Customer Enquiry Management in a Global Competitive Context:

A Comparative Multi-Case Study Analysis

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Abstract

Business-to-Business (B2B) relationships, such as between a manufacturer and a customer, are increasingly important during the Customer Enquiry Management (CEM) process, particularly so for non-Make-To-Stock (non-MTS) companies operating in industrial markets. Few empirical studies have explored the CEM practices adopted by firms in practice. A study of the Italian capital goods sector by Zorzini *et al.* (2007) is a recent exception. Moreover, most studies have approached CEM from a cross-department integrated perspective but in the digital economy, and with globalization, outsourcing and extended supply chains, CEM needs to be approached from a broader supply chain-oriented perspective, incorporating B2B exchanges. This paper builds on the study by Zorzini *et al.* (2007) by conducting multi-case study research with seven UK-based companies in the capital goods sector, including three sales and support companies with offshore manufacturing. By adopting a cross-national research perspective, it assesses whether the proposed theory applies to other capital goods firms outside Italy. By also adopting a supply chain perspective of CEM it investigates current industry practice in B2B markets and explores whether cross-functional coordination and formalization issues can be extended into a global context. Evidence from the UK generally supports prior theory, confirming links between high levels of coordination, formalization of the CEM process and improved performance. Some refinements are proposed, for example, in order to make the theory suitable for a global context. The characteristics of a supply chain are important factors that affect CEM. This research has managerial implications for improving the CEM process in non-Make-To-Stock (non-MTS) capital goods companies from both an intra and an inter-organisational (B2B) perspective. Coordination with partners along the supply chain is needed at the enquiry stage and constraints linked to global customers should be considered when structuring the CEM process. Companies, especially SMEs, operating in B2B contexts should be aware of complexities resulting from managing global customers from different countries and cultures (e.g., when making pricing decisions) together with the opportunities that emerge from entering the global marketplace.

1. Introduction

The management of Business-to-Business (B2B) relationships, such as between a manufacturer and a customer, is of strategic importance in many marketplaces. The responsiveness of the supply chain relies on the effective and efficient processing of orders and information across the various channel members, especially in the initial stages of the customer order process. This can be particularly challenging when products are highly customised, decision-makers are dispersed and customers demand short lead times. As a result, the Customer Enquiry Management (CEM) process is fundamental for non-Make-To-Stock (non-MTS) firms operating in industrial markets and impacts a company's ability to provide quotations that are both competitive and reliable whilst also being realistic (Hicks *et al.*, 2000; Watanapa & Techanitisawad, 2005). While much recent attention has focused on digital B2B exchanges such as via e-procurement, the sophistication of the CEM process for highly customized products means that more personal B2B integrating mechanisms are often relied upon (Stevenson & Hendry, 2007). With globalisation, B2B market transactions become even more complex (Meijboom, 1999; Gunasekaran & Ngai, 2005) while many manufacturing environments, including non-MTS contexts, are characterized by a decreasing degree of vertical integration (Hicks *et al.*, 2000; Hicks *et al.*, 2006). As organizations become more global and begin to rely more and more on their external supply chains, coordination becomes more difficult yet more critical to organizational effectiveness (St. John & Young, 1995; Prasad *et al.*, 2005). Globalization also results in B2B negotiations between members of different nations; differences in language and culture play an important role in CEM (e.g., in pricing decisions) and need to be taken into account at a strategic and a tactical decision level (Meijboom, 1999; Reynolds *et al.*, 2003; Flint, 2004; Sambharya *et al.*, 2005).

Despite the importance of the CEM process, few empirical studies have explored the CEM practices adopted by firms in practice (Ebben *et al.*, 2005) thereby failing to evaluate the true practical relevance of theoretical methods proposed in the literature. A recent exception is a study of the Italian capital goods sector by Zorzini *et al.* (2007). The few studies that have emerged have approached the CEM process from an internal cross-department perspective (Konijnendijk, 1994; Kingsman & Mercer, 1997; Kromker *et al.*, 1997; Jin & Thomson, 2003); however, research is now required which adopts a global supply chain perspective to the study of CEM, including the role of B2B exchanges. Insufficient attention in the international supply chain management literature has been given to non-MTS environments (Sahin & Robinson, 2005).

This paper pursues two core objectives. *Firstly*, it builds on the empirical study by Zorzini *et al.* (2007) in which the authors: (i) developed an interpretative framework for understanding how and why the CEM process varies between capital goods manufacturers; and, (ii) presented three propositions to be tested by further research, focussing on the impact of cross-functional coordination and formalization of the process on firm performance. This paper adopts a comparative, cross-national perspective: interviews with capital goods companies in the UK are used to assess whether the theory proposed by Zorzini *et al.* (2007) applies to other industrial marketers. *Secondly*, we adopt a supply chain perspective of CEM and explore whether cross-functional coordination and formalization issues can be extended into a global context (both in terms of global enterprises and companies with overseas customers/suppliers). By pursuing this second objective, the paper makes a contribution to assessing current industry practice in B2B markets during the customer enquiry management process.

The remainder of this paper is organized as follows. A review of the literature is presented in Section 2 before the research methodology adopted in this study is described in Section 3. Section 4 then assesses whether the theory proposed by Zorzini *et al.* (2007) applies to other capital goods companies outside Italy. Section 5 presents a global perspective of issues relating to the CEM process that emerge from this study. Possible refinements to the interpretative framework, bridging the gap between academic research and industry practice, are considered in Section 6 before the paper concludes (Section 7).

2. Literature Review

Improving customer satisfaction is crucial to a firm's competitiveness (Xiong *et al.*, 2006), particularly in non-MTS environments where customer orders penetrate the organization and have a pervasive influence on most business processes (Meijboom, 1999). A close relationship with customers is a distinguishing feature of CEM, defined as a multi-stage process from the submission of an enquiry to order confirmation (Hendry, 1992; Kingsman *et al.,* 1996; Kingsman, 2000). CEM requires inter-disciplinary competences ranging from operational and planning & control to behavioral processes; most studies have therefore approached it from a cross-department integrated perspective (Jin & Thomson, 2003). Key contributions in the literature that consider the CEM process from this perspective are presented in Subsection 2.1, with particular focus on empirical studies.

Given increasing competition in the new digital economy, global markets, outsourcing and extended supply chains, an integrated CEM process is of even greater importance in B2B

contexts but needs to be approached from a broader supply chain perspective (Hicks *et al.*, 2000). The impact of supply chain characteristics and other globalization-related issues on the CEM process are therefore described in Subsection 2.2. The state-of-the-art is assessed in Subsection 2.3.

2.1 The CEM Process: A Cross-Department Perspective

The CEM process often involves complex trade-offs (e.g., between price and delivery lead time), requiring inter-disciplinary expertise (Kromker *et al.,* 1997; Jin & Thomson, 2003). Setting delivery dates (DDs) that are both competitive and reliable therefore requires ongoing co-ordination between the Sales & Marketing and Production departments (Kingsman & Mercer, 1997) and is a critical activity for Make-To-Order (MTO) companies (Easton & Moodie, 1999; Ivanescu *et al.*, 2002; Moses *et al.*, 2004; Wullink *et al.*, 2004; Ebben *et al.*, 2005). The challenge of managing conflicting objectives has been studied by several authors. Crittenden *et al.* (1993) propose categories of integrating mechanisms for reducing potential conflicts (e.g., organizational design, communication, and group decision support systems). Kate (1994) investigates co-ordination mechanisms between production and sales activities. St. John & Hall (1991) identify possible co-ordination instruments, including formalized control procedures. Formalization in supporting cross-functional co-ordination is also discussed by Javorsky & Kolhy (1993) and Welker (2004).

Most contributions which have addressed cross-functional coordination in non-MTS firms are theoretical. Of the few empirical studies, those by Konijnendijk (1994), Hicks *et al.* (2000 and 2001), Parente *et al.* (2002) and Zorzini *et al.* (2007) focus on industrial markets and are of particular relevance. Konijnendijk (1994) explored marketing- manufacturing interdependence in Engineer-To-Order (ETO) companies through a survey and case studies, proposing several co-ordination mechanisms. However, further research is required to analyze the impact of contingency factors on co-ordination requirements and mechanisms. The impact of contingency factors on the CEM process is considered by Hicks *et al.* (2000 and 2001). From case research with ETO companies in the capital goods sector, the authors find that realizing advantages from research and development, engineering design and suppliers is dependent upon knowledge and information sharing during the tendering process. Parente *et al.* (2002) adopt a contingency perspective, examining the causal effect of the production-sales interface on customer satisfaction. Three interface variables (connectedness, conflict, and coordination) are measured by surveying: sales representative-production manager pairings in three manufacturing companies and customer satisfaction. Product type (ETO vs.

4

non-ETO) is introduced as a moderating variable. Results indicate that cross-functional coordination has a significant impact on customer satisfaction in ETO situations.

Building on theory, such as from Welker (2004), Zorzini *et al.* (2007) present conceptual model for understanding which factors influence the structure of the CEM process. This is reproduced in Figure 1 and provides the conceptual basis for the study.

[Take in Figure 1]

The model considers four decision variables: DD setting management mode (including lead time setting, workload analysis, monitoring of subcontractors and suppliers), responsibility for DD setting, cross-functional coordination and formalization. Three contingency factors were found to be particularly relevant to company choices: product complexity, system flexibility, and uncertainty of the context. The impact of CEM approaches on company performance (e.g., responsiveness, delivery reliability and strike rate) was investigated. High cross-functional coordination and formalization were found to constitute best practice whatever the contingency factors. Responsibility for DD setting was found to be less important than the degree of cross-functional coordination. Three propositions to be tested by further research were presented. Two are particularly relevant to this study while the third one is beyond the scope of this research.

The above review of literature which considers the CEM process from a cross-department perspective demonstrates that few empirical studies have explored the CEM methods employed by firms in practice. Furthermore, no attempts have been made so far to add a cross-national dimension to the research.

2.2 The CEM Process: A Global Perspective

Non-MTS Supply Chains in a Global Context

Coordination along non-MTS supply chains is an important and complex issue (Gunasekaran & Ngai, 2005); as customer orders trigger production processes, coordination needs to be extended throughout the supply chain so products are manufactured and delivered on time. Despite this, non-MTS supply chains have received less attention than MTS chains, especially in the coordination and information sharing literature (Hicks *et al.*, 2000; Prasad *et al.*, 2005; Sahin & Robinson, 2005). A key contribution to supply chain management in ETO contexts is the study by Hicks *et al.* (2000) where proactive involvement of procurement in tendering and product design decisions is found to be strategically important for improving efficiency and

effectiveness. The strategic importance of information management, supported by Information Technology (IT), for effective information sharing across the supply chain in industrial contexts is highlighted by Hicks *et al.* (2006).

Some authors describe the international dispersion of chain elements as an important feature of non-MTS supply chains in the current competitive climate, where planning and execution activities usually involve managing partners and suppliers geographically dispersed all over the globe (Meijboom, 1999; Gunasekaran & Ngai, 2005). At present, insufficient attention in the international supply chain management literature has been given to non-MTS environments. Differences between MTS and non-MTS systems mean that research findings are not transferable across supply chain structures (Prasad *et al.*, 2005); hence, further research is required (Sahin & Robinson, 2005).

The CEM Process in Global Non-MTS Supply Chains

Given the importance of supply chain characteristics and globalization, studying CEM from a global supply chain perspective is required. Few studies have analyzed coordination at the enquiry stage from this perspective (St. John & Young, 1995; St. John *et al.*, 1999). Existing contributions concern multinational enterprises (MNEs), which position their value chain activities globally and/or have globally dispersed subsidiaries, rather than non-MTS environments.

St. John & Young (1995) present a framework for coordinating marketing, operations and product development within a global firm, finding that more complex systems of coordination are required for more complex strategies and organization forms. It is also suggested that, rather than being a new type of coordinating mechanism, IT supplements and facilitates the formal and informal mechanisms already in place within most organizations. Research by St. John *et al.* (1999) supports the notion of a hierarchy of coordinating techniques that parallel the complexity of strategies. The more uncertain the environment, the more complex the system of coordinating mechanisms must be. Recent contributions have highlighted the strategic relevance of decision support and information systems in supporting manufacturing-marketing coordination (Darmon, 2002; Hicks *et al.*, 2006). The theoretical study by Darmon (2002) focuses on efficiency, previously neglected in the literature, and proposes a statistical procedure for estimating the costs of information gathering and processing by a salesperson. Considering current challenges, further research is required to analyze the impact of globalization on CEM, particularly in small independent companies.

Implications for efficiency resulting from operating in a global market should also be investigated in practice.

Negotiations between customers and sales forces are increasingly important to CEM in B2B markets. Operations Management literature in this area is limited but an insight can be found in a stream close to industrial marketing management. Honeycutt & Ford (1995) study the impact of globalization on the sales force, finding that adopting international strategies increases the complexity of the sales management process. Companies operating in a global context have to understand diverse customer needs and demonstrate expertise in implementing marketing programs in distinct cultural settings. Hence, marketing and sales managers must consider the role of culture in every decision.

With globalization, MNEs and SMEs participate in more negotiations with members of different cultures (George *et al.*, 1998; Reynolds *et al.*, 2003) that may not share the same ways of thinking, feeling and behaving (Simintras & Thomas, 1998). Negotiations become more difficult when accompanied by the complexity of culture (Tse and Francis, 1994) and are influenced by the cultures in which the participants are socialized, educated and reinforced (Simintras & Thomas, 1998). Simintras & Thomas (1998) found that a failure to anticipate, understand and effectively remove cultural obstacles can lead to failed negotiations. Lin & Miller (2003) found that national culture impacts the negotiation approach directly and indirectly through relationship commitment and the relative power of negotiators. Despite the increasing importance of international negotiations, the literature is criticized by Reynolds *et al.* (2003) for being mainly normative and largely disjointed.

In conclusion, a supply chain-oriented perspective is rarely adopted by studies focused on non-MTS industrial contexts and the literature fails to adequately describe the impact of globalization on the CEM methods adopted in practice. This is particularly relevant given that the negotiation process is becoming increasingly relevant and significantly influenced by cross-cultural differences.

2.3 Assessing the Literature

Existing literature fails to adequately describe the methods employed by firms in practice throughout the CEM process. Few empirical studies adopt a contingency perspective to research and none present a cross-national dimension. Most studies have approached CEM from an internal cross-department perspective while it is argued here that research is required which adopts a global supply chain perspective to the study of CEM, including the role of B2B exchanges. This paper builds on the empirical study by Zorzini *et al.* (2007) and

contributes by: (i) adopting a cross-national research perspective; and, (ii) extending previous results into a global supply chain context.

3. Research Methodology

This paper pursues two objectives, expressed in two research questions (RQ1 and RQ2):

RQ1: *Are the two research propositions (RP1 and RP2 below) and the interpretative framework, both previously presented by Zorzini et al. (2007) based on analysis of the Italian capital goods sector, supported by evidence from capital goods firms operating outside Italy?*

    RP1: *Ceteris paribus, the greater the cross-functional coordination during the CEM process, the better the business performance from a productive (i.e., responsiveness and delivery reliability) and an economic (i.e., strike rate percentage) point of view.*

    RP2: *Ceteris paribus, the higher the formalization level of the CEM process, the better the business performance from a productive and an economic point of view.*

RQ2*: How do supply chain characteristics, and other globalization factors, impact on decision variables related to the CEM process such as coordination and formalization?*

3.1 Case Selection Procedure

A comparative, cross-national research perspective has been adopted (Usunier, 1998; Bryman & Bell, 2003) to address RQ1. The research was designed to provide consistency and equivalence between the methods implemented in the two studies (Bryman & Bell, 2003). A multi-case study research strategy, allowing for in-depth investigation, was adopted in Zorzini *et al.* (2007) and has also been adopted in what follows for UK-based capital goods companies. As in Zorzini *et al.* (2007), cases have been selected according to theoretical replication logic - cases may produce contrary results but for predictable reasons (Yin, 2003; Eisenhardt & Graebner, 2007). Cases were also selected so that firms differing from each other in size and enterprise structure were included. Seven small and medium sized capital goods companies operating in B2B contexts in the UK were selected (see Table 1). Two are medium-sized and five are small companies according to international company

classifications. Four firms belong to multinational groups and three are independent companies. Four of the companies can be defined as ETO, while the remaining cases are: MTO (Make-To-Order), ATO (Assembly-To-Order), and ranging from MTS (Make-To-Stock) to ETO. While consistency and equivalence is important, Usunier (1998) suggests choosing cases that are representative of a country. As a result, considering the higher frequency of offshore manufacturing in the UK capital goods sector compared to in Italy, three sales & support companies (with overseas manufacturing) have been included. The manufacturing companies are labelled M1-M4 and the sales and support companies S1-S3 in the remainder of this paper.

[Take in Table 1]

3.2 Data Collection

To establish equivalent operational measures and procedures for field work (Yin, 2003; Usunier, 1998), data has been collected through face-to-face semi-structured interviews with a senior representative from each company using an English language version of the questionnaire designed for the previous study. Interviews were audio-recorded and transcribed for analysis. Respondents were: sales & marketing managers, production managers, product managers, and managing directors.

The questionnaire consists of three main sections. Section 1 includes questions regarding general features of the company and characteristics of the products. Section 2 covers production characteristics, focusing on: the level of system flexibility, the network of suppliers and subcontractors, and the planning process. Section 3 investigates the CEM process, including general process features (e.g., process stages, resources, order acceptance policy), information processing, organizational features (e.g., responsibility for DD setting and cross-functional co-ordination mechanisms), supply chain relationships, and finally, the impact of the CEM mode on company performance (with reference to the average percentage of bids converted to firm orders, i.e., the strike rate percentage, and the average delay in fulfilling orders). Secondary data, such as from company websites, was also collected and analyzed. A case study database was created and detailed reports were drafted to aid analysis.

The original conceptual model proposed by Zorzini *et al.* (2007) was applied to each case. It identifies links between decisions related to the CEM structure, contingency factors that may influence this process, and measures of company performance (see Figure 1). The

process through which the analysis contributes towards answering the two research questions is outlined in the following subsections.

3.3 Data Analysis: Answering RQ1

In addressing RQ1, the degree to which Proposition 1 (RP1) and Proposition 2 (RP2) are supported by the UK sample was assessed. Three possible levels of support (full support, partial support, and no support) were defined for the two propositions. Links between the structure of the CEM process and the contingency factors identified as most relevant by the previous study (product complexity, system flexibility and uncertainty of the context) were also analyzed. This allowed us to investigate the relevance of additional factors that had not been taken into account in the previous study and implied changes to the interpretative framework. In light of this analysis, refinements to the two propositions were considered. In accordance with the analytic induction process described by Bryman & Bell (2003), the propositions were refined to exclude and/or explain deviant cases.

3.4 Data Analysis: Answering RQ2 (An Emergent Question)

While examining cases through the induction process described above was intended to contribute towards answering RQ1, it also highlighted the importance of the impact of supply chain characteristics and other globalization-related issues on the CEM practices adopted in practice. Hence, the second research question (RQ2) emerged from the process of addressing the first (RQ1). Having identified RQ2, the initial literature review was widened and a global supply chain perspective of the CEM process was adopted. The approach to RQ2 is therefore consistent with the grounded theory approach (Glaser & Strauss, 1967; Locke, 2001).

Although a company's supply chain characteristics had not been explored in Zorzini *et al.* (2007) and therefore had not been monitored at the initial research design stage, the supply chains of the companies selected differed in configuration (thereby aiding the theory-building process). The supply chains differ in terms of: the number of suppliers, subcontractors and sales units; the type of relationship with partners; and, the degree of globalization (i.e., geographic dispersion). The questionnaire collects data concerning supply chain characteristics and globalization issues but the significance of this was not evident for the companies investigated in Zorzini *et al.* (2007). As the relevance of these issues became apparent for the UK companies, additional data was collected during the interviews in an unstructured manner.

4. Assessing the Validity of Previous Results for UK Cases (RQ1)

This section considers the first research question and discusses whether results obtained from the empirical analysis of the seven UK-based companies support the theory proposed by Zorzini *et al.* (2007). By applying the conceptual model proposed by the authors, important contingency factors and decision variables relating to the CEM process have been identified and company performance has been assessed using data collected. Contingency factors, decision variables and company performance are summarised in Tables 2-4.

[Take in Tables 2-4]

As in Zorzini *et al.* (2007), three distinct levels (low, medium, high) are used to classify the contingency factors. The level of product complexity is defined by technical features such as standardization, modularization and means of achieving customization. The product complexity is linked to the production strategy characterizing a company (ETO, MTO, ATO or MTS). The level of system flexibility is defined by the availability of production flexibility options (e.g., overtime, temporary workers, sub-contracting, re-planning production) and the extent to which they are used. The level of uncertainty refers to the relevance of three distinct sources of uncertainty: *demand* (predictability of product demand and uncertainty surrounding specific customer orders), *process* (predictability of available resources for engineering and production activities) and *supply* (ease with which supplier lead times can be quoted for specific orders and the variability of lead times defined by suppliers).

Regarding the decision variables, the DD setting management mode can be divided into four issues: lead time setting, workload analysis, monitoring of subcontractors, and monitoring of suppliers. As in Zorzini *et al.* (2007), five distinct levels (high, medium-high, medium, low-medium, low) are used to describe the degree of coordination and formalization. The level of coordination is defined by taking into account: the frequency of communication, volume and type of information exchanged, number of departments involved and the number of integrating mechanisms adopted (e.g., direct contact, telephone, e-mail system, pre-planned meetings). Given that three sales and support companies are analyzed, the variable "coordination" is used in a wider sense compared to the previous study. It includes intra-firm communication but also inter-firm (B2B) information exchanges across the enterprise. In the case of MNEs (as is the case for two sales and support companies interviewed), rather than cross-functional, communication can involve corresponding departments (e.g., marketing and sales units) in different organizations. Formalization has been evaluated by taking into

account two main elements: the degree to which the rules and procedures adopted at the enquiry stage are defined, and the organizational setting, i.e., the way in which coordination is achieved (e.g., by on-demand direct contact rather than by pre-planned meetings). Company performance is assessed based on the strike rate percentage, the average percentage of delayed orders and the average delay compared to the total delivery lead time. Five distinct levels are used (very good, good, medium, bad, very bad), applying understanding of the capital goods sector derived from previous studies.

To assess the validity of Propositions 1 and 2, the levels of coordination, formalization and performance in each case have been defined. A correspondence is expected between the various levels. A proposition is considered to be: fully supported if the levels correspond strictly; partially supported if there are one or two degrees of difference between coordination/formalization and the performance level; not supported if the levels of coordination/formalization and performance differ by more than two levels. Proposition 1 is fully supported in one case and partially supported in six cases. Proposition 2 is fully supported by four cases, partially supported by one case and not supported by two cases. Results are summarized in Table 4 and suggest the need to: (1) refine the proposed propositions, and/or (2) add further contingency factors or introduce moderating factors into the framework. While contingency factors impact directly on decision variables related to the CEM process, moderating factors influence the link that exists between the structure of the process and company performance. An explanation of the results is presented in what follows.

4.1 Research Proposition 1 (RP1)

Six cases of partial support have prompted us to assess the need to refine RP1 (also affecting RP2) and to add contingency or moderating factors. While the relevance of further factors is usually supported by more than one case, refining the propositions results from a single case (M1: discussed below). Possible further factors impacting CEM are then presented based on the empirical evidence.

Proposition Refinements

M1, a medium-sized manufacturing company, features a high level of cross-functional coordination and a medium level of formalization. Procedures adopted at the enquiry stage include clearly defined steps but no rigid general rules can be set because the method of interacting with customers is driven by the type of commodity (the company operates in three different business areas). Coordination is largely achieved informally, mainly on-demand and

often through face-to-face contact. The interviewee explained that: "*contacts within the company are quite informal. All of the directors are easily approachable and communication among the various departments is aided by the closeness to each other in terms of office location*". At present, M1 is trying to increase formalization in the CEM process by making their paper-based sales contract system purely electronic-based. The company also aims to improve the monitoring of enquiries and orders confirmed by customers. Considering a large number of orders managed each year (about 500 machines per year) and a medium size, a higher level of formalization is needed to adequately support the CEM process and cross-department coordination. The interviewee highlighted the aim of improving responsiveness to customer enquiries and the reliability of DDs. Current company performance can be defined as medium (based on the average number of delayed orders and the average delay). The manager interviewed argued that: "*delays tend not to be too frequent, but we would like to improve the company performance from this point of view*".

This case implies that cross-functional coordination and formalization impact jointly on the performance of companies characterized by a large-sized control problem (i.e., a high number of orders managed each year and/or a high number of employees). In contrast, very good performance is achieved by M4 with a high level of coordination and a low level of formalization. It is argued that either a high level of coordination or a high level of formalization can result in good company performance in small-sized companies. For medium and large-sized firms, a high level of cross-functional coordination alone will not guarantee good company performance; a high level of formalization of the process is also needed. This can be considered a refinement to RP1 and RP2.

Identifying Further Factors Impacting CEM

Four cases of partial support (two manufacturing companies, M2 and M3, and two sales and support companies, S1 and S2) identify a factor not previously taken into account. For each of the four cases, the production volume can be split into highly customer-specific orders and more standard orders (requiring limited customization). This proportion, linked to production strategy, varies across the four cases.

For M2, standardization is high compared to the average level offered by capital goods manufacturers. Only 10% of the production volume is highly customized. The interviewee argued that "*the only uncertainty is on the highly customized machines*". This allows M2 to plan part of the production for stock. The stock provides a manageable buffer that increases flexibility. This explains how reliable DDs are achieved despite a medium level of cross-

functional coordination (Table 4). Only the sales and manufacturing departments are involved and communication is mainly on-demand via e-mail and telephone. The sales director interviewed explained that: "*the number of cross-functional meetings within the company tends to be kept to a minimum*". S1 has the same level of coordination and performance as M2 (medium coordination and very good performance). In this case, the low number of highly customized orders compared to the total production volume is relevant. The commercial manager interviewed explained that: "*normally, products are not re-engineered and changes to the standard machines are reasonably slight; re-design may concern the handling system but not the basic machine*".

For both M2 and S1, the proportion of slightly/highly customized orders allows the companies to achieve very good performance with medium coordination levels. For M3 and S2, this proportion impacts the link between coordination and company performance in the opposite way: good performance is achieved with high coordination. The performance of M3 and S2 is good, but not excellent, despite a high level of coordination. The performance of M3 and S2 is explained by the high percentage of highly customized orders. Given a certain level of coordination, this may impact the performance achieved by the companies.

In conclusion, the proportion of slightly/highly customized orders can be considered as a moderating factor that affects the link between decision variables related to the CEM process (specifically, coordination during the process) and company performance. This can be considered a possible refinement to the interpretative framework.

The distinguishing features of the three sales & support companies led to identifying a second moderating factor: the availability of integrated information systems. An increase in the complexity of coordination was expected in these three cases due to the geographic dispersion of the value chain, as described in the literature (Levy, 1995; Narasimhan & Mahaparatra, 2004). Inter-organizational (B2B) coordination was also expected to have a stronger impact on the company performance (compared with inter-department coordination). However, these results have been verified in one case only (S3), where no integrated information systems are available. S1 and S2 are now discussed, followed by S3.

S1 and S2 belong to large multinational groups. As a result, resources and competences are more readily available to them (compared with small independent companies). In both cases, advanced information systems are available and IT plays a significant role in supporting the CEM process at a global level. The integrated systems allow information to be shared more easily within the groups, reducing complexity in coordination. For S2, a centralised SAP system allows every subsidiary agency to obtain information

directly that can also be checked by interacting with the German headquarters if needed. The managing director interviewed explained: "*we usually check what refers to highly customized orders by getting in touch with the headquarters, mainly by e-mail*". The system also allows forecasting and planning to be managed centrally. A similar system is available in S1 although processes have not been fully integrated at present. The commercial manager interviewed argued that "*better performance in terms of responsiveness and reliability of delivery dates could be achieved by increasing the degree of inter-firm coordination supported by information systems*". However, he highlighted that "*the obtained results will strongly depend on the degree of precision and reliability of the information used*".

The above may explain how S1 achieves very good performance with only a medium level of coordination (see Table 4). This supports Sambharya *et al.* (2005), who highlighted that the democratization of IT reduced geographic distance and compressed response times for MNEs. Results are also similar to St. John & Young (1995) and St. John *et al.* (1999), whose findings support the notion of a hierarchy of coordinating techniques that parallel the complexity of international strategies adopted by MNEs, reducing the level of complexity in communication. Meanwhile, S2, with a high level of coordination and good performance, implies that if both integrated information systems and a high percentage of highly customized orders are present, the latter tends to cancel the moderating effect of the former, i.e., making communication less effective.

The expected increased complexity of coordination caused by globalization has been highlighted for S3 only, where no integrated information systems are available. S3, the UK reseller of industrial equipment manufactured by an Italian company, is a very small independent firm with only 5 employees. While the main equipment is always supplied by the Italian company, the final product delivered to the customer may be supplemented by components and sub-assemblies provided by UK-based suppliers (managed directly by S3). S3 is characterized by low-medium coordination. Most communication at the enquiry stage is on-demand via e-mail and telephone. Contacts may be frequent but the information exchanged is limited. Hence, inter-organization coordination is low-medium and has a strong impact on company performance (very bad - the worst performing company). The company has a low level of knowledge concerning technical features of the product and production resources compared to S1 and S2. This may also have a negative impact on performance and is an important factor to take into account when structuring the CEM process from both an inter-department and an inter-organizational, or B2B, perspective.

The availability of integrated information systems impacts the link between the structure of the CEM process (more specifically, the level of coordination) and company performance. Therefore, the availability of integrated information systems is a moderating factor (like the proportion of slightly/highly customized orders discussed above) rather than a formalized integrating mechanism characterizing the CEM structure (as in the previous study). Analysis of the three sales & support companies has also highlighted the significance of features related to supply chain characteristics and globalization.

Key results derived from the analysis of RP1 are as follows:

- Refinements are required to RP1 and RP2 to reflect the joint impact of coordination and formalization on company performance for medium-to-large sized firms;

- Two moderating factors should be introduced into the interpretative framework to account for the proportion of slightly/highly customized orders and the availability of integrated information systems;

- A further contingency factor, knowledge within departments/organizations about the product and production system, should be considered.

4.2 Research Proposition 2 (RP2)

Analysis of RP2 highlighted two cases of no support and one case of partial support. The two cases that do not support RP2 are both manufacturing companies: M4 and M2. M4, with a low level of formalization and very good performance, contradicts RP2 for two reasons. Firstly, the high level of centralized decision-making within the company; secondly, the type of business that the company manages (mainly national and repeat). Similarly, M2, with a low-medium level of formalization and very good performance, contradicts RP2 for two reasons. Firstly, due to the high degree of vertical integration within the value chain; secondly because of the high proportion of standard orders.

The level of formalization characterizing M4 is low. Management of the quotation process is based mainly on implicit knowledge and past experience. The interviewee argued that: "*most of the work is repeat work*". The high degree of centralization of information sharing and decision-making makes it unnecessary to formalize rules and procedures or to introduce information systems to support the process in order to achieve good performance. The CEM process is managed and controlled from the initial contact with the customer to the beginning of the manufacturing process by just two people: the production and the engineering managers. The interviewee explained that: "*a continuous/non-stop interaction between the two managers is achieved by direct contact or by the e-mail system*". The two

managers usually have all the information they need to interact with customers and plan production. This allows them to prioritize orders quickly and effectively based on customer needs and changes in requirements ("*As the two managers know each other's pressures, they are able to decide the most suitable planning actions.*"). This is the only case where a dedicated sales department cannot be identified. Based on this, it is argued that the degree of centralization of decision-making procedures impacts the structure of the CEM process. Also, the type of business managed by M4 explains why RP2 is not supported. As most customers are UK-based, and 99% are repeat customers, the complexity of managing customer enquiries is reduced, allowing the CEM process to be managed in a centralized and informal way. However, these features (i.e., national and repeat rather than global and versatile business) are not considered to be the dominant trend in B2B contexts. Hence, the propositions have not been refined.

M2, which also does not support RP2, has a low-medium level of formalization and very good performance. Here, the high degree of vertical integration within the value chain may have an impact. Conducting most of the manufacturing activities (e.g., fabrication, coating and assembly) internally implies a high degree of control over them and makes high formalization unnecessary for achieving good performance. The sales director explained that: "*the way of carrying out each single action is not rigidly formalized and the way of interacting with production planning to check the capacity availability for setting DDs and to update the production plans is not clearly defined*". However, as in M4, this feature is considered an exception compared to increased outsourcing by many capital goods manufacturers (Hicks *et al.*, 2000). As a result, the propositions are not refined.

A second reason why M2 does not support RP2 is the high percentage of standard orders. This confirms the relevance of the proportion of slightly/highly customized orders as a moderating factor. Furthermore, S1, which partially supports RP2, confirms the relevance of both moderating factors (the above and the availability of integrated information systems).

Key results derived from the analysis of RP2 are as follows:

- No further refinements to the proposed propositions are needed because the features that explain the cases of no support for RP2 (managing a national and repeat business and a high degree of vertical integration) are considered to be exceptions compared to the main trends that characterize the competitive landscape in the capital goods sector;

- The importance of the two moderating factors from the analysis of RP1 (the proportion of slightly/highly customized orders and the availability of integrated information systems) is confirmed; therefore, they will be added to the interpretative framework;

- The degree of centralization of the decision-making procedures can be considered a further contingency factor.

The aforementioned contingency and moderating factors should be taken into account when refining the interpretative framework (to be presented in Section 6). Although the features explaining cases of no support for RP2 did not lead to refining the propositions, as in the analysis of RP1, this highlighted the impact of supply chain characteristics and globalization issues on CEM practices. This will be discussed in the following section.

5. Impact of the Supply Chain & Globalization on CEM (RQ2)

This section explores the importance of supply chain characteristics and globalization issues during the CEM process for the analyzed cases (in Subsection 5.1 and 5.2, respectively).

5.1 Impact of Supply Chain Characteristics on the CEM Process

The role of supply chain characteristics such as configuration (i.e., the number of tiers in the supply chain and the number of actors at each tier) is evident in two of the cases (S3 and M2):

- In the case of S3, the main equipment supplied by the Italian manufacturing company may be complemented by components, sub-assemblies and assemblies provided by twelve UK-based suppliers. Design activities are also sometimes outsourced to two UK subcontractors; hence, there are thirteen suppliers, both national and overseas, to S3. This complex and global supply chain configuration impacts the company's decision to systematically monitor suppliers and carry out detailed analysis when setting lead times at the enquiry stage (see Table 3). The interviewee explained that: "*most of our delays are caused by problems concerning supply*". The need for S3 to coordinate several actors along the supply chain can also explain why responsibility for DD setting is not shared between the UK sales company and the manufacturing company.

- M2 features high vertical integration - most physical processes are carried out internally. Standard components are supplied by external suppliers (thirty mainly local suppliers) but no subcontractors are used. This has a direct impact on the CEM structure: low supply chain configuration complexity makes the monitoring activity relatively straightforward (see Table 3).

The M4 case shows that the type of relationship with supply chain partners is also influential. M4 uses ten main suppliers, fifty secondary suppliers (for one to three items only), three main subcontractors (on a regular basis) and two further subcontractors; the majority of these are local firms. Despite the high number of suppliers and subcontractors, M4 does not monitor their capacity availability at the enquiry stage. Relationships are well-established, which affects the level of system flexibility (high) and the level of process and supply uncertainty (low). The production manager interviewed argued that: "*our suppliers are very flexible and we rely on them. In case of rush orders, the required components can be delivered even in one day*". This impacts the structure of the CEM process, as illustrated by the interpretative framework presented in Zorzini *et al.* (2007). Therefore, the type of relationship with individual supply chain partners affects the CEM structure indirectly by influencing the levels of system flexibility and uncertainty. For M4, this indirect influence is prevailing compared to the direct impact on the CEM process determined by the supply chain configuration. While the type of relationship with individual supply chain partners was taken into account by the previous study, supply chain characteristics (e.g., configuration) should be added to the interpretative framework as a new contingency factor.

The two sales and support companies belonging to multinational groups are distinctive. In both cases, the supply chain is very complex; S1 has approximately 800 global suppliers (plus subcontractors) while S2 has several hundred global suppliers; in both cases multiple sourcing policies are usually adopted. Despite this complexity, the approach to managing the CEM process is not significantly altered. In both cases, the monitoring activity is carried out by departments at the headquarters (in Switzerland and Germany) and integrated ISs are available. In both cases, subcontractors are not monitored (rarely used) and suppliers are only occasionally monitored (for highly customized orders). For S1, a complex and thorough monitoring activity (including detailed and systematic analyses for lead time setting, systematic workload and occasional supplier monitoring) is carried out by the Swiss unit for non-standard orders. As customer enquiries at a local-level usually require high responsiveness, approximate estimations are usually preferred by the sales subsidiary at a very early stage of the quotation process (the UK sales manager argued: "*in case of non-standard requests, the time required for a detailed answer from production planning in Switzerland is three weeks, but the customer wants an answer in three days*"). For S2, partial monitoring (for critical components only) is conducted at the quotation stage, reducing the time needed. The Managing Director stated that: "*checking all the components would be too time-consuming. Therefore only the main components are checked at the enquiry stage. Then,*

when we get an order, all the components are checked". In the case of companies belonging to multinational groups, the influence of supply chain configuration on CEM needs to be carefully analyzed. In these cases, monitoring activities are carried out by both the sales subsidiary and departments at headquarters and mechanisms are used for inter-organizational coordination. Belonging to a multinational group can be considered a further contingency factor to be added to the interpretative framework.

5.2 Impact of Globalization on the CEM Process

Analyzing the CEM process in the global B2B marketplace has identified some key issues relating to the global market, and some specific issues concerning global enterprises (or MNEs).

Global Market

Three of the manufacturing companies help to understand how operating in a global market impacts CEM practices (M1, M2 and M3). The market of the fourth manufacturing company (M4) is national while the customers of the three sales and support companies are mainly national or, in the case of S2, global customers managing part of their value chain activities in the UK. What follows is therefore focused on the three aforementioned manufacturing companies.

As highlighted by the literature (Meijboom, 1999; Sambharya *et al.*, 2005), a small-to-medium-sized company entering the global marketplace will encounter many good opportunities and some increased complexities. M1 has customers in the Far East, Europe, America and the West coast of Africa; M2 has customers in the UK, Europe, the Far East, US, Australia and South-Africa; M3 has 90% of its business in the Far East. A source of complexity that emerges is the need to coordinate the activities of sales agents and structures distributed around the world. The strategic relevance of this is underlined by Honeycutt & Ford (1995) and Wotruba (1996). None of the three companies use the sales structures adopted by larger companies (e.g., resellers or subsidiary agencies). M1, a medium sized company belonging to a multinational group, chooses to manage its global customers through sales teams located in each main European capital city and on each continent in the world. Most agents are dedicated to a single company while some are shared by the group M1 belongs to. M2 and M3 are smaller companies and use freelance agents to save on costs.

The three companies differ in degree of centralization of the CEM process and the mechanisms adopted to coordinate sales agent activities, largely dependent on the volume of

orders managed each year. M1 assigns managers to sales territories who coordinate activities. The high number of orders managed each year (approximately 500) means the CEM process cannot be managed centrally. Centralization is possible for M2 and M3, where the number of orders is lower (70 and 24 orders respectively). The sales director in M2 stated: "*I check and track directly all the enquiries, even the ones managed through agents*". The sales manager in M3 explained that "*enquiries are transmitted by the agents to the headquarters in the UK, quotations are generated at a central level and then communicated to the agents*". In both cases, a central database is available but cannot be accessed by the sales agents all over the world. In the case of M2, this is aided by a high degree of production standardization. In the case of M3, these steps are usually followed by an initial discussion with customers through agents aimed at assessing customer interest in the offer and the need for face-to-face negotiation. Some differences are dependent on the country. For example, enquiries coming from China tend to be managed in a less centralized way because the agents located there are well-established and have better knowledge of the product compared to those in other countries.

Operating in a global B2B market can also lead to communication and language difficulties, especially for small independent companies. This may complicate and prolong negotiations with customers, making it a resource-intensive process. This makes it increasingly important to manage customer enquiries efficiently. For M2, costs and benefits associated with each enquiry submitted by foreign customers are carefully estimated to decide whether to invest resources in defining an offer (especially when requirements are non-standard). This can lead the company to reject some enquiries, maintaining a high efficiency over the process. Dealing with overseas customers may also make setting DDs more difficult by adding further constraints to the problem, such as shipment schedules. The sales manager in M3 explained: "*constraints related to shipping the machines need to be taken into account when planning production because shipments are scheduled only once a week or two weeks. This also may make the reliability of delivery dates more difficult to guarantee*".

When negotiations with customers are particularly important (e.g., when there is high competition) and the market is global, it may be advisable to differentiate the quotation process according to the customer's country of origin. This allows M3 to account for cultural differences between global customers, a factor highlighted by many authors (Tse & Francis, 1994; Simintras & Thomas, 1998; Reynolds *et al.*, 2003; Lin & Miller, 2003). The sales manager interviewed suggested that, depending on the customer's dominant culture, the negotiation phase may need to focus more on technical details and engineering aspects (e.g.,

for Turkey) rather than on the price (e.g., for Pakistan). Therefore, different negotiation margins are used for the different markets, starting with different initial prices to quote (e.g., 30-40% negotiation margin for Pakistan, 10-15% negotiation margin for East of Europe, 5% negotiation margin for Australia, no negotiation margin for UK and US). A formal approach to exchanging information is needed in order to manage the quotation process in such a differentiated way while maintaining efficiency. This is aided by the availability of an integrated information system. The sales manager in M3 explained that: "*the centralized system and database are totally shared and everybody within the company can access the information*".

M3 and M2 suggest that managing global customers increases complexity. Their small size, the scarce resources devoted to the quotation process and a tendency to manage the CEM process centrally may also have an impact. To cope with high uncertainty, M3 splits the process into stages that differ in the level of detailed analysis. An initial and approximate quotation is usually given in 15-20 minutes, consisting of 2-3 pages of order specification. If the customer is interested in the offer, a more detailed definition (15 pages of documentation) follows. This may take several hours or days to prepare and requires further information to be obtained from the customer.

Two main sources of complexity related to globalization emerged from the analysis:

- The need to coordinate the activities of globally dispersed sales agents and structures;
- Difficulties in managing global customers with different languages and cultures.

These aspects should be considered when structuring the CEM process, particularly by small independent companies operating globally. Specific needs linked to global customers can be considered a further contingency factor to be included in the interpretative framework. Increased complexity caused by global customers may also impact the efficiency of the CEM process. This can require careful estimation and monitoring of resources during the quotation process and the adoption of methods aimed at increasing efficiency.

Global Enterprises

Two of the three sales and support companies (S2 and S1) belong to multinational groups and are classified as global enterprises. In these cases, some particular features relating to coordination emerge. Inter-firm coordination can either be cross-functional or involve the corresponding departments in another organization. For S2, inter-firm coordination involves sales departments in the UK and in Germany. An ad-hoc sales contact in the German

headquarters interacts with the UK sales unit and acts as an intermediary for the German engineering and production planning departments. This allows high responsiveness in communication (usually a one week response time). In contrast, in S1 inter-firm information exchanges are cross-functional. The UK sales department interacts directly with the Swiss engineering and production departments; as a result, a longer time (about three weeks) is usually needed for communication at the enquiry stage. This long response time, leads the UK company to bypass the formal coordination rules defined for non-standard orders, for which inter-firm communication would be compulsory, whenever possible. In practice, the UK commercial manager has the freedom of deciding whether to contact the headquarters in Switzerland (based on order features like product standardization and technical complexity). He is in charge of identifying, where necessary, suitable people to be involved in preparing each quotation, depending on the type of order. He explained: "*it is my decision: if I do not feel comfortable doing it, then I involve everybody who is necessary*". For non-standard but easily manageable orders, rough estimations are produced at the quotation stage without involving the Swiss unit. The UK sales manager has a good level of technical knowledge, which aids this practice: "*in most cases my experience and capabilities allow me to produce rough estimations, which are good enough at a very early stage of the quotation process*". Given a low proportion of special projects, most of the time implicit rules are used.

The above analysis has highlighted the strategic importance of the type of inter-organizational, or B2B, coordination at the enquiry stage for global enterprises operating in industrial contexts. The analysis in Subsection 4.1 also highlighted the relevance of available integrated ISs.

6. Refining the Interpretative Framework

In summary: using the results of Sections 4 and 5, refinements to the interpretative framework presented by Zorzini *et al.* (2007) are proposed. New contingency factors are added and moderating factors are introduced. While the contingency factors impact directly on the CEM structure, the moderating factors affect the link between the CEM structure and company performance. This means that, even when the decision variables related to the CEM process (specifically, the levels of coordination and formalization) are consistent with the contingency factors, the expected correspondence between the coordination/formalization levels and company performance may not be aligned. The refined framework is shown in Figure 2;

changes are highlighted by a dotted line. The following describes how the contingency factors have been revised before exploring moderating factors added to the framework.

[Take in Figure 2]

Five main categories of *contingency factors* were included in the previous model: company size and structure, product features, production system features, market-related factors, and uncertainty. The factors have been changed by:

(1) Splitting the category of company size and structure into two: firstly, company size and internal structure (including number of employees and orders managed each year) and secondly, a company's external structure (e.g., supply chain characteristics and possible group-level issues). Regarding the internal structure, the importance of knowledge within departments about products and the production system has been highlighted in this paper, especially when inter-organization (B2B) coordination is required at the enquiry stage (as in the sales and support companies). The centralization of decision-making procedures characterizing a company is also relevant and has been included in this category of factors. Regarding the external structure, two main contingency factors have been identified that relate to: (i) whether a company belongs to a group/larger enterprise; and, (ii) the supply chain configuration (e.g., number of tiers and number of actors at each tier). Belonging to a group can influence the structure of the CEM process, often making resources and competences more widely available compared to small independent companies. Furthermore, group-level decision-making procedures and integrating mechanisms can be implemented. These issues are particularly relevant in large multi-national enterprises.

(2) Adding further contingency factors to the category of market-related factors (e.g., related to global customers). The impact of globalization on the CEM structure prompted us to take into account specific constraints linked to global customers. These are related, for example, to differences in culture and language and to the level of market competition for the customer's order.

The previous framework did not include *moderating factors* but the UK-based cases have highlighted the moderating impact of the following on the link between the structure of the CEM process and company performance:

(1) The proportion of slightly/highly customized orders. This has been separated from the contingency factors related to product features because it refers to product mix rather than

to the characteristics of individual orders. This is an important aspect in cases where the production volume can be split into highly customized orders and more standard orders. In these cases, a dominant order type cannot always be identified and both types impact the CEM process and company performance. This sort of hybrid environment is arguably becoming more commonplace in today's B2B contexts as customer requirements become increasingly differentiated.

(2) The availability of integrated information systems. This was considered by Zorzini *et al.* (2007) as a formalized integrating mechanism characterizing the CEM structure; however, analysis of the three sales and support companies demonstrates its impact on the link between the decision variables related to CEM and company performance. This prompted us to separate it from the other factors/variables included in the framework.

7. Conclusion

Business-to-Business (B2B) relationships, such as between a manufacturer and a customer, are increasingly important during the Customer Enquiry Management (CEM) process, particularly so for non-Make-To-Stock (non-MTS) companies operating in industrial markets. Companies that are able to manage the initial stages of the customer order process both effectively and efficiently may create the competitive advantage required to win supply contracts. However, few empirical studies have explored the CEM practices adopted by firms in practice. This study contributes by: investigating the CEM practices adopted by non-MTS capital goods companies in the UK, complementing a previously presented cross-departmental study of the CEM process, and extending this into a global supply chain context. The paper makes a contribution to assessing current industry practice in B2B markets during the customer enquiry management process and to bridging the gap between academic research and industry practice in this area.

The first research question asked whether the theory (two propositions and an interpretative framework) developed by Zorzini *et al.* (2007) applies to capital goods firms operating outside Italy. The two propositions focus on the positive impact of high levels of coordination at the enquiry stage and formalization of the CEM process on company performance. Results for the seven UK firms, including three sales and support companies with offshore manufacturing, generally support this link although insights from some cases led to refining the propositions to account for the collective impact of coordination and formalization on performance for medium-to-large sized companies. Analysis confirmed the

relevance of the three contingency factors identified by the previous study (product complexity, system flexibility and context uncertainty); however, the results also suggested taking into account: (i) further contingency factors affecting decision variables related to the CEM process (e.g., knowledge within departments/organizations about products and the production system and the centralization of decision-making procedures); and, (ii) two moderating factors impacting the link between the CEM structure and company performance (proportion of slightly/highly customized orders and the availability of integrated information systems).

The second research question asked how globalization affects CEM. The impact of supply chain coordination and other globalization factors has been discussed together with some efficiency-related issues. The configuration of the supply chain, in terms of the number of tiers in the supply chain, the number of actors at each tier, and the type of relationship with supply chain partners is important. The analysis has shown that the number of suppliers and subcontractors has a direct impact on the CEM structure: low supply chain configuration complexity makes the monitoring activity relatively straightforward while a complex and thorough monitoring activity is required when there are a large number of suppliers/subcontractors, particularly when they are globally dispersed. Furthermore, the type of relationship with individual supply chain partners affects the CEM structure indirectly by influencing the levels of system flexibility and context uncertainty.

Two sources of complexity that result from operating in a global context have been highlighted:

- Coordinating the activities of sales structures distributed around the world.
  For small independent companies, the degree of centralization of the CEM process and the mechanisms adopted to coordinate the activities of sales agents depends largely on the volume of orders managed each year. Centralization is usually possible when the number of orders managed is reasonably low. For global enterprises, the type of inter-organizational coordination at the enquiry stage (whether it is cross-functional or between corresponding departments in different organizations, whether intermediaries are involved, or whether the process is supported by integrated information systems) is found to be strategically important.
- Managing global customers with different languages and cultures.
  Communication and language difficulties may complicate and prolong negotiations with customers, especially for small independent companies. This makes the efficiency of the

process important. Differences in customer culture also play an important role; it may be advisable to differentiate the negotiation process according to the customer's country of origin in highly competitive contexts (e.g., by differentiating negotiation margins).

Based on the results of the analysis, refinements to the interpretative framework presented by Zorzini *et al.* (2007) have been proposed to make it suitable for a global context.

This research has managerial implications for improving the CEM process in non-MTS capital goods companies from both an intra and an inter-organisational (B2B) perspective. In particular, the conclusions suggest:

- A need to coordinate with partners along the supply chain (suppliers and subcontractors) at the enquiry stage to improve the flow of timely and reliable information to support the CEM process, especially in globally dispersed supply chains.

- A need, particularly for SMEs, to be aware of the complexities resulting from managing global customers (e.g., differences in culture and language) when structuring the CEM process together with the opportunities that emerge from entering the global marketplace.

This paper is a starting point for studying CEM in global B2B contexts. More research is needed to further investigate the impact of operating in a global context on the CEM process, especially for SMEs, and to identify best practices.

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Figures & Tables

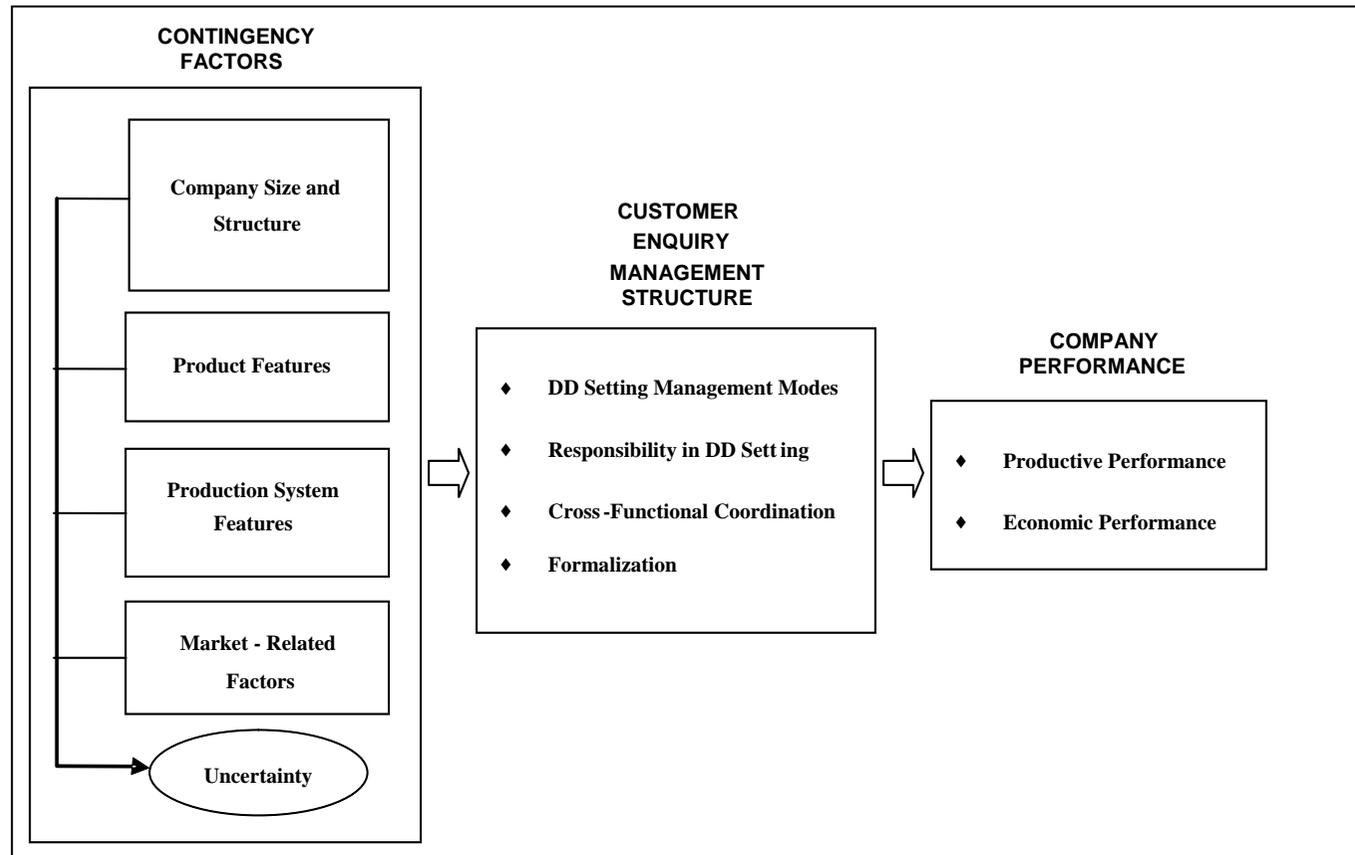*Figure 1: The Conceptual Model Proposed by Zorzini et al. (2007)*

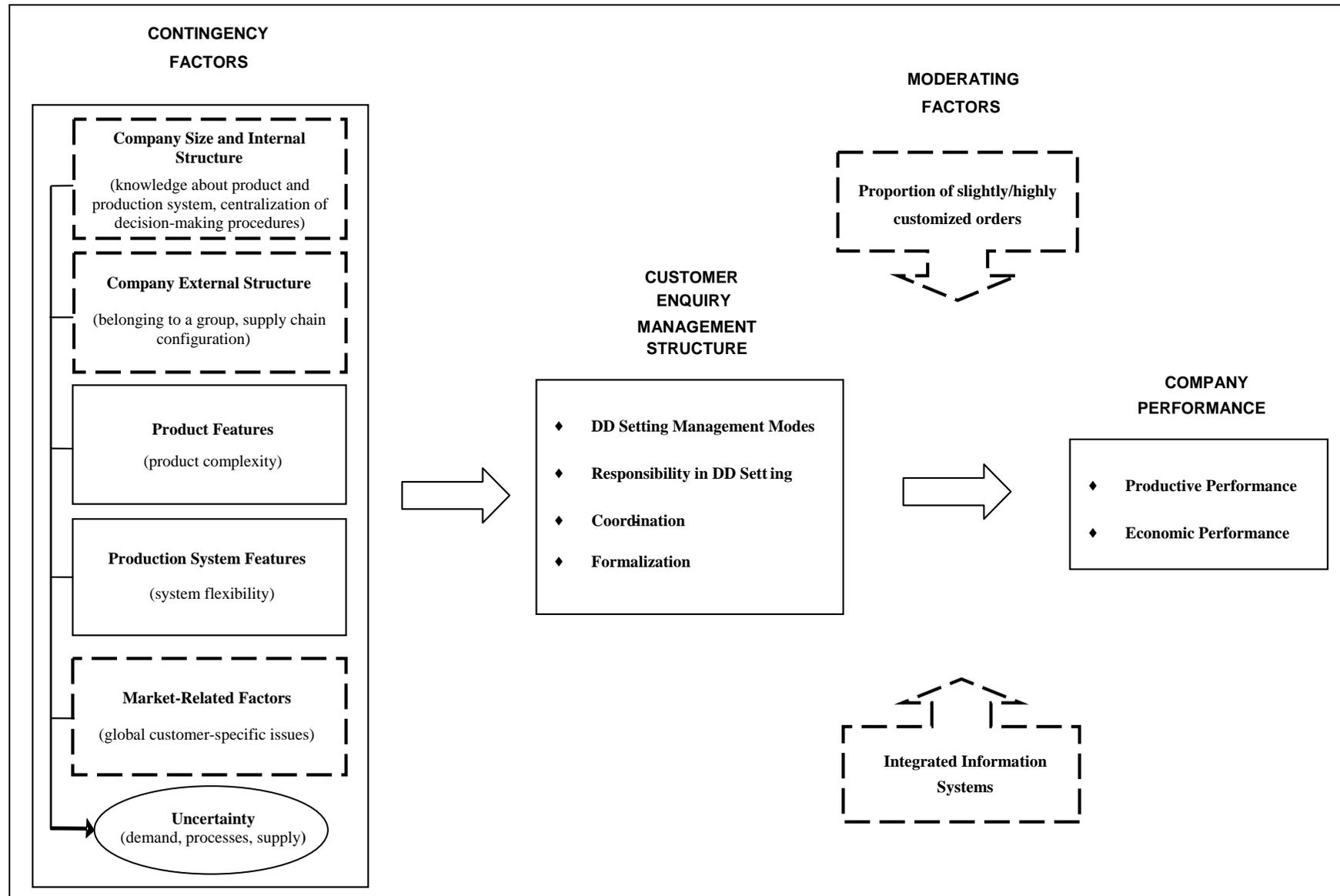*Figure 2: The Refined Interpretative Framework*

Table 1: Characteristics of the Companies Interviewed

Company	Interviewee	Product Type	Employees (2006)	Turnover [£m] (2006)	Production Strategy	Location of Activities	Group Member
M1	Product Manager	Sorting machines	150	35	ATO	Marketing and sales, after-sales, engineering and manufacturing in the UK	Yes
M2	Sales Director	Vacuum forming and thermoforming machinery	21	Unknown	Ranging from MTS to ETO	Marketing and sales, after-sales and engineering in the UK, manufacturing in the UK and Italy	No
M3	Sales Manager	Textile finishing machinery	35	8	ETO	Marketing and sales, after-sales, engineering and manufacturing in the UK	Yes
M4	Production Manager	Textile machinery	30	1.5	ETO	Marketing and sales, after-sales, engineering and manufacturing in the UK	No
S1	Sales Manager	Laser cutting and water-jet cutting systems	85	24	MTO	Marketing and sales and after-sales in the UK, manufacturing in Switzerland and Germany	Yes
S2	Managing Director	Injection moulding machines	31	9.2	ETO	Marketing and sales, after-sales and engineering in the UK, manufacturing in Germany	Yes
S3	Managing Director	Industrial refrigeration and thermoregulation systems	5	2.3	ETO	Marketing and sales, after-sales and engineering in the UK, manufacturing in Italy	No

Table 2: Contingency Factors for the Analyzed Companies

Company	Company Type	Contingency Factors	Summary (Flex-Uncert-Prod Complex)
M1	Manufacturing company	Medium system flexibility - Medium demand uncertainty - Medium product complexity	**M-Md-M**
M2	Manufacturing company	Medium system flexibility - Low uncertainty - Low product complexity	**M-L-L**
M3	Manufacturing company	Low system flexibility - High demand and supplier uncertainty - Medium product complexity	**L-Hds-M**
M4	Manufacturing company	High system flexibility – High demand uncertainty - Medium product complexity	**H-Hd-M**
S1	Sales and support company	Low system flexibility - High demand uncertainty - Low product complexity	**L-Hd-L**
S2	Sales and support company	Low system flexibility - High demand uncertainty - High product complexity	**L-Hd-H**
S3	Sales and support company	High system flexibility - High demand and process uncertainty - Medium product complexity	**H-Hdp-M**

Table 3: Decision Variables for the Analyzed Companies

Company	M1	M2	M3	M4	S1	S2	S3
DD Setting Management Modes ▪ **Lead time setting** ▪ **Workload analysis** ▪ **Monitoring of subcontractors** ▪ **Monitoring of suppliers**	▪ Average standard lead times ▪ Systematic ▪ No monitoring ▪ No monitoring	▪ Average standard lead times ▪ Systematic ▪ No monitoring ▪ No monitoring	▪ Detailed and systematic analysis for each order ▪ Systematic ▪ Systematic ▪ Systematic	▪ Detailed and systematic analysis for each order ▪ Systematic ▪ No monitoring ▪ No monitoring	▪ Average standard lead times ▪ Systematic ▪ No monitoring ▪ Occasional	▪ Detailed and systematic analysis for each order ▪ Systematic ▪ No monitoring ▪ Occasional	▪ Detailed and systematic analysis for each order ▪ Systematic ▪ Systematic ▪ Systematic
Responsibility for DD Setting	Shared (sales, engineering, manufacturing)	Sales	Sales	Production and Engineering	Sales	Shared (sales and engineering in UK and Germany, production planning in Germany)	Sales
Coordination	High	Medium	High	High	Medium	High	Low-Medium
Formalization	Medium	Low-Medium	Medium-High	Low	Medium-High	Medium-High	Low

Table 4: Results from the Analysis of Propositions 1 and 2 (RP1 & RP2)

Company features	Manufacturing companies				Sales & support companies		
	M1	**M2**	**M3**	**M4**	**S1**	**S2**	**S3**
Performance	Medium	Very good	Good	Very good	Very good	Good	Very bad
Level of coordination	High	Medium	High	High	Medium	High	Low-Medium
Proposition 1	Partially supported	Partially supported	Partially supported	Supported	Partially supported	Partially supported	Partially supported
Level of formalization	Medium	Low-Medium	Medium-High	Low	Medium-High	Medium-High	Low
Proposition 2	Supported	Not supported	Supported	Not supported	Partially supported	Supported	Supported