Article Title Page

Supply chain alignment for improved business performance: an empirical study

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[Author 1 bio]

Heather joined Cranfield School of Management faculty in 2004 following the completion of her Doctorate at Cranfield University addressing the application of the form postponement strategy in the manufacturing industry. As a Senior Research Fellow she now manages the Agile Supply Chain Research Club and works on a wide variety of research projects in the Supply Chain Research Centre. Her particular areas of interest include: form postponement and mass customisation; segmented (or customer responsive) supply chain strategy; outsourcing of logistics and procurement in the NHS; development of buyer-supplier partnerships. While primarily a researcher, Heather leads a module, and delivers lectures, on supply chain core concepts and strategy on the MSc in Logistics and Supply Chain Management and is the author of the Logistics and Management Strategy text book (5th edition). She also delivers lectures on case study research methodology to the Doctoral Research Programme. Prior to her academic career Heather worked in industry for a number of years including as an internal operations consultant for BICC.

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Jan joined WMG in October 2013 from her prior position of Reader at Cranfield University School of Management. Jan's career has been split between both industry and academia. She joined the faculty of Cranfield in 2001, following the completion of her Executive MBA there. She also completed her PhD at Cranfield, researching the development of a customer responsive supply chain. Prior to her return to academia, Jan developed a successful career within industry, beginning at ICI/Zeneca Pharmaceuticals. Following this, she worked up to senior management level at Dyson, in both Supply Chain and Operations Management functions. At Dyson, she undertook a number of operational and process improvement roles within R&D, customer logistics, purchasing and manufacturing. Jan is a Chartered Engineer and Member of the IMechE. She is on the board and scientific committee of EurOMA (European Operations Management Association), the cabinet of the UK roundtable of CSCMP (Council of Supply Chain Management Professionals) and a member of the IMechE Manufacturing Industries Division (MID) board. She is on the editorial board of three journals, including the International Journal of Operations and Production Management, and she is an advocate for improving the uptake of STEM (science, technology, engineering and maths) subjects by school children.

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Chee is a professor of Supply Chain Management at Leeds University Business School, University of Leeds. He is the director of the Centre for Operations and Supply Chain Research (COSCR) at the University of Leeds. His research interests include supply chain integration/collaboration, sustainable supply chain management, third-party logistics services, global/ethical sourcing, and operations strategy. He teaches logistics, supply chain and operations management at undergraduate, MSc, MBA, PhD and executive levels. He has published more than 70 academic and practitioner articles.

[Author 4 bio]

Soroosh is deputy director MSc Logistics and Supply Chain Management and senior research fellow at the Centre for Strategic Procurement and Supply Chain Management (CSPSCM). He is involved in a number of research and consultancy projects with the Strategic Procurement and Supply Forum, GS1-UK, Chartered Institute of Purchasing and Supply (CIPS) and Chartered Institute of Logistics and Transport (CILT), and is also a lecturer of postgraduate and executive courses, leader of a number of teaching modules, and supervisor for Master's and Doctorate theses at Cranfield University. Soroosh has BSc and MSc degrees in Industrial Engineering and a PhD in Operations and Supply Chain Management from the University of East Anglia. He has published two book chapters and more than 10 articles in international academic journals and conferences, and professional magazines. He has been involved in teaching, research and consultancy in universities and companies in the UK and internationally for the last 15 years. His professional activities include a wide range of consultancy projects in the fields of supply chain planning and management, supplier evaluation and development, production planning and control, project management, quality management systems, operations strategies, and sustainability.

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Denyse is the Course Director for the Executive Master's in Logistics and Supply Chain Management. As the Course Director, Denyse plays a crucial role in ensuring that the course is relevant and delivers impact for our students and their organisations. In addition, Denyse is currently leading on a 3-year project to improve food supply chains so as to meet the rising global demand for food and to protect the environment - Step Change in Agri-Food Logistics Eco-Systems. Cranfield School of Management is the lead partner working along with four partner organisations: the European Food and Farming Partnerships (EFFP), DHL, Wageningen University and the Université d'Artois. Prior to joining Cranfield, Denyse worked at Nestlé. Her initial position was in the Corporate Quality Management Group at the Head Office in Switzerland, and subsequently on the GLOBE team based in Australia. She worked with internal stakeholders to refresh the global approach to supplier management to guarantee the quality of the products at the time of use. Part of her mandate was also to re-visit the global approach to managing traceability across the supply chain.

Structured Abstract:

Purpose - Supply chain alignment remains a major challenge for supply chains. This study aims to explain how it can be achieved, and its implications for business performance, by testing the strengths of the relationships between previously identified enablers, supply chain alignment and business performance.

Design/methodology/approach - A literature review develops hypotheses on the relationships between enablers, alignment and business performance. A survey of medium to large UK manufacturing companies was conducted where the sample comprised 151 randomly selected companies and the response rate was 56%. Partial Least Square regression was used to test the hypothesis.

Findings - Two types of supply chain alignment are defined – shareholder and customer – but only customer alignment has a direct positive impact on business performance, while shareholder alignment is its antecedent. Top management support was shown to be an enabler of both shareholder and customer alignment, while organisation structure, information sharing and performance measurement system enabled shareholder alignment, and internal relational behaviour enabled customer alignment.

Research limitations/implications - Supply chain management research lacks knowledge on exactly how supply chain alignment can be achieved and what business performance implications it has. This research provides a tested conceptual model to address this gap.

Practical implications - The refined conceptual model provides precise guidance to practitioners on how to improve business performance through supply chain alignment.

Originality/value - Whilst the strategic management literature emphasizes the importance of shareholder alignment, this study reveals another crucial alignment – customer alignment – and shows its direct positive impact on business performance.

Keywords: supply chain, business performance, alignment, enablers, shareholder, customer

Article Classification: research paper

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1. Introduction

In general terms alignment means consistency between strategic goals, metrics and activities (Melnyk et al., 2004). Alignment, or fit, has been identified as an essential antecedent of firm performance by the major business and management disciplines, including: strategy (Venkatraman, 1989; Powell, 1992); organisational behaviour (Nadler and Tushman, 1988; Kathuria et al., 2007); information systems (Brown and Magill, 1994; Luftman and Brier, 1999); and manufacturing strategy (Skinner, 1969; Wheelwright, 1984; McAdam and Brown, 2001). From a strategic fit perspective, supply chain alignment results in fits among objectives, structures and processes within and between different functions and members in a supply chain, leading to better business performance (for example Tamas, 2000). Houlihan (1985) suggests that Supply Chain Management (SCM) is about addressing the imbalances due to these conflicting objectives by managing the trade-offs between supply policies, economics of manufacturing and complexity. Lee (2004) cites supply chain alignment as one of three strategic business imperatives, alongside agility and adaptability. Lack of supply chain alignment can be caused by functional silos and conflicting objectives across marketing, sales, manufacturing, and distribution (for example Beth et al., 2003; Pagell, 2004; van Hoek and Mitchell, 2006).

The current literature on supply chain alignment is both fragmented and largely theoretical in nature. While several definitions of supply chain alignment have been suggested, there is a lack of agreement on what the different types of supply chain alignment are, and how firms could achieve such alignments in practice. To address these problems, Wong et al. (2012) identified several key enablers and two types of supply chain alignment – shareholder alignment and customer alignment – based on a systematic literature review. It makes sense to study shareholder and customer alignment because there should be alignment between each firm's supply chain strategy and those of its supply chain partners, both internal and external (Gattorna, 1998).

This paper seeks to clarify the meaning of shareholder and customer alignment, the relationship between them, and how alignment can be achieved in practice to deliver improved firm performance. Shareholder alignment requires the functional strategies, and business processes used to deliver them, to be consistent with business strategy and shareholder expectations (for example revenue growth, working capital efficiency, operating cost reduction

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and fixed capital efficiency (Christopher and Ryals, 1999). In essence shareholder alignment is about efficiency; or in Drucker's words "doing things right" or "doing better what is already being done" (Drucker, 1974, page 44). The need for shareholder alignment is supported by the argument that poor business performance is often caused by firms' failure to align internal supply chain processes with strategic goals (Tamas, 2000). Indeed, in one study, Hendricks and Singhal (2003) report that supply chain production glitches or shipment delays are associated with an abnormal decrease in shareholder value of 10.28%.

The alignment that is achieved with customers is equally critical, since every member of a supply chain tends to act in ways that favour their own interests. Thus, an optimal decision made by one supply chain member may well cause delivery delays and excessive inventories in another part of the supply chain (Lee, 2004). Ideally everyone in the supply chain should have the same objective – to deliver the best value to the end consumers. Customer alignment requires deliberate acts to achieve strategic fits in an organisation towards creating customer value, measured in terms of customer perceived benefits gained from a product/service compared to the cost of purchase (Johnson and Scholes, 1999). In essence, customer alignment is about effectiveness, in Drucker's (1974, page 44) words "doing the right things". The importance of customer alignment is supported by both the customer-orientation literature (Anderson and Narus, 1990; Jeong and Hong, 2007) and by the need to align the demand creation processes with the demand fulfilment or SCM processes that achieve customer responsiveness (Godsell et al., 2006). The relationship between shareholder and customer alignment, in terms of the extent to which they reinforce each other, or indeed are conflicting, is however not clearly explained in the supply chain literature.

A survey by Tamas (2000) found that only 13% of 80 supply chain executives questioned believed that their supply chain practices are fully aligned with their business unit strategies. In reality, the ability to create 'seamless' or 'boundary-less' connections in a supply chain (Christopher et al., 2004) is hard to achieve and many supply chain experts agree that alignment between internal functions can be more difficult than building external alliances. For example, breaking down the silos between sales/marketing and the operations/supply chain functions is still a pervasive problem (Beth et al., 2003; Pagell, 2004; van Hoek and Mitchell, 2006). This all emphasises the importance of the enablers of supply chain alignment that were identified in a systematic review of the literature by Wong et al. (2012).

It has long been argued that theory plays an important role in developing practice. Popper (1959, page 59) has identified theories as "the nets cast in order for us to rationalise, to

explain and to master the world". Moreover, theory increases our understanding (Dubin, 1969) and provides us with fundamental (Freudenthal, 1961; Kaplan, 1964), simplified explanations of a phenomenon in the complex real world (van de Ven, 2007). Theory is fundamental to the development of a field (Wacker, 1998). Not only enabling the development of frameworks to aid analysis to aid pragmatic explanation (Wacker, 1998) by simplifying reality (Svensson, 2013).

The inter-related fields of operations, logistics and supply chain recognise the important role of theory development in advancing practice (Meredith et al., 1989; Mentzer & Kahn, 1995; Stock, 1997; Schmenner & Swink, 1998; Meredith, 2001; Stock, 2009), but recognise that there is limited research of this nature (Listou, 1998; Kovács & Spens, 2005). To improve the development of theory in the field of operations and supply chain (O&SC) various different theory development processes have been suggested (for example Meredith, 1993; Handfield and Melnyk, 1998; Meredith, 1998; Wacker, 1998; Carlile and Christensen, 2004; van de Ven, 2007). These processes can be synthesised to identify four key stages in the theory development cycle; conceptualise, build, test and refine (Zhong et al., 2015). *Conceptualisation* refers to the phase within which the germ of an idea that might become a theory is conceived. *Building* is the phase in which a theory or theoretical framework is actually constructed. The *testing* stage is where a hypothesis or theoretical framework is verified against reality. As the last stage of the theory development, *refining* refers to the phase in which the modification takes place, which is expected to close any gaps generated during the empirical testing. However, refining is only involved when the theory is accepted by the empirical testing, and might be iterative, and aims to make improvements to the theory generated. If the theory is rejected in the testing stage, the cycle moves to conceptualization or building, depending on how huge the gap is. In fact, theory development is an iterative cycle, which tends to follow a temporal sequence of these stages.

This paper seeks to move the study of supply chain alignment for improved business performance from conceptualize and build, onto test and refine. It builds on the conceptualization of supply chain alignment by Wong et al. (2012). Firstly it extends the conceptual framework of Wong et al. (2012) to include the impact of alignment on firm performance and clarify the relationship between shareholder and customer alignment. The development and testing of hypotheses, using a survey of UK manufacturers, enabled the verification of theory against practice. This provided clarification on how supply chain

alignment, which leads to improved business performance, is achieved in practice and the development of an empirically refined conceptual framework.

This paper begins with a review of the theoretical underpinnings or 'conceptualization' of the relationships that were tested. The model development or 'building' process is outlined and the methodology for the study described. It concludes with a review of the survey results from empirical 'testing', 'refining' of the conceptual model, and reflections on the implications for theory and practice.

2.   Conceptualizing and Building a Model for Supply Chain Alignment

In this paper we seek to clarify the relationship between shareholder and customer alignment and how they can be achieved in practice to deliver superior business performance. We extend the framework developed by Wong et al. (2012) to include the impact of alignment on firm performance, as illustrated by the theoretical models in Figure 1. The original framework (Wong et al., 2012) identified and developed six enablers of shareholder alignment (SA) and customer alignment (CA): customer relational behaviour (CR); internal relational behaviour (IR); information sharing (IS); organisation structure (OS); business performance measurement system (PM); and top management support (TS). Our theoretical models further include the relationships among shareholder alignment, customer alignment and business performance (including net profits, revenue, market share and return on investment).

[Insert Figure 1 about here]

The literature review on the relationship between shareholder alignment and customer alignment (in section 2.1) illustrates that there is no clear direction in this relationship, therefore two models were introduced, identical except for this relationship. Model 1 hypothesises that shareholder alignment is positively related to customer alignment (SA➔CA, H3a) and model 2 hypothesises that customer alignment is positively related to shareholder alignment (CA➔SA, H3b), thus hypothesising that shareholder and customer alignment enhance each other and that they each lead to improvements in business performance, as discussed in section 2.1. Furthermore, it is hypothesised that the six enablers support each type of alignment, as detailed in section 2.2. All nine constructs are defined, in relation to key references, in Table 1.

2.1   *Performance impacts of shareholder and customer alignment*

Our conceptualizations of shareholder alignment and customer alignment are inspired by the literature on supply chain alignment, shareholder value and customer value. While such literature focuses on defining values of importance to shareholders and customers, for this study the conceptualization of shareholder and customer alignment focuses on the degree of fit between strategies (business unit and supply chain) and shareholder or customer values. Day and Fahey (1990) highlight the importance of alignment between business unit strategies and shareholder value; this type of alignment is called shareholder alignment (Wong et al., 2012). From an SCM perspective, shareholder alignment is achieved when business strategy, supply chain strategy and employees' expectations are aligned to meet shareholder objectives, such as revenue growth and working capital efficiency (Christopher and Ryals, 1999), then it is more likely for an organisation to provide higher earnings per share. The need for shareholder alignment is supported by the argument that poor business performance is often caused by firms' failure to align internal supply chain processes with strategic goals (Tamas, 2000). In fact a number of operations management studies have found a connection between the strategic alignment of functional and business strategies and business performance (Joshi et al. 2003; Tarigan 2005; Schneiderjans and Cao 2009). A study of 141 strategic business units by Baier et al. (2008) supports the hypothesis that relative fit between business strategy and purchasing strategy (strategic alignment) is key to achieving superior financial performance. It can be deduced that when such alignments are achieved, business and operations strategy will be defined to enable necessary organisational change for meeting shareholder objectives, which are themselves aligned with improvements in business performance. These arguments lead to the formulation of hypothesis H1.

Hypothesis H1: *Shareholder alignment (SA) is positively related to business performance (BP).*

Customer alignment is the process whereby business strategy and supply chain strategy are aligned to create customer value. It sounds similar to customer orientation but they are two distinct concepts; customer orientation is more of a culture whereas customer alignment is a strategic move. Customer orientation refers to the culture within an organisation, which embraces behaviours for creating customer value (Jaworski and Kohli, 1993; Slater and Narver, 1994). Instead, customer alignment refers to deliberate acts to achieve strategic fit between the organisations which will create customer value. Similarly to customer orientation processes (Slater and Narver, 1994), customer alignment processes acquire market intelligence for inter-functional assessment, but also use it to develop business unit and supply chain strategies to

respond to customer needs understood from the market intelligence. Customer alignment allows the necessary adjustment and investment in the organisation and supply chains to meet customer needs. Customer value often changes due to changing customer expectations (Parasuraman, 1997; Day, 2000; Eggert et al., 2006); therefore customer alignment plays a crucial role in meeting such moving targets. Moreover, in their study of 194 small to medium manufacturing companies, O'Regan and Ghobadian (2004) find that generic organisational capabilities (many of which are derived from supply chain strategy, such as distributing products broadly or responding to swings in volume) enable firms to manage for the future by focusing on customer needs and requirements. Furthermore, the alignment of these generic organisational capabilities and strategic planning is a prerequisite for high business performance. It follows that, when business unit and supply chain strategies are aligned to meet customer value, it is more likely for the focal firms, and their supply chains, to provide superior delivery and services and thus improved business performance. These arguments lead to the formulation of H2.

Hypothesis H2: *Customer alignment (CA) is positively related to business performance (BP).*

Historically, management studies have rarely considered shareholder alignment concurrently with customer alignment. For example, the value chain theory of Porter (1985) focuses on the building blocks by which a firm creates a product, which is valuable to the customers, assuming that there is no need to trade-off with shareholder value. Only since the mid-1990s have some studies started to examine the links between shareholder and customer value (Bourguignon, 2005). The tension between delivering customer and shareholder value is a problem all profit-driven organisations have to manage. Still, there is debate in the literature over whether shareholder, or customer, should take priority. The reality is that the ultimate goal of any company is to make a sustained return for their shareholders. Some argue that organisations are in business primarily to maximise shareholder value (Rappaport, 1987; Cornelius and Davies, 1997), and can do so by also delivering customer value, and thereby maintaining competitiveness. Some scholars have argued that customer value comes first, because a business is more likely to achieve its goals when it organises itself to meet the current and potential needs of customers more effectively than its competitors (Copulsky, 1991; Doyle, 1994; Laitamaki and Kordupleski, 1997; Drucker, 2001). This view is supported by the efficiency versus effectiveness debate, which concluded that effectiveness (similar to customer alignment) is the foundation for success: "even the most efficient business cannot survive, let

alone succeed, if it is efficient in doing the wrong things, that is, if it lacks effectiveness" (Drucker, 1974, page 44). Similarly Deming (1985) concludes that "it is necessary that everyone knows what to do; than for everyone to do their best".

An alternative to the trade-off perspective is that organisations need to be able to achieve a balance between the two alignment processes (Feurer and Chaharbaghi, 1994; Cleland and Bruno, 1997) so that it is possible to deliver effectiveness through customer alignment and efficiency through shareholder alignment. Ultimately the development of a congruent business strategy to deliver shareholder value, whereby product, marketing and supply chain functions work together, is the state of alignment that leads to superior performance (Godsell et al., 2010). In addition, we argue that customer and shareholder alignment inform and complement each other. Such a novel theoretical lens to supply chain alignment is interesting, because it considers the alignment, or fit, between shareholder and customer alignment, as a reason for achieving sustainable business performance.

Marquez and Blanchard (2006) emphasise the importance of connecting customer value with business targets, and Cao et al. (2012) find evidence that strategic alignment (where functional strategies are aligned with business strategies), may not lead to improved firm performance if those strategies are not appropriate for the competitive environment. Thus, customer alignment can inform the process of shareholder alignment and therefore allow shareholders to better align their objectives with a congruent business strategy. Frohlich (2002) argues that the lack of alignment between business models and practices and customer needs will have an adverse effect on shareholder value. In a way customer alignment – "doing the right things" – ensures customer loyalty and thus promises continuous revenue, thus contributing to shareholder value. Shareholder value promises continuous investment which supports the implementation of the business unit and supply chain strategies to meet customer need (Slater and Narver, 1994; Kaplan and Norton, 2004), thus suggesting the joint effects of customer alignment and shareholder alignment for enhancing both shareholder and customer value, and therefore leading to superior business performance. From this perspective, shareholder alignment and customer alignment reinforce each other, meaning that shareholder alignment positively affects customer alignment and vice versa. These arguments lead to the formulation of the following hypotheses.

Hypothesis H3a: *Shareholder alignment (SA) is positively related to customer alignment (CA).*

Hypothesis H3b: *Customer alignment (CA) is positively related to shareholder alignment (SA).*

2.2 Enablers for shareholder and customer alignment

To achieve shareholder alignment there is a need to achieve fits among organisational structures (OS), business strategy and shareholder expectations (Lawrence and Lorsch, 1967; Thompson, 1967). The organisation literature advocates that organisational structure, in terms of formalisation, centralisation, and hierarchy, have to be aligned with strategy and the environment (Lawrence and Lorsch, 1967; Thompson, 1967). However, these generic features are not sufficient for describing the process-oriented organisational structure required for achieving alignment across functions (Lambert et al., 2005). A more process-oriented organisational structure with the ability to enable/support cross-functional knowledge exchange and inter-departmental activities is required to achieve cost effectiveness (Ettlie and Reza, 1992; Davenport, 1993; Lewis and Slack, 2003). A process-oriented organisational structure facilitates inter-functional collaboration for meeting customer needs. Organisations with functional silos are often being blamed for the inability to respond to various customer demands (Beth et al., 2003; Pagell, 2004; van Hoek and Mitchell, 2006). However, when an organisation is segmented and aligned to focus on different value streams, it is more likely to meet customer expectations with the same resources (Godsell et al., 2006). Furthermore, appropriate process owners with a wider control span are able to stimulate complex strategic integration (Burgelman and Doz, 2001). These arguments suggest the above-mentioned characteristics of organisational structure are effective in meeting shareholder alignment, especially in terms of capital efficiency and customer alignment, and delivery service, leading to the formulation of hypothesis H4.

Hypothesis H4: *A process-oriented organisational structure (OS) is positively related to (a) shareholder alignment (SA) and (b) customer alignment (CA).*

Internal relational behaviour (IR) refers to the ways in which activities are performed to facilitate the process of building up cross-functional relationships. Internal relational behaviour is characterised by cross-functional teams, mutual understanding, joint problem-solving and planning. It helps to achieve mutual understanding and supports joint planning among functions for improving cost effectiveness (Anderson and Narus, 1990; O'Leary-Kelly and Flores, 2002; Pagell, 2004). It is also essential for meeting customer needs. Customer delivery performance can be improved when suppliers cooperate with their internal functions, and customers, to re-align order penetration points (Auramo et al., 2004). It is argued that

internal integration is the central link between customers and an organisation's responses to changes in the market (Flynn et al., 2010). The improvement of cross-functional relationships, and the use of cross-functional teams, often promote mutual understanding towards a more customer responsive culture (Godsell et al., 2006) and mutually accepted objectives (Pagell, 2004). Without a close internal relationship, it is very difficult for top management to implement any strategy. Therefore, we argue that internal relational behaviour is an enabler for customer alignment, as well as shareholder alignment. These arguments suggest internal relational behaviour is required to achieve shareholder alignment and customer alignment, leading to the formulation of hypothesis H5.

Hypothesis H5: *Internal relational behaviour (IR) is positively related to (a) shareholder alignment (SA) and (b) customer alignment (CA).*

Customer relational behaviour (CR) refers to customer interactions, which facilitate the process of building up and maintaining customer relationships. Customer relational behaviour is a boundary spanning capability, which facilitates goal/cost/profit sharing, and joint planning and problem-solving, with customers to ensure customer loyalty and eventually revenue growth, and subsequently creates shareholder alignment (Day, 1994; Auramo et al., 2004; Tracey et al., 2005). Customer relational behaviour basically has five key characteristics: goal sharing, cost sharing, profit sharing, joint problem solving and delivery performance improvement. Customer relational behaviour is crucial for the alignment of customer demand with production planning and replenishment (Lee and Whang, 2000; Barratt and Oliveira, 2001) to lower inventory (working capital) cost and, at the same time, maintain delivery performance. Thus, customer relational behaviour is perhaps one of the most significant enablers for customer alignment. However, it is also crucial for achieving shareholder alignment because one way firms align their customers' interests with their own is by redefining the terms of their relationships so that firms share risk, costs, and rewards equitably (Lee, 2004). Such an alignment is required to ensure that everyone in the chain has the same objective, i.e. to deliver the best service to the end consumers (Lee, 2004). This means that customer relational behaviour may be able to influence the customers such that shareholders' interests are safeguarded. These arguments suggest internal relational behaviour is required to achieve shareholder alignment and customer alignment, leading to the formulation of hypotheses H6.

Hypothesis H6: *Customer relation (CR) behaviour is positively related to (a) shareholder alignment (SA) and (b) customer alignment (CA).*

Top management (TS) support, in this paper, refers to support and commitment by top management in SCM. Managerial commitment to SCM is required for achieving collaboration breakthroughs (Akkermans et al., 1999; Luftman and Brier, 1999) and customer responsiveness (Storey et al., 2005). Top management provides a crucial channel between shareholders and employees, because they translate shareholders' goals into business strategies and support employees to achieve business strategies (Tamas, 2000). Top management teams that listen to employees and invest in human assets through the provision of training, reap the benefits in terms of a better shareholder alignment (Buhner, 1997). Also, top management participation in operational issues and encouragement of open communication helps to align employees' behaviour (Gerbing et al., 1994). Brown et al. (2007) argue that involving manufacturing/operations managers in the strategic planning process helps align manufacturing and business strategy, and this alignment is associated with higher manufacturing performance. Furthermore, top management support in SCM is crucial in aligning employees' behaviour in contributing to cost saving and customer service improvement (i.e. customer alignment). Indeed Ashenbaum et al., (2009) have developed a construct, 'organizational alignment', to measure the extent to which upper management attempts to foster integration between purchasing and logistics. Top management not only has the authority to provide resources, but also to direct the supply chain and business unit strategies towards meeting customer needs. These arguments suggest top management support is required to achieve shareholder alignment and customer alignment, leading to the formulation of hypothesis H7.

Hypothesis H7: *Top management (TS) support is positively related to (a) shareholder alignment (SA) and (b) customer alignment (CA).*

Information sharing (IS) in this paper relates to the exchange of information to facilitate business strategy and supply chain activities. Information sharing is argued to significantly impact on shareholder and customer alignment. Increased intensity of organisational connectivity due to information sharing often decreases production cost (Clark et al., 2001) and increases customer service, because accurate information (Bourland et al., 1996; Lee and Whang, 2000), combined with the capability to use shared information (Sahin and Robinson, 2002), is required to plan production and inventory effectively. During strategy formulation and implementation, information sharing across the hierarchy is essential to achieve buy-in and therefore alignment between business strategy and employees. The lack of transparency and visibility across supply chains is the main obstacle to internal and external alignment

(Christopher and Gattorna, 2005) and collaborative planning (Barratt, 2003; Holweg, 2005). Furthermore, when employees act upon accurate and timely customer demand information, they will be able to respond to customer needs more accurately and quickly. By using shared information systems it is possible to achieve full potential in developing flexible pricing strategies and tailored offerings for individual customers (Clemons and Weber, 1994). These arguments suggest information sharing is required to achieve shareholder alignment and customer alignment, leading to the formulation of hypothesis H8.

> **Hypothesis H8:** *Information sharing (IS) is positively related to (a) shareholder alignment (SA) and (b) customer alignment (CA).*

Business performance management (PM) system refers to the system in which business performance is being measured for influencing staff to achieve improvements. Because people act according to incentives, business performance management systems are vital in providing the right incentives to influence staff behaviour. Thus, business performance management systems, if properly aligned with shareholders' objectives, will act as catalysts for change and allow employees to contribute to shareholders' objectives (Schmenner and Vollmann, 1994; Gunasekaran et al., 2001; Morgan, 2004). Furthermore, employees act according to rewards and performance targets, but if these are not aligned with business strategies and customer needs, there will be a greater tendency to sub-optimize, which may adversely affect customer delivery performance. When firms emphasise customer performance management, staff will make sure they meet customer needs. Thus, business performance management systems can also lead to customer alignment. These arguments lead to the formulation of hypothesis H9.

> **Hypothesis H9: The** *business performance management (PM) system is positively related to (a) shareholder alignment (SA) and (b) customer alignment (CA).*

3.   Empirical Testing: Survey Design and Sample Description

A survey approach was selected for this study as it primarily tests existing theories, rather than exploring new and emerging areas, where a case study approach would have been appropriate (Yin, 2014). A survey was developed to test the theoretical models developed and extended from the Systematic Literature Review (Wong et al., 2012), by establishing probabilistic relationships between the enablers and alignment, and alignment and business performance.

This section presents the approach taken to both developing the scales and collecting the data to empirically test the theoretical models.

3.1 Scale development

Multiple items were used for the measurement of each of the constructs, as summarized in Table 1 and detailed in Appendix 1. The measurement scales were developed in accordance with Churchill's (1979) procedure for developing measures with desirable reliability and validity properties. First, the constructs were defined in an exacting way (Table 1), based on a systematic literature review (Wong et al., 2012). Second, measurement items were generated which capture the construct as defined by using two techniques:

- Literature searches were conducted by two researchers for each construct to determine how it had been defined previously and the measurement items that had been used (as described later in this section).

- The experience survey technique was used in that a panel of five expert academicians in the field of SCM (from outside the research team) were consulted on the constructs and their measured items. Accordingly, some items were reworded or redefined.

In addition, the questionnaire (illustrated by the table in Appendix 1) was piloted with five practitioners prior to the distribution. Thus, the face validity of a total of 52 items was approved for the nine research constructs. Each item was measured using a 5-point Likert type scale.

Third, following the collection of data (described in section 3.2) the construct's convergent validity was tested (described in section 4.1) and any items with factor loadings below 0.7 were removed in line with Nunnally's (1978) recommended threshold. Fourth, to ensure construct validity, discriminant validity was examined (as described in section 4.1) and all constructs passed the tests. Finally, norms were not required as the respondents were not being asked to rate the level of items relative to some arbitrary scale of high and low, but instead the Likert scale points were clearly defined.

As mentioned above, for the second step in Churchill's (1979) procedures, literature searches were conducted for each construct to determine the measurement items that had been used. To measure business performance, items from the performance measurement scale of Ahmed et al. (1996) were used. We chose this scale because both market and economic measures of performance were used to give a commonly recognised view of business performance. The scales for customer alignment and shareholder alignment were self-developed on the basis of the work of Lawrence and Lorsch (1967), Thompson (1967), Day and Fahey (1990), Jaworski and Kohli (1993), Slater and Narver (1994), as described in the

previous section. To measure top management support, the scale by Ahire et al. (1996), as used in relation to Total Quality Management, was adapted. In order to measure information sharing, the information quality scale from Li et al. (2005) was adapted and used, as it is focused on the quality of information shared. The scales for organisational structure, internal relational behaviour, customer relational behaviour and business performance measurement system have been developed based on the literature review (as presented in the previous section) and the systematic literature review by Wong et al. (2012). Since most of the constructs are not new, the measurement items are expected to be relevant to the constructs.

[Insert Table 1 about here]

The measurement items for all constructs were defined as reflective indicators. This was mainly due to the nature of the measured items, which were viewed as a representative sample of all the conceivable indicators that exist within the conceptual domain of the constructs in this research.

3.2   *Data collection*

The sample frame comprised 151 randomly selected companies, from a database of 2,338 UK-registered manufacturing firms that employ over 250 staff. Relatively large UK manufacturers were chosen from the FAME database (www.bvdinfo.com) as it was expected they would be sufficiently well established and experienced at balancing shareholder and customer needs. It was thus anticipated that the dataset would enable shareholder alignment, customer alignment, and business performance, plus interrelationships to be examined.

Target respondents were senior or middle managers in the areas of logistics, manufacturing, procurement and SCM, with a single reply from every organisation accepted. Two waves of randomly selected companies from the database were given to a tele-marketing firm, which then obtained names, email addresses and telephone numbers of the targeted respondents. A web-based version of the survey was e-mailed to 151 companies in the database. After the completion deadline had passed, a reminder with the link was sent out, which was followed by a telephone call from a member of the research team, who administered the questionnaire over the phone wherever possible. Overall 117 responses were received from the 151 randomly selected companies, representing an initial response rate of 77%.

Following Hair et al. (2014, p. 55), the dataset was cleaned by first removing any responses that were less than 85% complete. For the remaining, partially completed questionnaires, Tsikriktsis' (2005) missing data techniques were used. For those responses with 10% or less missing data (i.e. 26 responses in this survey), the mean substitution technique was used, and for the rest (i.e. one response in this survey), the pairwise deletion technique was applied. Moreover, by using a t-test, no statistically significant difference was found between those accepted responses with missing data and complete responses with no missing data. A total of 84 useable responses were received, from the 151 individuals receiving the survey, giving a final response rate of 56%. The sample size of 84 is comparable with studies using a similar data analysis method, such as: Claassen et al. (2008), Rosenzweig (2009), and Caniëls et al. (2013). Further, the response rate of 56% is relatively high compared to similar studies such as: McCormack et al. (2008): 21.4%; Sun et al. (2009): 29%; De Giovanni (2012): 17.1%; Caniëls et al. (2013): 24%.

To ensure that the sample size of 84 was adequate for testing the research models using Partial Least Square (PLS), power analysis was employed. Power analysis is superior to unwieldy 'rules of thumb', because it is the most accurate way to identify the requirements of sample size for a specific statistical analysis and its power to explain population effects (McQuitty, 2004; Faul et al., 2008). A power analysis G*Power 3.0 was performed which shows that this sample is suitable for explaining population effects[1] (Faul et al., 2008). PLS analysis was used to test the hypotheses, as, being based on variance maximization, it is able to handle small to medium-sized samples (Chin, 1998).

Even though the companies were randomly selected, it is acknowledged that companies, which were willing to work with the research project, could be more likely to give their details to the tele-marketing company. Therefore, to test for the possibility of non-response bias, the extrapolation method recommended by Armstrong and Overton (1977) was followed. The first wave of responses was compared with those responses received after follow-ups (which may be considered as non-responses to the first round). A random sample of 30 responses was taken from each group, and then these samples were tested for possible differences; a t-test was used to test for differences between the two samples for each measured item. The results indicated no differences at the 5% level of significance or lower.

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[1]. G*Power 3.0 post hoc test indicates a high power $(1-\beta)$ of 0.72 for the sample size.

4.   Analysis and Results

This section describes the validity and reliability tests performed on the research constructs and also the Structural Model Analysis used to test the hypotheses. Two structural models were tested; model 1 includes the SA→CA hypothesis H3a, and model 2 includes the CA→SA hypothesis H3b.

4.1   Validity and reliability

Construct convergent validity was tested via Confirmatory Factor Analysis (CFA) on each construct individually. Factor loadings for the items on each construct were calculated and examined. Any items with a factor loading below 0.7 were removed. In total eight items were dropped (they are shown in *italics* in Table 3 in Appendix 1).

The levels of Average Variance Extracted (AVE) of the final constructs varied from 0.595 to 0.748, i.e., consistently above the 0.50 level recommended by Fornell and Larcker (1981). Furthermore, the levels of Cronbach's α varied from 0.7 to 0.867, exceeding the standard threshold of 0.70 recommended by Nunnally (1978); and for most of the constructs, exceeded the more rigorous 0.80 threshold recommended by Straub and Carlson (1989). As a result of the CFA analysis, a set of valid constructs entered the structural models.

In the structural models, discriminant validity was examined using the method of Fornell and Larcker (1981), by a comparison of the square root of AVE and correlations for pairs of constructs.   Table 2 shows the key validity and reliability indices obtained (Table 4 in Appendix 2a and Table 5 in Appendix 2b detail the loadings and cross-loadings for the final research models). All constructs passed the tests, where the square root of AVE for each construct was greater than its correlations with other constructs (the differences range between 0.132 and 0.758). Further, the uni-dimensionality for sets of items for all pairs of constructs was examined; all items for each pair of constructs loaded clearly and strongly on their expected construct (construct loadings are between 0.133 and 0.807 greater than cross loadings). Overall, the result is a set of valid, reliable constructs.

[Insert Table 2 about here]

4.2   *Structural Model Analysis*

The research hypotheses were tested using the Smart-PLS 2.0 software package (Ringle et al., 2005). Figure 2 illustrates the results of the paths (hypotheses) test by illustrating the path coefficients and their significance (*t*-value). Path coefficients were established via Partial-Least-Squares algorithm. The paths were calculated as:

$$\eta_1 = \gamma_1 \, \xi + \zeta_1$$

$$\eta_2 = \beta \, \eta_1 + \gamma_2 \, \xi + \zeta_2$$

Where, η = latent endogenous construct (η_1 = inputs from exogenous constructs; η_2 = inputs from endogenous and exogenous constructs), ξ = latent exogenous construct, ζ = random disturbance term, γ = path coefficient between exogenous and endogenous constructs, and β = path coefficient between two endogenous constructs).

The tests for the significance of path coefficients were based on *t*-values, calculated using the bootstrap facility (with 1000 re-samples). A hypothesis is confirmed by a positive, and significant, path coefficient between the two constructs. When the size of the resulting empirical *t*-value is above 1.96, it is assumed that the path coefficient is significantly different from zero at a significance level of 5% (α=0.05; two-tailed test). The critical *t*-values for significance levels of 1% (α=0.01; two-tailed test) and 10% (α=0.10; two-tailed test) probability of errors are 2.58 and 1.645, respectively (Hair et al., 2014).

The explanatory power of a structural model was examined via the coefficient of determination (R^2 value) in the endogenous constructs in the model (Hair et al., 2014). In this study, the final endogenous construct in the model (i.e. Business Performance) had R^2 value of 0.14 and 0.15 in models 1 and 2 respectively, which can be interpreted as 14% and 15% of Business Performance variances are explained by the constructs of this model. Similarly, 60% and 64% (R^2 = 0.60 and 0.64 in models 1 and 2 respectively) of the Shareholder Alignment and 39% and 31% (R^2 = 0.39 and 0.31 in models 1 and 2 respectively) of the Customer Alignment variances are explained by the exogenous constructs of the models.

The schematics for models 1 and 2 in Figure 2 illustrate the results of the analysis including the standard coefficient and the significance level indicated by the *t*-values. In hypothesis H1, it was hypothesised that shareholder alignment would have a direct impact on business performance; this was not supported by the data in either model. The impact of customer alignment on business performance (H2) was supported by both models and it was

also observed that the bi-directional connections between shareholder alignment and customer alignment were significant and supported by the data (H3a in model 1 and H3b in model 2).

Hypotheses H3 through to H9 relate to the impact of the enablers on both shareholder and customer alignment, and the results from both models were very similar, in terms of their significance, except for H7a relating top management support to shareholder alignment. Hypothesis H4 addressed the importance of an organisation's process orientation to both shareholder and customer alignment. Analysis revealed that only the link between organisational structure and shareholder alignment was significant and therefore hypothesis H4a was supported.

[Insert Figure 2 about here]

Hypothesis 5 identified the potential impact between the internal relational behaviour and both shareholder and customer alignment. The results indicate that internal relational behaviour has a significant impact on customer alignment, but not shareholder alignment. Interestingly, Hypothesis 6, which looks at the importance of customer relational behaviour, as an enabler for both shareholder and customer alignment, did not prove to be significant for either, based on our data. In contrast, Hypothesis 7 defines the importance of top management support as a key enabler to both shareholder and customer alignment, and in both cases for model 1 the hypothesis were shown to be significant. However, for model 2 only the relationship between top management support and customer alignment (H7b) was found to be significant. Both of the remaining hypotheses (H8 & H9), which looked at the importance of information sharing and performance management, proved to be significant for shareholder alignment but not customer alignment.

Even though possible mediating effects had not been hypothesised, some post hoc analyses were performed for the possible mediating roles of shareholder alignment and/or customer alignment in the relationship between the six enablers and business performance. Mediation tests followed the standard "mediation model with direct effect" technique, where the model is tested with and without the mediator(s) separately, and the path significances are compared accordingly (Hayes and Scharkow, 2013; Malhotra et al., 2014; Rungtusanatham et al., 2014). However, none of them was found to be statistically significant. Further, since the relationship between shareholder alignment and business performance was not significant, the mediating role of customer alignment on this relationship was tested, but was not supported.

5. Reflection and Discussion

This paper seeks to clarify the nature of supply chain alignment and in doing so develop the theory associated with supply chain alignment to advance practice in the field. It tests the effects of shareholder and customer alignment, as the two underpinning constructs of supply chain alignment, and finds that they impact on business performance in a different manner. As illustrated in Figure 3, this study identifies the effective enablers of shareholder and customer alignment, and the mechanisms in which shareholder and customer alignment produce business performance impact.

Of the six candidate enablers identified from a systematic review of the literature (Wong et al., 2012), only customer relational behaviour (CR) was found to have no detectable influence either on shareholder alignment (SA) or on customer alignment (CA). Almost all of the remaining enablers impacted on strategic alignment or customer alignment, but not both. While this result is somewhat unexpected, it can be intuitively explained by the strong bi-directional relationship that exists between strategic alignment and customer alignment. In other words, an enabler of one will indirectly be an enabler of the other. Only top management (TS) support was found to be an enabler of CA and of SA. Although it was not supported for strategic alignment in model 2 (CA is positively related to SA) it was supported in model 1, (SA is positively related to CA).

Both the relationship between SC alignment, and business performance and the enablers to supply chain alignment, are now discussed in turn.

[Insert Figure 3 about here]

5.1 *The relationship between supply chain alignment and business performance*

In contrast with the literature, the study revealed that only customer alignment (CA) has a direct positive impact on business performance, as measured in terms of achieving agreed targets for net profit, revenue, market share and return on investment. Previous studies (Joshi et al., 2003; Tarigan, 2005; Baier et al., 2008; Schneiderjans and Cao, 2009) only considered shareholder-focused strategic alignment and did not examine the roles of customer alignment. The empirical results of this study indicate that shareholder alignment does not affect business performance directly, instead it affects customer alignment, which has an effect on business performance.

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This is not as surprising as it first seems when the underpinning constructs are considered. At the heart of customer alignment is the development of a business strategy consistent with customer needs (Jaworski and Kohli, 1993; Slater and Narver, 1994). This requires the development of a supporting strategy (operations and supply chain) that firstly ensures customer needs are met; flexes to ensure key customer needs continue to be met; and is willing to take corrective action to both key processes and organisational structure if needs are not met (Godsell et al., 2011). In other words, and supporting the argument of Drucker (1974), CA is focused on effectiveness, or 'doing the right things', which is the foundation for success.

In contrast the shareholder alignment constructs are internally (efficiency) focused and not externally (effectiveness) focused. They consider the internal alignment of the organisation to the company strategy and its shareholder objectives (Lawrence and Lorsch, 1967; Thompson, 1967; Day and Fahey, 1990). The study identified that shareholder alignment is an antecedent of customer alignment in terms of delivering business performance. This is logical if an organisation has the ongoing delivery of customer needs at the heart of their strategy, and this is consistent with the objectives of the owners and shareholders. This is then cascaded via the operations and supply chain (O&SC) function through the functional strategy, a vision to which the employees can align (Hill, 1985; Leong et al., 1995). Ongoing alignment is maintained through the revision of the O&SC strategy if a gap within corporate strategy begins to emerge.

Rather than debating the trade-off between customer and shareholder alignment (Rappaport, 1987; Cornelius and Davies, 1997) or arguing the need for balancing between customer alignment and shareholder alignment (Feurer and Chaharbaghi, 1994; Cleland and Bruno, 1997), or arguing customer value comes first and shareholder value next alignment (Copulsky, 1991; Doyle, 1994; Laitamaki and Kordupleski, 1997; Drucker, 2001), this study ascertains that both customer alignment and shareholder alignment are important and are needed to improve business performance and indeed this study confirms that there is a strong bi-directional relationship between the two. In the words of Drucker (1974, page 44) it is "doing things rights", *and* "doing the right things", by aligning with customers, that brings direct benefits in business performance. As highlighted by Cao et al. (2012), this study points out that it is crucial to recognise that shareholder alignment alone is inadequate for achieving better business performance and the efforts put into achieving shareholder alignment can reach the maximum rewards only when companies are capable of aligning business strategy with

supply chain strategy, that emphasises consistently meeting customer needs – customer alignment. In short, shareholder alignment and customer alignment inform and complement each other.

5.2   *Enablers to supply chain alignment*

This study advances supply chain alignment literature by identifying two categories of enabler, each for different types of alignment. Shareholder alignment is enabled independently by four factors: organisational structure, information sharing, the business performance measurement system and top management support. The corporate strategy is deployed through the functional O&SC strategy, which is reflected in the organisational structure that reflects the need for functional excellence whilst maintaining a cross-functional perspective (Srivastava et al., 1999). This study shows that relevant cross-functional skills are required to manage the core business processes of Plan, Source, Make, Deliver and Sales, ensuring functional excellence. The organisation has to be structured to allow cross-functional task forces to work together to resolve issues with a broader business perspective (Anderson and Narus, 1990; O'Leary-Kelly and Flores, 2002).

Shareholder alignment is further enabled by information sharing because functional and cross-functional excellence need to be underpinned by accurate information relating to material flow being readily available, at the right time, and employees with sufficient knowledge to use the information to make decisions (Lee and Whang, 2000; Sahin and Robinson, 2002; Li et al., 2005).

The business performance measurement system is also crucial in supporting shareholder alignment as it provides the governance mechanism by which the organisation can evaluate if the cascade of strategy is effective (Ahmed at al., 1996). It has close links to the measured items that support both shareholder alignment and organisation structure. In the first instance it is important to ensure that the performance targets, cascaded through the organisation, align to the overall business strategy and objectives, and that measures are taken at agreed intervals, e.g. daily, weekly, monthly or quarterly. Just as both the customer and business face aspects of the strategy flex to maintain alignment, the business also needs to take action to improve performance when targets are not met. Furthermore, the business performance measurement system needs to support the organisational structure and encourage employees to strive for excellence both functionally and cross-functionally (Storey et al., 2006).

Top Management (TS) Support was the only enabler to both customer and shareholder alignment. The supply chain sits at a nexus between the customer and the business. It is therefore important for senior managers to ensure that they engage fully with potential SC issues within the business, through reading reports and listening to employees and participating in meetings where SC issues are discussed (Storey et al., 2005). Increasingly it is recognised that Sales and Operations Planning (S&OP), or Integrated Business Planning (IBP), is a critical enabler of this engagement (Godsell et al., 2011). It provides a forum to determine what is best for the business when reconciling demand side (customer requirements) with supply side (supply chain capabilities).

The measured items that more directly related to shareholder alignment were not found to be significant – for instance, senior management supporting the increased human resources or capital investment required for supply chain initiatives. This may be because it was not clear how they directly supported the business strategy, but could also be a result of the difficulties that SC managers have in presenting a compelling case to the senior management team. It is not possible to determine the underpinning reasons from this study but it has highlighted an important avenue for further research. In contrast, the items more directly related to customer alignment, i.e. the strategic importance both of SCM and appropriate supporting SC capabilities, were recognised by top management as critical to meeting customer needs (Ahire et al., 1996; Buhner, 1997; Storey et al., 2005). This is potentially further support for the hypothesis that CA is perceived to have a positive impact on business performance.

Internal Relational (IR) Behaviour was the only other enabler to customer alignment. SCM has long been recognised as a critical business process (Cooper et al., 1997; Srivastava et al., 1999) that cuts across functional boundaries to deliver products and services to the customer. Internal relation is a critical enabler of the SCM process to align with customer needs, as it seeks to ensure a high degree of mutual understanding across the functions, a cross-functional approach to problem solving and planning. Since internal relational behaviour is more a process-oriented construct, that is focused on cross-functional activities, it was not significantly related to shareholder alignment, which emphasises theh alignment of shareholder objectives across organisational hierarchies in a vertical rather than horizontal fashion.

The only enabler that the model did not support was Customer Relational (CR) Behaviour. At first this may appear surprising, given the positive impact that customer alignment has on business performance. However, upon further investigation of the underpinning measured items, it can be seen that they suggest integration rather than alignment

with the customer as goals, costs, problems and plans are jointly shared. Bagchi and Skjoett-Larsen (2002, p. 92) state that:

'Organizational integration encourages partners to become more entrenched members of the network and instils a sense of belonging to the supply chain…true organizational integration thus paves the way for individual members of the chain to behave more like one unified entity sharing ideas, skills and culture alike.'

In contrast, alignment is defined by Christopher et al. (2004, p. 372) as:

'…the ability to create "seamless" or "boundaryless" connections, in other words there are no delays caused by hand-offs or buffers between the different stages in the chain and transactions are likely to be paperless.'

The debate regarding the difference between alignment and integration is an important one for SCM, and one for further research, particularly in relationship to the customer.

6. Refinement, Conclusions and Further Work

This study advances strategic management and supply chain literature by revealing that the relationship between shareholder alignment, customer alignment and improved business performance is more complex than the extant literature suggests. Whilst the strategic management literature emphasises the importance of strategic alignment between business strategy and shareholder value (shareholder alignment), this study reveals another very crucial alignment – customer alignment. Within an organisation the business strategy is critical to driving shareholder alignment within the business as it drives the deployment of the strategy through the functions. However, a customer orientation can be maintained if it is a fundamental part of the business strategy. This study further advances theory of supply chain alignment by revealing that shareholder alignment and customer alignment require different key enablers, as opposed to previous thoughts, i.e. that they share the same enablers. All the above new insights lead to the refinement of our conceptual framework in Figure 4, which provides useful practical recommendations supported by our findings.

[Insert Figure 4 about here]

According to the framework, the deployment of a successful business strategy (which should emphasise shareholder and customer alignment) is governed by top management, through a business performance measurement system and supported by a matrix organisational structure. Vertically functional excellence is instilled through a classic functional hierarchy. However, cross-functional planning, problem solving and mutual understanding across the functions are achieved through the customer-orientated SCM process and supportive internal relational behaviour. This ensures customer alignment and superior business performance are delivered. Alignment is not static because customer and shareholder needs can change over time. It requires continual monitoring, evaluation and action to ensure that alignment is maintained. This occurs across the business strategy, functional strategy and SCM process. This requires a high degree of information sharing both vertically and horizontally, which can only occur if accurate, relevant and timely information is available. From this we can derive three key insights for practice:

1. The business strategy needs to make explicit reference to the way that it will deliver customer value and thus consider both customer and shareholder alignment, thus ensuring that it is both 'effective' (does the right things) and efficient (does things right).

2. Top management needs to develop an appropriate governance structure to ensure that the strategy is delivered. As previously discussed, Sales and Operations Planning (S&OP) or Integrated Business Planning (IBP) is a natural governance mechanism within a business for ensuring that the gap with strategy is closed. Done well it forces senior management to address shareholder and customer alignment on a monthly basis. It also ensures that the process is not static and is refreshed in a timely manner, thus driving both functional and process excellence into the organisation.

3. SCM needs to be regarded as a process that draws together the functional expertise siloed within the business, into a cross-functional team focused on delivering customer value at lowest possible supply chain cost. Such an approach is beginning to emerge in some organisations, whereby the classic regional, functional organisational structure has a process orientated overlay. In line with Srivastava et al. (1999), SCM is one of three core processes; the other two are typically customer relationship management and innovation.

In conclusion this study is methodologically robust. As a result of the CFA, a set of valid constructs entered the structural models. Discriminant validity and uni-dimensionality were tested for their structural mode and both cases passed the relevant tests by a large margin. One potential limitation of the analysis is the generalizability of the findings beyond the types of companies surveyed, which employed more than 250 people (medium and large companies) and were UK-based. Given the European or global nature of many of these companies, it is likely that the results are generalizable to similar sized companies in other developed economies. However, the relevance of the results to small and medium sized enterprises (SMEs) would require further testing, since it is expected that they may not be sufficiently large and complex for all the enablers to be relevant. For example, organisational structure in terms of control spans, business process owner, cross-functional knowledge flow and inter-departmental activities may not be applicable to small, or even medium sized companies. Further, it is likely that SMEs will not be concerned with managing shareholder and customer alignment with a view to improving business performance.

A further limitation of this paper is that business performance is only considered from the economic perspective and not from the social or environmental perspective that sustainability might require. This is due to the scope and conceptualisation of the shareholder and customer alignment processes. Extending the scope of business performance to include social and environmental aspects is desirable but this would stretch beyond what our theories can explain. This is one area for future research.

The natural extension of this study is to continue to empirically refine the conceptual framework presented in Figure 4 in more depth. A case based approach would afford a more in-depth exploration into the relationship between the constructs and is perhaps the most appropriate next step. There are two specific areas for investigation highlighted by this study. The first is to understand why top management tended not to approve the majority of requests for additional resources or capital expenditure to support supply chain initiatives. Was this a function of limited resources, lack of strategic fit or the inability of supply chain managers to sell their ideas? The second is the reason why the customer relational behaviour construct was not supported. For instance, is this because the measured items focused on hard-wired integration rather than the more networked concept of alignment? A case based approach would enable a greater understanding of the constructs and the relationships between them, such that

both the theory and practice of improving business performance through supply chain alignment can be further advanced.

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Appendix 1. Summary of Measurement Scales

[Insert Table 3 about here]

Appendix 2a. Loadings and cross-loadings in the final research model 1.

[Insert Table 4 about here]

Appendix 2b. Loadings and cross-loadings in the final research model 2

[Insert Table 5 about here]

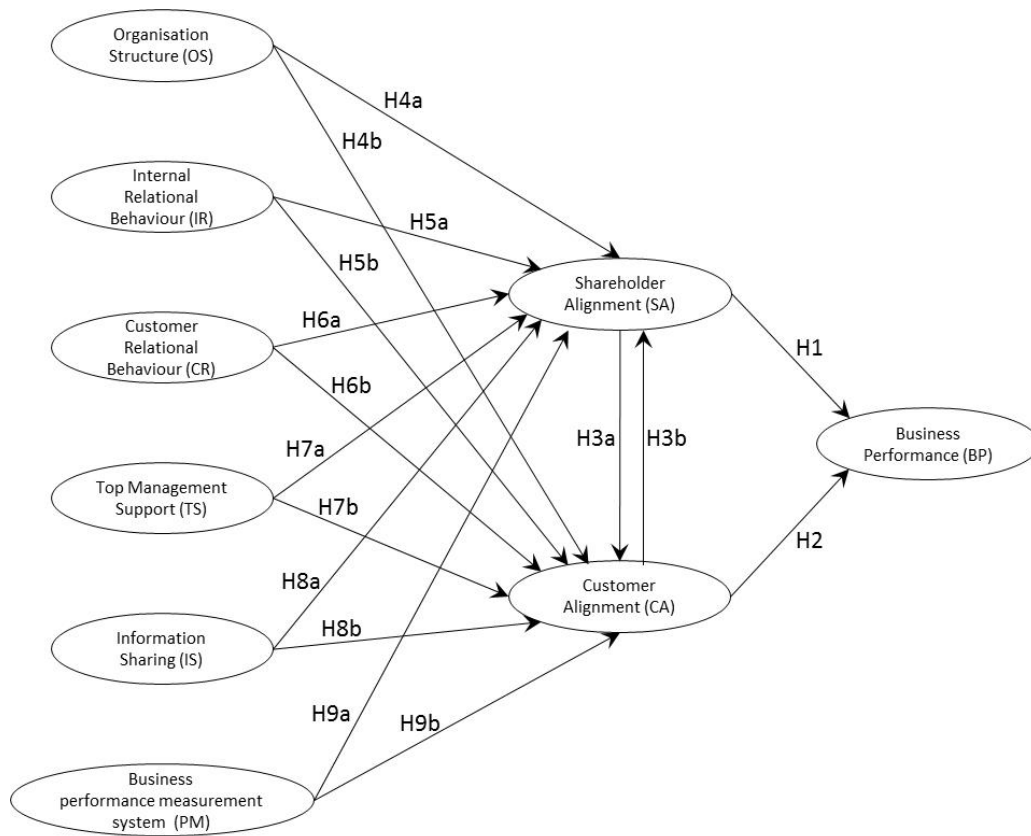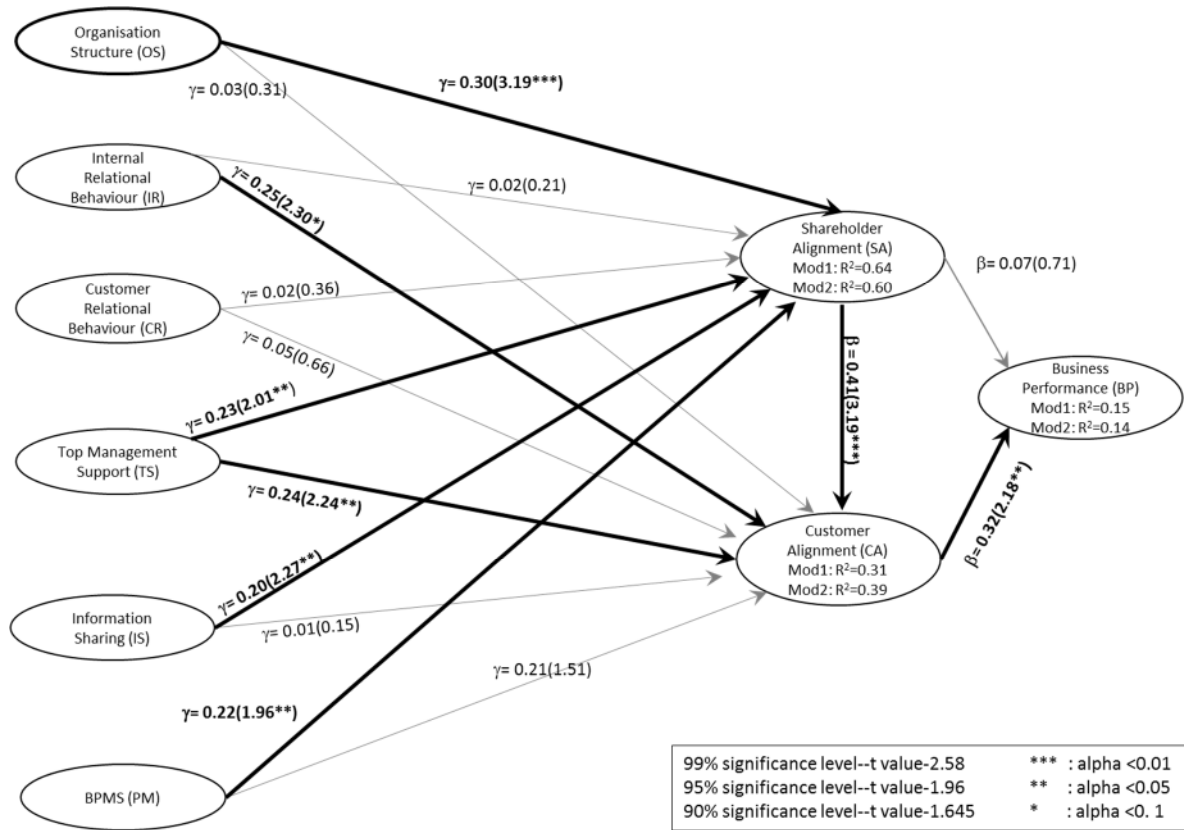**Figure 1. Theoretical Models (model 1: with SA→CA, H3a; model 2: with CA→SA, H3b)**
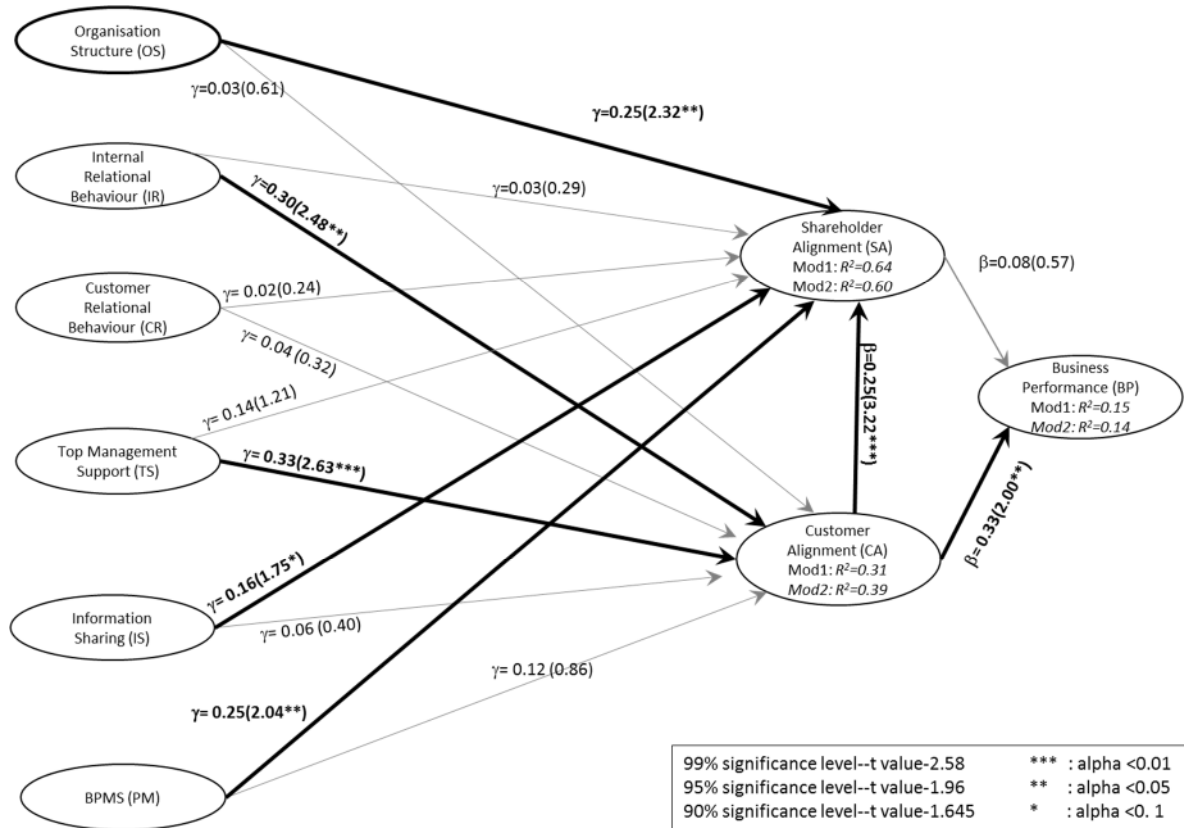
Model 1:

Model 2:

Figure 2. PLS Structural analysis results showing standardized coefficient and significance level (t-values in brackets) for structural models 1 and 2. (Lines in bold indicate a significance level =/> 90%)
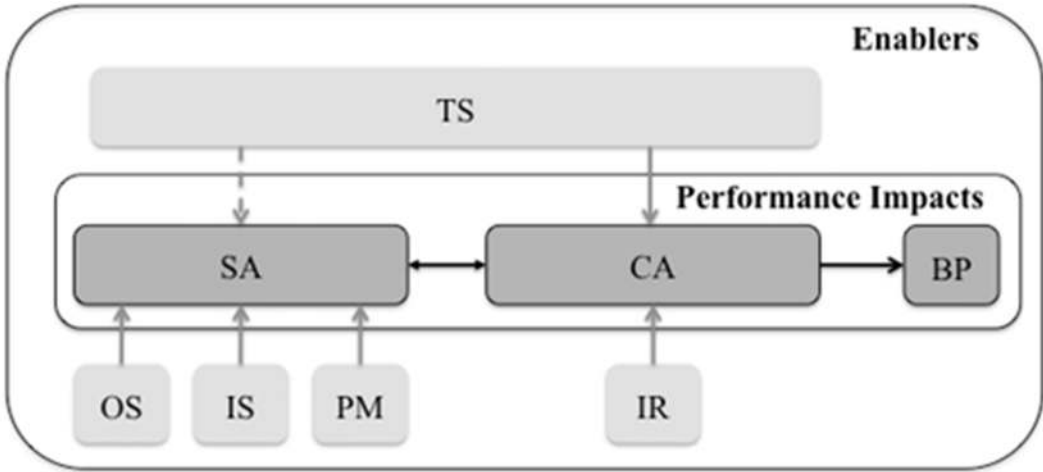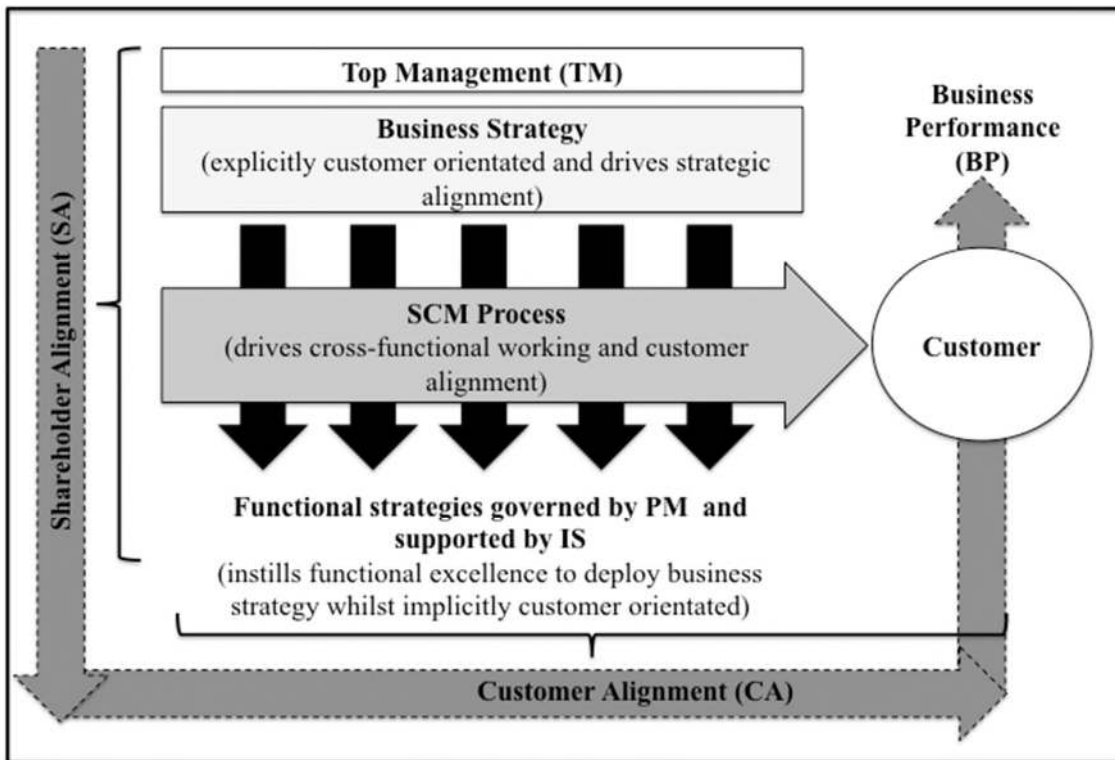
Figure 3. Conceptual model

Figure 4. Refined conceptual model

Table 1. Constructs Definition and measured items

Construct	Definition and measured items	Key references
Business performance (BP)	*Definition*: Financial performance of an organisation during the last five years *Measured items*: Net profits, revenue, market share and return on investment	Ahmed et al. (1996)
Customer alignment (CA)	*Definition*: Deliberate acts to achieve strategic fits in an organisation toward creating customer value *Measured items*: Consistency between business strategy and customer needs; extent to which performance of the supply chain/operations strategy fulfils customer needs; changes and adjustments of operations to fulfil different key customers' needs	Jaworski and Kohli (1993); Slater and Narver (1994)
Shareholder alignment (SA)	*Definition*: Business strategy, supply chain strategy and employees' expectations are aligned with shareholder objectives *Measured items*: Consistency between business strategy and shareholder objectives; consistency between operations/supply chain strategy and the business strategy; employees share same vision as shareholders; changes to process and organisation to deliver shareholder objectives	Lawrence and Lorsch (1967); Thompson (1967); Day and Fahey (1990)
Organisational structure (OS)	*Definition*: Process-oriented organisational structure with the ability to enable/support cross-functional knowledge exchange and inter-departmental activities *Measured items*: Scope of process control of SC/Operations Director, process owners, cross-functional process knowledge, involvement in inter-departmental activities	Ettlie and Reza (1992); Davenport (1993); Lewis and Slack (2003)
Internal relational behaviour (IR)	*Definition*: Activities and manners in which these activities are performed to facilitate the process of building up cross-functional relationships *Measured items*: Cross-functional activities; mutual understanding of other functions processes; joint problem-solving and planning across functions	Anderson and Narus (1990); O'Leary-Kelly and Flores (2002); Pagell (2004)
Customer relational behaviour (CR)	*Definition*: Customer interactions which facilitate the process of building up and maintaining customer relationships *Measured items*: Goal-sharing, cost sharing and profit sharing practices with customers; and joint efforts with customers in problem-solving and planning	Day (1994); Auramo et al. (2004); Tracey et al. (2005)
Top management support (TS)	*Definition*: Support and commitment from top management in supply chain management *Measured items*: Listens to employees on SC issues; participation in supply chain meetings; provides human resources and capital investment for SC initiatives; emphasises strategic importance of supply chain management; aware of need for supply chain capability to meet customer needs	Gerbing et al. (1994); Ahire et al. (1996); Buhner (1997); Storey et al. (2005);
Information sharing (IS)	*Definition*: Sharing of information for facilitating business strategy and supply chain activities *Measured items*: Sharing relevant, accurate and sufficient information for operations/supply chain in a timely manner and level of knowledge required to use available information	Bourland et al. (1996); Lee and Whang (2000); Sahin and Robinson, (2002); Li et al. (2005)
Business performance measurement system (PM)	*Definition*: The system in which business performance is being measured and utilised for achieving the improvement *Measured items*: Links between strategic objectives and performance targets; performance is reported and reviewed against targets at agreed intervals; performance measurements are used for process optimisation across functions	Schmenner and Vollmann (1994); Gunasekaran et al. (2001)

Table 2. Construct validity and reliability for models 1 and 2

(Test of discriminant validity, unidimensionality, and reliability with Correlations, AVE, Composite Reliability, and Cronbachs α (square-root of AVE in italics on diagonal))

a: Model 1 (SA to CA hypothesis H3a)

	AVE	Comp. Rel.*	Cron. α**	BP	CA	SA	OS	IR	CR	TS	IS	PM
BP	0.707	0.906	0.867	*0.841*								
CA	0.629	0.872	0.804	0.371	*0.793*							
SA	0.652	0.881	0.820	0.258	0.541	*0.807*						
OS	0.747	0.855	0.663	0.254	0.389	0.674	*0.864*					
IR	0.711	0.881	0.799	0.212	0.475	0.548	0.595	*0.843*				
CR	0.588	0.851	0.771	0.190	0.340	0.440	0.450	0.549	*0.767*			
TS	0.634	0.874	0.806	0.232	0.463	0.574	0.494	0.427	0.404	*0.796*		
IS	0.673	0.891	0.839	0.083	0.321	0.555	0.556	0.511	0.413	0.329	*0.820*	
PM	0.677	0.913	0.880	0.225	0.325	0.657	0.659	0.509	0.518	0.579	0.498	*0.823*

b: Model 2 (CA to SA hypothesis H3b)

	AVE	Comp. Rel.*	Cron. α**	BP	CA	SA	OS	IR	CR	TS	IS	PM
BP	0.705	0.905	0.867	*0.840*								
CA	0.630	0.872	0.804	0.375	*0.794*							
SA	0.651	0.881	0.821	0.262	0.544	*0.807*						
OS	0.747	0.855	0.663	0.255	0.388	0.675	*0.864*					
IR	0.713	0.882	0.799	0.208	0.470	0.551	0.596	*0.844*				
CR	0.589	0.851	0.771	0.193	0.334	0.441	0.450	0.557	*0.767*			
TS	0.634	0.874	0.806	0.232	0.461	0.575	0.495	0.425	0.404	*0.796*		
IS	0.673	0.891	0.839	0.084	0.319	0.555	0.556	0.516	0.413	0.329	*0.820*	
PM	0.677	0.913	0.880	0.225	0.322	0.657	0.659	0.512	0.518	0.579	0.498	*0.823*

*** Composite Reliability ** Cronbachs α**

Table 3

Constructs/Measured Items	Mean	SD	Item Loading	CR	AVE
Business performance (BP) *(1) Never, (2) Seldom; (3) Sometimes, (4) Often, (5) Always…..met the set/agreed targets				0.867	0.707
BP1: During the last five years, the net profit has:*	0.200	0.071	0.837		
BP2: During the last five years, the revenue targets have:*	0.292	0.073	0.823		
BP3: During the last five years, the market-share targets have:*	0.410	0.100	0.836		
BP4: During the last five years, the return on investment has:*	0.291	0.064	0.867		
Customer Alignment (CA) *(1) Strongly disagree, (2) Disagree, (3) Neither agree nor disagree, (4) Agree, (5) Strongly agree				0.804	0.629
CA1: Business strategy of your company is consistent with customer needs: *	0.347	0.049	0.784		
CA2: Describe the performance of the supply chain/operations strategy of your company: (1) Never, (2) Seldom; (3) Sometimes, (4) Often, (5) Always ….fulfil customer needs	0.324	0.039	0.836		
CA3: Your company willingly adjust operations to fulfil the different needs of key customers:*	0.281	0.040	0.763		
CA4: When the supply chain cannot fulfil customer needs, your company initiates necessary changes in processes and organisations:*	0.304	0.050	0.788		
Shareholder Alignment (SA) *(1) Strongly disagree, , (2) Disagree, (3) Neither agree nor disagree, (4) Agree, (5) Strongly agree				0.820	0.652
SA1: The business strategy of your company is consistent with the objectives of shareholders/owners:*	0.229	0.030	0.700		
SA2: The operations/supply chain strategy of your company is consistent with the business strategy:*	0.341	0.022	0.872		
SA3: The employees of your company share the same vision as the shareholders/owners:*	0.333	0.030	0.777		
SA4: When the supply chain cannot deliver shareholder/owner objectives, your company initiates necessary changes to process and the organisation:*	0.324	0.020	0.870		
Organisation Structure (OS) *(1) Strongly disagree, , (2) Disagree, (3) Neither agree nor disagree, (4) Agree, (5) Strongly agree				0.663	0.747
OS1: Which of the following activities (Plan, Source, Make, Deliver, Sales) are under the control of the operations/supply chain director (or equivalent) in your company? (1) One, (2)Two, (3) Three, (4) Four, (5) All…. of these activities					
OS2: In your company there are process owners for each of the following core business processes – Plan, Source, Make, Deliver and Sales:					
OS3: In your company employees have cross-functional knowledge and skills required to manage the core business process including Plan, Source, Make, Deliver and Sales:*	0.631	0.066	0.890		
OS4: In your company departments are organised according to					

Constructs/Measured Items	Mean	SD	Item Loading	CR	AVE
Internal Relational Behaviour (IR)				0.799	0.711
IR1: *Describe the average employee involvement in cross-functional activities in your company:* *(1) No, (2) One ad-hoc, (3) A few ad-hoc, (4)A few long term, (5) Many long-term ………cross-functional teams*					
IR2: Describe the current level of mutual understanding in your company: (1) No functional department, (2) A few functional departments, (3) Most functional departments, (4) All functional department, (5) All functional departments and subsidiaries……… know each other's business processes well.	0.433	0.065	0.843		
IR3: Describe the current joint problem-solving practices in your company: (1) No joint problem-solving between functional departments (2) A few functional departments, (3) Most functional departments, (4) All functional departments, (5) All functional departments and subsidiaries …….are willing to solve problems together	0.319	0.052	0.819		
IR4: Describes the current joint-planning practices in your company: (1) No joint planning between functional departments …. (2) A few functional departments, (3) Most functional departments, (4) All functional departments, (5) All functional departments and subsidiaries ………..are willing to plan together	0.431	0.043	0.867		
Customer Relational Behaviour (CR)				0.771	0.588
CR1: Describe the current goal-sharing practices between your company and your customers: (1) No goal-sharing with customers (2) Share goals with a few key customers, (3) Share goals with most key customers, (4) Share goals with all key customers, (5) Share goal with all customers	0.442	0.072	0.817		
CR2: Describe the current cost-sharing practices: (1) No cost-sharing with customers , (2) Share costs with a few key customers, (3) Share costs with most key customers, (4) Share costs with all key customers, (5) Share costs with all customers	0.295	0.064	0.706		
CR3: *Describe current profit-sharing practices:* *(1) No profit-sharing with customers, (2) Share profits with a few key customers, (3) Share profits with most key customers, (4) Share profits with all key customers, (5) Share profits with all customers*					
CR4: Describe current joint problem-solving practices: *(1) No joint problem-solving with customers, (2) Joint problem-solving with a few key customers, (3) Joint problem-solving with most key customers, (4) Joint problem-solving with all key customers, (5) Joint problem-solving with all customers*	0.245	0.072	0.748		
CR5: Describe the current joint-planning practices: *(1) No joint-planning with customers, (2) Joint planning with a few key customers, (3) Joint planning with most key customers, (4) Joint planning with all key customers, (5) Joint-planning with all customers*	0.304	0.061	0.792		
Top management support (TS)* (1) Strongly disagree,, (2) Disagree, (3) Neither agree nor disagree, (4) Agree, (5) Strongly agree				0.806	0.634
TS1: The top management of your company: (1) Never, (2) Seldom, (3) Sometimes, (4) Often, (5) Always…….. reads reports and listens to employees regarding SC issues	0.333	0.038	0.834		

Constructs/Measured Items	Mean	SD	Item Loading	CR	AVE
Information Sharing (IS) *(1) Strongly disagree, , (2) Disagree, (3) Neither agree nor disagree, (4) Agree, (5) Strongly agree				0.839	0.673
**IS1:** The information available to operations/supply chain department is relevant to the management of material flow:*	-	-	-		
IS2: The information for the management of material flow by operations/supply chain is accurate: *	0.336	0.044	0.862		
IS3: The information for the management of material flow by operations/supply chain is available in a timely manner: *	0.261	0.045	0.816		
IS4: The information for the management of material flow by operations/supply chain is sufficiently available: *	0.271	0.042	0.835		
IS5: The operations/supply chain department have sufficient knowledge to use all available information for the management of material flow: *	0.354	0.055	0.765		
Business Performance Measurement Systems (PM) *(1) Strongly disagree, , (2) Disagree, (3) Neither agree nor disagree, (4) Agree, (5) Strongly agree				0.880	0.677
PM1: Performance targets at different organisation levels are linked to the overall business objectives: *	0.257	0.028	0.847		
PM2: Performance of different organisation levels is reported at agreed intervals: *	0.209	0.026	0.868		
PM3: Performance of different organisation levels is reviewed against targets at agreed intervals: *	0.231	0.020	0.843		
PM4: When performance targets are not met, your company takes action to improve the performance: *	0.264	0.028	0.805		
PM5: Indicate the effect of the business performance measurement system on employee behaviour: (1) Encourage functional sub-optimisation … (5) Encourage process optimisation across functions	0.260	0.038	0.745		

Table 4

	BP	CA	SA	OS	IR	CR	TS	IS	PM
BP1	0.837	0.193	0.153	0.195	0.097	0.152	0.083	0.097	0.170
BP2	0.823	0.255	0.234	0.181	0.174	0.052	0.179	0.049	0.158
BP3	0.836	0.434	0.223	0.221	0.238	0.243	0.245	0.062	0.207
BP4	0.867	0.278	0.234	0.248	0.154	0.157	0.215	0.084	0.206
CA1	0.208	0.784	0.474	0.331	0.378	0.383	0.444	0.249	0.339
CA2	0.351	0.836	0.39	0.285	0.439	0.300	0.31	0.331	0.243
CA3	0.212	0.763	0.41	0.289	0.329	0.190	0.429	0.178	0.189
CA4	0.406	0.788	0.437	0.326	0.356	0.183	0.284	0.251	0.244
SA1	0.057	0.23	0.700	0.367	0.266	0.286	0.377	0.369	0.459
SA2	0.151	0.451	0.872	0.665	0.481	0.368	0.477	0.514	0.584
SA3	0.344	0.511	0.777	0.577	0.504	0.398	0.522	0.396	0.529
SA4	0.240	0.503	0.87	0.522	0.475	0.356	0.462	0.501	0.54
OS3	0.240	0.400	0.611	0.890	0.501	0.359	0.414	0.483	0.56
OS5	0.197	0.261	0.550	0.837	0.532	0.427	0.445	0.479	0.584
IR2	0.203	0.425	0.429	0.522	0.843	0.36	0.393	0.366	0.37
IR3	0.095	0.342	0.442	0.526	0.819	0.550	0.347	0.489	0.438
IR4	0.218	0.422	0.513	0.468	0.867	0.505	0.340	0.455	0.484
CR1	0.113	0.393	0.396	0.354	0.448	0.817	0.398	0.331	0.480
CR2	0.25	0.172	0.348	0.28	0.31	0.706	0.287	0.309	0.374
CR4	0.087	0.153	0.286	0.348	0.445	0.748	0.237	0.227	0.349
CR5	0.144	0.252	0.296	0.403	0.486	0.792	0.275	0.388	0.353
TS1	0.195	0.379	0.495	0.38	0.411	0.318	0.834	0.292	0.509
TS2	0.135	0.344	0.439	0.292	0.342	0.331	0.735	0.262	0.437
TS5	0.179	0.35	0.472	0.423	0.295	0.349	0.819	0.276	0.428
TS6	0.226	0.401	0.42	0.477	0.309	0.289	0.793	0.217	0.467
IS2	0.109	0.287	0.487	0.512	0.416	0.361	0.326	0.862	0.487
IS3	0.010	0.225	0.383	0.432	0.338	0.203	0.189	0.816	0.286
IS4	0.050	0.219	0.407	0.437	0.443	0.369	0.250	0.835	0.373
IS5	0.176	0.300	0.513	0.430	0.460	0.394	0.291	0.765	0.450
PM1	0.188	0.25	0.574	0.542	0.406	0.482	0.581	0.359	0.847
PM2	0.118	0.204	0.473	0.549	0.368	0.392	0.432	0.38	0.868
PM3	0.095	0.222	0.520	0.503	0.332	0.466	0.396	0.461	0.843
PM4	0.170	0.280	0.584	0.493	0.402	0.325	0.400	0.437	0.805
PM5	0.327	0.358	0.525	0.612	0.559	0.458	0.549	0.404	0.745

Table 5

	BP	CA	SA	OS	IR	CR	TS	IS	PM
BP1	0.835	0.195	0.156	0.195	0.096	0.152	0.083	0.097	0.170
BP2	0.815	0.258	0.236	0.181	0.167	0.052	0.179	0.049	0.158
BP3	0.843	0.434	0.227	0.221	0.234	0.243	0.246	0.062	0.207
BP4	0.865	0.282	0.238	0.248	0.152	0.157	0.215	0.084	0.206
CA1	0.211	0.769	0.474	0.331	0.373	0.383	0.444	0.249	0.339
CA2	0.354	0.831	0.394	0.284	0.436	0.299	0.310	0.331	0.243
CA3	0.214	0.775	0.415	0.289	0.328	0.190	0.430	0.178	0.189
CA4	0.406	0.799	0.441	0.326	0.354	0.183	0.284	0.251	0.244
SA1	0.056	0.224	0.687	0.367	0.266	0.286	0.377	0.369	0.459
SA2	0.150	0.452	0.871	0.665	0.482	0.368	0.477	0.514	0.584
SA3	0.346	0.510	0.784	0.577	0.503	0.398	0.522	0.396	0.529
SA4	0.239	0.504	0.870	0.522	0.477	0.356	0.462	0.501	0.540
OS3	0.241	0.397	0.613	0.890	0.497	0.359	0.414	0.483	0.560
OS5	0.196	0.264	0.552	0.838	0.538	0.427	0.445	0.479	0.584
IR2	0.203	0.424	0.432	0.522	0.825	0.360	0.393	0.366	0.370
IR3	0.097	0.343	0.444	0.526	0.838	0.550	0.347	0.489	0.438
IR4	0.218	0.419	0.516	0.468	0.869	0.505	0.340	0.455	0.484
CR1	0.115	0.387	0.398	0.354	0.453	0.817	0.398	0.331	0.480
CR2	0.252	0.168	0.348	0.281	0.312	0.706	0.287	0.309	0.374
CR4	0.089	0.150	0.287	0.348	0.451	0.749	0.237	0.227	0.349
CR5	0.147	0.251	0.295	0.403	0.496	0.793	0.274	0.388	0.353
TS1	0.195	0.374	0.495	0.380	0.412	0.318	0.833	0.292	0.509
TS2	0.138	0.343	0.440	0.292	0.342	0.331	0.735	0.262	0.437
TS5	0.180	0.347	0.472	0.423	0.292	0.349	0.819	0.276	0.428
TS6	0.225	0.403	0.422	0.477	0.305	0.288	0.794	0.217	0.467
IS2	0.111	0.285	0.487	0.512	0.419	0.361	0.326	0.862	0.487
IS3	0.009	0.227	0.382	0.432	0.341	0.203	0.189	0.816	0.286
IS4	0.046	0.218	0.406	0.438	0.448	0.369	0.250	0.835	0.373
IS5	0.175	0.299	0.514	0.430	0.465	0.394	0.291	0.765	0.451
PM1	0.190	0.244	0.572	0.542	0.407	0.482	0.581	0.359	0.847
PM2	0.117	0.202	0.472	0.549	0.369	0.392	0.432	0.380	0.867
PM3	0.094	0.220	0.519	0.503	0.336	0.466	0.396	0.461	0.843
PM4	0.171	0.279	0.585	0.493	0.405	0.325	0.400	0.437	0.806
PM5	0.329	0.356	0.527	0.612	0.560	0.458	0.548	0.404	0.745