As discussed in Chapter 6, two dimensions of strategic orientation: aggressiveness and conservativeness, are weakly correlated with each other. In this analysis, multiple regression is used rather than bivariate regression. Firstly, the use of multiple regression will facilitate simultaneous analysis. Secondly, this technique presents the contribution of each independent variable, eliminating the effect of other(s) to a dependent variable. The assumption of linearity and normality needed for the regression analysis has been checked from the scatter and normal plots (Appendix J), which confirm that both assumptions were met. Two dimensions of SO are treated as independent variables and PI as a dependent variable. Table 8.3 presents the regression model obtained from the analysis.

Table 8.3: Regression: SO and PI

Independent variable	Standardised coefficient	t	Sig.
SO conservativeness	0.614	12.371	0.000
SO aggressiveness	0.072	1.448	0.149

The table presents the standardised coefficients of independent variables in the regression equation. Standardised coefficient denotes the average amount the dependent variable (PI) increases when the independent variable increases by one standard deviation. A t-test is performed to test a two-tailed hypothesis that the coefficient value is significantly higher or lower than zero. The result of t-test indicates that only SO conservativeness is a significant predictor for PI. Further regression analysis is conducted with SO conservativeness as the only independent variable. The result is shown in Table 8.4.

Table 8.4: Regression: SO conservativeness and PI

$$R = 0.619; R^2 = 0.384$$

$$F = 155.598; \text{Sig.} = 0.000$$

Independent variable	Standardised coefficient	t	Sig.
SO conservativeness	0.619	12.474	0.000

The table shows that the correlation coefficient (R) between SO conservativeness and PI is 0.619, which is considered as *a marked degree correlation*. As shown by R^2 , SO conservativeness explains 38% of the variance in PI. F-ratio examines whether the regression line predicted by the model explains a significant amount of the variance in the dependent variable. This test is significant ($F(1,250) = 155.598$; $p < 0.001$), which means that PI can be seen as a linear function of SO conservativeness. As shown by the regression model, SO conservativeness is a significant predictor for PI, with standardised coefficient 0.619.

Overall, this analysis suggests that conservativeness traits adopted by Internet retailers are related to the level of performance indicators measured. Internet retailers with higher conservativeness-oriented strategy were more likely to monitor their business performance with more performance indicators. Conversely, the relationship does not appear for aggressiveness-oriented strategy.

Furthermore, the effect of business size as a control variable is examined in this relationship, as business size is correlated with SO conservativeness and PI. Table 8.5 presents the summarised output of this analysis.

Table 8.5: Regression: SO conservativeness, business size, and PI

Model	R	R Square	Change Statistics				
			R Square Change	F Change	df1	df2	Sig. F Change
1	0.619 ^a	0.384	0.384	155.598	1	250	0.000
2	0.633 ^b	0.401	0.017	7.063	1	249	0.008
a	Predictors: (Constant), SO conservative						
b	Predictors: (Constant), SO conservative, business size						

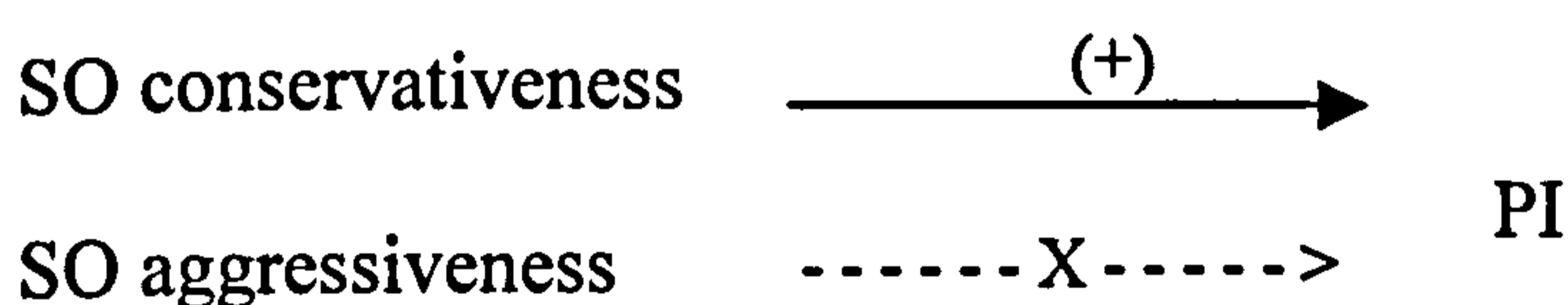
Independent variable	Standardised coefficient	t	Sig.
SO conservativeness	0.587	11.601	0.000
Business size	0.134	2.658	0.008

The regression model shows that the inclusion of business size has only *slightly* increased the correlation coefficient (R) of the model from 0.619 to 0.633. The variance (R^2) explained by the model has also slightly increased from 38% to 40%. This small change in R^2 is significant as indicated by $F_{\text{change}}(1,249) = 7.063$; $p < 0.01$.

Though business size becomes an additional predictor for PI, its *contribution* as indicated by its standardised coefficient (0.134), to the model is minor compared to that of SO conservativeness (0.587). The result suggests that largely the correlation between SO conservativeness and PI is genuine, and only a small part of the correlation is due to the effect of business size.

Summary of section 8.2

This section has investigated the relationship between strategic orientation and the level of performance indicators measured. The analysis indicates that strategic orientation adopted by Internet retailers is related to their performance measurement. The results also specifies that Internet retailers which are more conservative in their strategic orientation are likely to measure more performance indicators. However, the similar relationship is not observed between aggressiveness-oriented strategy and the level of performance indicators. The size of Internet retailer is also positively associated with the level of performance indicators measured, but the strength of its correlation is small compared to that of conservativeness-oriented strategy. Overall, the results of analysis can be illustrated as in the following diagram.



8.3 Strategic Orientation and Business Performance

The investigation of strategic orientation and business performance is aimed to understand whether business performance is associated with strategic orientation. The analysis of relationships consists of four parts: (1) between four types of SO and BP financial, (2) between two dimensions of SO and BP financial, (3) between four types of SO and BP operational, and (4) between two dimensions of SO and BP operational. Each of them is now presented in turn.

8.3.1 Four types of SO and BP financial

The relationship between four types of SO and BP financial is analysed using ANOVA. The purpose is to investigate whether there is a difference in BP financial across four types of SO.

Table 8.6 displays the mean scores of BP financial for four types of SO. Although the difference in the mean scores is not strongly apparent, the table shows that Lcon – Hagg has the lowest score, while Hcon – Lagg has the highest. The error bar chart (Figure 8.2) shows clearly that these two strategic types show different mean scores of BP financial. Therefore, ANOVA test was predicted to indicate the difference in BP financial across these four types of SO.

Table 8.6: Descriptive: SO types – BP financial

SO 4 types	N	Mean	S.D.
Lcon - Lagg	71	5.930	2.098
Lcon - Hagg	53	5.613	1.918
Hcon - Lagg	65	6.746	1.943
Hcon - Hagg	63	6.056	1.762

L: Low, H: High, con: conservativeness, agg: aggressiveness

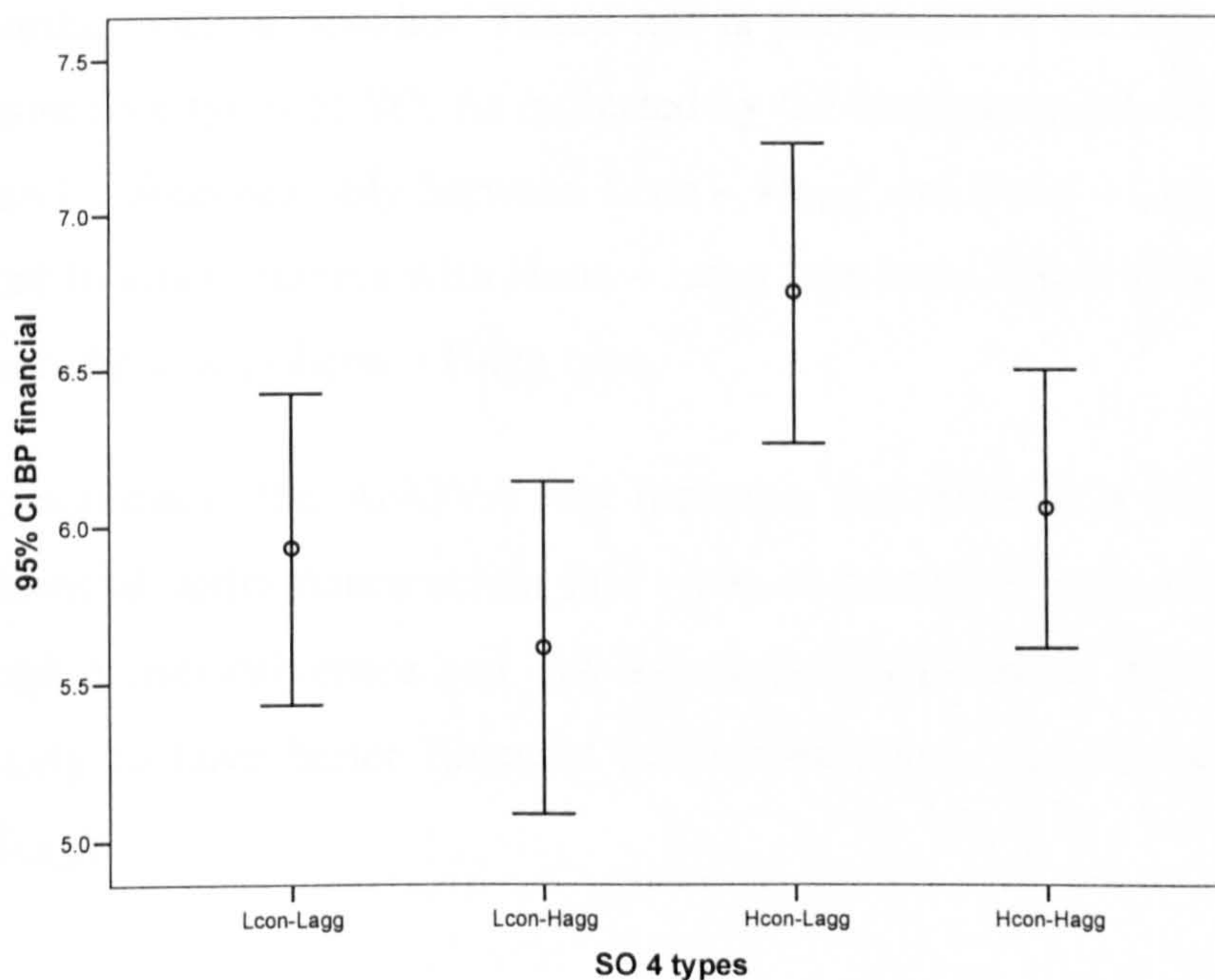


Figure 8.2: Error-bar chart: SO – BP financial

Table 8.7 shows the outputs of the ANOVA test. The result of Levene's test is not significant ($p > 0.05$), which means that the homogeneity of variance assumption is

not violated. The ANOVA table shows that the F-ratio is significant: $F(3,258) = 2.829$; $p < 0.05$. This result means that the level of BP financial is found to be different across four types of SO.

Table 8.7: ANOVA: SO 4 types and BP financial

Test of Homogeneity of Variances

Levene Statistic	df1	df2	Sig.
1.111	3	248	0.345

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	41.878	3	13.959	3.708	0.012
Within Groups	933.586	248	3.764		
Total	975.463	251			

Homogeneous subset - Tukey HSD

SO 4 types	N	Subset for alpha = .05	
		1	2
Lcon - Hagg	53	5.613	
Lcon - Lagg	71	5.930	5.930
Hcon - Hagg	63	6.056	6.056
Hcon - Lagg	65		6.746
Sig.		0.581	0.090

Furthermore, a post-hoc Tukey-test is performed to identify the difference among those four types of SO. As indicated by the *homogeneous subset* table, the difference can be observed only between Lcon – Hagg and Hcon – Lagg. The results indicate that Internet retailers with Hcon – Lagg type have higher mean score of BP financial than those with Lcon – Hagg type.

In summary, the ANOVA test indicates that there is a difference in the level of financial performance across four types of strategic orientation. Internet retailers with high conservativeness and low aggressiveness-oriented strategy (Hcon – Lagg) are likely to have better financial performance than the opposite orientation (Lcon – Hagg).

8.3.2 Two dimensions of SO and BP financial

The relationship between two SO dimensions (aggressiveness and conservativeness) and BP financial is analysed using multiple regression. The assumption of linearity

and normality needed for the regression analysis has been checked from the scatter and normal plots (Appendix J), which confirm that both assumptions were met. In this analysis, aggressiveness and conservativeness are treated as independent variables, and BP financial as a dependent variable.

Table 8.8 presents the summarised output of the analysis. The correlation coefficient (R) between both SO dimensions and BP financial is 0.194. As shown by R^2 , SO explains only 4% of variance in PI. Though it is a small percentage, the model obtained is statistically significant, as indicated by F-ratio ($F(2,249) = 4.886$; $p < 0.01$). The result of the t-test indicates that coefficients for both SO dimensions are significantly not zero. The sign of coefficients indicates that SO conservativeness is related to BP financial positively, while SO aggressiveness is negatively related.

Table 8.8: Regression: SO and BP financial

R = 0.194 ; $R^2 = 0.038$
F = 4.886; Sig. = 0.008

Independent variable	Standardised coefficient	t	Sig.
SO conservativeness	0.149	2.385	0.018
SO aggressiveness	-0.136	-2.181	0.030

Furthermore, the effect of business size as a control variable is examined in this relationship, as business size is correlated with SO conservativeness and BP financial. Table 8.9 presents the summarised output of this analysis.

Table 8.9: Regression: SO, business size, and BP financial

Independent variable	Standardised coefficient	t	Sig.
SO conservativeness	0.092	1.467	0.144
SO aggressiveness	-0.143	-2.356	0.019
Business size	0.236	3.782	0.000

The table indicates that the inclusion of business size has eliminated SO conservativeness as a predictor for BP financial. Further regression analysis was performed with SO aggressiveness and business size as dependent variables. The result is shown in Table 8.10 (overleaf).

Table 8.10: Regression: SO, business size, and BP financial

$R = 0.287$; $R^2 = 0.082$

$F = 11.171$; $\text{Sig.} = 0.000$

Independent variable	Standardised Coefficients	t	Sig.
SO aggressiveness	-0.138	-2.268	0.024
Business size	0.258	4.249	0.000

The regression model indicates that SO aggressiveness still has negative correlation with BP financial, which indicates that its contribution to BP financial is not affected by business size. Business size itself has *replaced* the position of SO conservativeness as a significant predictor for PI.

8.3.3 Four types of SO and BP operational

The relationship between four types of SO and BP operational is analysed using ANOVA. The purpose is to investigate whether there is a difference in BP operational across four types of SO.

The descriptive statistics (Table 8.11) seems to indicate that Hcon – Lagg and Hcon – Hagg have higher mean score of BP operational than Lcon – Lagg and Lcon – Hagg. However, the difference in the mean scores is not strongly apparent. The error bar chart (Figure 8.3) shows that the charts are overlapping. Therefore, the ANOVA test might indicate no difference in BP operational across these four strategic types.

Table 8.11: Descriptive: four types of SO and BP operational

SO 4 types	N	Mean	S.D.
Lcon - Lagg	71	6.646	1.703
Lcon - Hagg	53	6.371	1.810
Hcon - Lagg	65	6.867	1.980
Hcon - Hagg	63	6.968	1.478

L: Low, H: High, con: conservativeness, agg: aggressiveness

Table 8.12 presents the output of the ANOVA test. Levene's test is not significant ($p > 0.05$), which means that the homogeneity of variance assumption is not violated. The main result of the ANOVA test shows that F-ratio is not significant: $F(3,248) =$

1.319; $p > 0.05$. This result means that the level of BP operational is found not to be different across those four strategic types.

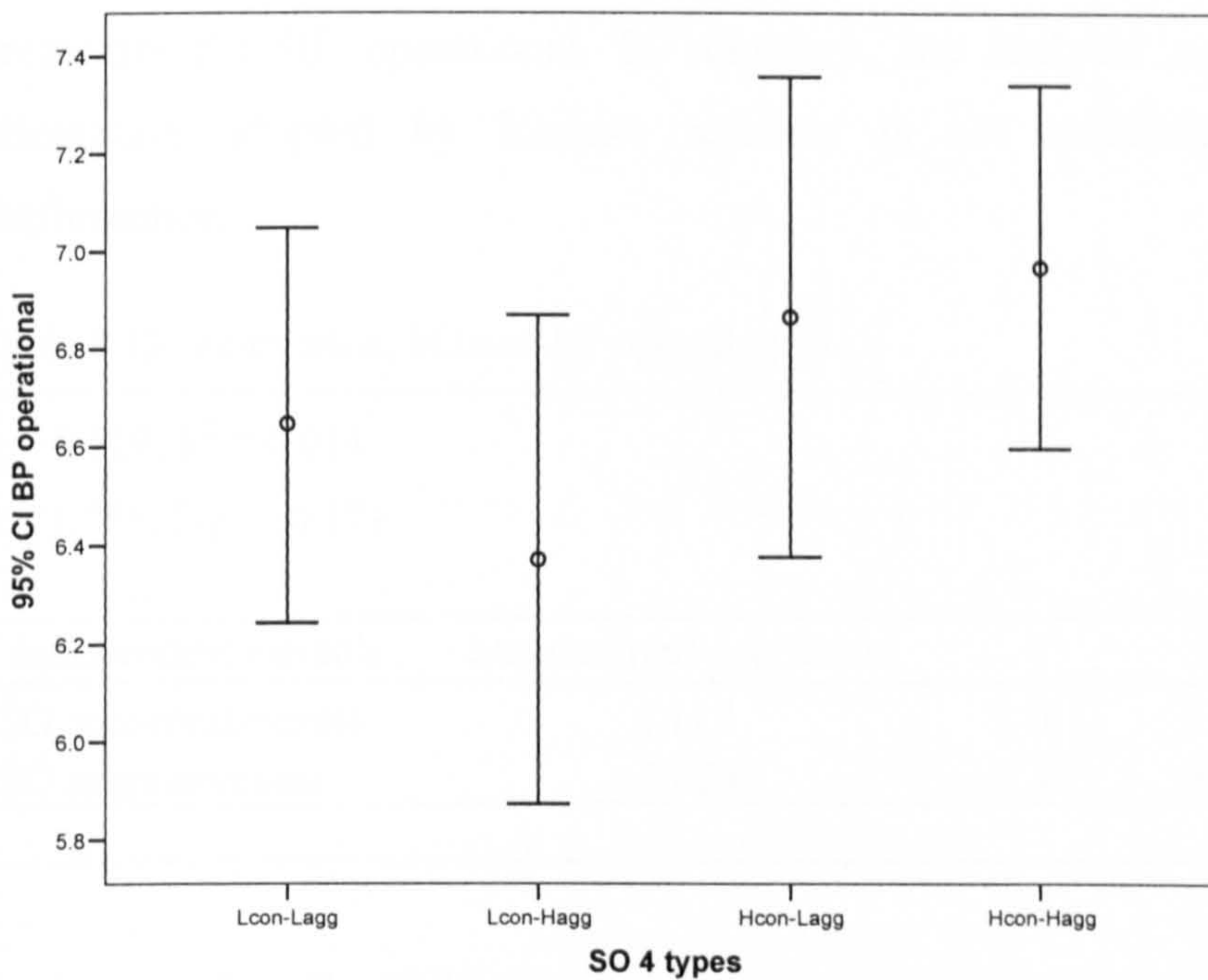


Figure 8.3: Error-bar chart: SO – BP operational

Table 8.12: ANOVA: SO and BP operational

Test of Homogeneity of Variances

Levene Statistic	df1	df2	Sig.
0.314	3	248	0.816

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12.120	3	4.040	1.319	0.269
Within Groups	759.646	248	3.063		
Total	771.766	251			

8.3.4 Two dimensions of SO and BP operational

The relationship between two dimensions of SO and BP operational is analysed using multiple regression. The assumption of linearity and normality needed for the regression analysis has been checked from the scatter and normal plots (Appendix J), which confirm that both assumptions were met. In this analysis, two dimensions of SO (aggressiveness and conservativeness) are treated as independent variables, and BP operational as a dependent variable.

Table 8.13 presents the summarised outputs of the analysis. The regression model is not significant, as indicated by F-ratio ($F(2, 249) = 1.781; p > 0.05$). As shown by the result of t-test, both SO conservativeness and SO aggressiveness are not significant predictors for BP operational. In summary, the analysis suggests that strategic orientation adopted by Internet retailers is not associated with operational performance.

Table 8.13: Regression: SO and BP operational

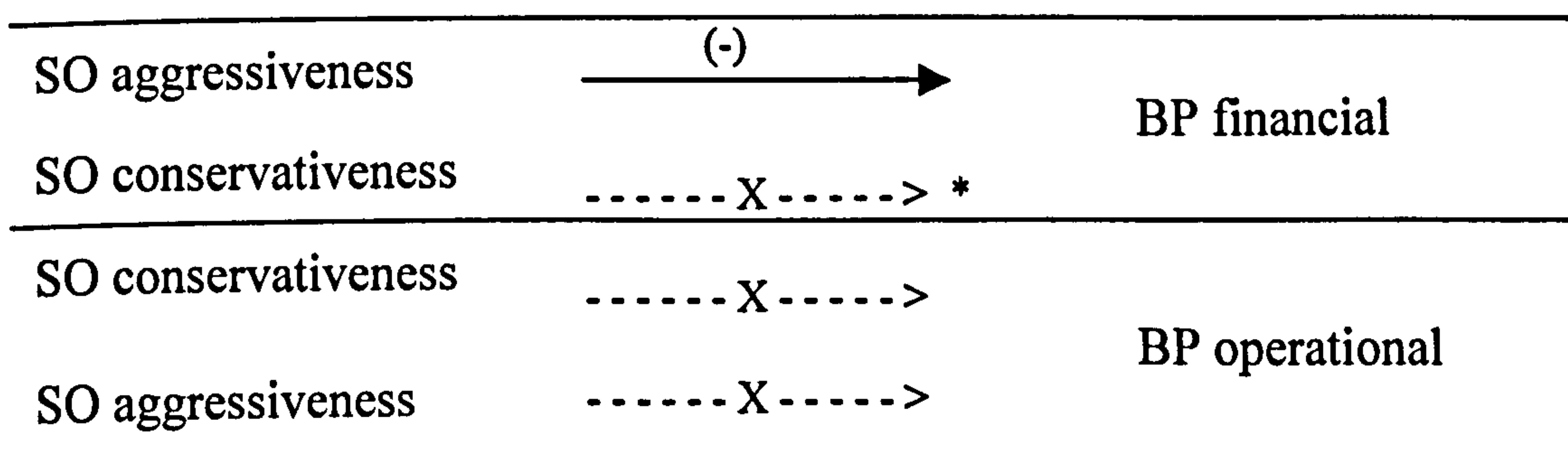
$R = 0.119; R^2 = 0.014$

$F = 1.781; Sig. = 0.171$

Independent variable	Standardised coefficient	t	Sig.
SO conservativeness	0.117	1.861	0.064
SO aggressiveness	-0.028	-0.445	0.657

Summary of section 8.3

This section has investigated the relationship between strategic orientation and business performance. The analysis suggests that strategic orientation is related to financial performance, but not operational performance. The analysis indicates that business size has eliminated the effect of conservativeness-oriented strategy to financial performance. The result suggests that Internet retailers relatively bigger in size (in a context of small and medium-sized businesses) and less in aggressiveness are likely to have better financial performance. These results can be illustrated as follows.



*) link affected by business size as control variable

8.4 Performance Measurement and Business Performance

This section aims to investigate the association between performance measurement and business performance. The investigation of relationship is made between the level of performance indicators measured and financial as well as operational performance.

8.4.1 PI and BP financial

The relationship between PI and BP financial is analysed using bivariate regression. The assumption of linearity and normality needed for the regression analysis has been checked from the scatter and normal plots (Appendix J), which confirm that both assumptions were met. In this analysis, PI is treated as an independent variable and BP financial as a dependent variable.

Table 8.14 presents the summarised output of this analysis. As indicated by F-ratio, the model obtained is not significant ($F(1,250) = 2.452; p > 0.05$). This result means that the regression model (PI) is not enough to explain the variance in the dependent variable (BP financial). Therefore, the result of this analysis suggests that that the level of performance indicators measured is not related to financial performance.

Table 8.14: Regression: PI – BP financial

$R = 0.099; R^2 = 0.010$

$F = 2.452; \text{Sig.} = 0.119$

Independent variable	Standardised coefficient	t	Sig.
PI	0.099	1.566	0.119

8.4.2 PI and BP operational

The relationship between PI and BP operational is analysed using bivariate regression. In this analysis, PI is treated as an independent variable and BP operational as a dependent variable. The assumption of linearity and normality needed for the regression analysis has been checked from the scatter and normal plots (Appendix J), which confirm that both assumptions were met.

Table 8.15 presents the summarised output of this analysis. The correlation coefficient (R) between PI and BP operational is 0.198. As shown by R^2 , PI explains only 4% of variance in BP operational. Though it is a small percentage, the model obtained is statistically significant, as indicated by F-ratio ($F(1,250) = 10.227$; $p < 0.005$). The standardised coefficient has a positive sign. In summary, the regression analysis indicates that the level of performance indicators measured is positively related to operational performance.

Table 8.15: Regression: PI – BP operational

R = 0.198; $R^2 = 0.039$

F = 10.227; Sig. = 0.002

Independent variable	Standardised coefficient	t	Sig.
PI	0.198	3.198	0.002

Furthermore, the effect of business size as a control variable is examined. The regression model in Table 8.16 shows that the inclusion of business size does not change the relationship between PI and BP operational ($F_{\text{change}}(1,249) = 0.001$; $p > 0.05$). This result confirms that as business size is not correlated with BP operational, the inclusion of business size as a control variable will not affect the relationship between PI and BP operational.

Table 8.16: Regression: PI, business size, and BP operational

Model	R	R Square	Change Statistics				
			R Square Change	F Change	df1	df2	Sig. F Change
1	0.198 ^a	0.039	0.039	10.227	1	250	0.002
2	0.198 ^b	0.039	0.000	0.001	1	249	0.977

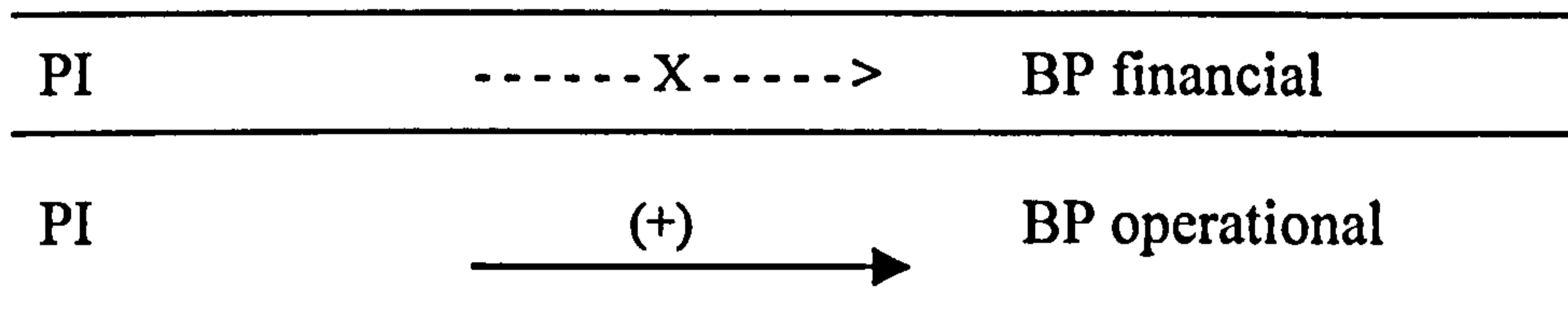
a Predictors: (Constant), PI

b Predictors: (Constant), PI, business size

Independent variable	Standardised coefficient	t	Sig.
PI	0.198	3.059	0.002
Business size	0.002	0.028	0.977

Summary of section 8.4

This section has investigated the relationship between performance measurement and business performance. The analysis suggests that the level of performance indicators measured is associated positively with operational performance, but not financial performance. The results can be illustrated as follows.



8.5 Strategic Orientation, Performance Measurement, and Business Performance

Previous sections indicated that strategic orientation and performance measurement are correlated to business performance. As strategic orientation is also correlated to performance measurement, an analysis that combines strategic orientation and performance measurement as independent variables would indicate the individual effect of both variables on business performance. This section presents the result of this analysis.

8.5.1 SO, PI, and BP financial

The earlier analysis has indicated that SO is related to BP financial (Table 8.8), but PI is not (Table 8.14). Therefore, the regression analysis is made to identify whether the inclusion of PI will affect the relationship between SO and BP financial. The assumption of linearity and normality needed for the regression analysis has been checked from the scatter and normal plots (Appendix J), which confirm that both assumptions were met. In this analysis, two dimensions of SO, and PI are treated as independent variables, whereas BP financial as a dependent variable.

Table 8.17 presents the regression model of this analysis. The inclusion of PI does not significantly change the model ($F_{\text{change}}(1,148) = 0.205; p > 0.05$). If PI is removed

from the model, the analysis will be the same as the one performed earlier. In summary, BP financial is associated with SO but not with PI.

Table 8.17: Regression: (SO + PI) and BP financial

Model	R	R Square	Change Statistics				
			R Square Change	F Change	df1	df2	Sig. F Change
1	0.194 ^a	0.038	0.038	4.886	2	249	0.008
2	0.196 ^b	0.039	0.001	0.205	1	248	0.651

a Predictors: (Constant), SO aggressiveness, SO conservative

b Predictors: (Constant), SO aggressiveness, SO conservative, PI

Independent variable	Standardised coefficient	t	Sig.
SO conservativeness	0.126	1.594	0.112
SO aggressiveness	-0.139	-2.210	0.028
PI	0.036	0.453	0.651

8.5.2 SO, PI, and BP operational

The earlier analysis has indicated that PI is related to BP operational (Table 8.15), but two SO dimensions are not (Table 8.13). Therefore, the regression analysis is made to identify whether the inclusion of two SO dimensions will affect the relationship between PI and BP operational. The assumption of linearity and normality needed for the regression analysis has been checked from the scatter and normal plots (Appendix J), which confirm that both assumptions were met. In this analysis, PI and two dimensions of SO are treated as independent variables, and BP operational as a dependent variable. Table 8.18 (overleaf) presents the output of this analysis.

The findings show that the inclusion of two SO dimensions is not statistically significant ($F_{\text{change}}(2,248) = 0.250$; $p > 0.05$). If both variables are removed from the model, the analysis will be the same as the one performed earlier. In summary, BP operational is associated with PI, but not with SO.

Table 8.18: Regression: (SO + PI) and BP operational

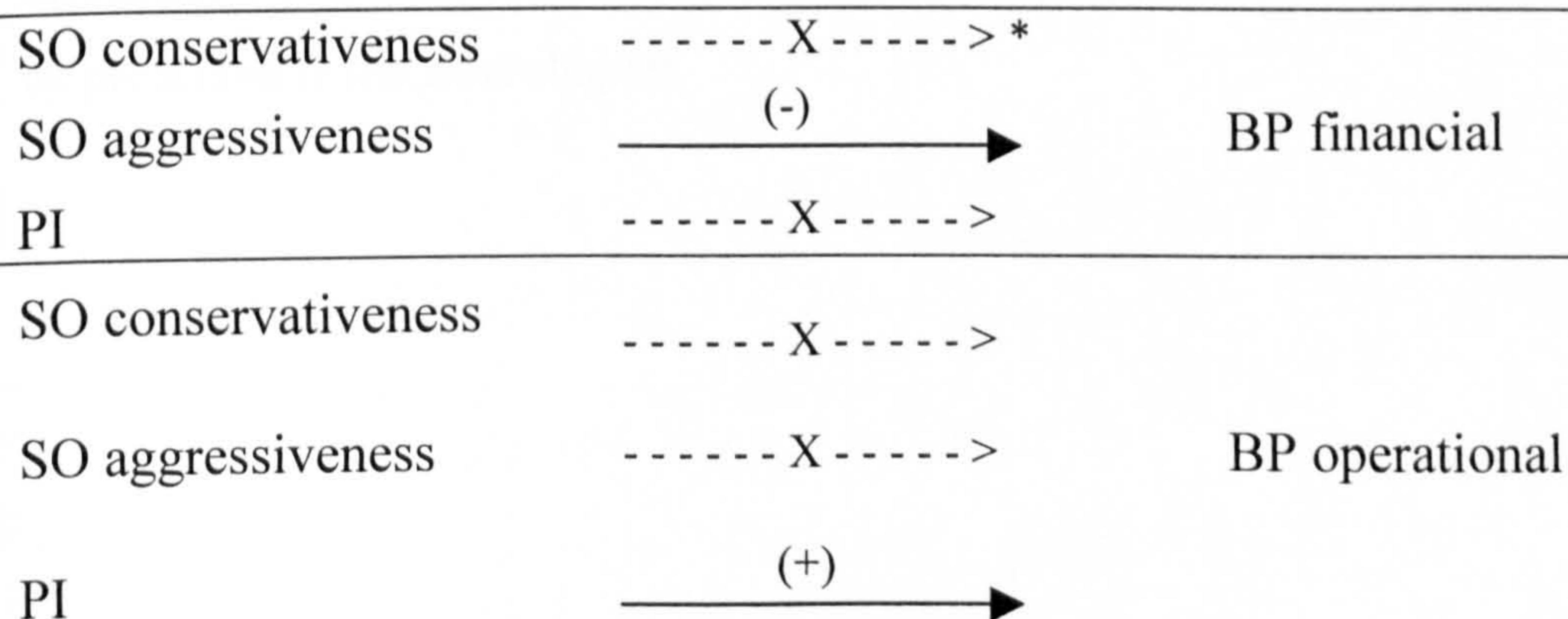
Model	R	R Square	Change Statistics				
			R Square Change	F Change	df1	df2	Sig. F Change
1	0.198 ^a	0.039	0.039	10.227	1	250	0.002
2	0.203 ^b	0.041	0.002	0.250	2	248	0.779

a Predictors: (Constant), PI
b Predictors: (Constant), PI, SO aggressiveness, SO conservative

Independent variable	Standardised coefficient	t	Sig.
PI	0.211	2.649	0.009
SO conservativeness	-0.012	-0.152	0.879
SO aggressiveness	-0.043	-0.690	0.491

Summary of section 8.5

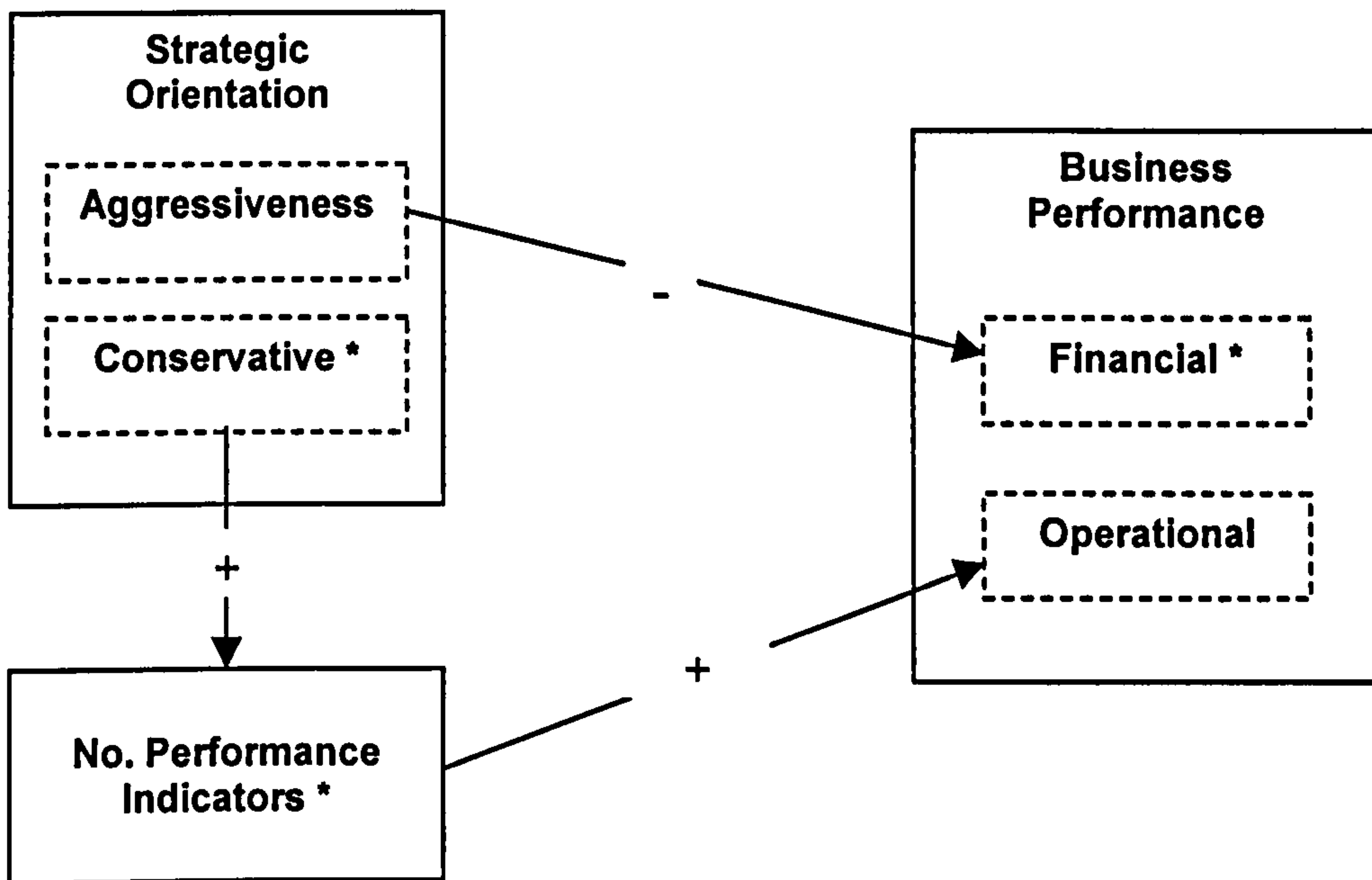
This section has investigated the relationship *between* a combination of strategic orientation and performance measurement, *and* business performance. The investigation was aimed to identify the individual effect of strategic orientation and performance measurement on business performance. The results suggest that strategic orientation is associated with financial performance, and performance measurement with operational performance. The findings are similar to those presented earlier. Internet retailers with less aggressiveness-oriented strategy were likely to have better financial performance. Furthermore, Internet retailers which measured more performance indicators were likely to have better operational performance. These results can be illustrated as follows:



* link affected by business size as control variable

8.6 Summary

This chapter has presented the analysis of relationships involving strategic orientation, performance measurement, and business performance. Figure 8.4 summarises the results.



*) associated with business size

Figure 8.4: Summary of statistical analysis

The empirical model shown in Figure 8.4 provides a more detailed picture of the links between strategic orientation, performance measurement, and business performance, than the second research model presented in Chapter 3. The advantage and significance of this empirical model can be viewed from its simplicity in presenting (1) the complexity of strategic orientation, performance measurement, and business performance, and (2) the links among these three constructs. Further discussion about the main findings of this study and their link with the literature will be presented in the next chapter.

Chapter 9

DISCUSSION

9.1 Introduction

The Internet has opened up many opportunities for retailers of all sizes to trade through it. The story of Internet retailing is often dominated by a few big players, such as Amazon.com and Tesco.com (e.g. Constantinides, 2004; Hackney et al., 2006; Kotha, 1998). This research focused especially on small and medium-sized Internet retailers in the UK, which are large in number. Small and medium-sized Internet retailers, in this study, are defined as having annual Internet sales turnover of less than £10 million.

This study emerged from a lack of understanding on performance measurement implemented by Internet retailers, and its significance. The understanding on performance measurement covers issues, such as what performance indicators measured, what demographic factors might explain their variability, and how Internet retailers use the information. The significance of performance measurement, in this study, is investigated in its relation with business strategy and business performance. Two research questions were formulated: (1) What is the current state of performance measurement implemented by Internet retailers?, (2) In the Internet retailing business context, to what extent and in what ways are business strategy, performance measurement, and business performance related to each other? Accordingly, two research models, research objectives, and a series of propositions were developed. The statistical analysis has demonstrated several major findings, as discussed in this chapter. The discussion is organised into two parts, associated with the two research questions as well as the two research models: (1) performance measurement implemented by Internet retailers, and (2) significance of performance measurement.

9.2 Performance measurement implemented by Internet retailers

This study has investigated the performance measurement implemented by Internet retailers, and the analysis has produced some significant findings, as discussed in this section. The discussion covers three aspects: (1) what performance indicators measured, (2) what demographic profiles explain the variability of performance indicators measured, and (3) how information obtained from measuring performance indicators is used.

9.2.1 Performance indicators measured

This part discusses the findings associated with the research objective to describe performance indicators measured by Internet retailers. This study investigated 30 performance indicators categorised in five dimensions: (1) financial, (2) market-sales, (3) customer, (4) web, and (5) process. This section discusses the finding of performance indicators measured in two aspects: (1) five dimensions and individual performance indicators, and (2) total number of performance indicators.

1. Five dimensions and individual performance indicators

The results of analysis indicated that Internet retailers measured their performance with various indicators of five dimensions: (1) financial, (2) market-sales, (3) customer, (4) web, and (5) process. Based on the number of retailers measuring performance indicators in each of the five dimensions, market-sales is the top, followed by web, financial, customer, and process. In a descending order, the findings of each dimension are now discussed.

First, the market-sales dimension covers indicators related to market and sales. Nearly all of Internet retailers measured total sales and number of orders. Both total sales and number of orders, which reflects the ultimate retail activity, are common measures for any retailer. The results confirmed that the majority of Internet retailers measured them on daily basis to obtain information about their daily retail activity performance. Overall, the high emphasis on the market-sales dimension might

indicate that Internet retailers currently have been more rational in viewing their business compared to those during the dotcom era.

Second, the web dimension covers performance indicators related to web-traffic and web-quality. The results indicated that around three quarters of Internet retailers measured web-traffic indicators, but only around a half measured web-quality. The findings might indicate that web-traffic indicators (e.g. number of visits, page views) are still important. As online customers are loose, Internet retailers may need to measure the site traffic regularly. In addition, as a huge number of competitors are only *one mouse-click away*, continuous monitoring of web-traffic is always critical. Another possible reason for the popularity of web-traffic indicators is that they can be measured automatically by software. This automatic measurement enables those indicators to be measured mostly on a daily basis, as indicated by the findings. The results of analysis also showed that Internet retailers without store presence were more likely to measure web-traffic indicators compared to those with store presence. As the survival of Internet retailers without store presence depends on online customers, web-traffic indicators are reasonably more important for them than those with store presence.

Furthermore, web-quality (e.g. website usability, website information quality) can be measured, for example, by conducting online surveys of customers or analysing feedback from customers. Web-quality is measured less compared to web-traffic for some possible reasons: (1) extra efforts needed to measure it, (2) lack of knowledge, and (3) outsourcing. Some extra efforts (resources) for collecting data are required to measure web-quality. The finding supports that Internet retailers were likely to measure web-quality indicators on a monthly basis, less frequently than web-traffic. While researchers (e.g. Feinberg and Kadam, 2002; Tamimi et al., 2003; Wolfinbarger and Gilly, 2003) suggested the importance of web-quality, especially for customer satisfaction, Internet retailers might have lack of knowledge about it. Furthermore, Internet retailers might outsource their web-site development, hosting, and maintenance. These conditions may provide some reasons why only around a half of Internet retailers measured web-quality.

Third, the financial dimension covers profitability and cost efficiency-related indicators. The top two of the most frequently measured are profit margin (87% of retailers) and revenue per customer (69% of retailers). Profit margin, mainly measured on a monthly basis, has been recognised as the ultimate performance measure for any business. The awareness of profit margin might indicate that Internet retailers currently have paid more attention to the real business performance compared to those during the dotcom era. Revenue per transaction (total sales revenue / number of transactions) as an aggregate measure is important because it could reflect profit generation. Retailers would expect higher value of revenue per transaction.

Fourth, the customer dimension covers indicators related to customer acquisition and customer retention. The top two indicators measured are conversion rate visitor to purchase (57% of retailers), as a measure of customer acquisition, and number of newsletter subscribers (54% of retailers), as a measure of customer retention. Both were measured mostly on a monthly basis. Conversion rate visitor to purchase is an indicator of how successful an Internet retailer is able in transforming visitors to generate sales. As many online visitors may visit a retail site but only a few of them actually make purchases, monitoring this indicator is critical. In addition, as there are so many Internet shopping sites, advertising through the media to maintain customer awareness could be not feasible for relatively small-sized Internet retailers. To keep their customers informed about their offers, Internet retailers rely much on newsletters, which can reach customers individually.

The finding on the customer dimension could be viewed from another angle, in which about a half of Internet retailers did not measure indicators in this dimension. This possibly indicate that many Internet retailers did not concern themselves about getting and keeping customers. Further analysis reveals that within the context of small and medium-sized businesses in this study, those relatively larger were likely to measure more performance indicators. As the numbers of orders and customers are growing, Internet retailers might have more concern to measure customer-related indicators.

Fifth, the process dimension covers indicators of timeliness and accuracy. The top two indicators measured are on-time delivery, as a timeliness indicator, and percentage of error in goods picked and delivered to customers, as an accuracy indicator. These indicators are critical because they measure the retailer's promise to customers, and they are keys for customer satisfaction or dissatisfaction. Therefore, Internet retailers were likely to measure them on a daily basis, as indicated by the results of analysis. Despite their importance, both indicators were measured only by less than a half of Internet retailers. The possible explanation why the process dimension is least measured among five dimensions could be traced from two aspects of Internet retail operation: web and fulfilment. The web operation, such as ordering, payment, and order tracking (if it is available), is largely automated. The advancement of IT could largely eliminate the error in those processes. Therefore, Internet retailers might not give a priority to measuring them. The results of analysis supported that only about 20% of Internet retailers measured the error in charge made to customers. On the other hand, the fulfilment or offline operation is less automated. As supported by the finding, more Internet retailers measured fulfilment (e.g. errors in goods picked and delivered to customer) than web operations (e.g. percentage of error in charge made to customer). However, the fulfilment-related indicators were only measured by less than a half of Internet retailers. One of the possible reasons is the outsourcing of delivery to third party (e.g. Royal Mail, DHL, City Link).

Among 30 performance indicators investigated in this study, the top six frequently measured by Internet retailers are: (1) total sales, (2) number of orders, (3) profit margin, (4) number of visits, (5) number of customers, and (6) sales value per transaction. These can be thought as the most important and generic performance indicators for Internet retailers. Four of them belong to the market-sales dimension, and each of the other two belongs to financial and web dimensions. The findings indicate that Internet retailers put high emphasis on market-sales-related indicators.

For a certain performance indicator, Internet retailers may measure it at different frequency, reflecting their different emphasis. This study investigated the frequency at which each of the performance indicators was measured, whether daily, weekly, monthly, quarterly, or annually. Overall, the findings indicate that they are mostly

measured on a daily (31%), weekly (20%), and monthly (32%) basis. Number of orders, total sales, and number of customers are mostly measured daily. Those three are market-sales related indicators, and can be viewed as basic daily performance indicators of Internet retailing operation. While daily total sales and number of orders are basic measures for any retail channel, number of customers could be most relevant for Internet retailing. The findings indicate that Internet retailers are concerned with monitoring their success in acquiring orders and customers. On a weekly basis, the most frequently measured performance indicators are number of visits and unique visitors, in which both are web-traffic indicators. Furthermore, profit margin is mostly measured on a monthly basis. Cost mostly cannot be measured daily, because it has a component of fixed cost. Internet retailers, therefore, are likely to measure profit margin on a monthly basis.

So far, five dimensions and their associated individual performance indicators have been discussed. The discussion moves on the effort to simplify those five dimensions.

2. Total number of performance indicators

The variations in the number of performance indicators in each of five dimensions raised an issue whether there was a relationship among them, and as a consequence they possibly could be reduced into a smaller number of dimensions. The analysis suggested that the number of performance indicators in those five dimensions could be simplified into a single variable as a total number of performance indicators measured. Therefore, the variation of performance indicators measured by Internet retailers can be represented as a total number of performance indicators. Within the sample, this number seems evenly distributed in which a third of them measured 13 to 18, a third more, and another third fewer.

In relation to the different emphasis on the five dimensions, as previously discussed, Internet retailers with a high total number were likely to measure more performance indicators throughout five dimensions, while those with a low number were likely to measure selected performance indicators, especially in market-sales, web, and financial dimensions. That number can be used to represent the variable of

performance measurement. It enables the analysis of relationship between performance measurement and other variables (e.g. business performance). This kind of relationship was rarely investigated, possibly because of the absence of such variable.

As Internet retailers might measure different performance indicators, as well as different numbers, a further issue is whether demographic (business) profiles might explain this variability.

9.2.2 Variability of performance indicators measured

The discussion in this part is associated with the research objective to explain whether business profile is associated with performance measurement implemented by Internet retailers. The study has investigated whether the level of performance indicators is different across groups within four variables of business profile: (1) product category, (2) business size, (3) business format, and (4) maturity. The variability of some individual performance indicators measured in relation to business profile is also explained.

1. Performance measurement and Product category

Analysis indicated that the level of performance indicators measured was not different among Internet retailers classified by product categories. This finding *does not support* the prediction in Chapter 3 that Internet retailers in more popular product categories (means many retailers in these categories), such as clothing, entertainment, and home-DIY, would measure more performance indicators than those in less popular ones (means a few retailers in these categories), such as health-and-beauty and food-and-drink. The findings reveal that the level of performance indicators measured is not in general related to product category sold. Further investigation on the variability of individual performance indicators indicated that nearly a half of Internet retailers served overseas customers, as they measured the '*ratio of sales overseas*' indicator. An important finding related to product category is that those selling clothing and entertainment products were more likely to measure this indicator than those selling home-DIY products. This finding might support the

idea that clothing and entertainment products are more suitable for online selling, including International market, than home-DIY products.

2. Performance measurement and Business format

Analysis indicated that Internet retailers without store presence, on average, measured more performance indicators than those with such presence. This result supports the prediction in Chapter 3. Internet retailers without store presence seem to have more concern to measure their online business progress, as this Internet channel is to be their main retail channel. They may have less experience than those with store presence. On the other hand, those with store presence may have previous experiences, and they might have less concern compared to those without store presence in tracking their Internet retailing operation. For those with store presence, the success of the Internet channel could be achieved indirectly through the sales increase in their store outlets.

Further investigation of individual performance indicators revealed that Internet retailers without store presence were more likely to measure web-traffic indicators than those with store presence. These findings might indicate that as Internet is the main channel for Internet retailers without store presence, they have more concern for measuring their web store performance. In addition, those without store presence had more concern for measuring profit margin than those with store presence. For the latter, the success of their Internet channel might go through the increase of sales and profit from their outlet stores.

3. Performance measurement and Business size

Analysis indicated that relatively bigger Internet retailers, in the context of small and medium-sized businesses, were likely to measure more performance indicators than smaller ones. This finding supports the prediction in Chapter 3. A simple explanation for this finding is the complexity involved. Those relatively bigger Internet retailers could be associated with more customers served, more suppliers, more orders, more product varieties, and more complex other operations. The results support that those relatively bigger Internet retailers are more likely to measure indicators of process

accuracy (e.g. on-time delivery, error in goods picked and delivered) as they faced higher complexity of operation. This finding would suggest to Internet retailers to upgrade their performance measurement to cover the increasing complexity of their operation as their business is growing. This supports the idea that performance measurement is dynamic. Furthermore, those relatively larger Internet retailers (in a context of small and medium businesses) were more likely to measure financial-related indicators than smaller ones. A simple explanation is that larger business size is associated with higher financial risk.

4. Performance measurement and Maturity

More mature Internet retailers was predicted to measure more performance indicators than less mature ones, as the former have higher organisational learning and knowledge. Surprisingly, the finding *does not support* the prediction. The analysis suggests that the level of performance indicators measured is statistically not different between less mature (< 5 years) and more mature (> 5 years) Internet retailers. Further investigation of individual performance indicators reveals that there is no significant difference between both groups. In this online business sector characterised as volatile and dynamic, new entrants might come and outperform the existing more mature firms. From the customers' view, customers would expect Internet retailers, regardless of their maturity, providing the acceptable level of service, such as product information, online payment, on-time delivery, and return policy. This condition makes Internet retailers, regardless of their maturity, face the similar business environment. Therefore, they might have no difference in evaluating their business success.

In summary, among the four variables of business profile, only business format and business size are associated with the level of performance indicators measured. Internet retailers without store presence or those with relatively bigger size (in a context of small and medium-sized businesses) are likely to measure more performance indicators. Regarding these findings, both business size and business format possibly affect the relationship between performance measurement and other variables.

So far, the variability of performance measurement has been discussed, and the next section moves on to the way Internet retailers use the information obtained from performance measurement. The understanding of this issue could give insight about the significance of performance measurement.

9.2.3 Use of performance measurement

This section discusses the way Internet retailers use the information obtained from measuring various performance indicators. The discussion is associated with two research objectives: (1) to describe the way Internet retailers use the information obtained from performance measurement, and (2) to explain whether performance measurement implemented by Internet retailers is associated with the use of information obtained. Measuring performance produces information used to support business practices (Boody et al., 2005; Bourne et al., 2000; Henri, 2006; Mahama, 2006; O'Brien and Marakas, 2006; Simons, 1991). This study investigated the use of performance measurement to support managerial activities and decision-making.

The analysis suggests that managerial activities could be represented as two factors: (1) strategy-related activities, and (2) administration-related activities. The findings explained that Internet retailers used the information obtained from performance measurement to support more on strategic than administration-related activities. The former cover activities for strategy assessment and benchmarking/ improvement, while the latter cover performance appraisal and reporting (Chapter 3). The findings correspond to a study of traditional businesses by Kald and Nilsson (2000) and Nilsson and Kald (2002). The high use of information to support strategic-related activities might indicate the strategic role of performance measurement. The information obtained from performance indicators, such as profit margin, total sales, number of visitors, and sales value per transaction, could provide information for a retailer to make further decisions, for example on product assortment, pricing, and promotional expenditure. The less use of information in administration-related activities is possibly related to the characteristics of small and medium retailers in this study, with the majority having fewer than five employees and the owner acting as managing director. The use of performance measurement for assessing performance of management and staff, and determining rewards for them, as a

component of administration-related activities, would be not quite relevant for these small and medium-sized businesses. Two other elements of administration-related activities are providing reports to shareholders and the head office. As for many firms, the owner manages the business operation, so there is no necessity to provide a report to shareholders. These conditions might explain why not many Internet retailers measured administration-related activities because of their relevance.

Similarly, the use of information to support decisions can be represented as two factors: (1) strategy-related decisions, and (2) personnel-related decisions. The results indicated that Internet retailers used the information for more strategy than personnel-related decisions. This finding is similar to the use of performance measurement for managerial activities. Measuring performance indicators provides information to a retailer, such as profit margin, total sales, number of visitors, and sales value per transaction. This information was likely to be used in strategic, top level management, and operational decisions. The information obtained is used less for personnel decisions for the same reasons related to the characteristics of small and medium-sized businesses, as previously described. These findings confirm a study by Henri (2006), who identified the contribution of performance measurement in the management decision-making process. The following issue is a confirmation whether Internet retailers, which measured more performance indicators were likely to use the information more intensively.

The results of analysis suggest that the more performance indicators measured, the more likely Internet retailers use the information to support strategy and administration-related activities, as well as strategy and personnel-related decisions. Though this finding is not surprising, it has provided evidence that Internet retailers used the information obtained. Therefore, the effect of performance measurement, as discussed further in this chapter, should be understood from this perspective.

Further analysis was made to identify individual performance indicators that differentiated between those using the information more intensively and those using it less. The result suggests that the more intensive users are likely to measure the *efficiency* of their operations such as acquisition cost, conversion rate, and fulfilment cost, as well as the *accuracy* of their operations to deliver the right goods to the right

customers. This finding might indicate that efficiency and accuracy measures are important information for Internet retailers to support managerial activities and decision-making.

Overall, the results could be linked to some prior studies. A study by Henri (2006) has found the association between the use of performance measurement in strategic decision-making and the *diversity of measurement*. A study by Kald and Nilsson (2000) investigated performance indicators and the use of performance measurement, but it did not present the relationship between both variables. Lipe and Salterio (2000) also discovered that performance measurement had an effect on managers' decision-making. In addition, the finding of this study supported the argument made by Kaplan and Norton (1992, 1996b) that organisations use performance measurement (BSC) to guide key organisational decisions.

Summary of section 9.2

The investigation of performance measurement implemented by Internet retailers has produced three important findings: (1) a total number of performance indicators measured as a variable of performance measurement, (2) business size and business format are related to the number of performance indicators measured, and (3) the more performance indicators measured, the more intensive Internet retailers use the information. These findings become the basis of investigating the significance of performance measurement, which lies in its association with business performance and business strategy.

9.3 Significance of performance measurement

This section discusses the finding of the significance of performance measurement. Its significance was investigated in its relationship with business strategy pursued by Internet retailers and the level of business performance achieved. This topic is associated with the second research question, as well as the second research model presented in Chapter 3. The discussion covers four aspects associated with four research objectives: (1) to explain the relationship between business strategy and

performance measurement, (2) to explain the relationship between business strategy and business performance, (3) to explain the relationship between performance measurement and business performance, and (4) to explain the relationship *between a combination of performance measurement and business strategy and business performance*.

Before the findings of the relationships are discussed, a description of strategic orientation and business performance are presented. Throughout the analysis, performance measurement is viewed as a total number of performance indicators measured.

9.3.1 Variables of Strategic orientation and Business performance

Strategy is one of the most important issues because it is a means to achieve a firm's objectives. This issue is specifically important for Internet retailers because the use of the classical strategy concept is often questionable. This study has investigated business strategy of Internet retailers in terms of common traits called strategic orientation, in six dimensions: (1) aggressiveness, (2) analysis, (3) defensiveness, (4) futurity, (5) proactiveness, and (6) riskiness (Venkatraman, 1989). The strategic orientation identifies the realised business strategy in holistic terms, focusing on the means adopted to achieve the desired goals (Venkatraman, 1989). As shown in Chapter 6, strategic orientation for Internet retailers can be treated as two dimensions: aggressiveness and conservativeness. The conservativeness dimension is a combination of analysis, defensiveness, and futurity. Proactiveness and riskiness dimensions are statistically not observed as distinctive dimensions in the data analysis. The absence of both dimensions is likely to be associated with the relevance of the items composing them (see Chapter 6).

Further investigation has been made to understand the association between strategic orientation and business profile. First, the findings suggest that less mature (<5 years) Internet retailers are likely to be more aggressive than more mature (>5 years) ones. This finding confirms that less mature Internet retailers have been more aggressive in developing customer base at the expense of profit than those more mature. The finding supports the concept of life cycle for Internet retailing, in which

less mature firms would try to build customer base as quickly as possible by spending on promotion and partnerships (Rayport and Jaworski, 2000). Second, relatively bigger Internet retailers (in a context of small and medium-sized businesses) are likely to be more conservative than smaller ones. Bigger size could be associated with operations that are more complex and have more customers and orders to deal with. Those relatively bigger Internet retailers might do more problem-solving analysis, and make more efforts to find ways that are more efficient, and on considering resource allocation. Therefore, the result indicates that relatively bigger Internet retailers are likely to be more conservative.

In the context of this study, two dimensions of strategic orientation found could provide some advantages. This strategic orientation provides a simple concept as well as a broad domain. The concept is simple because the complex nature of the Internet retailer's strategy can be explained in two separate traits. The concept has a broad domain because the use of common traits of strategic orientation could overcome the fragmentation of business strategy classification such as market positioning strategy (e.g. cost leadership, differentiation, focus), geographical-based strategy, or functional strategy (e.g. marketing, IT, financial). The two separate dimensions also enable the classification of Internet retailer strategy into four types of strategic orientation: (1) High Conservativeness – High Aggressiveness, (2) High Conservativeness – Low Aggressiveness, (3) Low Conservativeness – High Aggressiveness, and (4) Low Conservativeness – Low Aggressiveness.

Empirical evidence on strategy pursued by Internet retailers is very limited. Among the few empirical studies in this area, Bughin (2001) has identified two successful strategies of Internet retailers based on the classical strategic positioning: (1) niche or focus strategy, and (2) reach or broad-and-low-cost strategy. For both strategies, Bughin (2001) emphasised the importance of cost efficiency for achieving business profitability. In the STROBE constructs used in this study, cost-efficiency could be linked to defensiveness, as a component of conservativeness-oriented strategy. This implies that two successful strategies as identified by Bughin (2001) are associated with higher conservativeness-oriented strategy.

To this point, one variable of performance measurement, and two variables of strategic orientation were identified. The third variable of interest is business performance. Among five measures of business performance, the analysis suggests that they could be simplified into two aspects: operational and financial performance. Financial performance covers measures of profitability and sales growth. Operational performance covers measures of customer retention, web-quality, and superiority of fulfilment process. The identification of financial and operational performance is consistent with the concept proposed by Venkatraman and Ramanujam (1986) regarding the concept of business performance.

As the variables of performance measurement, strategic orientation, and business performance were identified, the relationships between those variables were made to identify the link between performance measurement and strategic orientation, and their effect on business performance. As previously presented, the relationship involving performance measurement could be affected by business size and business format. Between them, only business size is related to strategic orientation and business performance. Specifically, relatively bigger Internet retailers (in a context of small and medium-size businesses) are likely to be more conservative and to have better operational performance. Therefore, business size was used as a control variable in the analysis of relationships. The findings are discussed in the following sections.

9.3.2 Strategic orientation and Performance measurement

The discussion in this section is associated with the research objective to explain the relationship between business strategy and performance measurement. The results of analysis indicate that the level of performance indicators measured is associated with strategic orientation pursued by Internet retailers. The investigation among four strategic-types indicates that Internet retailers with high conservativeness-oriented strategy (either high or low aggressiveness) are likely to measure more performance indicators than those with low conservativeness. The investigation of individual dimensions confirmed that finding. Firstly, Internet retailers which put more emphasis on conservativeness-oriented strategy, typically exhibit a higher number of performance indicators measured. This evidence reveals that Internet retailers,

which in their strategic behaviour are likely to use forecasting, track of business trend, conduct 'what if' analysis, make analysis for major decisions, use planning techniques, use cost control systems for monitoring performance, or use operation management techniques, tend to measure more performance indicators. In these strategic traits, Internet retailers might need varieties of information regarding their business progress. Accordingly, they are likely to measure more performance indicators to obtain such information.

Secondly, the findings indicate that aggressiveness-oriented strategy, which is indicated, for example, by cutting price and sacrificing profitability to acquire many customers (increase market share), is not related to the extent of performance indicators measured. This behaviour could be linked to daring aggressive companies that do not care too much about performance indicators, as their focus is on gaining market share. These companies may focus on only a few performance indicators, such as number of orders, number of customers, and total sales.

The findings thus support the proposition that strategic orientation is associated with performance measurement. These results are consistent with literature on both strategic management and performance measurement. Literature on strategic management explains that performance measurement is a part of the strategic management process (Byars et al., 1996; David, 1995). In this process, performance measurement belongs to the strategy evaluation phase, one of the activities of which is to monitor progress in the execution of the organisation's strategy. Therefore, performance measurement should be developed from this strategy. Literature on performance measurement suggests that the measurement should be derived from a company strategy. An underlying premise of the BSC philosophies is that organisations should select and align performance indicators carefully to business needs, directions, and strategies (Evans, 2004). In addition, these findings are also consistent with work by Hoque (2004), which found a significant and positive association between strategy and the number of *non-financial* indicators for performance evaluation.

Previous studies predicted or suggested that performance measurement should be derived from strategy. This study has contributed to provide a piece of evidence

about this link. The finding suggests that Internet retailers which put higher emphasis on conservative behaviour need to measure more performance indicators. This link leads to another issue whether performance measurement is related to business performance, which is discussed in the next section. This issue could be interpreted as the effect of performance measurement on business performance.

9.3.3 Performance measurement and Business performance

The discussion in this part is associated with the research objective to explain the relationship between business strategy and business performance. The results of analysis indicate that the level of performance indicators measured is positively related to operational performance, but not financial performance. Internet retailers which measure more performance indicators are likely to have better operational performance. The findings thus support the proposition that performance measurement is associated with business performance, and show that the extent of performance indicators measured by Internet retailers seems to affect business performance. The results are consistent with performance measurement literature concerning the rationale (value) of performance measurement (e.g. Kaplan and Norton, 1996b; Widener, 2006). The findings are also consistent with the study by Evans (2004), who found a positive relationship between the level of performance indicators measured and customer satisfaction. One possible explanation about the findings of this study is that by measuring a range of performance indicators, Internet retailers would be better in understanding how the business is progressing. Based on this understanding, they could take some decisions and actions, such as providing better product selection, selecting better advertising channels, and selecting better suppliers, to ensure the business is progressing on the expected track.

As previously mentioned, this study finds that the level of performance indicators measured is not associated with financial performance. Contrary to the finding of this study, Evans (2004) identified the relationship between the level of performance indicators and financial performance. The achievement in profitability and sales growth, as components for financial performance, to some extent depends on the external factors, such as the number of competitors (retailers), the number of buyers, buyers' behaviour towards online shopping, and general economic conditions. These

factors are likely beyond a firm's control. While the information obtained from performance measurement could be used to improve operational business aspects, its use to influence directly financial performance seems limited.

There was very limited evidence about the link of performance measurement to business performance. This finding of the study has now contributed a piece of evidence on how performance measurement possibly affects business performance. The finding particularly indicates that performance measurement has a positive effect on operational performance.

So far, the link between strategic orientation and performance measurement has been identified, and between performance measurement and business performance. A further issue is how strategic orientation possibly affects business performance.

9.3.4 Strategic orientation and Business performance

The discussion in this section is associated with the research objective to explain the relationship between the choice of strategic orientation and business performance. The investigation among four strategic-types indicated that Internet retailers with High Conservativeness - Low Aggressiveness orientation were more likely to have better *financial* performance than those with the opposite orientation (Low Conservativeness - High Aggressiveness). This finding would suggest that High Conservativeness - Low Aggressiveness strategic orientation seems a successful strategy. Conversely, there is no difference in *operational* performance among the four strategic-types.

The investigation of two dimensions of strategic orientation produced the similar results. Firstly, the results showed that aggressiveness-oriented strategy was *negatively* associated with financial performance and not associated with operational performance. Aggressiveness traits refer to cutting price and sacrificing profitability to gain more customers and sales. In this orientation, Internet retailers may spend money excessively for marketing purposes, as well as reduce profit because of price-cutting. Therefore, these traits could have a negative effect on profitability, though it might increase the number of orders. Aggressiveness was found not to be associated

with operational performance, possibly because these traits were aimed directly to affect the front end of business performance, such as the number of orders and total sales.

This finding is consistent with two studies (Morgan and Strong, 2003; Venkatraman, 1989) which found a negative effect of aggressiveness-oriented strategy on performance. Morgan and Strong (2003) identified a negative effect of aggressiveness on performance (measured as a single construct), while Venkatraman (1989) identified this negative effect on profitability. This fact was considered consistent with the general idea of some literature on the riskiness associated with the pursuit of market share in the overall business strategy (Venkatraman, 1989).

Secondly, the results indicate that conservativeness-oriented strategy is related *positively* to financial performance, *but* this effect *disappeared* when business size is controlled. This means that the effect of conservativeness-oriented strategy on financial performance is not genuine, but due to business size. As presented earlier, relatively bigger Internet retailers are likely to be more conservative. In addition, the findings indicate that relatively bigger Internet retailers are also associated with better financial performance. The findings of no relationship between conservativeness and financial performance seem surprising as some previous studies indicated positive relationship. Venkatraman (1989) and Morgan and Strong (2003) found a positive effect of futurity, analysis and defensiveness, which together refer to conservativeness-oriented strategy, on business performance. In another study, Rajagopalan (1997) also identified the effects of strategic orientation (using prospector and defender) on both accounting and market-based performance, in a sample of electricity utility firms. Using Miles and Snow strategic types, Moore (2005) also found a positive correlation *between* prospector, analyser, and defender strategic types *and* business performance. However, those studies did *not mention* controlling business size. There could be possibility that if those studies had controlled for business size, the effect of conservativeness-related strategy would have disappeared.

The effect of business strategy on business performance has been one of the main issues among researchers, but more evidence is still needed to understand what

specific strategy and what aspect of business performance are affected. This study has contributed to provide a piece of evidence, particularly in the context of small-medium Internet retailers, that aggressiveness has a negative impact on financial performance. This finding would suggest that in order to achieve better financial performance, Internet retailers should be more rational in their spending for marketing purposes.

The ineffectiveness of marketing spending that sacrifices profitability and cash flow could be interpreted from two perspectives: (1) market structure, and (2) business size. The market structure of online shopping consists of a considerable number of sellers (at least more than the 1,417 small and medium retailers used as the sample) and millions of individual buyers. In this condition, the excessive marketing spending would bring only a small effect on drawing potential buyers' attention. Secondly, small and medium-sized businesses could be associated with limited financial resources. Therefore, excessive spending on marketing effort would be likely to bring negative effects on financial condition.

The results of analysis indicate that both aggressiveness and conservativeness have no direct relationships to operational performance. Items composing aggressiveness are much related to cost, profitability, and sales growth. Therefore, its no-link to operational performance could be understood. On the other hand, conservativeness-oriented strategy, which is composed of analysis, defensiveness, and futurity, could be associated with customer retention, web-quality, and fulfilment process. The absence of link is surprising. Possible explanations are, then, explored in the light of previous studies.

Prior studies which identified the link between business strategy and business performance commonly used financial-related performance only. For example, Venkatraman (1989) used sales growth and profitability-related measures for business performance. He did not specifically use operational-related performance. Moore (2005) also used a single construct of business performance, which was composed of profitability and sales-related indicators. That study found a positive correlation *between* prospector, analyser, and defender strategic types *and* business performance. Other studies did not particularly separate financial and operational

performance. For example, Morgan and Strong (2003) have used a single construct of business performance, as an average score of items composing financial and operational-related indicators. They found that firms which emphasised analysis, defensiveness, and futurity traits exhibited high level of business performance. If the study reported here uses *the average score* of the five items comprising business performance, a positive relationship is also found between conservativeness-oriented strategy and business performance (at significance level $p < 0.05$). Therefore, if Morgan and Strong (2003) had separated financial and operational performance, their results would have possibly revealed the link between strategic orientation and operational performance. In addition, the findings of this study are also consistent with a meta-analysis study by Miller and Cardinal (1994), who confirmed that *strategic planning* positively affected a firm's financial performance, which covers profitability and growth. In summary, this study has provided evidence that a firm's strategy is related to financial performance, but not operational performance.

So far, the possible effects of strategic orientation as well as performance measurement on business performance are identified. The earlier section has indicated that strategic orientation was linked to performance measurement. Therefore, the next issue is whether this link influences the previous individual relationships between strategic orientation and business performance, and between performance measurement and business performance.

9.3.5 Compound effect of Strategic orientation and Performance measurement

The discussion in this part is associated with the research objective to explain the relationship *between* a combination of performance measurement and business strategy *and* business performance. Though the earlier section indicates that strategic orientation and performance measurement is highly correlated, the relationship between strategic orientation and business performance, as well as between performance measurement and business performance is not affected. This means that both relationships are genuine. In summary, the finding is the same as the previous results that aggressiveness-oriented strategy is associated negatively with financial performance, while the level of performance indicators measured is related

positively to operational performance. These findings show the possibility that business strategy could affect financial performance, and performance measurement could affect operational performance.

The findings could be explained in the light of literature. As presented in Chapter 2, Stoelhorst and Raaij (2004) proposed five possible sources of business performance: (1) positional advantages in product markets, (2) efficient business processes, (3) unique or otherwise costly-to-copy resources, (4) innovative capabilities, and (5) superior learning capabilities. The findings that aggressiveness and performance measurement are associated with business performance will be explained in the view of those sources.

First, aggressiveness-oriented strategy could be linked to *positional advantages* in product markets. Better business performance is considered as the result of a firm's ability to protect superior positions (Porter, 1980; Stoelhorst and Raaij, 2004). Internet retailers with a good product-market position may not need to sacrifice their cash flow and profitability. The finding supports that aggressiveness-oriented strategy is negatively related to financial performance.

Second, performance measurement could be linked to *learning capability*. The process of designing performance indicators, process of measurement, and the way of using the information could increase learning capability. The use of information to support managerial activities and decision-making could enhance the firm's ability, for example (1) to find more *efficient business processes* (e.g. product outsourcing, fulfilment), and (2) to develop *innovative capabilities* in acquiring and maintaining customers. As these efforts are linked to operational aspect of the business, they are likely to affect operational performance.

While aggressiveness-oriented strategy is related to financial performance, conservativeness is related to performance measurement. This finding shows that between two dimensions of strategic orientation, one is related to financial performance, and the other to performance measurement, which in turn is related to operational performance. This raises a further issue about the association between operational and financial performance.

Financial performance, particularly profitability, is somewhat beyond a firm's control, as it is affected by external factors, such as buyers, suppliers, and competitors. Conversely, a firm has more control on operational (non-financial) performance. Literature on performance measurement, such as on the Balanced Scorecard, suggests that financial performance (called lagging indicator) is the effect of non-financial performance (called leading indicator). The efficient internal business process combined with satisfied customers would lead to financial success (Kaplan and Norton, 1992). This link suggests that the improvement in operational business aspects might lead to the improvement in financial performance. A study by Ittner and Lacker (1998) provided support that non-financial measures are leading indicators of financial performance. That study provided evidence that customer satisfaction measures, as a non-financial measure, are a leading indicator for financial performance. A study by Azofra et al. (2003) found a positive association between the level of non-financial performance and the level of profitability. Therefore, the link of operational and financial performance could be relevant for the finding of this research.

The statistical analysis indicates that financial and operational performance variables are significantly correlated with each other (Pearson's coefficient = 0.444, $p < 0.001$). This result might explain that improvement in website quality, fulfilment process, and customer retention is likely to increase sales growth and profitability. Improvement in the quality of website (online business aspect) is likely to provide better online shopping experience for customers, which could subsequently lead to better customer satisfaction. Improvement in the fulfilment and related process (offline business aspect) is likely also to lead to better customer satisfaction. Both may lead to more repeat orders, more new customers (affected by testimonials or ratings of previous buyers), and higher value of transactions. Subsequently, these might lead to higher sales and higher profit for a retailer.

Summary of section 9.3

The investigation of relationships among strategic orientation, performance measurement, and business performance indicated some expected and surprising findings. The analysis of those empirical relationships is supported by a clear

identification of a single variable of performance measurement, two dimensions of strategic orientation, and two aspects of business performance. Although two dimensions of strategic orientation were not predicted in Chapter 3, the relationship between conservativeness-oriented strategy and the level of performance indicators is somewhat similar to the prediction. The relationship identified between the level of performance indicators and operational performance also supports the prediction. On the other hand, the absence of the relationship between conservativeness-oriented strategy and financial, as well as operational, performance does not support the prediction.

9.4 Summary

This chapter has discussed performance measurement and strategic orientation implemented by Internet retailers in the UK, and their significance in affecting business performance. The findings indicate that Internet retailers measure their performance with various indicators, and use the information obtained to support managerial activities and decision-making. Performance measurement and strategic orientation are likely to affect business performance, but in different aspects. Performance measurement is likely to affect operational performance, while strategic orientation to affect financial performance. How the findings could possibly enhance current thinking in the related research area and practical business understanding is discussed in the following chapter.

Chapter 10

CONCLUSIONS AND IMPLICATIONS

10.1 Introduction

This study has theoretically developed and empirically evaluated research models incorporating performance measurement, use of performance measurement, strategic orientation, business performance, and business profile among Internet retailers in the UK. This chapter presents a summary of findings, implications for research and practice, limitations, and suggestions for future research.

10.2 Summary of findings

The findings are summarised in relation to the research questions, objectives, and propositions in order to provide a clear view of the aims and achievements of this study. The presentation is structured to correspond to the two research questions, as the basis of this study.

10.2.1 Findings for Research Question 1

The first research question is *'What is the current state of performance measurement implemented by Internet retailers?'*. Following its four specific objectives, the findings of this study are now summarized:

Objective 1: To describe performance indicators measured by Internet retailers.

This study has identified performance measurement implemented by Internet retailers in the UK through indicators covering financial, market-sales, customer, web, and process dimensions. Internet retailers have focused their performance measurement on financial and market-sales indicators. This finding might reveal that

they have been more rational in looking at how their businesses perform compared to those during the dotcom era. Among the top performance indicators measured are total sales, profit margin, number of visits, number of orders, and number of customers. Performance indicators are mostly measured on a daily, weekly, and monthly basis. In terms of the number of performance indicators measured, a third of Internet retailers measured between 13 and 18, a third more, and a third fewer. Overall, the findings indicate that Internet retailers have paid attention continuously to monitor their business progress from various aspects of performance.

Objective 2: To explain whether business profile is associated with performance measurement implemented by Internet retailers.

This objective was followed by a proposition: *The level of performance indicators measured by Internet retailers is related to their business profiles: product category, business format, business size, and maturity.*

This study identifies that the level of performance indicators measured is related to business size and business format, but not product category and maturity. Relatively bigger Internet retailers (in a context of small and medium-sized businesses) tend to measure more performance indicators than smaller ones. Those might need more information from various aspects of business performance because they deal with more customers, more suppliers, more orders, more product varieties, and more complex operation. Internet retailers without store presence are also likely to measure more performance indicators than those with store presence. In short, the findings have partially supported the proposition.

Objective 3: To describe the way Internet retailers use the information obtained from performance measurement.

This study reveals that Internet retailers use the information obtained from performance measurement for strategic as well as administration-related activities. They are likely to use the information more intensively for strategic-related activities than administration ones. Furthermore, Internet retailers also use the information obtained from performance measurement for strategic as well as personnel decisions,

and more for the former than the latter. The high use of information for strategic purposes could indicate that performance measurement has a strategic role in the business.

Objective 4: To explain whether performance measurement implemented by Internet retailers is associated with the use of information obtained.

This objective was followed by a proposition: *Internet retailers that measure more performance indicators will use the information more intensively to support managerial activities and decision-making.*

The results indicate that the more performance indicators measured, the more likely Internet retailers use the information to support managerial activities and decision-making. This use of information may denote the contribution of performance measurement. In short, the findings have supported the proposition.

The findings related to the first research question have focused on the exploratory of performance measurement implemented by Internet retailers. The next section summarises the findings which focus on the significance of performance measurement.

10.2.2 Findings for Research Question 2

The second research question is *'In the Internet retailing business context, to what extent and in what ways are business strategy, performance measurement, and business performance related to each other?'*. Following the four specific objectives, the findings of this study are summarised as follows:

Objective 5: To explain the relationship between business strategy and performance measurement.

This objective was followed by a proposition: *The choice of strategic orientation made by an Internet retailer is related to the level of performance indicators measured.*

The findings indicate that the level of performance indicators measured is associated with strategic orientation chosen by Internet retailers. Internet retailers, which put more emphasis on conservativeness-oriented strategy tend to measure more performance indicators. In this strategic orientation, Internet retailers need a variety of information regarding their business progress. Accordingly, they are likely to measure more performance indicators to obtain such information. The findings have supported the proposition.

Objective 6: To explain the relationship between business strategy and business performance.

This objective was followed by a proposition: *The choice of strategic orientation made by an Internet retailer is related to the level of business performance.*

The findings indicate that aggressiveness-oriented strategy has a negative impact on financial performance. While conservativeness-oriented strategy is identified as having a positive effect on financial performance, its effect is confounded by the business size. This finding would suggest that in order to achieve better financial performance, Internet retailers should manage their business in a more rational way in managing cost and revenue. In general, the findings have supported the proposition.

Objective 7: To explain the relationship between performance measurement and business performance.

This objective was followed by a proposition: *The level of performance indicators measured by an Internet retailer is related to the level of its business performance.*

The findings indicate that the level of performance indicators measured is related positively to operational performance, but not financial performance. This link could be seen in that the activity of measurement and the information obtained may help Internet retailers to monitor and improve their operational performance. The findings have also supported the proposition.

Objective 8: To explain the relationship *between* a combination of performance measurement and business strategy *and* business performance.

This objective was followed by a proposition: *The choice of strategic orientation and the level of performance indicators measured have different effects on business performance.*

The findings confirm that strategic orientation is associated with financial performance, and performance measurement with operational performance. In short, the findings have also supported the proposition.

The findings, in general, have supported the propositions. In specific, they have enriched the understanding of the links stated in the propositions.

10.3 Implications for Research

The implications of this study can be divided into methodological and theoretical issues. Methodological issues are concerned with the implications of the research design on future empirical efforts. Theoretical issues are concerned with the specific implications of the study's findings for existing theory related to performance measurement and Internet retailing business.

10.3.1 Methodological issues

The contributions of this study related to methodological issues are discussed below.

1. Sample of Internet retailers

With the lack of an established directory of Internet retailers, this study has contributed to develop a list of the Internet retailers in the UK. The list is unique as it is developed by combining three different sources: (1) an established retail directory, (2) the industrial body of Internet retailing (e.g. IMRG, TrustUK), and (3) online shopping directory (e.g. shopsafe.co.uk). The list mostly covers small and medium-

sized Internet retailers.

2. Performance Indicators

This study has successfully developed and validated a list of performance indicators for Internet retailing. The results of the survey supported that the list provided most of the performance indicators measured by Internet retailers. The list has been designed to monitor Internet retailer performance from five aspects: financial, market-sales, customer, web, and process. In addition, this study has validated that the variety of performance indicators measured can be represented as a single variable, which is the total number of performance indicators measured by an Internet retailer. This variable can represent a variable of performance measurement.

3. Further validation of strategic orientation

This study has provided further validation for Venkatraman's STROBE (strategic orientation) instrument. While previous studies have used the instrument in traditional business, this study has applied it in non-traditional business. This study identifies that aggressiveness, analysis, defensiveness, and futurity are observed as distinctive strategic orientations, but riskiness and proactiveness are not. This finding might suggest that items of riskiness and proactiveness in the instrument are possibly not relevant in the context of Internet retailers under investigation. This study has also taken a further step by combining analysis, defensiveness, and futurity into a single dimension called conservativeness-oriented strategy, because of the inter-correlation among them. This inter-correlation, in fact, is also observed in previous study (e.g. Venkatraman, 1989). This combination has provided a simpler interpretation of strategic orientation pursued by Internet retailers.

4. Research Model

This study has developed and validated a unique model that covers the relationships among business strategy, performance measurement, and business performance. Though researchers have predicted the value of implementing performance measurement, this study has specifically put performance measurement, together

with business strategy, as a factor that could affect business performance. The model and its associated relationships are enabled because of a single variable of performance measurement.

10.3.2 Theoretical issues

The theoretical implications of this study lie in the findings making a significant, value-added contribution to current thinking (Whetten, 1989). Five important implications of the findings are presented below.

1. Performance measurement and Internet retailers

This study could be considered as one of the early attempts to investigate performance measurement in the Internet retailing business. It has provided empirical evidence about performance measurement and its link with business profiles, as well as its importance. The findings would be expected to enhance the current understanding of performance measurement in this business sector.

2. Performance measurement and strategic orientation

Researchers have suggested that performance measurement normatively should be derived from business strategy. However, there was still unclear explanation of whether different strategic orientation pursued might constitute a different emphasis on performance measurement. This study has provided empirical evidence about the association between strategic orientation pursued by firms (Internet retailers) and their performance measurement. To be more specific, this study identifies that Internet retailers with more conservativeness-oriented strategy tend to measure more performance indicators. This finding may increase the understanding of the link between business strategy and performance measurement.

3. Strategic orientation and business performance

The relationship between business strategy and business performance has been a core

element of the strategic management area. The underlying idea is that, through proper strategy, firms can manage their internal resources and external factors to achieve superior performance. While prior studies did not explicitly differentiate the link of business strategy to financial and operational performance, this study has provided a piece of empirical evidence that strategy is associated, particularly, with financial rather than operational performance. More specifically, Internet retailers with less aggressiveness and more conservativeness (associated with business size)-oriented strategies have experienced better financial performance. This finding would suggest the importance of pursuing the proper strategy, as it is related to the bottom line of business.

4. Performance measurement and business performance

Performance measurement has been considered as providing value to the business, however the empirical evidence of this normative perspective is limited. This study has provided empirical evidence that performance measurement is associated particularly with operational rather than financial aspects of business performance. Internet retailers, which measure more performance indicators, tend to have better operational performance. This finding provides a clear idea that the value of performance measurement should be traced from its role in improving operational rather than financial aspects of business performance.

5. Performance measurement, strategic orientation and business performance

This study provides evidence that both strategic orientation and performance measurement complement each other as possible factors to affect business performance. Strategic orientation is associated with financial performance, while performance measurement with operational performance. Overall, the finding has enhanced the understanding of the relationship involving business strategy, performance measurement and business performance.

10.4 Implications for Practice

The findings might have implications for Internet retailing managers. The most important of these are highlighted below:

1. Importance of performance measurement

This study has demonstrated that the importance of measuring performance indicators and using the information is apparent in at least three aspects. First, performance measurement supports managerial activities as well as decision-making, especially for strategy-related purposes. The information obtained will help the management, for example to assess the implementation of business strategy, to identify possible needs to change business strategy, and to anticipate the future direction of the business. Therefore, this finding would suggest to Internet retailing managers to measure their business performance in various aspects covering market-sales, financial, web, process, and customer.

Second, performance measurement supports strategic orientation pursued by Internet retailers, especially those putting higher emphasis on a conservativeness-oriented strategy. The information obtained will help the management in tracking business trends, making analysis for major decisions, and implementing cost-efficiency methods. Therefore, this study would suggest to Internet retailers with a high conservativeness-oriented strategy to measure various aspects of the business performance.

Third, performance measurement leads to better operational performance, which in turn is considered to lead to better financial performance. The information obtained could guide the management to improve operational performance, such as maintaining customers, providing better online shopping (website), and providing a better fulfilment process. Improvement in these aspects is expected to generate more repeated transactions, more customers, more sales, and higher profit. Therefore, this study would suggest to Internet retailers to measure various aspects of their business performance.

Overall, this study suggests to Internet retailers to measure various aspects of their performance, covering market-sales, financial, customer, web, and process-related indicators. Though the finding indicates that the more performance indicators measured, the better the operational performance, the findings should not be extrapolated to suggest to Internet retailers to measure a huge number of performance indicators. The essential of measuring performance indicators is to monitor key aspects of business performance, and to use the information obtained. By measuring more indicators, online retailers obtain more information to support their strategic choice.

2. Choice of strategic orientation

This study has demonstrated the association between strategic orientation and financial performance. This relationship would suggest one possibility (among others) of how Internet retailers could achieve better financial performance. Internet retailers should adopt a low aggressiveness-oriented strategy, to achieve better financial performance. They should avoid cutting price and sacrificing profitability to gain market share. This suggestion should not be extended to thinking that aggressiveness has a negative effect. This aggressiveness-strategic orientation could be necessary for new (less mature) Internet retailers to introduce their existence and to acquire many orders, as the findings indicate that the less mature are likely to be more aggressive. When the market has been established, Internet retailers need to be less aggressive in order to achieve better financial performance.

In addition, as more conservativeness is associated with the more performance indicators measured, which in turns the number of performance indicators is positively related to operational performance, this study would suggest Internet retailers to adopt a more conservativeness-oriented strategy. This means that Internet retailers, for example, should be analytical in making decisions, control cost carefully, and keep track of business trends. The combination of low aggressiveness and high conservativeness would be a successful strategic orientation.

10.5 Limitations and suggestions for future study

In assessing the findings of this study, it is important to interpret the results in the light of some limitations. The limitations are discussed in relation to four aspects: (1) sample, (2) research design, (3) performance measurement framework, and (4) business strategy framework.

Firstly, the sample used for analysis is limited to small and medium-sized Internet retailers, with annual sales turnover of less than £10 million. Therefore, the findings might not be applicable for big Internet retailers, such as Amazon.co.uk and Tesco.com. Future research may investigate the model for bigger Internet retailers. In addition, this study is limited to Internet retailers selling tangible goods. Future research may adopt and adapt the research model for those selling services (e-service). Especially, the list of performance indicators needs some modifications. Moreover, the results should be interpreted in the UK economic context, where online shopping has been growing fast and there are a big number of retailers in this sector. Future research might be conducted in different settings, for example, an environment in which this sector is in its early growth. The nature and relationship involving performance measurement, business strategy, and business performance might possibly reveal different findings.

Secondly, this study is based on a survey, which is cross-sectional in nature. This method creates some limitations, as it captures a situation at a point in time. This limitation is embedded in the data gathering from the mail survey. As an illustration, performance indicators, strategic orientation, and business performance are not static. In addition, this study focused on the content aspect of performance measurement. A potential opportunity for future research is to explore the process of how performance measurement could affect operational performance, and how the need in strategic orientation can be formulated into the selection of performance indicators. Future research could employ a qualitative approach, such as a case study method or a longitudinal study. Furthermore, a list of performance indicators was developed from literature and refined based on comments obtained from three phases of pre-test among retailing practitioners, as well as academics. The lack of an exploratory approach in the early development is another limitation, as some respondents in the

pre-test may have been reluctant to articulate other performance indicators than the ones they were asked to evaluate in the pre-test.

Thirdly, performance indicators were developed and classified by adopting a structural approach, similar to Balanced Scorecard (BSC). Some studies on BSC and performance measurement in general have attempted to cover broad aspects of firm performance covering different stakeholders: employees, community, environment, suppliers, customers, and shareholders. This study has been directed to focus on the front-end measures of Internet retailing performance in order to provide the most important aspects of performance. Therefore, it has eliminated some of broad aspects, such as employees' learning process and supplier relationship, which could potentially associate with Internet retailing performance. Based on the findings of this study, further research may extend the scope of performance measurement to cover broader aspects in order to provide a more comprehensive picture of Internet retailing performance.

Finally, this study used a single framework/ instrument of business strategy developed by Venkatraman (1989). This framework, which is manifested as multiple common traits, is associated with the realised business strategy in holistic terms, focusing on the means adopted to achieve the desired goals (Venkatraman, 1989). It does not incorporate the process in which the strategy is developed. Literature indicates that varying roles top managers and organisational members play in the strategy-making process is to have an impact on business performance (Hart, 1992). A potential venue for future research could adopt this perspective to understand further the relationship of business strategy to performance measurement and business performance. Moreover, although this framework was developed to overcome the limitations of typology frameworks, such as those proposed by Porter (1980) and Miles and Snow (1978), these two could be still used in further research to provide a comparative result to the findings of this study.

10.6 Concluding Remarks

Internet retailing business has been growing fast in the UK, as well as in other

countries. A major issue is how this business sector can progress. Better understanding of successful strategy and sources of business performance is always an important concern among practitioners as well as academics. The findings of this study are hoped to add a small drop of water in the ocean of knowledge.

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Appendix A: Investigation of product categories

A1. Product categories of 15 online shopping directories

A.2 Analysis of product category among 50 Internet retailing sites

Appendix A1: Investigation of product categories

Product categories of 15 online shopping directories (1 – 3)

1. www.shopsafe.co.uk	2. www.Gb-shopping.co.uk	3. www.Uk-shopping-guide.co.uk
Alcoholic Drinks	Arts & Crafts	Automotive
Arts & Collectables	Auctions	Betting
Auctions	Books and Magazines	Books
Betting	Business	Children's
Books & Magazines	Car Audio System	Computing
CDs & Music	Careers	Cool Stuff
DVDs & Videos	Collectables	Electrical
Department Stores	Communications	Fashion
Electrical Goods	Computers	Finance
Fashion - Men	Dating	Food & Drink
Fashion - Women	Disability Aids	Gifts
Fashion - Children	DIY	Health & Beauty
Fashion - Footwear	Electrical Appliances	Home & Garden
Flowers	Fashion & Clothing	Mobile Phones
Finance	Finance & Insurance	Movies
Food & Drink	Flowers	Music
Gadgets	Food & Drink	Sports & Travel
Games	Gambling & Betting	
Garden & DIY	Games	
Gifts	General Shopping	
Greetings Cards	Gifts	
Health & Beauty	Health & Beauty	
Home Computing	Home & Garden	
Home Furnishing	Insurance	
Insurance	Jewellery	
Jewellery	Kids/Children	
Motoring	Mobile Phones	
Mobile Phones	Motoring	
Parties	Music & Movies	
Pets	Pets	
Software	Property	
Sports & Leisure	Recruitment	
Supermarkets	Sport	
Toys	Toys	
Travel & Holidays	Travel	
Tickets	Web Services	
Weight Loss		

(continued)

Appendix A1: Product categories of 15 online shopping directories (4 – 6)

4. www.uk-shop-online.co.uk	5. www.uk-onlineshopping.co.uk	6. www.british-shopping.com
Auction	Betting	Gifts
Automotive	Books & Magazines	Food & Wine
Betting	Clothes & Fashion	Collectables
Books	Computing	Telephones
Children's	DVDs & Videos	Money Matters
Computing	Financial Services	Party Supplies
Cool Stuff	Floral Deliveries	Gambling
Department Stores	Food & Drink	Arts & Crafts
Electronics	Gardening & DIY	Auctions
Fashion	Gifts Gadgets & Gizmos	Lifestyle
Finance	Health & Beauty	Hotels
Food & Drink	Holidays & Flights	Fashion
Gifts	Home & Furnishings	Computers
Health & Beauty	Household & Electrical	Bookstores
Home & Garden	Jobs & Recruitment	Health & Beauty
Jewellery	Miscellaneous	Toy & Games
Mobile Phones	Mobile Phones	Jewellery
Movies	Motoring	Travel
Music	Music	Catalogue Stores
Sport	Pets	Dept Stores
Tickets	Sporting Goods	Credit Cards
Tobacco	Toys & Games	Buy Currency
Travel		Home & Garden
Underwear		Sporting Goods
		Music & Film
		Automotive
		Office
		Property
		Internet Services
		Jobs
		Insurance

(continued)

Product categories of 15 online shopping directories (7 – 9)

7. www.1storeplus.co.uk	8. www.4ukshopping.co.uk	9. www.shopandsave.co.uk
Arts and Crafts Gadgets Antiques Gifts Auctions Health & Beauty Babies & Mums Holidays & Travel Books & Magazines Homes & Gardens Cars & Motoring Internet Charity Jewellery Clothes & Fashion Jobs Competitions Music Computers Office Equipment D.I.Y. Others DVD & Video Pets Education/Reference Sport & Outdoors Electricals Superstores Finance & Insurance Telecoms Flowers & Cards Tickets Food & Drink Toys & Games	Arts & Crafts Auctions Books & Magazines Collectables Communications Electrical Goods Fashion & Clothing Finance & Insurance Flowers Food & Drink Gambling & Betting Games & Gadgets Health & Beauty Home & Garden Jewellery Mobile Phones Motoring Music & Movies Pets Property Recruitment Sport Travel Web Services	Auctions Children Computers Entertainment Gifts Home & Garden Mobile Phones Telecommunications Travel Bet, Play & Win Clothing & Fashion Dept. Stores Finance Health & Beauty Internet Pets Tickets US Stores Books & Magazines Computer Games Electrical Food & drink Hobbies & Sports Lifestyle Services Transport Christmas

(continued)

Product categories of 15 online shopping directories (10 – 12)

10. www.stoptoshop.co.uk	11. www.shoponline.co.uk	12. www.uk-online-store.co.uk
Automotive Betting Books Computing Fashion Finance Gifts Health & Beauty Home & Garden Movies Music Sport & Fitness Telecoms Travel Underwear	Books Careers Clothing Computers Dating Finance Flowers Food Gambling Gardening Gifts Health Insurance Music Phones Sport Tickets Travel	Books Betting Computing Electrical Entertainment Fashion & Clothing Food & Drink Health & Beauty Home & Garden Insurance Leisure Lifestyle Mobile Phones Motoring Music & DVDs Property Services Services Shopping Sports & Leisure Timeout Travel & Holidays Weddings & Parties

(continued)

Product categories of 15 online shopping directories (13 – 15)

13. www.get-shopping.com	14. www.shopping.net	15. www.totalshops.co.uk
<p>Arts & Crafts Auctions Babies / Children Camping Gambling & Betting Books & Magazines Communications Computing Dating Diet / Fitness Electrical Goods Entertainment Fashion & Clothing Finance & Insurance Flowers Food & Drink Franking Machines Free Stuff Gadgets Games & Consoles Games / Quizzes /Competitions General Shopping Gifts Health & Beauty Home & Garden Jewellery Lingerie Mobile Phones Motoring Music & Movies Office Supplies Outdoor Pets Property Recruitment Software Sport Travel Web Services Weddings Adult DJ Equipment</p>	<p>Books Cars Clothes Computers Electrical Flowers Food Gifts Health & Beauty Money & Insurance Insurance Jobs Lifestyle Movies Music Property Software Travel Toys Video Games Home & Garden Mobile Phones</p>	<p>Art & Home Furnishing Books Computers & Electronics Diet & Wellbeing DIY, Garden & Pets Fashion & Jewellery Flowers, Gifts & Cards Fragrance & Cosmetics Furniture Gadgets Garden Plants Home Appliances Home wares Insurance Internet & Broadband Motoring Music, Games & Videos musical Instruments Outdoors & Leisure Phones Satellite TV & Cable Sound & Vision Sport Stationery Toy & Games Travel & Holidays Wine</p>

Appendix A2: Analysis of product category among 50 Internet retailing sites

Site	1. Grocery	2. Alcohol	3. Clothing	4. Food	5. Jewellery	6. Furniture	7. Electrical	8. DIY	9. Sport	10. Toys	11. Books	12. Video	13. Health	14. Other
1									x		x			
2	x													
3	x													
4							x	x		x				
5														x
6					x									
7	x													x
8			x											
9							x				x			
10														x
11													x	x
12													x	
13							x							
14					x									
15	x													
16	x													
17						x								
18										x				x
19													x	
20														x
21													x	x
22			x	x			x	x	x					
23			x											
24			x											
25										x				

(continued)

Appendix A2 (continued)

Site	1. Grocery	2. Alcohol	3. Clothing	4. Food	5. Jewellery	6. Furniture	7. Electrical	8. DIY	9. Sport	10. Toys	11. Books	12. Video	13. Health	14. Other
26											X			
27			X	X										
28			X											
29						X								
30						X								
31			X	X	X	X	X	X	X	X				
32			X							X				X
33								X						
34	X													
35					X									
36										X				
37							X							
38			X											
39			X											
40											X			
41									X					
42									X					
43														
44				X			X							
45											X			
46													X	
47						X					X			
48								X						
49	X					X	X	X		X				X
50											X			

Appendix B: First phase pre-test

List of performance indicators

Dimension	Sub-dimension	Metrics	Description	Formula	
1. Web	Web traffic	Unique visitors	Measures actual number of individuals who visits site at least once, regardless of how many times they return	—	
		Growth of visits	Indicates continuing attractiveness of site	$(\text{Current no. visits} - \text{previous no. visits}) / \text{previous no. visits}$	
	Web quality	Web Quality	Measures quality of website from customer perspective	Web quality index (composite measures)	
2. Customer	Customer acquisition	Conversion rate visitor to registration	Measures success of site to attract visitor to register	Total visitors/ visitors registered	
		Conversion rate visitor to purchase	Measures success of site to transform visitor to customer	Total visitors/ visitors purchasing	
	Customer retention	Repeat-customer conversion rate	Measures success to generate sales from existing customers	Measures success to generate sales from existing customers	$\text{No. repeat customers} / \text{total customers}$
		Customer churn rate	Provides insight into growth or decline of customer base as well as average length of participation in service	Provides insight into growth or decline of customer base as well as average length of participation in service	$\text{No. customers withdrawn} / \text{total customer}$
		Repeat-customer churn rate	Provides insight into growth or decline of repeat customers	Provides insight into growth or decline of repeat customers	$\text{No. repeat customers withdrawn} / \text{total customers}$
		Repeated sales per each customer	Measures success to retain customer for repeating sales	Measures success to retain customer for repeating sales	$\text{No. repeat sales} / \text{total customers}$

(continued)

List of performance indicators (continued)

Dimension	Sub-dimension	Metrics	Description	Formula
3. Process	Timeliness	Click-to-ship time	Measures time to handle order from placement to for delivery	Interval time between order placement and shipping
		Ship-to-deliver time	Measures time to deliver order to customer	Interval time between shipping and order received by buyer
		Click-to-deliver match	Measures how successfully business meets promise to deliver order.	(actual click-to-deliver time) - (promised click-to-deliver time)
		Online enquiry-to-response time	Measures how fast online enquiry is responded to	Average time from enquiry to response
		Return notification-to-refund time	Measures how fast business handles return	Average time from customer return notification to sending refund
		Percentage of error in goods picked and delivered to customer	Indicates how accurately business delivers right order	No. wrong orders delivered/ total no. orders
	Accuracy	Percentage of error in delivery destination	Indicates how accurately business delivers order to right destination (person)	No. orders delivered to wrong destination/ total no. orders
		Percentage of error in charge made to customer	Indicates how accurately business handles payment	No. times wrong charge/ total no. orders
		Sales per employee	Indicates productivity of staff	Sales /total no. employees

(continued)

List of performance indicators (continued)

Dimension	Sub-dimension	Metrics	Description	Formula
4. Financial	Cost efficiency	Visitor acquisition cost	Tracks average cost to acquire one visitor	Marketing cost / total visitors
		Customer acquisition cost	Tracks average cost to acquire one customer	Marketing cost / total customers
		Repeat-customer acquisition cost	Traces cost to acquire repeat customer from first time customers	Acquisition cost/ repeat customers
		Customer maintenance cost	Measures cost to keep customer	Maintenance cost/ total customers
		Cost of order picking	Measures cost (human and equipment) to pick order	Total picking cost / total orders
		Cost of delivery	Measures cost (human and equipment) to deliver order to customer	Total delivery cost / total orders
		Revenue per customer	Measures average amount of sales per customer	Total sales / total customers
		Revenue per repeat customer	Measures in money average amount of sales from repeat customers	Sales from repeat customers/ repeat customers
		Revenue per transaction	Indicates average value of transaction	Total sales / no. transactions
		Gross profit margin	Measures percentage of value of each sale remaining after firm has paid for goods	Sales-COGS / sales
Profitability	Operating profit margin	Operating profit margin	Measures percentage of value of each sale remaining after all costs and expenses other than interest, taxes, and preferred stock dividends are deducted	Sales-COGS-expenses / sales

(continued)

List of performance indicators (continued)

Dimension	Sub-dimension	Metrics	Description	Formula
5. Growth	Sales and market growth	Sales growth	Measures percentage increase in sales	Sales increase/ sales
		Customers growth	Measures percentage increase in customers	Customer increase/ customers
		Sales growth per established customer	Measures percentage increase in sales / total customers	Sales increase/ customers
		Order growth	Indicates increase in orders	Orders increase / orders
		Number of new product categories introduced	Indicates expansion of product categories offered	No. new product categories
		Number of new products offered in catalogue	Indicates expansion of product lines (within old or new product categories) offered	No. new product lines
		Ratio of sales from new product lines	Measures extension of product lines sold	Sales new product lines / sales
		Ratio of sales from overseas	Measures attractiveness and also capability of business to serve overseas market	Sales from overseas/ sales

Appendix C: Second phase pre-test

C1. First round – Questions

C2. Second round – Responses

Appendix C1: First round – Questions

1. Are you able to rate the extent you agree or disagree that each of the performance measures currently critical to evaluate your Internet retailing business performance, as in the following example?

	Strongly disagree					Strongly agree	
Customer acquisition cost	1	2	3	4	5	6	7
Gross profit margin	1	2	3	4	5	6	7
Revenue per customer	1	2	3	4	5	6	7

2. Are you able to rate your company's current Internet retail business performance relative to the industry average, or to comparable competitors, as in the following example?

	Much worse		About the same			Much better	
Customer retention	1	2	3	4	5	6	7
Profit margin	1	2	3	4	5	6	7
Sales growth	1	2	3	4	5	6	7

3. Are you able to rate the frequency of use of the information produced by performance measurement systems as the following example?

	Frequency						
	Never		Occasionally			Frequently	
To support decisions at top-management level	1	2	3	4	5	6	7
To support decisions at operational level	1	2	3	4	5	6	7
To facilitate implementation of business strategy	1	2	3	4	5	6	7

Appendix C2: Second round – Responses

The following table presents the communication method and the type of responses obtained.

Respondent	Communication	Type of response
crotchet.co.uk	e-mail and fax	Complete questionnaire
tinet.co.uk	e-mail	Complete questionnaire
bearbookstore.com	e-mail	Answer, comment, complete questionnaire
Balicom.org	e-mail	Answer and comment
big W	interview	Answer and comment

Comments and suggestions

1. Some items in the 'business orientation' section, such as: 'We often sacrifice profitability to gain market share', and 'We often cut price to increase market share' could be sensitive for respondents (big W).
2. Performance indicator 'market share' (section performance indicator selection) could be relevant for some Internet retailers but not for others. In a well-established Internet retailing business environment, the analysis of market share is important. Internet retailers may measure their market share against others. Market share could be measured against the total online market or total online plus non-online market. However, in an early growing Internet retailing business environment, market share is less important than total online market or its growth, because the value of total online market is quite small compared to that of total non-online market (bearbookstore).
3. An Internet retailer may analyse 'order growth' (section performance indicator selection) by the number of transactions per day/ month/ year, and the size of transaction growth itself (bearbookstore).
4. Performance indicator 'amount of sales' (section performance indicator selection) could be interpreted differently as 'sales value per transaction' or 'total sales' (bearbookstore).
5. A phone order might be considered as a part of mail order retailing or a separate one (bearbookstore).
6. Internet retailers may not know their main competitor as well as the number of competitors within the same business sector. Some Internet retailers may operate

in a borderless market area (global), but some others may operate in a specific area (local) (bearbookstore).

7. Small companies may not produce an annual report, therefore some performance indicators, such as profit margin, could be unknown (big W).
8. Some additional issues, such as delivery systems, payment systems, and customer complaint, should be considered (Balicom).
9. Respondents could be more comfortable to answer using a scale 1 to 5 rather than 1 to 7 (big W).
10. The order of sections in the questionnaire could be based on the consideration that the most interesting section comes first. It is suggested that business profile comes first, business orientation second, and the rest comes afterwards (big W).
11. It was suggested to make the questionnaire in two pages. A long list of performance indicators and business orientation should be shortened (big W).
12. Some additional performance indicators are suggested (bearbookstore):
 - Sales value per transaction
 - Number of transactions per month
 - Number of transactions growth
 - Response to marketing 'newsletter'
 - Number of newsletter subscribers/ unsubscribers/ growth
 - Search engine rank (Yahoo/ Google)

Consideration for revision

1. All items to measure business orientation are retained for several reasons. First, those items, as a whole, represent a strategy construct. Second, they have been used in some previous studies. Third, three respondents who completed the questionnaire were able to provide responses.
2. The comment about market share does not contradict its inclusion. For some firms which consider measuring market share is not relevant, they could give the response 'not used'. Therefore, market share is retained.
3. Order and transaction more or less have same meaning. In buying a product online, customers make an order as well as a payment (transaction). As a

consequence, order and transaction more or less have the same meaning. To incorporate those two terms, 'order growth' is modified to 'order (transaction) growth'.

4. In the questionnaire, 'amount of sales' is meant as 'total sales'. To eliminate vagueness, amount of sales is changed to total sales.
5. Retailer may promote, display and sell merchandise in-store, by printed catalogue, or by website, but not by telephone. Therefore, phone order is not considered a separate retail format.
6. The comment about 'competitor' came from the business performance section. It suggested that who should be considered as competitor is vague. This suggestion is considered reasonable. Therefore, the item is modified by asking how satisfied respondents are towards their online business performance.
7. The comment that some performance indicators might be unknown by small companies does not conflict with this study, because it is to investigate those being used as well as not used.
8. Delivery system has been incorporated in the list of performance indicators. Five related performance indicators are: (1) click-to-ship time, (2) ship-to-deliver time, (3) click-to-deliver match, (4) percentage of errors in goods picked and delivered to customer, and (5) percentage of error in delivery destination. Payment system has also been incorporated as (1) percentage of error in charge made to customer, and (2) return-notification-to-refund time. Finally, complaint has been incorporated in the list as online enquiry-to-response time.
9. The suggestion to use Likert scale 1 to 5 is considered reasonable. Therefore, the scale 1 to 7 is changed to 1 to 5.
10. The suggestion to put business profile as the first section is accepted. Another suggestion to put strategic orientation as the second is considered inappropriate. Performance measurement is placed in the second section instead, because it represents the main topic of this survey.
11. Three-page questionnaire is considered not too long. Therefore, the content of the questionnaire is retained in three pages. The questionnaire will be printed on

both sides of a double A4 size paper (A3). Three pages of content and one cover page will form a four-page questionnaire.

12. Additional performance indicators (bearbookstore):

- Sales value per transaction. This depends on the product sold. It could be small, such as stationery items and CDs, or big, such as electronics and furniture. The value of transaction might be related also to the delivery charge. Some online retailers offer free delivery, some give free delivery for a transaction costing more than a certain amount, and others charge the delivery cost to customers.
- 'Newsletter' sent through e-mail is a means for an Internet retailer to inform its customers individually about its latest offers. The suggestion to include a measure 'the number of newsletter subscribers/ unsubscribers' is accepted. This indicator is placed under the customer dimension. The growth of newsletter subscribers can be calculated from the number of subscribers over different periods; therefore, the inclusion of this measure is not necessary. Response to a marketing 'newsletter' in terms of the number of customers wanting to receive it is covered by the measure of the number of newsletter subscribers. If customers make further purchases after receiving a newsletter, it is covered by the measure 'repeated sales per customer'. Therefore, response to a marketing newsletter is not considered a separate performance indicator.
- Search engine rank (rank in Yahoo/ Google). When customers are looking for certain products or services through search engines (e.g. Yahoo, Google), they will find a list of company sites. To reach these customers, Internet retailers normally expect that their site will be listed on the top. Some companies (e.g. www.searchenginestrategies.biz; www.seoinc.com, www.submitexpress.com) provide this kind of service for helping Internet retailers to achieve and maintain dominant listings in the major search engines. This kind of listing achievement can be manipulated, therefore the inclusion of this measure is not appropriate.
- To measure order (transaction) growth, data on the number of orders (transactions) over different periods is required. Therefore, a measure of the number of transactions per period has been covered by a measure of

order (transaction) growth. Total sales is included together with sales growth, because it is a critical performance indicator of any business.

- The suggestion about search engine rank relates to a method called search engine optimisation (SEO). SEO is the process of promoting a business online to achieve top search engine rankings for relevant targeted key-phrases.

Appendix D: Questionnaire of second phase pre-test

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Performance Measurement in the Online Retail Business

If you would like a copy of the findings, please supply your name and mailing or email address in the box below. Alternatively, if you would prefer your responses to remain completely anonymous, you can request a copy electronically [g.gunawan@lboro.ac.uk].

Name: Address: E-mail Address – for result to be sent electronically:

ALL RESPONSES WILL BE TREATED IN THE STRICTEST CONFIDENCE

Please return the completed questionnaire using the stamped envelope provided

Thank you for your help

A. PERFORMANCE INDICATORS SELECTION

Please circle a number between '1' to '7' to indicate the extent you **agree** or **disagree** that each of the following performance indicators is **currently critical** to evaluate your **online retail business** performance. For performance indicators that are **not being used**, please circle number '0'.

	Strongly disagree					Strongly agree		Not used
	1	2	3	4	5	6	7	0
Gross profit margin	1	2	3	4	5	6	7	0
Operating profit margin	1	2	3	4	5	6	7	0
Revenue per transaction	1	2	3	4	5	6	7	0
Revenue per customer	1	2	3	4	5	6	7	0
Revenue per repeat customer	1	2	3	4	5	6	7	0
Visitor acquisition cost	1	2	3	4	5	6	7	0
Customer acquisition cost	1	2	3	4	5	6	7	0
Customer maintenance cost	1	2	3	4	5	6	7	0
Customer retention cost	1	2	3	4	5	6	7	0
Cost of order picking	1	2	3	4	5	6	7	0
Cost of delivery	1	2	3	4	5	6	7	0
Amount of sales	1	2	3	4	5	6	7	0
Sales growth	1	2	3	4	5	6	7	0
Ratio of sales from new product categories	1	2	3	4	5	6	7	0
Ratio of sales overseas	1	2	3	4	5	6	7	0
Sales growth per established customer	1	2	3	4	5	6	7	0
Market share	1	2	3	4	5	6	7	0
Order growth	1	2	3	4	5	6	7	0
Customer growth	1	2	3	4	5	6	7	0
Number of new product categories introduced	1	2	3	4	5	6	7	0
Number of new products offered in catalogue	1	2	3	4	5	6	7	0
Conversion rate visitor to registration	1	2	3	4	5	6	7	0
Conversion rate visitor to purchase	1	2	3	4	5	6	7	0
Repeat-customer conversion rate	1	2	3	4	5	6	7	0
Customer churn (withdrawal) rate	1	2	3	4	5	6	7	0
Repeat-customer churn (withdrawal) rate	1	2	3	4	5	6	7	0
Repeated sales per customer	1	2	3	4	5	6	7	0
Customer extension (buy another product category)	1	2	3	4	5	6	7	0
Unique visitors	1	2	3	4	5	6	7	0
Growth of visits	1	2	3	4	5	6	7	0
Web quality	1	2	3	4	5	6	7	0
Click-to-ship time	1	2	3	4	5	6	7	0
Ship-to-deliver time	1	2	3	4	5	6	7	0
Click-to-deliver match	1	2	3	4	5	6	7	0
Online enquiry-to-response time	1	2	3	4	5	6	7	0
Return notification-to-refund time	1	2	3	4	5	6	7	0
Percentage error in goods picked and delivered to customer	1	2	3	4	5	6	7	0
Percentage error in delivery destination	1	2	3	4	5	6	7	0
Percentage error in charge made to customer	1	2	3	4	5	6	7	0
Others not in the list (please insert below)								
	1	2	3	4	5	6	7	0
	1	2	3	4	5	6	7	0
	1	2	3	4	5	6	7	0
	1	2	3	4	5	6	7	0
	1	2	3	4	5	6	7	0
	1	2	3	4	5	6	7	0

B. BUSINESS ORIENTATION

Please indicate the extent to which you agree, or disagree that each of the following business orientation applies to your online business. *Please circle one number for each statement*

	Strongly disagree			Strongly agree			
	1	2	3	4	5	6	7
We often sacrifice profitability to gain market share	1	2	3	4	5	6	7
We often cut prices to increase market share	1	2	3	4	5	6	7
We often set prices below competition	1	2	3	4	5	6	7
We often seek market share position at expense of cash flow and profitability	1	2	3	4	5	6	7
We emphasise effective coordination among different functional areas	1	2	3	4	5	6	7
Our information systems provide support for decision making	1	2	3	4	5	6	7
When confronted with a major decision, we usually try to develop through analysis	1	2	3	4	5	6	7
We use several planning techniques	1	2	3	4	5	6	7
We use outputs of management information and control systems	1	2	3	4	5	6	7
We commonly use manpower planning and performance appraisal of senior managers	1	2	3	4	5	6	7
We occasionally conduct significant modifications to retail operation technology	1	2	3	4	5	6	7
We often use cost control systems for monitoring performance	1	2	3	4	5	6	7
We often use production management techniques	1	2	3	4	5	6	7
We often emphasise service quality through use of quality circles	1	2	3	4	5	6	7
Our criteria for resource allocation generally reflect short-term considerations	1	2	3	4	5	6	7
We emphasise basic research to provide us with future competitive edge	1	2	3	4	5	6	7
Forecasting key indicators of operations is common	1	2	3	4	5	6	7
Formal tracking of significant general trends is common	1	2	3	4	5	6	7
We often conduct "what if" analyses of critical issues	1	2	3	4	5	6	7
We are constantly seeking new opportunities related to present operations	1	2	3	4	5	6	7
We are usually the first to introduce new brands or products in the market	1	2	3	4	5	6	7
We are constantly on the look out for businesses that can be acquired	1	2	3	4	5	6	7
Competitors generally pre-empt us by expanding capacity ahead of them	1	2	3	4	5	6	7
Operations in later stages of life cycle are strategically eliminated	1	2	3	4	5	6	7
Our operations can be generally characterised as high-risk	1	2	3	4	5	6	7
We seem to adopt a rather conservative view when making major decisions	1	2	3	4	5	6	7
New projects are approved on a 'stage-by-stage' basis rather than with 'blanket' approval	1	2	3	4	5	6	7
We have a tendency to support projects where the expected returns are certain	1	2	3	4	5	6	7
Our online business operations have generally followed the 'tried and true' paths	1	2	3	4	5	6	7

C. RELATIVE PERFORMANCE

Relative to the industry average, or to comparable competitor, how do you rate your company's **current** online business performance on the following items? *Please circle one number for each statement*

	Much worse		About the same			Much better	
	1	2	3	4	5	6	7
Profit margin	1	2	3	4	5	6	7
Revenue generation	1	2	3	4	5	6	7
Cost efficiency	1	2	3	4	5	6	7
Market share	1	2	3	4	5	6	7
Sales growth	1	2	3	4	5	6	7
Customer acquisition	1	2	3	4	5	6	7
Customer retention	1	2	3	4	5	6	7
Web traffic	1	2	3	4	5	6	7
Quality of web-store	1	2	3	4	5	6	7
Fulfilment timeliness	1	2	3	4	5	6	7
Accuracy of process	1	2	3	4	5	6	7

D. USE OF PERFORMANCE MEASUREMENT

How often do you use the information produced by performance measurement systems for the following purposes? *Please circle one number for each statement*

	Never		Occasionally			Frequently	
	1	2	3	4	5	6	7
To support decision at top-management level	1	2	3	4	5	6	7
To support decision at operational level	1	2	3	4	5	6	7
To facilitate implementation of business strategy	1	2	3	4	5	6	7
To identify possible needs for changes in strategy	1	2	3	4	5	6	7
To produce information for internal reports (e.g. annual report)	1	2	3	4	5	6	7
To produce information for external parties	1	2	3	4	5	6	7
To facilitate comparison with competitor or other business units	1	2	3	4	5	6	7
To determine bonus to management and/ or staff	1	2	3	4	5	6	7

E. BUSINESS PROFILE

1. Besides selling goods online, does your company conduct the following business activities?

Please answer all three questions.

- a. Selling the same goods in-store as well? Yes No
- b. Selling the same goods through mail order catalogue as well? Yes No
- c. Being producer (manufacturer or publisher) of those goods? Yes No

2. Which of the following categories best describes **product range** of your **online business**?

Please tick (✓) only one box.

- Food and consumables: grocery, bakery, confectionery, alcohol drink and tobacco.
- Clothing and accessories: clothing, footwear, jewellery, and accessories.
- Home: furnishing, electrical goods, DIY, gardening, kitchenware-tableware, pet supplies, automotive accessories and baby products.
- Leisure and entertainment: sports equipment and sportswear, outdoor equipment, toys, craft, collectible, books, music and movie, musical instrument, stationery, card, gift, flowers, and party supplies.
- Health and beauty: healthcare, beauty, natural products, and toiletries.
- Mixed product categories: department stores.

3. Approximately how much are the **annual sales** of your **online business**? *Please tick (✓) only one box.*

- £ 0 – 49 thousand £ 100 – 249 thousand £ 500 - 999 thousand £ 5,000+ thousand
- £ 50 – 99 thousand £ 250 – 499 thousand £ 1,000 – 4,999 thousand

4. Approximately, how many **personnel** does your company currently employ for **online business**?

Please tick (✓) only one box.

- 0 – 4 people 10 – 19 people 50 - 99 people 250+ people
- 5 – 9 people 20 – 49 people 100 – 249 people

5. How many **years** has your **online business** been established? *Please tick (✓) only one box.*

- Less than 2 years 2 – 4 years 5 – 10 years More than 10 years

You are invited to write your comments and suggestions on this page. Please send them by e-mail to: G.Gunawan@lboro.ac.uk OR fax to: 01509 223960, George Gunawan - PhD student - Business School - Loughborough University

Appendix E: Third phase pre-test

1. Questions and responses

The following six questions were asked:

q.1: Are the 12 questions in the questionnaire clear?

q.2: Are the 12 questions arranged in logical order?

q.3: Are items in each question arranged in logical order?

q.4: Are the questions easy to answer?

q.5: How long will you take to answer the questionnaire?

q.6: Do you feel the lucky draw of cash prize £300 will motivate the respondents to participate in this survey?

A summary of responses is presented in Table D-1.

Table D-1: Summary of pre-test responses

No.	Participant	q.1	q.2	q.3	q.4	q.5	q.6
1	Woolworths-1	Yes	Yes	Yes	Yes	20'	Neutral
2	Woolworths-2	Yes	Yes	Yes	Yes	20'	Positive
3	Woolworths-3	Yes	Yes	Yes	Yes	20' - 30'	Positive
4	Selective	Yes	Yes	Yes	Yes	5'	Neutral
5	IT practitioner	Yes	Yes	Yes	Yes	less than 30'	Positive
6	Academic-1	Yes	Yes	Yes	Yes	15'	Negative
7	Academic-2	Yes	Yes	Yes	Yes	15' - 20'	Positive
8	Academic-3	Comment	No	Comment	Comment	10'	Positive
9	Academic-4	Mostly	Yes	Probably	Yes	quick	Positive
10	PhD-1	Yes	Yes	Yes	Yes	40'	Positive
11	PhD-2	Yes	Yes	Yes	Yes	12'	Positive
12	PhD-3	Yes	Yes	Yes	Yes	20' - 30'	Neutral
13	PhD-4	Yes	Yes	Yes	Yes	20'	Positive
14	PhD-5	Yes	Yes	Yes	Yes	30'	Positive
15	PhD-6	Yes	Yes	Yes	Yes	15 - 20'	Positive

In the first row, q.1 to q.6 refers to the six questions. The response 'Comment' for participant no.8 means that the person gave some comments rather than an explicit Yes/ No answer.

In column q.6, 'positive' indicates that participants feel that a lucky draw will motivate a person to complete the questionnaire; neutral means it may have no effect; and negative means it will bring a negative effect.

2. Feedback on clarity of questions

In general, most pre-test participants stated that the questions are clear. In addition, the following comments and suggestions were made. In this discussion, Q.1 – Q.10 refers to the question number in the questionnaire.

Q.1 : To add '*please specify*' after '*others*'.

Q.2: To change 'is' to 'are' in ... how much is the annual ...

Q3:

- To change the term '*personnel*' to '*people*' and then delete '*people*' in each item of options.
- To change the term '*personnel*' into '*employees*'.
- To consider the question as an open question (without options).

Q.4: To reword the term '*utilize*'

Q.5:

- To reword the term '*established*'
- To change the term '*how many years*' into '*how long*'
- To change into an open question; to let a respondent answer it

Q.6:

- To delete arrows because they are unnecessary. If respondents answer 'No', they will go to the next item.
- The indicator '*conversion rate visitor to registration*' and '*conversion rate visitor to purchase*' are quite similar.
- The indicators *website's usability, information quality, and service interaction quality* are considered as the analysis result rather than indicators.
- The term '*transaction*' has broader meaning than '*order*'. Transactions may cover order, enquiry, return, etc.
- About options 'IP – PC – AP', it is not clear whether respondents are expected to circle only one or possibly more.
- To modify the instruction with the following suggestion: 'For each of the following performance indicators measured by your company, please indicate how frequently and in how much detail each of them is measured'. To think whether asking 'in how much detail' is relevant.
- It is not clear whether the question refers to Internet activities.

Q.10

- 'Planning technique' and 'operations management technique' might be similar.
- Asking about 'life cycle' could be valid in the case where a traditional business changes into online. However, it may be not valid in the case that an online business has already established.
- The term 'analysis' in 'when confronted to develop through analysis' is not specific.

3. Feedback on logical order of questions

Most participants stated that the order of the questions is logical. Some suggestions were made: (1) online business performance (Q.8) might be placed last, and (2) the order of questions may follow the research framework: business orientation, performance indicators measured, use of performance measurement results, business performance. One participant answered 'No', and suggested that unless information about respondent is vital to the research, it should come later.

Most participants stated that the order of items in each questionnaire is logical. It was suggested to consider whether the items are arranged in ascending or descending order of importance, and to put the item 'in other personnel decision' of Q.6 in the beginning of the list because it is most likely that the information is used for this decision.

4. Feedback on ease of answering questions

Most participants stated that the questionnaire was easy to answer. Some emphasised that it would be easy as long as answered by the right person.

5. Feedback on approximate time to complete questionnaire

Participants estimated the time to complete the questionnaire as between 5 and 40 minutes.

6. Feedback on incentive method

There are different opinions about a lucky draw for a £300 cash prize. Firstly, it would be worthwhile to look at what participants from four retailing practitioners said about it. The first supported the use of a financial incentive. The second said that this incentive was a good idea and it might be an effective stimulus for some busy managers. The third said that the prize was worthless for managers, especially of big companies. The last said that if a person was willing to fill in the questionnaire, he or she would do it regardless of the prize.

In the view of one participant, respondents would be insulted by the prize, because it could indicate that their willingness to respond is driven by the prize. Furthermore, the same respondent said that, in his opinion, there is no difference in its effect, whether the prize is £100 or £300. Other participants supported the incentive.

In addition, some suggestions or comments were made, as follows:

1. An alternative method of incentive is by giving an amount of money to some charities, for which respondents may select their preference (e.g. charity for children, cancer, heart foundation, aged people).
2. Rather than offering a lucky draw, it would be better to mention that all responses would be included in a draw. It is possible to put a closing date at which the lucky draw is still valid.
3. The information on the lucky draw needs to be stated in 'general information'.
4. A letter expressing thanks sent after a respondent participates in a survey is appreciated because it is rarely done.
5. Offering a copy of the findings is good. The company may then know what it has done and what its competitors have done.
6. Rather than asking whether respondents want a copy of the findings, it is better to offer the copy. It should be explained how the report will benefit the company.

7. Asking for a contact name and address for sending a copy of the findings and for the purpose of a lucky draw is placed at the end of the questionnaire. An instruction is added to general information: “If you would like a copy of the findings and/ or wish to enter the £300 prize draw, please enter your details at the end of the survey”.
8. The statement ‘Thank you for your help’ should be placed at the end of the questionnaire.

7. Additional suggestions

1. Four PhD students highlighted the importance of providing a blank space for comments.
2. To ask whether respondents are willing to participate further (e.g. interview) in this research
3. It should be highlighted that all questions refer to ONLY online business part.
4. To make spaces between arrows (Q.6) even
5. To put label for each number of scale (Q.9 and Q.10)
6. The statement ‘Thank you for your help’ should be placed at the end of the questionnaire
7. The item about sending a copy of findings and participating in a lucky draw may come last
8. To change ‘information about respondent’ into ‘information about you’, in order to make it more personalised
9. To put the researcher’s name at the top left of the first page of the questionnaire
10. To delete ‘with’ in ‘...with NO single...’, in the ‘general information’ of the first page of the questionnaire
11. To give more space for contact address (the first-page questionnaire)
12. To delete footer ‘Many thanks for your help’, on page 2

13. To change footer 'Many thanks for your help (on page 2)' to 'Please turn over'
14. To change footer 'Many thanks for your help' (on page 3) ' to 'Please return completed questionnaire in the envelope provided'
15. To add a number to each item in the list (Q.6-Q.10)
16. To add page number
17. To highlight 'strictly confidential' (page 1), either using bold or capital font
18. To highlight all section headings
19. Q.1: If product category is important in analysis; more options (finer classification) are better. However, if not important, the existing classification would be appropriate.
20. Q.2: To change the option '£100 millions and over' to '£100 millions or more'
21. Q.2 and Q.3: It is questioned what sort of variation is expected.
22. Q.4: If a company is dotcoms, the respondent will not tick anything. It becomes ambiguous whether it is the case or it is a missing answer.
23. Q.4: To add '*please tick ...*' on the next line after the instruction, and put this in a bracket.
24. Q.4: To add 'catalogue' in 'mail / phone order'
25. Q.5: To change 'how many years...' to 'how long'
26. Q.6: To change options D-W-M-Q-A to numbers 1-2-3-4-5 or boxes.
27. Q.6: To put '*please circle ...*' in a bracket.
28. Q.7: To change 'each decision type' into 'each type of decision'.
29. Q.7 and Q.8: To provide an indication that 'the information' refers to Q.8
30. Q.8: To change the scale to % scale: 0 - 20%, 21% - 40%, 41% - 60%, 61% - 80%, 81% - 100%
31. Q.8, 9 and 10: To put '*please circle ...*' in a bracket.
32. Q.8: To change 'for the following' to 'in the following

33. Q.8: To write 'occasionally' without splitting it
34. Q.8 To write a plural form in 'retail channels', 'business operations', and 'reports'
35. Q.9 The scale is very biased. It is proposed to use 10-point scale anchored at 'very dissatisfied' and 'very satisfied'.
36. Q.9: To change 'for each of the following' to 'in each of the following'
37. Q.9: To change the existing scale into '1 = not at all', '3 = somewhat satisfied', '5 = very satisfied'.
38. Q.9: To change the existing scale to a range of 'very dissatisfied' to 'very dissatisfied'.
39. Q.10: To consider this proposed instruction: 'Please or disagree in each of the following statements **that** applies'
40. Q.10: To modify '... competitive edge' with '... competitive advantages'
41. Q.10: To modify '...ahead of them' with '... ahead of us'
42. Q.10: To modify '... than with blanket' with '...than through blanket'

8. Revisions made

Having considered those comments and suggestions, some are considered valuable to improve the questionnaire.

Lucky draw

The idea of a lucky draw is maintained. However, its presentation is revised to reduce the potential side effects by the following modifications:

1. Deleting the question that asks respondents whether they want to be included in a lucky draw or not. It will be explained that all completed questionnaires entitle respondents to a lucky draw of cash prize.
2. Reducing the amount of money from £300 to £200. The less money is likely to reduce the perception that the responses are driven by the monetary

incentive. It also fits the comment in the pre-test that there is not much difference in the amount of money provided in the lucky draw.

3. A request for the respondent contact address for the lucky draw purpose is combined with that for sending a copy of findings. This question is placed in a separate sheet.

Emphasis on online business

-As the questionnaire concerns ONLY online business, stronger emphasis will be given in general information (page 1) and throughout the questions. The focus on online business is highlighted in the title of each section.

Question 8

The majority of respondents see that Q.6 is tough to answer because it consists of three questions. Some comments have been given on the question of 'how much detail'. In addition, the question of 'how much detail' does not cover all performance indicators; it means that the analysis is limited. Three options of how much detail are considered not mutually exclusive. Certain performance indicators might be measured by individual product as well as product category. By considering these, the question about 'how much detail' is deleted.

Another issue of Q.6 is about the arrow signs. It is difficult to make even space between arrows. The arrow signs are therefore eliminated.

Scale of Q.9 and Q.10

In Q.9, the use of an unbalanced scale (using five points) basically is to obtain higher variation of responses. However, it creates a problem that this kind of scale is not commonly used. To overcome this problem, a numerical 10-point scale anchored by very dissatisfied – very satisfied is applied. It is a balanced scale and it enables coverage of a wider range of responses.

In Q.10, the scale label 'disagree – not sure – agree' is added in between 'strongly disagree' and 'strongly agree'. This addition will make this scale is similar with the five-point scale in Q.7 and Q.8.

A separate sheet for comment

A blank space for comment is considered necessary. Because of no more space in the questionnaire sheet, this blank space is provided in a separate sheet. In this sheet, a question asking whether a respondent is willing to participate further in this research is added. Furthermore, the question about contact address for sending a copy of the findings and a lucky draw prize is placed on this sheet. This 'separate' sheet is also intended to make respondents feel that their responses are not connected to their personal information.

Other revisions of format and rewording

1. Q.4: This question is revised by asking respondents with Yes-No options, whether their companies do business through in-store and mail order shopping. This revision will hinder the missing answer if their companies are dotcoms.
2. Q.1, Q.2, Q.3, Q.5: Additional instruction '*Please tick one box only*' is added.
3. Q.2: The term 'turnover sales' is changed to 'sales turnover'.
4. Q.2: The option £0 - £49 thousands is changed into 'less than £50 thousand'; because the latter is more common.
5. Q.2: The option '£100 million and over' is changed into '£100 million or more'; because the latter is more common.
6. Q.3: The term 'personnel' is changed to 'people'.
7. Q.7: The term 'for each decision type' is changed to 'each type of decision'.
8. Q.7 – Q.10: Each item in the list is numbered to make it easy for data input process.

Appendix F: Questionnaire of third phase pre-test

Performance Measurement in Online Retailing Business

General Information

1. All individual responses to this questionnaire will be kept strictly confidential. The data of this survey will be presented in an aggregated form, NO single firm's information will be disclosed.
2. This questionnaire will ask you about your **online/ internet retailing business**. If your company has in-store or mail order shopping, please refer to the online retailing part only. If your company only operates online, you may refer to the whole company in answering this questionnaire.
3. Please return the completed questionnaire, using the envelope provided.

Would you like a copy of the findings? Yes No

Would you like to be included in a lucky draw of **£300 cash prize**? Yes No

If you have answered 'Yes' to either question, please write your contact address.

Name : _____

Address : _____

E-mail : _____

Information about respondent

What is your current position in your company?

Owner/Proprietor/ Partner Chief Executive/ Managing Director Senior Manager

Manager Other, please specify

How many years have you been in the retailing OR online business? years

Thank you for your help

Section A: Online Business Characteristics

Q.1 Which one of the following categories best describes the product range of your online business?

- Food and Consumables
- Home: furnishing, electrical and electronics, DIY
- Health and Beauty
- Clothing, Footwear and Accessories
- Leisure and Entertainment: toys, hobbies, books, stationery, video /DVD/CD, periodicals
- Mixed product categories: department stores
- Other, -----

Q.2 Approximately how much is the annual turnover sales of your online business?

- £0 – 49 thousand
- £50 – 99 thousand
- £100 – 249 thousand
- £250 – 499 thousand
- £500 – 999 thousand
- £1 – 4 million
- £5 – 9 million
- £10 – 19 million
- £20 – 49 million
- £50 – 99 million
- £100 million and over

Q.3 Approximately, how many personnel does your company currently employ in your online business?

- 0 – 4 people
- 5 – 9 people
- 10 – 19 people
- 20 - 49 people
- 50 – 99 people
- 100 – 249 people
- 250 – 1000 people
- over 1000 people

Q.4 In addition to trading online, which of the following sales channels does your company currently utilise? *Please tick all the boxes that apply.*

- Fixed location store
- Mail/ Phone order

Q.5 How many years has your online business been established?

- Less than 2 years
- 2 – 4 years
- 5 – 10 years
- More than 10 years

Section B: Measuring Performance Indicators

Q.6 Please indicate for the following performance indicators which ones are measured for your online business; and for those which are measured, please indicate how frequently.

Please circle the appropriate options.

Performance indicators	Does your company measure this indicator?		How frequently?					How much detail?		
			Daily	Weekly	Monthly	Quarterly	Annually	By individual product	By product category	All products
Number of orders (transactions)	No	Yes →	D	W	M	Q	A	IP	PC	AP
Number of customers	No	Yes →	D	W	M	Q	A			
Total sales	No	Yes →	D	W	M	Q	A	IP	PC	AP
Market share	No	Yes →	D	W	M	Q	A	IP	PC	AP
Sales value per transaction	No	Yes →	D	W	M	Q	A			
Ratio of sales from overseas	No	Yes →	D	W	M	Q	A	IP	PC	AP
Acquisition cost	No	Yes →	D	W	M	Q	A			
Customer maintenance cost	No	Yes →	D	W	M	Q	A			
Cost of fulfilment	No	Yes →	D	W	M	Q	A	IP	PC	AP
Revenue per customer	No	Yes →	D	W	M	Q	A			
Revenue per transaction	No	Yes →	D	W	M	Q	A			
Profit margin	No	Yes →	D	W	M	Q	A	IP	PC	AP
Number of visits	No	Yes →	D	W	M	Q	A			
Unique visitors	No	Yes →	D	W	M	Q	A			
Page views	No	Yes →	D	W	M	Q	A			
Web-site's usability	No	Yes →	D	W	M	Q	A			
Web-site's information quality	No	Yes →	D	W	M	Q	A			
Web-site's service-interaction quality	No	Yes →	D	W	M	Q	A			
Conversion rate visitor to registration	No	Yes →	D	W	M	Q	A			
Conversion rate visitor to purchase	No	Yes →	D	W	M	Q	A			
Number of newsletter subscribers	No	Yes →	D	W	M	Q	A			
Customer churn (withdrawal) rate	No	Yes →	D	W	M	Q	A			
Repeated sales per customer	No	Yes →	D	W	M	Q	A	IP	PC	AP
Customer extension (buy another product category)	No	Yes →	D	W	M	Q	A	IP	PC	AP
On-time delivery (promise vs. actual)	No	Yes →	D	W	M	Q	A	IP	PC	AP
Online enquiry-to-response time	No	Yes →	D	W	M	Q	A			
Return notification-to-refund time	No	Yes →	D	W	M	Q	A	IP	PC	AP
Percentage of error in goods picked and delivered to customer	No	Yes →	D	W	M	Q	A			
Percentage of error in delivery destination	No	Yes →	D	W	M	Q	A			
Percentage of error in charge made to customer	No	Yes →	D	W	M	Q	A			
<i>Others, please specify</i>										
.....			D	W	M	Q	A			
.....			D	W	M	Q	A			
.....			D	W	M	Q	A			

Section C: Using Performance Measurement Results

Q.7 Please indicate the extent to which the information obtained from measuring performance indicators is used in the following types of decision. Please circle one number for each decision type.

Decision types	Not at all	A few decisions	About half	Most decisions	All decisions
In strategy decisions	1	2	3	4	5
In top level management decisions	1	2	3	4	5
In operational decisions	1	2	3	4	5
In pay reward decisions	1	2	3	4	5
In other personnel decisions	1	2	3	4	5

Q.8 Please indicate how frequently the information obtained from measuring performance indicators is used for the following managerial activities. Please circle one number for each item.

Managerial activities	Never	Occasi- onally	Half the time	Often	Always
To assess implementation of business strategy	1	2	3	4	5
To identify possible needs to change business strategy	1	2	3	4	5
To anticipate the future direction of the business	1	2	3	4	5
To compare (benchmark) with other retail channel within own company	1	2	3	4	5
To compare (benchmark) with direct competitors	1	2	3	4	5
To facilitate improvement of business operation	1	2	3	4	5
To assess performance of management and/ or staff	1	2	3	4	5
To determine reward for management and/ or staff	1	2	3	4	5
To provide report to shareholders	1	2	3	4	5
To provide report to the company/ head-office	1	2	3	4	5

Section D: Online Business Performance

Q.9 Please rate the extent to which you are satisfied with your online business performance for each of the following variables. Please circle one number for each item.

Performance	Somewhat satisfied				Very satisfied
Profitability	1	2	3	4	5
Sales growth	1	2	3	4	5
Customer retention	1	2	3	4	5
Superiority of fulfilment process	1	2	3	4	5
Quality of web-site	1	2	3	4	5

Section E: Online Business Orientation

Q.10 Please indicate the extent to which you agree, or disagree that each of the following statements applies to your online business. Please circle one number for each statement.

Online business orientation	Strongly disagree			Strongly agree	
We often sacrifice profitability to gain market share	1	2	3	4	5
We often cut prices to increase market share	1	2	3	4	5
We often set prices below competition	1	2	3	4	5
We often seek market share position at the expense of cash flow and profitability	1	2	3	4	5
We emphasise effective coordination among different functional areas	1	2	3	4	5
Our information systems provide support for decision making	1	2	3	4	5
When confronted with a major decision, we usually try to develop through analysis	1	2	3	4	5
We use several planning techniques	1	2	3	4	5
We use the outputs of management information and control systems	1	2	3	4	5
We commonly use human resource planning and performance appraisal of senior managers	1	2	3	4	5
We occasionally conduct significant modifications to online retail operation technology	1	2	3	4	5
We often use cost control systems for monitoring performance	1	2	3	4	5
We often use operation management techniques	1	2	3	4	5
We often emphasise service quality through use of quality circles	1	2	3	4	5
Our criteria for resource allocation generally reflect short-term considerations	1	2	3	4	5
We emphasise research to provide us with future competitive edge	1	2	3	4	5
Forecasting key indicators of online business operations is common	1	2	3	4	5
Formal tracking of significant general trends is common	1	2	3	4	5
We often conduct 'what if' analyses of critical issues	1	2	3	4	5
We are constantly seeking new opportunities related to present online business operations	1	2	3	4	5
We are usually the first to introduce new services, products or brands in the market	1	2	3	4	5
We are constantly on the look out for businesses that can be acquired	1	2	3	4	5
Competitors generally pre-empt us by expanding capacity ahead of them	1	2	3	4	5
Operations in later stages of life cycle are strategically eliminated	1	2	3	4	5
Our online business operations can be generally characterized as high-risk	1	2	3	4	5
We seem to adopt a rather conservative view when making major decisions	1	2	3	4	5
New projects are approved on a 'stage-by-stage' basis rather than with 'blanket' approval	1	2	3	4	5
We have a tendency to support projects where the expected returns are certain	1	2	3	4	5
Our online business operations have generally followed the 'tried and true' paths	1	2	3	4	5

Appendix G: Final questionnaire

Performance Measurement in the Online Retailing Business

GENERAL INFORMATION

1. All individual responses to this questionnaire will be kept **STRICTLY CONFIDENTIAL**. The data of this survey will be presented in an aggregated form; **NO** single company's information will be disclosed.
 2. This questionnaire will ask you about your **ONLINE / INTERNET RETAILING BUSINESS ONLY**. Please refer **only** to your **online / Internet retailing** business even though your company has in-store or mail order shopping. If your company only operates online (dotcoms), your answer should represent the entire company.
 3. Please return the completed questionnaire using the self-addressed envelope provided.
 4. **A copy of the findings** is available to all respondents who complete the questionnaire.
 5. Every questionnaire completed will have the chance to win a **lucky draw of £200 cash prize**.
 6. If you would like a copy of the findings and / or wish to enter the £200 prize draw, please enter your details at the end of this questionnaire.
-

Information about you

1. What is your current position in your company?

- Owner / Proprietor / Partner Chief Executive / Managing Director
 Senior Manager Manager
 Other. Please specify:

2. How many years have you been in the retailing OR online business? years

Section A: Characteristics of Your ONLINE BUSINESS

Q.1 Which of the following categories best describes the product range of your online business?
Please tick one box only in 'main category' column and all the boxes that apply in 'subsidiary category' column.

Main category	Subsidiary category
<input type="checkbox"/> Grocery	<input type="checkbox"/>
<input type="checkbox"/> Alcohol and Beverages	<input type="checkbox"/>
<input type="checkbox"/> Clothing and Accessories	<input type="checkbox"/>
<input type="checkbox"/> Footwear	<input type="checkbox"/>
<input type="checkbox"/> Jewellery	<input type="checkbox"/>
<input type="checkbox"/> Furnishing	<input type="checkbox"/>
<input type="checkbox"/> Electrical Goods	<input type="checkbox"/>
<input type="checkbox"/> DIY and Gardening	<input type="checkbox"/>
<input type="checkbox"/> Sports Goods	<input type="checkbox"/>
<input type="checkbox"/> Toys and Hobbies	<input type="checkbox"/>
<input type="checkbox"/> Books and Stationery	<input type="checkbox"/>
<input type="checkbox"/> Video / DVD / CD and Software	<input type="checkbox"/>
<input type="checkbox"/> Health & Beauty	<input type="checkbox"/>
<input type="checkbox"/> <i>Other. Please specify:</i>	<input type="checkbox"/>
.....	

Q.2 Approximately, how much are the annual sales turnover of your online business?
Please tick one box only.

- Less than £50 thousand
- £50 – 99 thousand
- £100 – 249 thousand
- £250 – 499 thousand
- £500 – 999 thousand
- £1 – 4 million
- £5 – 9 million
- £10 – 19 million
- £20 – 49 million
- £50 – 99 million
- £100 million or more

Q.3 Approximately, how many people does your company currently employ in your online business? *Please tick one box only.*

- Fewer than 5 people
- 5 – 9 people
- 10 – 19 people
- 20 – 49 people
- 50 – 99 people
- 100 – 249 people
- 250 – 1000 people
- More than 1000 people

Q.4 In addition to trading online, does your company do business through the following sales channels?

- | | | |
|----------------------|------------------------------|-----------------------------|
| Fixed location store | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Mail/ Phone order | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

Q.5 How many years has your online business been established? *Please tick one box only.*

- Less than 2 years
- 2 – 4 years
- 5 – 10 years
- More than 10 years

Section B: Performance Indicators Measured for Your ONLINE BUSINESS

Q.6 Please indicate for the following performance indicators which ones are measured for your online business; and for those which are measured, please indicate how frequently.
Please circle one option of frequency for each performance indicator measured.

Performance indicators	Does your company measure this indicator?		If 'Yes', how frequently is it measured?				
			Daily	Weekly	Monthly	Quarterly	Annually
1. Number of orders (transactions)	No	Yes	D	W	M	Q	A
2. Number of customers	No	Yes	D	W	M	Q	A
3. Total sales	No	Yes	D	W	M	Q	A
4. Market share	No	Yes	D	W	M	Q	A
5. Sales value per transaction	No	Yes	D	W	M	Q	A
6. Ratio of sales from overseas	No	Yes	D	W	M	Q	A
7. Acquisition cost	No	Yes	D	W	M	Q	A
8. Customer maintenance cost	No	Yes	D	W	M	Q	A
9. Cost of fulfilment	No	Yes	D	W	M	Q	A
10. Revenue per customer	No	Yes	D	W	M	Q	A
11. Revenue per transaction	No	Yes	D	W	M	Q	A
12. Profit margin	No	Yes	D	W	M	Q	A
13. Number of visits	No	Yes	D	W	M	Q	A
14. Unique visitors	No	Yes	D	W	M	Q	A
15. Page views	No	Yes	D	W	M	Q	A
16. Website's usability	No	Yes	D	W	M	Q	A
17. Website's information quality	No	Yes	D	W	M	Q	A
18. Website's service-interaction quality	No	Yes	D	W	M	Q	A
19. Conversion rate visitor to registration	No	Yes	D	W	M	Q	A
20. Conversion rate visitor to purchase	No	Yes	D	W	M	Q	A
21. Number of newsletter subscribers	No	Yes	D	W	M	Q	A
22. Customer churn (withdrawal) rate	No	Yes	D	W	M	Q	A
23. Repeated sales per customer	No	Yes	D	W	M	Q	A
24. Customer extension (buy another product category)	No	Yes	D	W	M	Q	A
25. On-time delivery (promised vs. actual)	No	Yes	D	W	M	Q	A
26. Online enquiry-to-response time	No	Yes	D	W	M	Q	A
27. Return notification-to-refund time	No	Yes	D	W	M	Q	A
28. Percentage of error in goods picked and delivered to customer	No	Yes	D	W	M	Q	A
29. Percentage of error in delivery destination	No	Yes	D	W	M	Q	A
30. Percentage of error in charge made to customer	No	Yes	D	W	M	Q	A
<i>Other. Please specify:</i>							
.....			D	W	M	Q	A
.....			D	W	M	Q	A
.....			D	W	M	Q	A

Section C: Using Performance Measurement Results of Your ONLINE BUSINESS

Q.7 Please indicate the extent to which the information obtained from measuring performance indicators (Q.6) is used in the following types of decision. Please circle one number for each type of decision.

Types of decision	Not at all	A few decisions	About half	Most decisions	All decisions
1. In strategy decisions	1	2	3	4	5
2. In top level management decisions	1	2	3	4	5
3. In operational decisions	1	2	3	4	5
4. In pay reward decisions	1	2	3	4	5
5. In other personnel decisions	1	2	3	4	5

Q.8 Please indicate how frequently the information obtained from measuring performance indicators (Q.6) is used for the following managerial activities. Please circle one number for each item.

Managerial activities	Never	Occasionally	Half the time	Often	Always
1. To assess implementation of business strategy	1	2	3	4	5
2. To identify possible needs to change business strategy	1	2	3	4	5
3. To anticipate the future direction of the business	1	2	3	4	5
4. To compare (benchmark) with other retail channels within own company	1	2	3	4	5
5. To compare (benchmark) with direct competitors	1	2	3	4	5
6. To facilitate improvement of business operations	1	2	3	4	5
7. To assess performance of management and / or staff	1	2	3	4	5
8. To determine reward for management and / or staff	1	2	3	4	5
9. To provide reports to shareholders	1	2	3	4	5
10. To provide reports to the company / head-office	1	2	3	4	5

Section D: Performance of Your ONLINE BUSINESS

Q.9 Please rate the extent to which you are satisfied with your online business performance in each of the following measures. Please circle one number for each item.

Performance	Very dissatisfied ←-----→ Very satisfied									
1. Profitability	1	2	3	4	5	6	7	8	9	10
2. Sales growth	1	2	3	4	5	6	7	8	9	10
3. Customer retention	1	2	3	4	5	6	7	8	9	10
4. Superiority of fulfilment process	1	2	3	4	5	6	7	8	9	10
5. Quality of website	1	2	3	4	5	6	7	8	9	10

Section E: Orientation of Your ONLINE BUSINESS

Q.10 Please indicate the extent to which you agree or disagree with each of the following statements that applies to your online business. Please circle one number for each statement.

Online business orientation	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
1. We often sacrifice profitability to gain market share	1	2	3	4	5
2. We often cut prices to increase market share	1	2	3	4	5
3. We often set prices below competition	1	2	3	4	5
4. We often seek market share position at the expense of cash flow and profitability	1	2	3	4	5
5. We emphasise effective coordination among different functional areas	1	2	3	4	5
6. Our information systems provide support for decision making	1	2	3	4	5
7. When confronted with a major decision, we usually try to develop through analysis	1	2	3	4	5
8. We use several planning techniques	1	2	3	4	5
9. We use the outputs of management information and control systems	1	2	3	4	5
10. We commonly use human resource planning and performance appraisal of senior managers	1	2	3	4	5
11. We occasionally conduct significant modifications to online retail operation technology	1	2	3	4	5
12. We often use cost control systems for monitoring performance	1	2	3	4	5
13. We often use operation management techniques	1	2	3	4	5
14. We often emphasise service quality through use of quality circles	1	2	3	4	5
15. Our criteria for resource allocation generally reflect short-term considerations	1	2	3	4	5
16. We emphasise research to provide us with future competitive edge	1	2	3	4	5
17. Forecasting key indicators of online business operations is common	1	2	3	4	5
18. Formal tracking of significant general trends is common	1	2	3	4	5
19. We often conduct 'what if' analyses of critical issues	1	2	3	4	5
20. We are constantly seeking new opportunities related to present online business operations	1	2	3	4	5
21. We are usually the first to introduce new services, products or brands in the market	1	2	3	4	5
22. We are constantly on the look out for businesses that can be acquired	1	2	3	4	5
23. Competitors generally pre-empt us by expanding capacity ahead of us	1	2	3	4	5
24. Operations in later stages of life cycle are strategically eliminated	1	2	3	4	5
25. Our online business operations can be generally characterised as high-risk	1	2	3	4	5
26. We seem to adopt a rather conservative view when making major decisions	1	2	3	4	5
27. New projects are approved on a 'stage-by-stage' basis rather than with 'blanket' approval	1	2	3	4	5
28. We have a tendency to support projects where the expected returns are certain	1	2	3	4	5
29. Our online business operations have generally followed the 'tried and true' paths	1	2	3	4	5

If you would like to make any comment regarding this research, please use the space provided below.

Would you like to participate further in this research?

- Yes No

If you would like to receive a copy of the findings as well as to enter a lucky draw of £200 cash prize, please write your details.

Name :

Address :
.....
.....

E-mail :

Please return the completed questionnaire in the enclosed envelope

Thank you for your participation

Appendix H: Cover Letters

- 1. First cover letter**
- 2. Follow-up cover letter**

«Director_Full_Name_1»
«Director_Position_1»
«Company_name»
«Address_Line_1____»
«Address_Line_2____»
«Address_Line_3____»
«Post_Town____»
«Full_Postcode____»

«Date»

Dear «Dear»,

Performance Measurement in Online Retailing Business

Performance measurement is an important part of successful business strategy development and implementation. However, there is surprisingly little empirical evidence about the impact of performance measurement and how it affects the success of online retailing.

We are writing to invite your participation in a study which is investigating the current state and effects of performance measurement in online retailing businesses in the U.K. The findings aim to help online business practitioners:

- to compare their online business against others;
- to understand how performance measurement and business strategy are linked to the business performance;
- to select appropriate performance indicators for their online business;
- to optimise the use of information obtained from measuring performance.

We would ask you to participate in this study by completing the enclosed questionnaire, which should take no longer than 5 minutes. We assure you that all responses to the questionnaire will be treated in the strictest confidence, and no record will be kept to link a specific set of responses to your organisation.

The findings of this study will be available to you after completion of the analysis.

If you have any queries regarding this study, please do not hesitate to contact us. Thank you for your co-operation. Your support is greatly appreciated.

Yours «Yours»,

George Gunawan
Researcher
Ph. (01509) 223239 Fax. (01509) 223960
E-mail: G.Gunawan@lboro.ac.uk

Prof. Malcolm King - *Project supervisor*

Dr. Fiona Ellis-Chadwick - *Project supervisor*

«Director_Full_Name_1»
«Director_Position_1»
«Company_name»
«Address_Line_1___»
«Address_Line_2___»
«Address_Line_3___»
«Post_Town___»
«Full_Postcode___»

«Date»

Dear «Dear»,

Performance Measurement in Online Retailing Business

About two weeks ago, we mailed you a questionnaire designed to study performance measurement implemented by online retailing business in the U.K. If you have already completed and returned the questionnaires to us, please accept our sincere thanks. If not, we would be very grateful if you would consider participating in this study.

The study aims to help online business practitioners:

- to compare their online business against others;
- to understand how performance measurement and business strategy are linked to the business performance;
- to select appropriate performance indicators for their online business;
- to optimise the use of information obtained from measuring performance.

We would be very grateful if you could spare about 5 minutes to complete the enclosed questionnaire. We are well aware that we are imposing on your busy schedule, but your response will be very helpful to understand this online business sector. May we also take the opportunity to reassure you that all responses to the questionnaire will be treated in the **strictest confidence**, and no record will be kept to link a specific set of responses to your organisation.

The findings of this study will be available to you after completion of the analysis.

If you have any queries regarding this study, please do not hesitate to contact us. Thank you for your co-operation. Your support is greatly appreciated.

Yours «Yours»,

George Gunawan
Researcher
Ph. (01509) 223239 Fax. (01509) 223960
E-mail: G.Gunawan@lboro.ac.uk

Prof. Malcolm King - *Project supervisor*

Dr. Fiona Ellis-Chadwick - *Project supervisor*

Appendix I: Overview of statistical techniques

1. t-test and ANOVA

A one-way ANOVA is a univariate statistical technique used to compare the means of more than two groups or levels of an independent variable. This analysis technique produces a variance ratio referred to as F-ratio. This ratio looks at the variability in the scores between the conditions compared to the variability in the scores due to random factors or error (Hinton et al., 2004, p.164). A significant F value in ANOVA tells that there is a difference somewhere among groups, but a further, post hoc, multiple comparison test needs to be employed to find out exactly which conditions (groups) are producing the effect. There are different post hoc tests, each of which has advantages and disadvantages. Tukey test is often recommended because it controls the overall Type I error (reject a null hypothesis, which in fact is true) rate and it is reasonably powerful (Hinton et al., 2004, p.169). The two assumptions of concern for ANOVA are:

1. Population normality – population from which the samples have been drawn should be normal.
2. Homogeneity of variance – the scores in each group should have homogeneous variance. Levene's test will determine whether variances are equal or unequal.

2. Bivariate Correlations

Bivariate correlation concerns with a relationship between two variables. If two variables are related, it means that there is a relationship between two variables when the distribution of values for one variable is associated with the distribution exhibited by another variable. In other words, the variation exhibited by one variable is patterned in such a way that its variance is not randomly distributed in relation to the other variable.

Correlation is a quantitative index, a standard statistical measurement of the degree of linear relationship between two sets of numbers (variables) to describe how closely they are related to one another. When working with quantities (ratio), correlations provide precise measurements; when working with rating scales,

correlations provide general indications. The index of correlation which is most widely used is the Pearson product-moment correlation coefficient (or Pearson correlation coefficient). This coefficient is reported as 'r', with values lying between -1 and +1. One old classic and typical interpretation of 'r' uses five easy 'rules of thumb' as follows:

- 0.0 – 0.2 : no or negligible correlation
- 0.2 – 0.4 : low degree of correlation
- 0.4 – 0.6 : moderate degree of correlation
- 0.6 – 0.8 : marked degree of correlation
- 0.8 – 1.0 : high correlation.

The square of the coefficient ('r²') is often used to interpret 'r' value. This 'r²' equals the percentage of the variation in one variable that is related to the variation in the other. An 'r' of 0.5 means 25% of the variation is related.

There are some warnings in using correlation. Firstly, it should not be assumed that a correlation means 'a change in one variable causes a change in another'. Secondly, Pearson correlation technique works best with linear relationships; it does not work well with curvilinear relationships (in which the relationship does not follow a straight line).

There are a number of underlying assumptions for the correlation analysis:

1. Related pairs – data must be collected from related pairs; if there is a score on variable-1, there must also be a score on a variable-2.
2. Scale of measurement – data should be interval or ratio in nature.
3. Normality – scores for each variable should be normally distributed.
4. Linearity – relationship between the two variables must be linear.
5. Homoscedasticity – variability in scores for one variable is roughly the same at all values of the other variable. That is, it is concerned with how the scores cluster uniformly about the regression line.

3. Factor Analysis

There are three main issues to be considered in doing factor analysis: (1) appropriateness of the data, (2) extraction and rotation method, and (3) reliability analysis. Each of them is explained briefly in the next paragraphs.

Appropriateness of the data for factor analysis is examined using three criteria. Firstly, the data should show a significant number of correlations greater than 0.3 among variables, and the determinant score should be greater than 0.0001. Secondly, the result of the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy test should be 0.5 or higher in order the data are suitable for factor analysis (Hinton et al., 2004, p.342). Thirdly, Bartlett test of sphericity should be significant at 0.05. This Bartlett test provides the statistical probability that the correlation matrix has significant correlations among at least some of the variables.

There are three main issues regarding extraction and rotation method. Firstly, principal component analysis (PCA) rather than common factor analysis (CFA) is used in this study. The reason is that PCA is commonly used as a variable reducing scheme and this method is conceptually less complex than CFA. PCA is concerned only with establishing which linear components exist within the data and how a particular variable might contribute to a component.

The second issue about rotation is the decision regarding the number of factors to extract. There are three guidelines most frequently used in deciding which factors to include or exclude. The first is the percentage of variance criterion. In the area of social sciences, it is common to keep enough factors that account for (at least) 60 per cent of the total variance (Hair, 1998, p.104). The second, known as Kaiser's criterion, is to drop all components with eigenvalues less than 1. The Kaiser criterion has been recommended for situations where the number of variables is less than 30 and the average communality is greater than 0.70, or when the number of participants is greater than 250 and the mean communality is greater than or equal to 0.60 (Stevens, 2002). The third is the Scree test criterion proposed by Cattell (1966). Cattell's scree test plots the number of factors (components) as the X axis, and the corresponding eigenvalues as the Y axis. Starting with the first factor, the plot slopes

steeply downward initially and then slowly becomes an approximately horizontal line. The recommendation is to retain all eigenvalues (and hence components) in the sharp descent *before* the first one on the line where they start to level off (Stevens, 2002, p.389). A more recent study suggested that for the sample size > 250 and a mean communality ≥ 0.60 , either the Kaiser or Scree rules will produce an accurate estimate for the number of true factor (Stevens, 2002, p.390). In addition, it is suggested that this estimation is more credible if the Q/P ratio is < 0.30 (P is the number of variables and Q is the number of factors).

The third issue is about the rotation method, whether orthogonal or oblique rotation is appropriate. Orthogonal rotation is used with the assumption that all factors are independent (uncorrelated). Conversely, oblique rotation is used with the assumption that the factors are correlated (Field, 2005, p.635). It is suggested to apply oblique rotation and to look at the result of the component correlation matrix (Field, 2005, p.636). If the matrix shows a negligible correlation between the extracted factors, the orthogonal rotation is reasonable. If the result shows a correlated factor structure, then the orthogonal rotation is not appropriate.

Reliability analysis measures if a scale consistently reflects the construct it is measuring. It should be applied to items within each factor. The prominent measure for reliability is Cronbach's alpha, α . It is suggested that Cronbach's α should be greater than 0.6 or 0.7 for a scale to be reliable. However, this guideline should be used with caution because the value of α depends on the number of items on the scale (Cortina, 1993). As the number of items on the scale increases, α will increase.

4. Regression

Regression analysis is used to predict a continuous dependent variable from a number of independent variables. With regression analysis, causal relationships among the variables cannot be determined. While it can be said that X "predicts" Y, it cannot be said that X "causes" Y. If only one independent variable is involved, this method is called simple linear regression, and if more than, it is called multiple regression.

Multiple regression analysis is a statistical technique that can be used to analyse the relationship between a single dependent variable and several independent variables (Hair et al., 1998, p.148). The objective of multiple regression analysis is to use the independent variables whose values are known to predict the single dependent value. Multiple regression analysis is used when independent variables are correlated with one another and with the dependent variable (Coakes and Steed, 2000, p.172). The result of regression is an equation that represents the best prediction of a dependent variable from several *weighted* independent variables. The weights denote the relative contribution of the dependent variables to the overall prediction. They indicate that some independent variables are more important than others in predicting variation in the dependent variable, and some will have almost no influence at all (Hinton et al, 2004, p.322).

There are three major regression models, namely standard or simultaneous regression, hierarchical regression, and stepwise regression. In the standard or simultaneous model, all independent variables enter the regression equation at once because the purpose is to examine the relationship between the whole set of predictors and the dependent variable. In the hierarchical method, the researcher determines the order of entry of the independent variables based on theoretical knowledge. In stepwise regression, the number of independent variables entered and the order of entry are determined by statistical criteria generated by the stepwise procedure.

A number of assumptions underpin the use of regression:

1. Ratio of cases to independent variables – the minimum requirement is to have at least five times more cases than independent variables.
2. Outliers – extreme cases have considerable impact on the regression solution and should be deleted or modified to reduce their influence.
3. Multicollinearity and singularity – multicollinearity refers to high correlations among the independent variables, whereas singularity occurs when perfect correlations exist among independent variables.

4. Normality, linearity, homoscedasticity and independence of residuals – it is assumed that the differences between the obtained and predicted dependent variable scores are normally distributed.

Appendix J: Linearity and normality tests

1. Regression: two SO dimensions and PI

The following two figures refer to the assumption of the regression analysis. First, the scatter plot (Figure J-1) of standardised residual against standardised predicted values shows that the points are randomly and evenly dispersed throughout the plot. This pattern indicates that the assumption of linearity and homoscedasticity have been met (Coakes and Steed, 2000; Field, 2005).

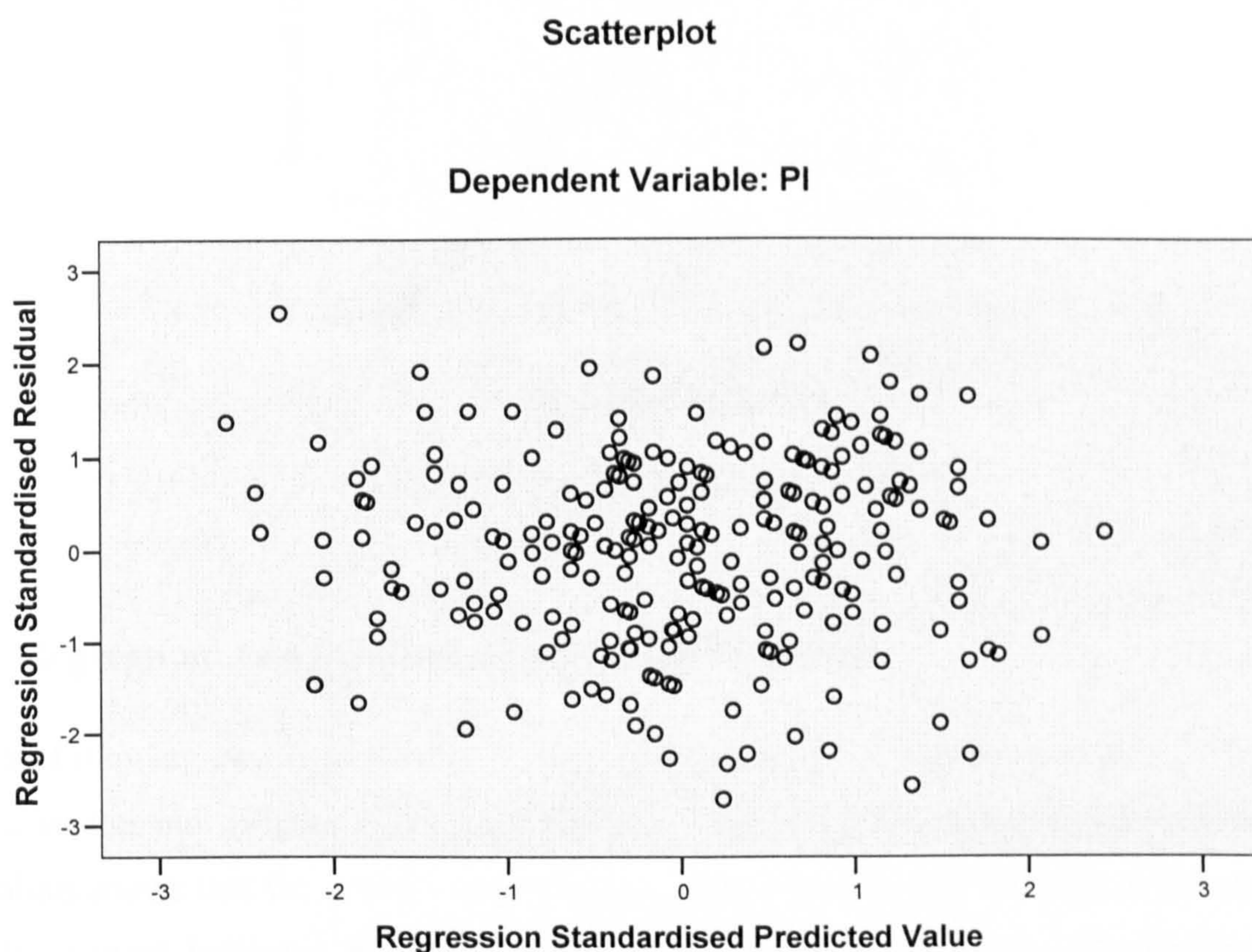


Figure J-1: Scatter plot: SO – PI

Second, Figure J-2 presents the normal plot of regression standardised residuals for the dependent variable. The straight line represents a normal distribution, and the points represent the observed residuals. As the points are close to the straight line, the figure indicates that the assumption of normality of residuals is met (Coakes and Steed, 2000; Field, 2005).

Normal P-P Plot of Regression Standardised Residual

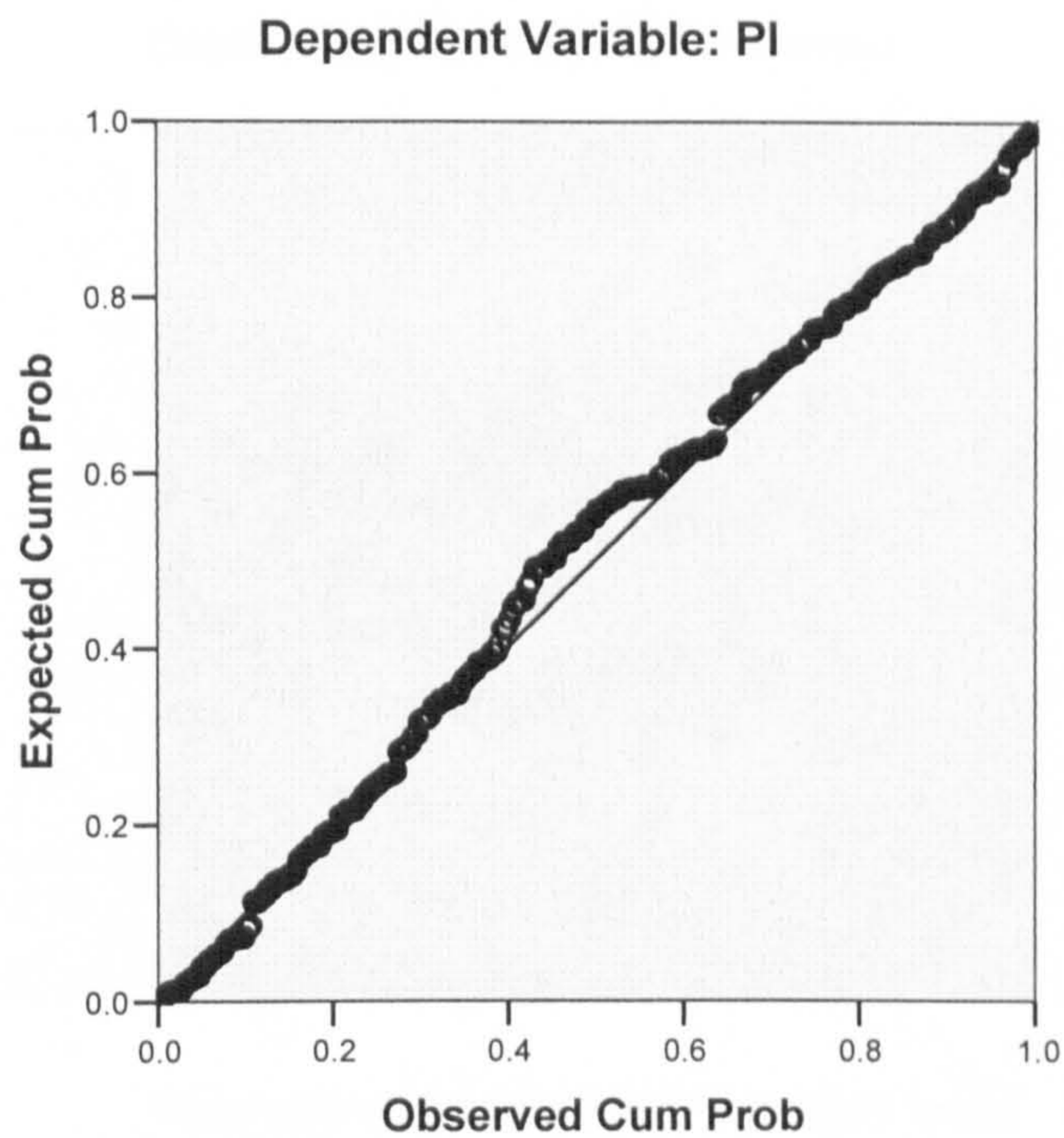


Figure J-2: Normal P-P plot: SO – PI

2. Regression: two SO dimensions and BP financial

The following two figures refer to the assumption of the regression analysis. First, the scatter plot (Figure J-3) of standardised residual against standardised predicted values shows that the points are randomly and evenly dispersed throughout the plot. This pattern indicates that the assumption of linearity and homoscedasticity have been met (Coakes and Steed, 2000; Field, 2005).

Scatterplot

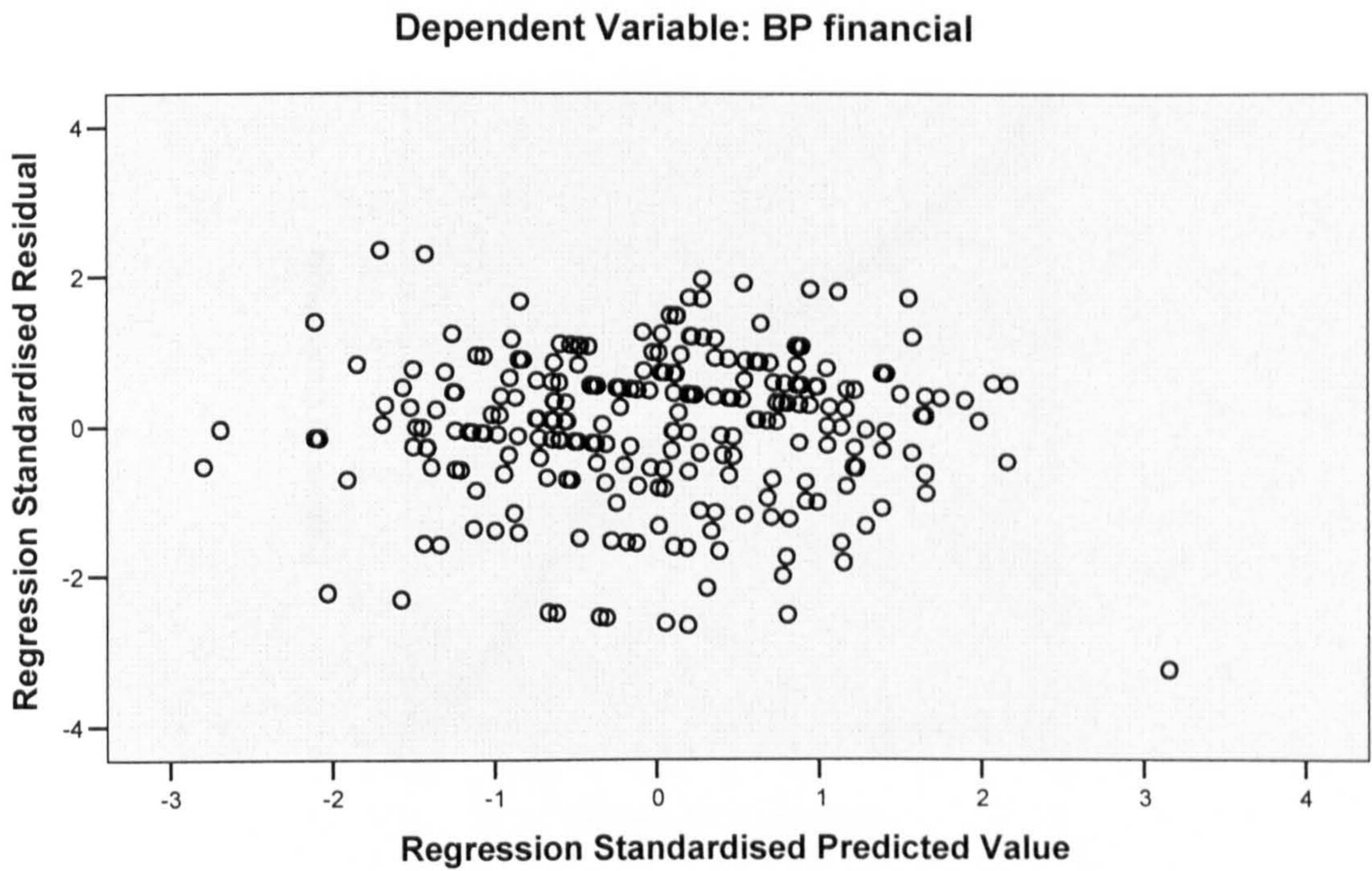


Figure J-3: Scatter plot: SO – BP financial

Second, Figure J-4 presents the normal plot of regression standardised residuals for the dependent variable. The straight line represents a normal distribution, and the points represent the observed residuals. As the points are close to the straight line, the figure indicates that the assumption of normality of residuals is met (Coakes and Steed, 2000; Field, 2005).

Normal P-P Plot of Regression Standardised Residual

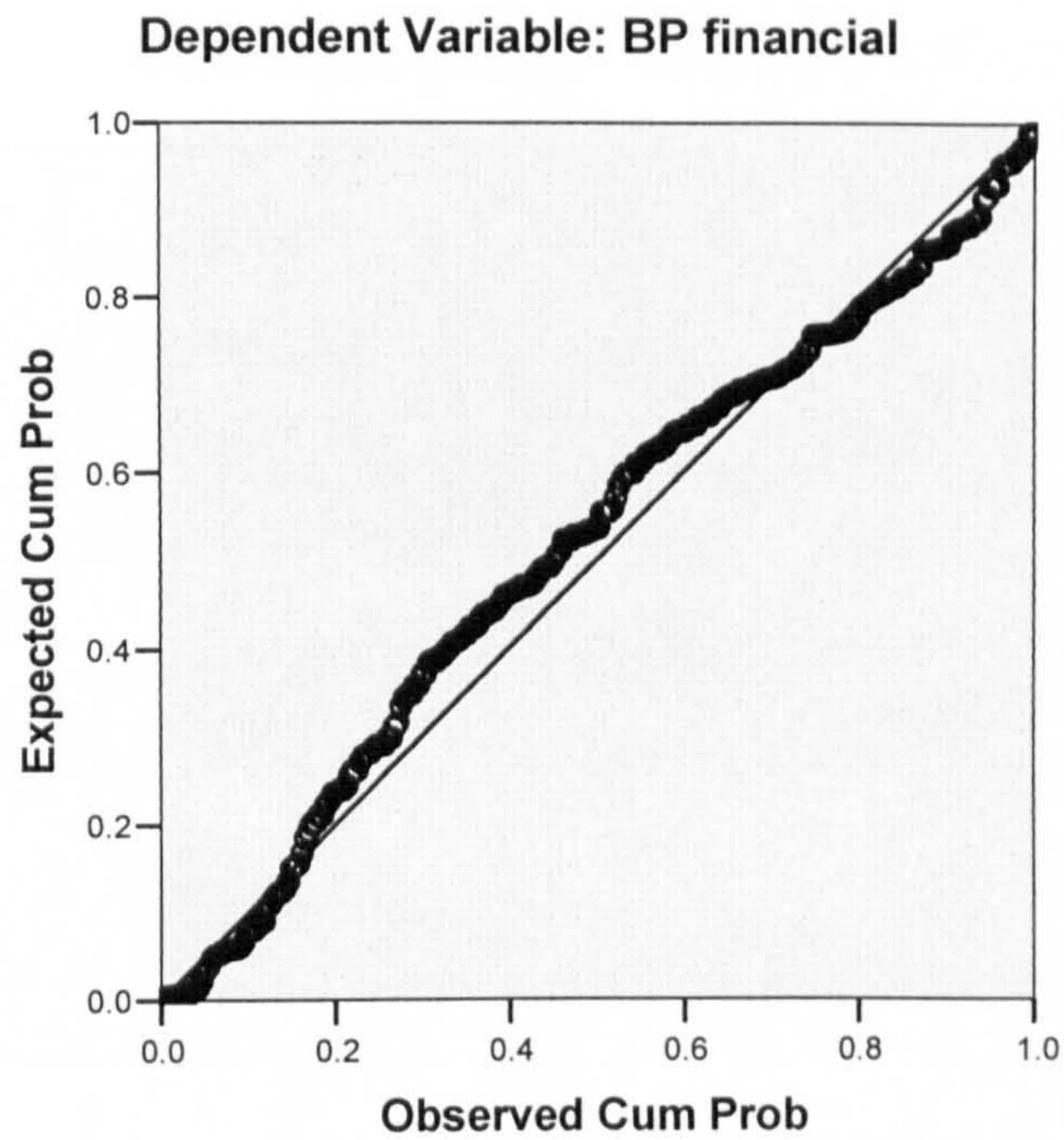


Figure J-4: Normal P-P plot: SO – BP financial

3. Regression: two SO dimensions and BP operational

The following two figures refer to the assumption of the regression analysis. First, the scatter plot (Figure J-5) of standardised residual against standardised predicted values shows that the points are randomly and evenly dispersed throughout the plot. This pattern indicates that the assumption of linearity and homoscedasticity have been met (Coakes and Steed, 2000; Field, 2005).

Scatterplot

Dependent Variable: BP operational

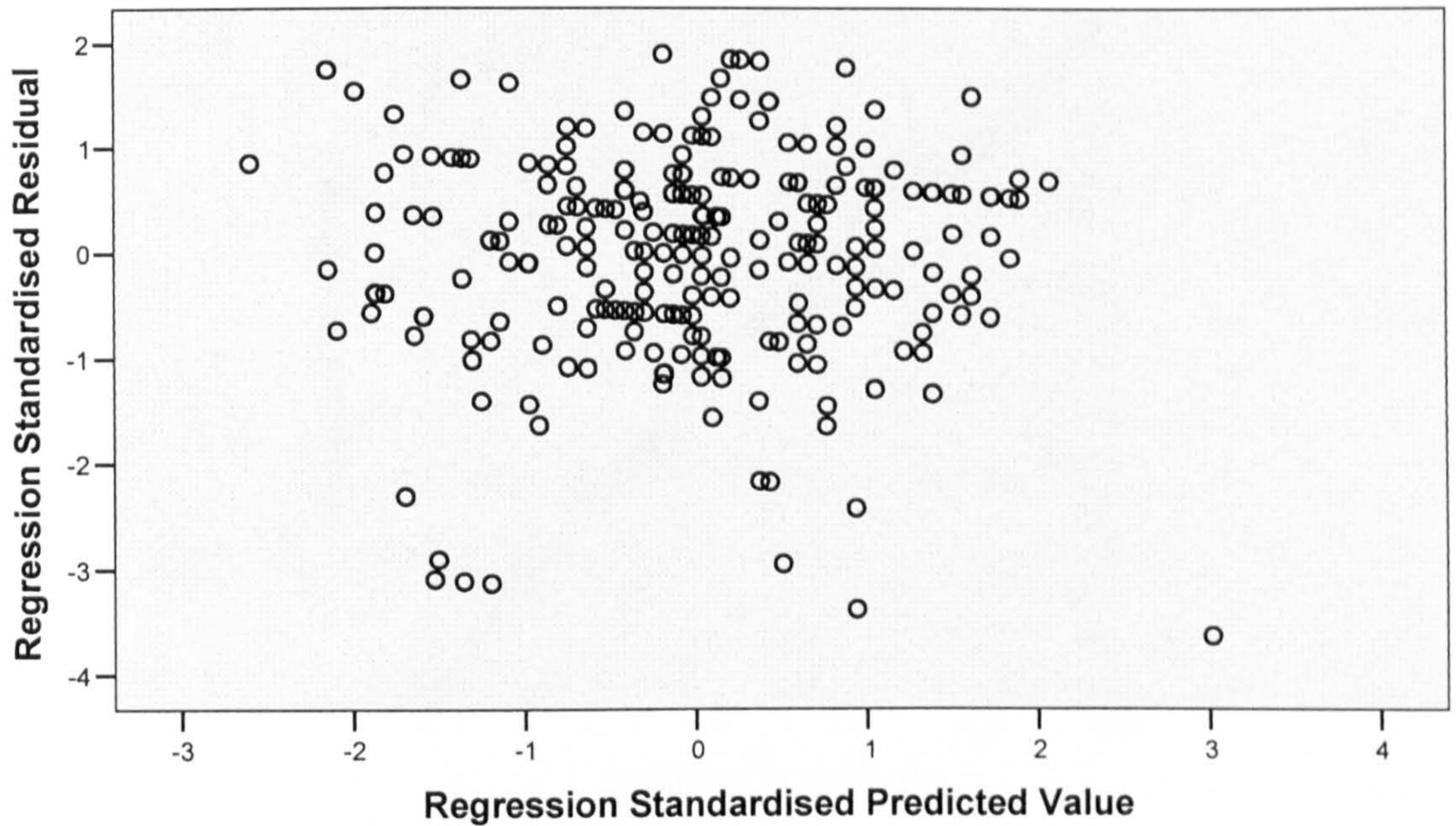


Figure J-5: Scatter plot: SO – BP operational

Second, Figure J-6 presents the normal plot of regression standardised residuals for the dependent variable. The straight line represents a normal distribution, and the points represent the observed residuals. As the points are close to the straight line, the figure indicates that the assumption of normality of residuals is met (Coakes and Steed, 2000; Field, 2005).

Normal P-P Plot of Regression Standardised Residual

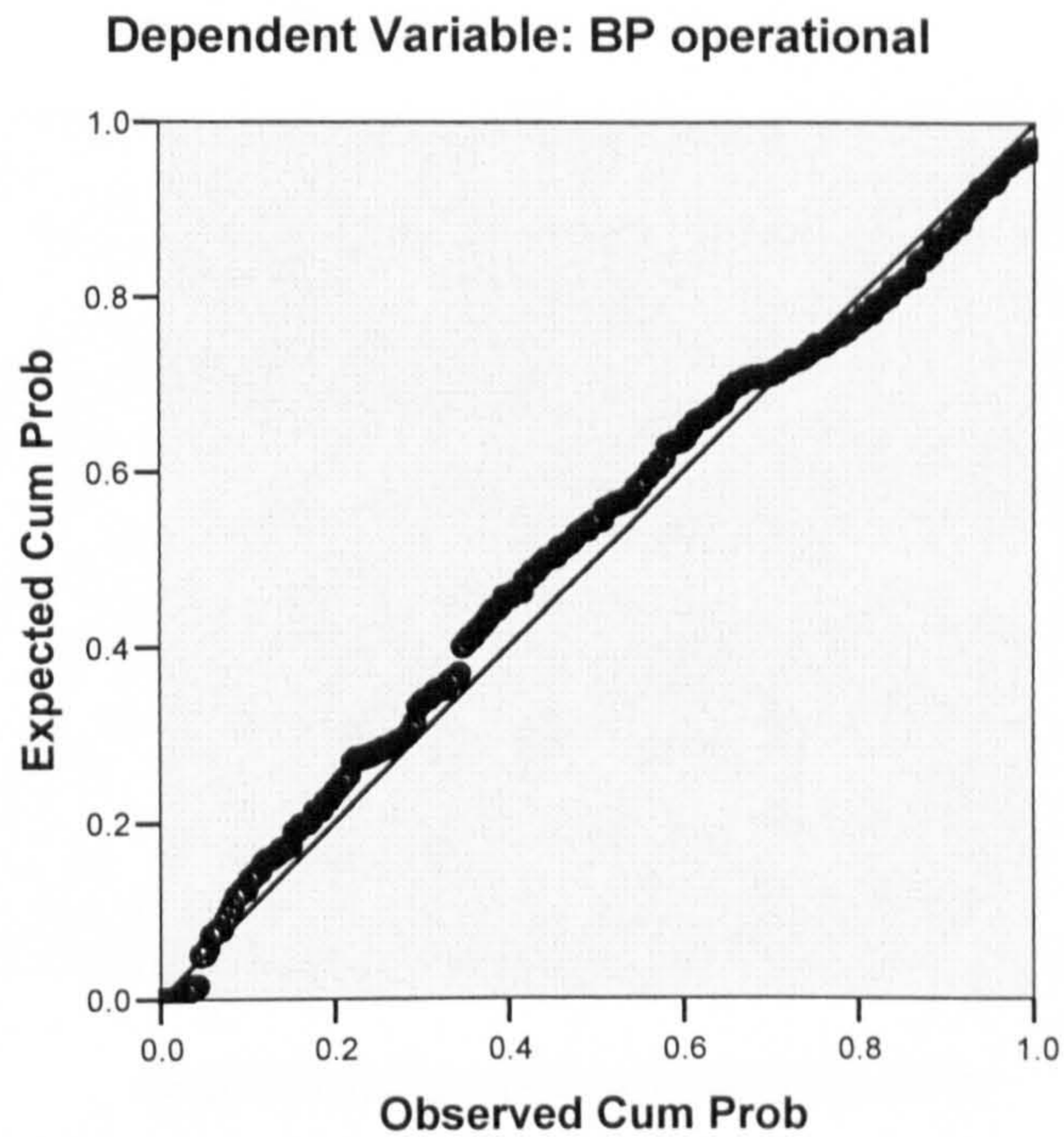


Figure J-6: Normal P-P plot: SO – PI

4. Regression: PI and BP financial

The following two figures refer to the assumption of the regression analysis. First, the scatter plot (Figure J-7) of standardised residual against standardised predicted values shows that the points are randomly and evenly dispersed throughout the plot. This pattern indicates that the assumption of linearity and homoscedasticity have been met (Coakes and Steed, 2000; Field, 2005).

Scatterplot

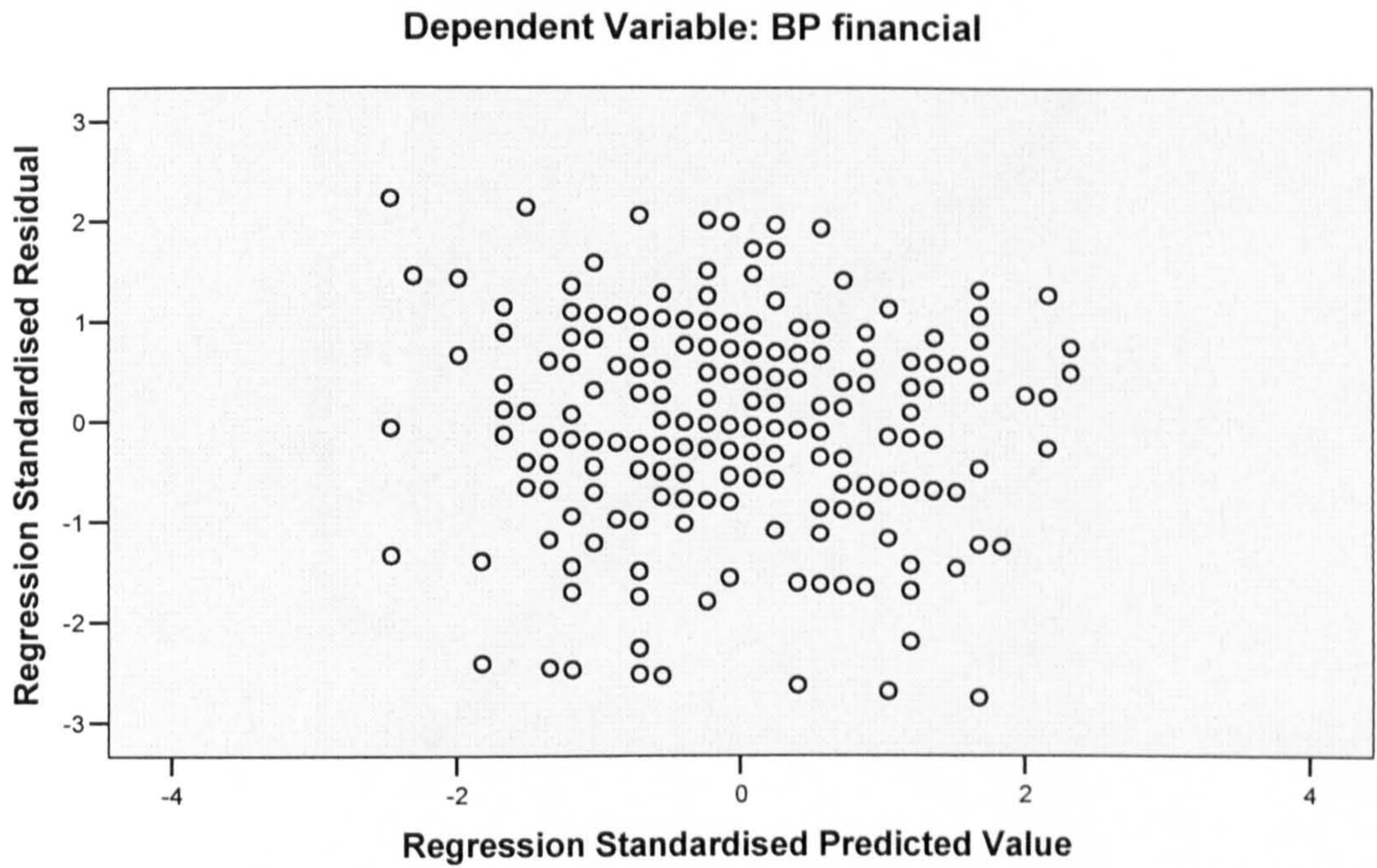


Figure J-7: Scatter plot: PI – BP financial

Second, Figure J-8 presents the normal plot of regression standardised residuals for the dependent variable. The straight line represents a normal distribution, and the points represent the observed residuals. As the points are close to the straight line, the figure indicates that the assumption of normality of residuals is met (Coakes and Steed, 2000; Field, 2005).

Normal P-P Plot of Regression Standardised Residual

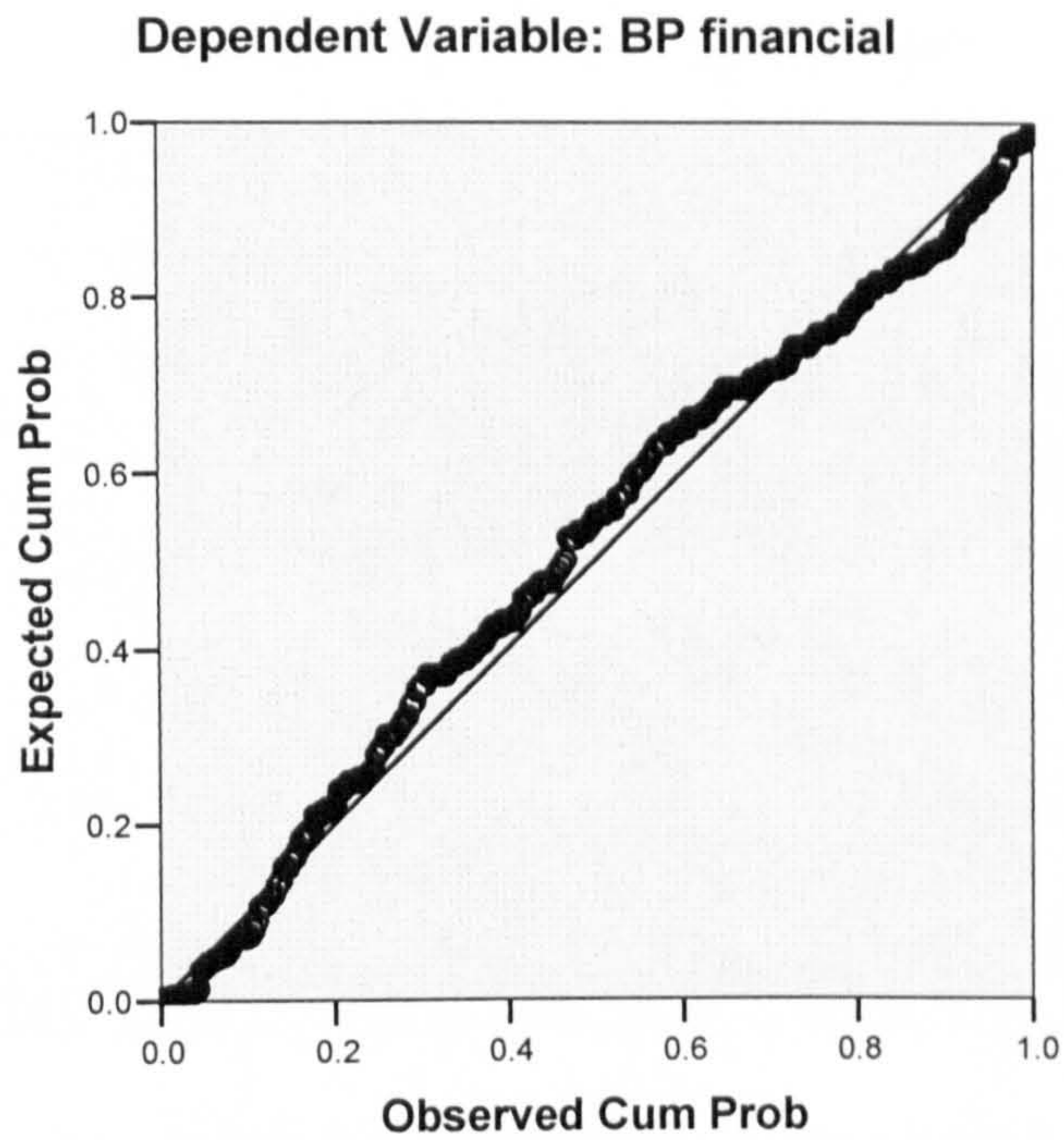


Figure J-8: Normal P-P plot: PI – BP financial

5. Regression: PI and BP operational

The following two figures refer to the assumption of the regression analysis. First, the scatter plot (Figure J-9) of standardised residual against standardised predicted values shows that the points are randomly and evenly dispersed throughout the plot. This pattern indicates that the assumption of linearity and homoscedasticity have been met (Coakes and Steed, 2000; Field, 2005).

Scatterplot

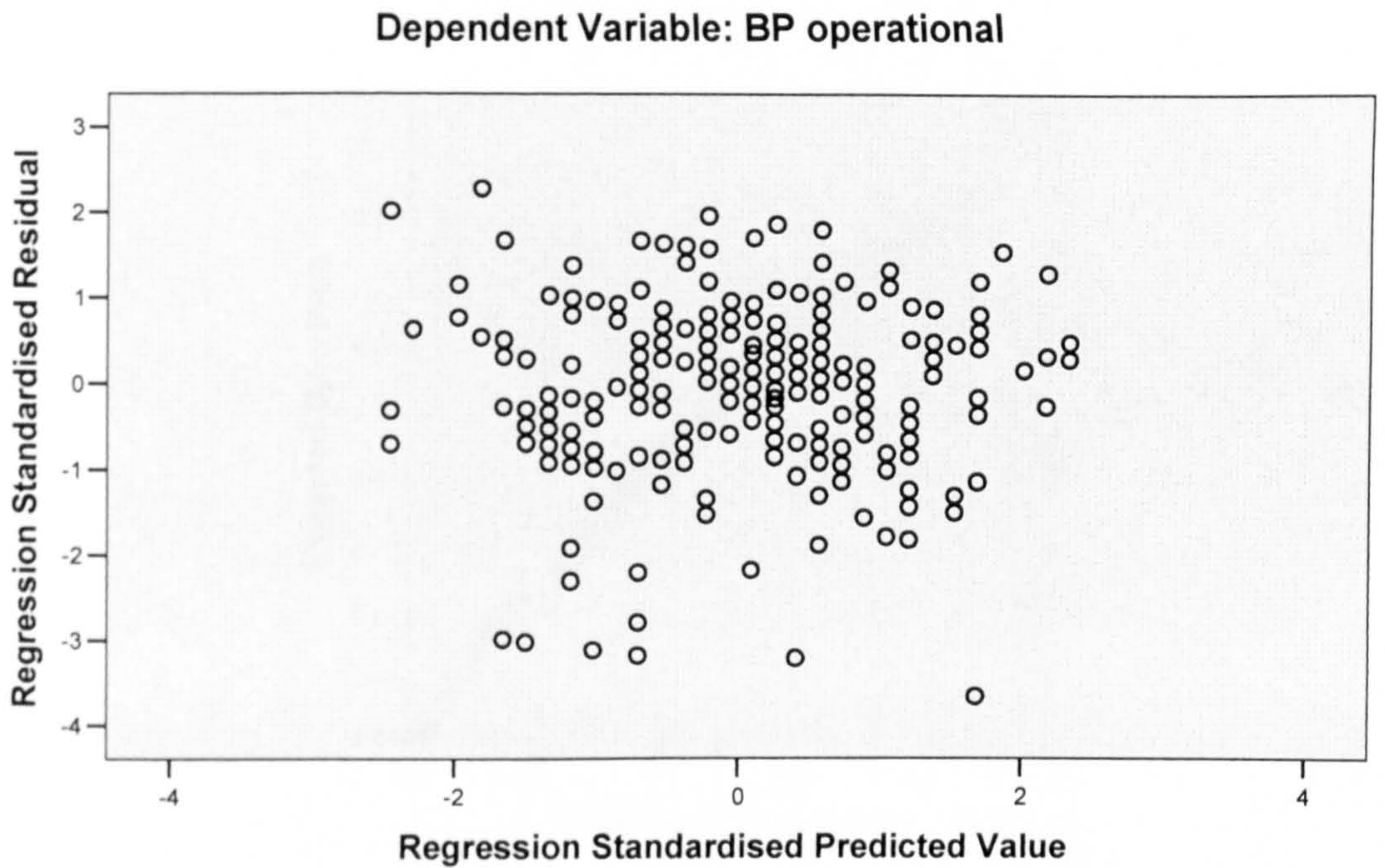


Figure J-9: Scatter plot: PI – BP operational

Second, Figure J-10 presents the normal plot of regression standardised residuals for the dependent variable. The straight line represents a normal distribution, and the points represent the observed residuals. As the points are close to the straight line, the figure indicates that the assumption of normality of residuals is met (Coakes and Steed, 2000; Field, 2005).

Normal P-P Plot of Regression Standardised Residual

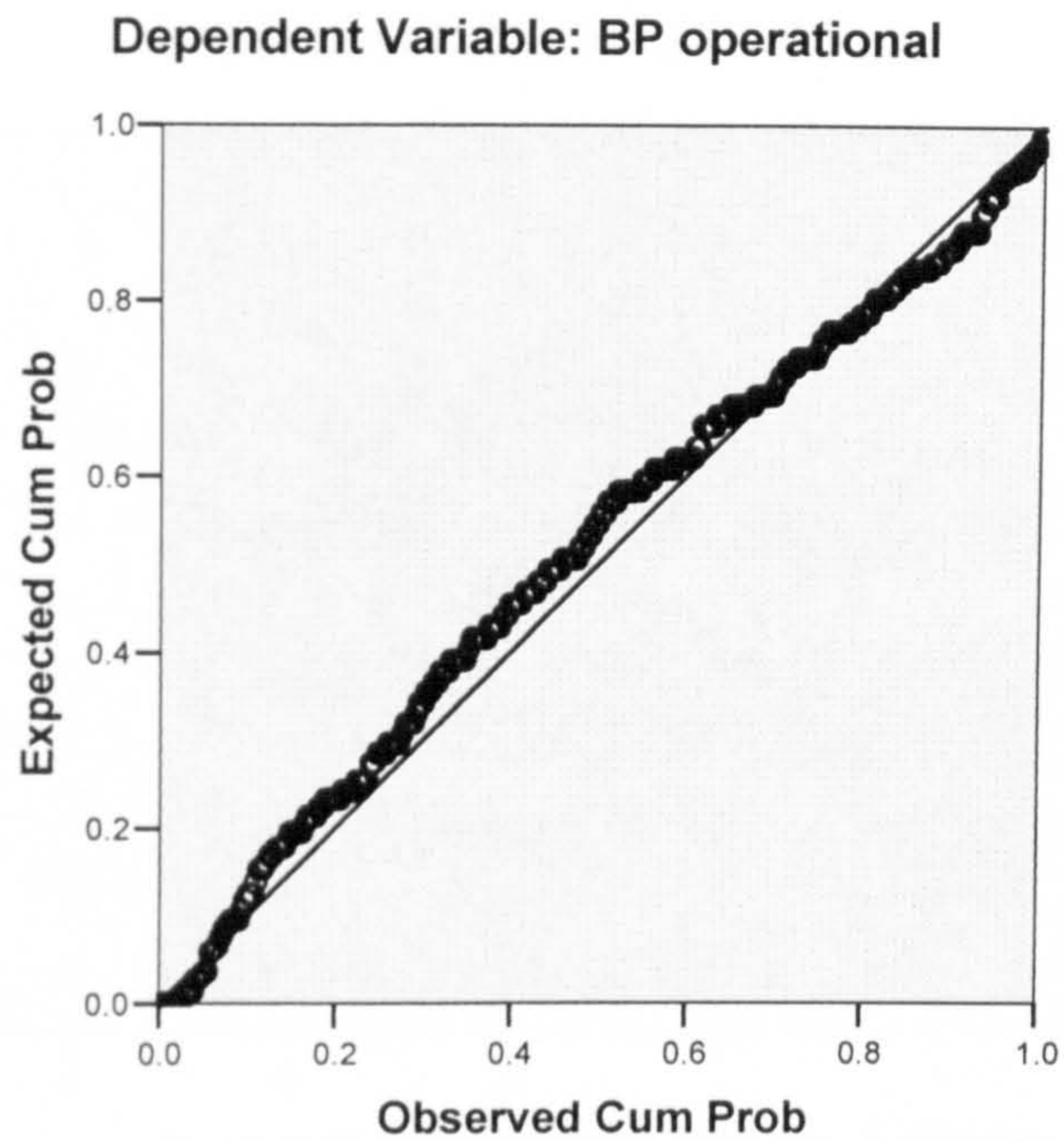


Figure J-10: Normal P-P plot: PI – BP operational

6. Regression: (SO + PI) and BP financial

The following two figures refer to the assumption of the regression analysis. First, the scatter plot (Figure J-11) of standardised residual against standardised predicted values shows that the points are randomly and evenly dispersed throughout the plot. This pattern indicates that the assumption of linearity and homoscedasticity have been met (Coakes and Steed, 2000; Field, 2005).

Scatterplot

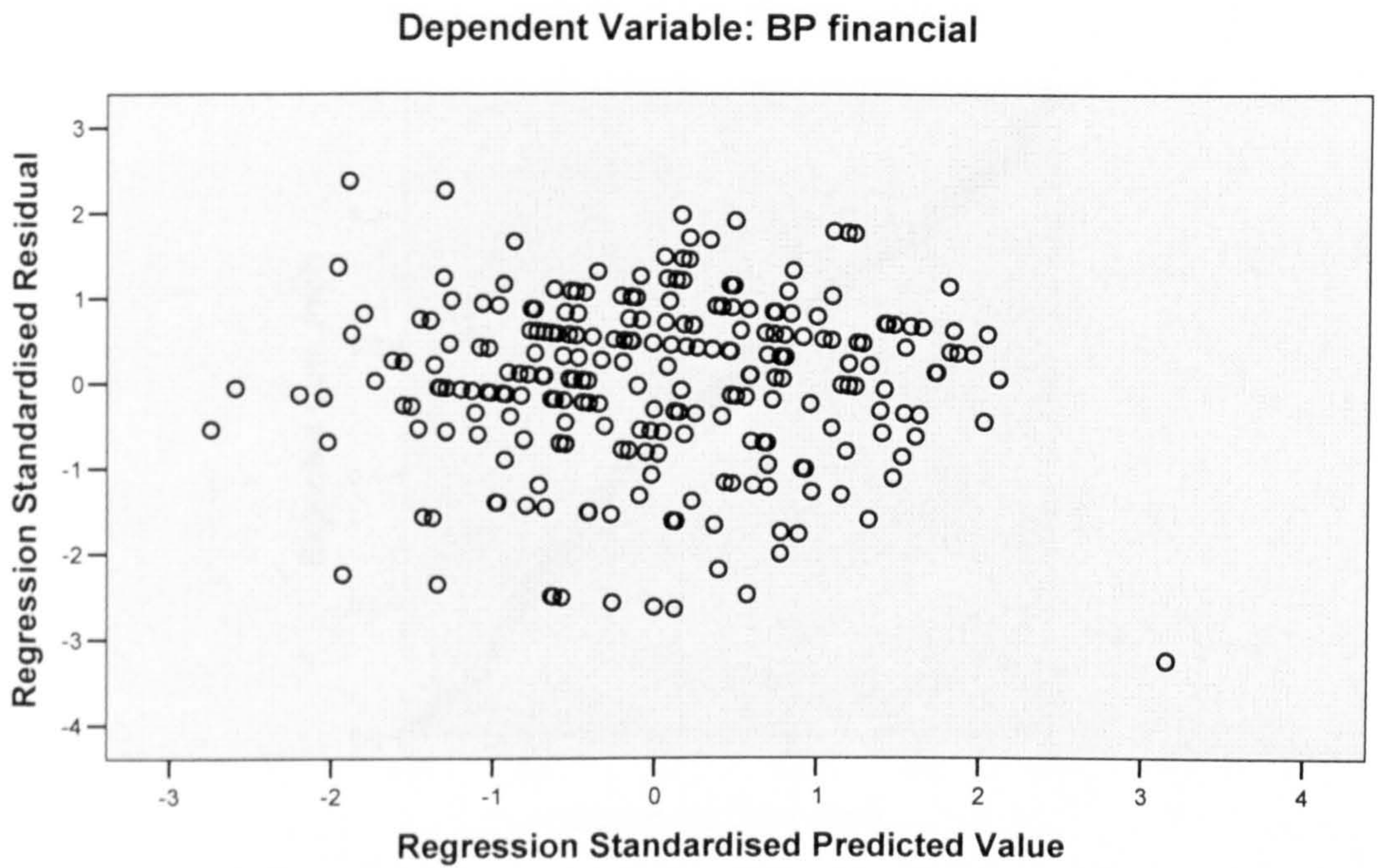


Figure J-11: Scatter plot: (SO + PI) – BP financial

Second, Figure J-12 presents the normal plot of regression standardised residuals for the dependent variable. The straight line represents a normal distribution, and the points represent the observed residuals. As the points are close to the straight line, the figure indicates that the assumption of normality of residuals is met (Coakes and Steed, 2000; Field, 2005).

Normal P-P Plot of Regression Standardised Residual

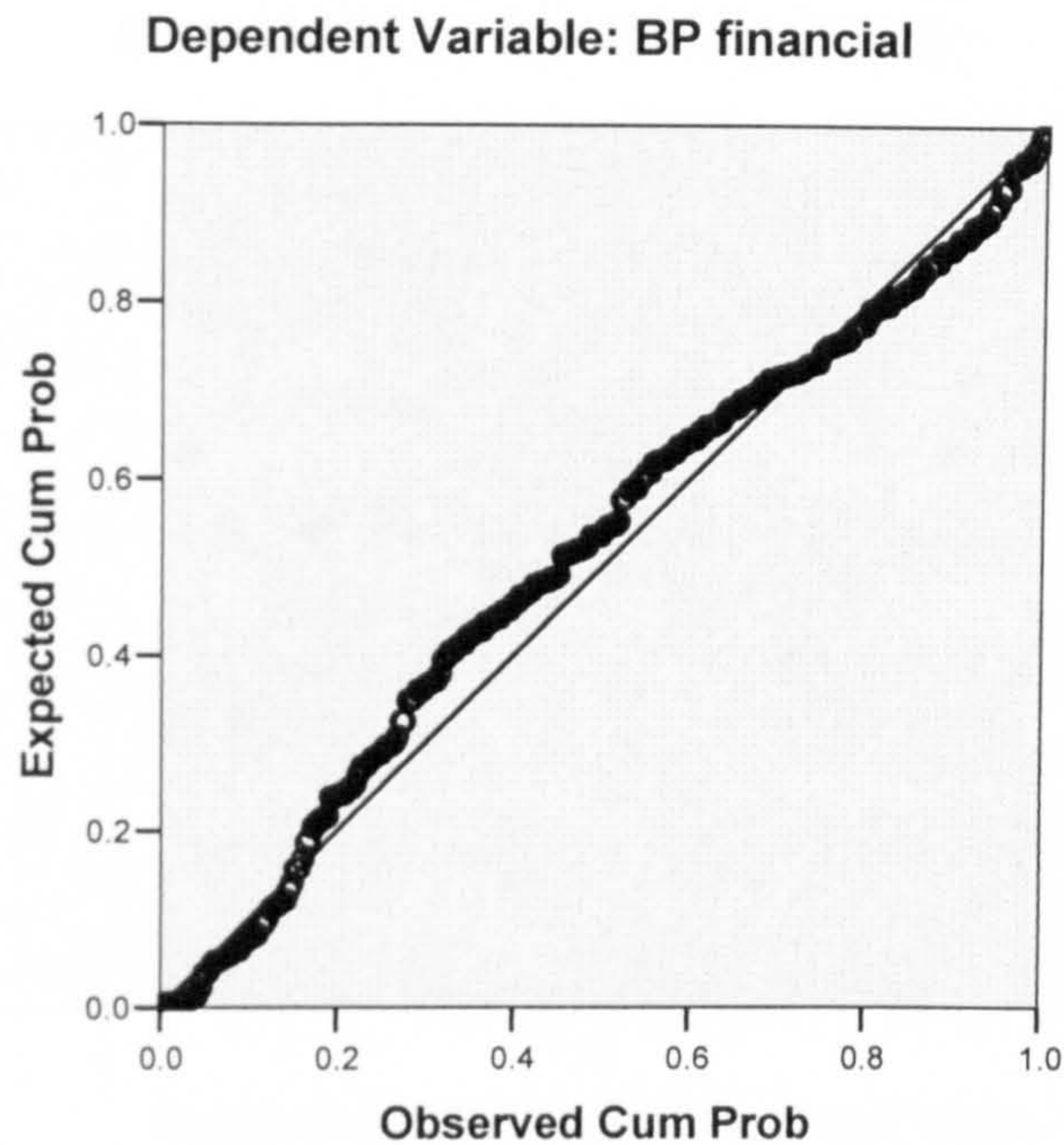


Figure J-12: Normal P-P plot: (SO + PI) – BP financial

7. Regression: (SO + PI) and BP operational

The following two figures refer to the assumption of the regression analysis. First, the scatter plot (Figure J-13) of standardised residual against standardised predicted values shows that the points are randomly and evenly dispersed throughout the plot. This pattern indicates that the assumption of linearity and homoscedasticity have been met (Coakes and Steed, 2000; Field, 2005).

Scatterplot

Dependent Variable: BP operational

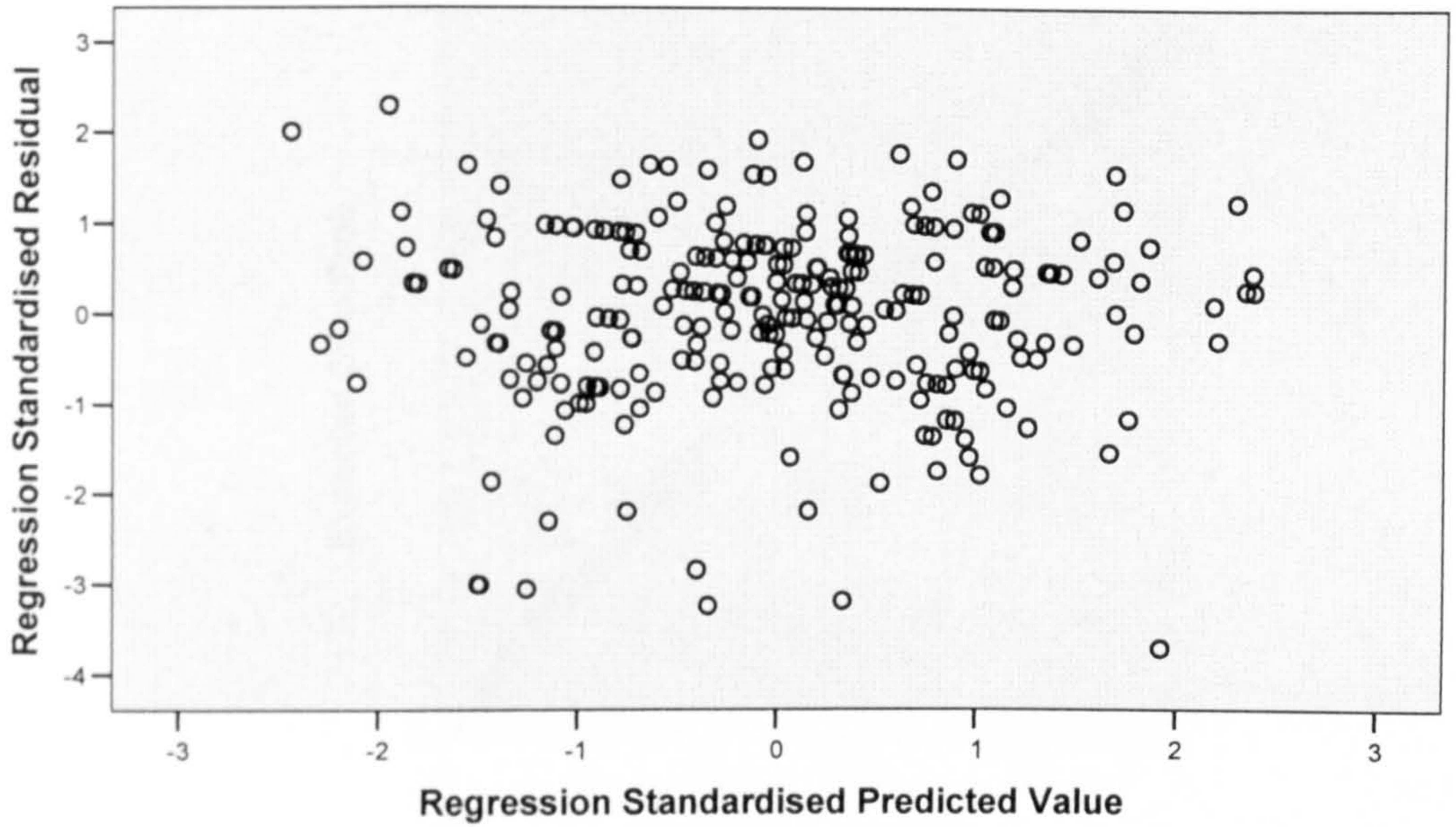


Figure J-13: Scatter plot: (SO + PI) – BP operational

Second, Figure J-14 presents the normal plot of regression standardised residuals for the dependent variable. The straight line represents a normal distribution, and the points represent the observed residuals. As the points are close to the straight line, the figure indicates that the assumption of normality of residuals is met (Coakes and Steed, 2000; Field, 2005).

Normal P-P Plot of Regression Standardised Residual

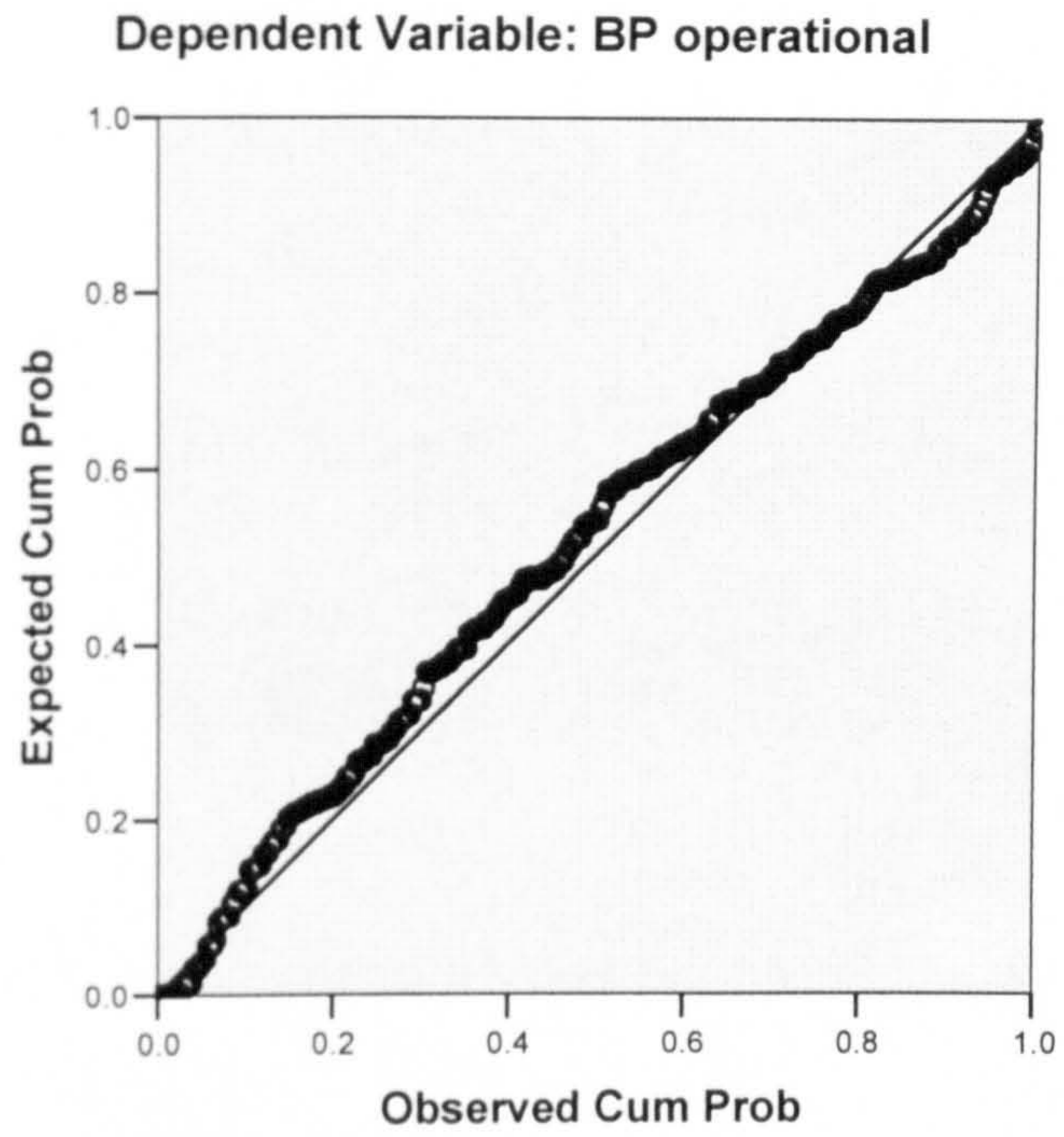


Figure J-14: Normal P-P plot: (SO + PI) – BP operational