The supply chain management-marketing interface in product development: an exploratory study

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Abstract

The paper explores the marketing-supply chain management (M-SCM) interface in New Product Development (NPD) processes according to some contextual factors drawn by literature. NPD processes of two divisions of the Italian branch of a multi-national company operating in the electric devices industry have been studied. Different configurations of the Marketing-Research & Development (R&D)-SCM interface have been observed. Results suggest that supply- and demand-side uncertainty, product innovativeness, market orientation, trust and absorptive capacity influence the way through which Marketing, R&D and SCM departments interact. These outcomes suggested implications for both managers and academicians.

Keywords: marketing – supply-chain management interface, product development process.

1. Introduction

The interface between supply-chain management and marketing (M-SCM) has long interested academy and practitioners. The cause of this interest is twofold: on the one hand, the definition itself of SCM as integration of supply (e.g., logistics and operations) and demand (e.g., marketing) management within and across companies, encompasses many phenomena and practices common to the discipline and practice of marketing and marketing management (Meltzer and Gundlach, 2010; Lamberti and Noci, 2009; Lamberti and Noci 2010). On the other hand, as often SCM decision makers have a pre-eminent operations background, the M-SCM interface is affected by the same problems of the widely analyzed manufacturing-marketing (M-M) interface: different prerogatives, management styles and culture (e.g., Song et al. 1997; Shapira and Can 1977; Crittenden et al. 1993; Ling-yee 2010), generating frequent conflicts, often resulting in a diminished effectiveness, efficiency and/or flexibility.

Nonetheless, as Mentzer and Gundlach (2010) note “despite […] developments and benefits, the nature and implications of the interrelationships of marketing and SCM have not been explored at great length in […] literature”. But this dearth of literature is even more problematic observing how also practice still lacks of a comprehensive set of tools for managing the M-SCM interface. As a result, companies have more often invested to create differential advantages in one but not both of the domains, often resulting in their suboptimal integration (Esper et al., 2010). This suboptimal integration is extremely detrimental both in a marketing and in a SCM perspective: on the marketing side, the lack of collaboration with the supply chain leads to suboptimal abilities to gather shared distribution-side and supply-side intelligence (e.g., Vargo et al. 2010; Esper et al. 2010; Gummesson 2008), with a negative effect on the ability to adopt market- and customer-oriented practices (e.g., Day 1995). On the SCM hand, the lack of coordination has been put at the core of diminished service level and often stock-outs (Campo et al. 2000; Emmelheinz et al. 1991; Fitzsimons 2000; Gruen and Corsten 2007), leading to unsatisfying customer performance (Mollenkopf et al. 2007; van Woensel et al. 2007).

These impacts are particularly relevant in processes in which marketing and SCM cooperate and in which it is harder to foresee the exact outcome of the process (e.g., Perrow, 1970). This is the reason why new product development (NPD) represents a fundamental moment of truth in M-SCM interface. Indeed, successful NPD is fundamentally a multidisciplinary process (Ulrich...
and Eppinger, 2000): several studies have demonstrated that different functional areas, including marketing, operations and SCM should cooperate with Research and Development (R&D) to develop successful innovation. Researchers in the realms of SCM, marketing and innovation management have widely investigated the antecedents and the factors moderating collaboration in NPD (e.g., Caglione et al., 2000; Johnsen et al., 2009), stressing the importance of coordinating and integrating operations, product development process (e.g. Christopher et al., 2004) and the other business functions – e.g., marketing and operations (Khan and Creazza, 2009).

Yet, even if literature has widely debated the importance of M-SCM interface and has pointed out how a M-SCM integration may lead to superior performance for the firm (e.g., Min et al. 2007; Gimenez and Ventura 2005), extant knowledge on the ways through which marketing and SC (should) interact in practice is substantially underdeveloped (Meltzer et al. 2009; Ritchie et al. 2000; Harland et al. 2003). To reach this goal, it is necessary to compare different M-SCM interface solutions in terms of performance (financial, market-based, innovation-based, internal)(Gatignon and Xuereb 1997) achieved. But the road to this objective is still very long, as we substantially lack the cornerstones for approaching this kind of analysis, i.e.:

(i) the definition of the different archetypes of M-SCM interfaces;
(ii) the elicitation of the contingent factors potentially impacting on the adoption of the different archetypes.

In other terms, literature has still fallen short in understanding, besides “why” marketing and SCM should collaborate, “how” M-SCM interface is (should) be managed, i.e. the ways through which marketing and SCM collaborate, as well as the factors leading to different managements of the interrelations.

Moving from these arguments, the goal of this work is to explore how companies manage the M-SCM interface in the specific setting of NPD projects. Since how and to what extent different functions coordinate are influenced by organization’s strategy and environmental uncertainty (e.g., Lawrence and Lorsch 1967, Miles and Snow 1978, Porter 1985), contingent variables affecting integration practices will be hypothesized and the paper will also look at understanding how such variables push companies to adopt a specific M-SCM interface. These variables will be systematized in a framework which will be confronted to the outcomes of a case study conducted in two divisions of the Italian branch of a MNC operating in the electric devices industry. Due to the complexity of the problem and the relative scarcity of extant knowledge on the issue, our approach will be fully constructivist, and the cases will aim at provide a preliminary testing of the framework and its refinement, in the form of a propositional inventory for grounding future research.

The remainder of this paper is organized as follows: section 2 presents the literature background, aimed at introducing the concept of M-SCM interface and its relevance in NPD processes; section 3 describes the framework endorsed in the study. In section 4 the methodology used to validate such a framework is presented, while the results of the case study are presented in section 5 and discussed in section 6. Managerial implications are advanced in section 7, while final conclusions and further research paths are presented in section 8.

2. Literature background

Cross-functional interface deals with the organizational structures, the tools and the policies adopted by organizations to manage the information flow, the conflicts and the mutual objectives between two distinct functional areas (Moenaert and Souder, 1996). The forms of interface may vary from mutual isolation (no information exchange, no collaboration, avoidance of consideration of the counterpart’s objective in decision-making) to full collaboration (a situation in which the two organizational functions constitute a unified whole) (Barki and Pinsonneault, 2005), passing through the adoption of different practices for knowledge exchange, coordination and collaboration, e.g team working. Extant literature on M-SCM interface generally contend that acting on M-SCM interface the two functions can be moved towards higher degrees of integration (e.g., Ellinger, 2000). This is intimately related to the idea of mutual responsiveness (Grant, 1996), in that integration is achieved when different, independent units mutually fine-tune their behaviour accordingly to other units’ requirements.

High inter-functional integration has generally been associated to higher service level performance, e.g. market responsiveness (e.g., Kohli and Jaworski, 1990). Among the others, an extensive body of empirical research has contended the fundamental role played by interfunctional integration in NPD performance (Lovelace, Shapiro and Weingart, 2001; Sherman, Souder and Jenssen, 2000): various and different competences are required to perform all the activities needed in the NPD process (Ulrich and Eppinger, 2000), and these competences are asked to produce a unique output. In this perspective, the adoption of collaboration practices, that lead to high integration, between different functions (and, namely SCM and marketing) has often been contended as an antecedent of new product and organizational success (e.g., Ettlie and Reza 2001, Mukhopadhyay and Kekre 2002).

Nonetheless, criticism about the absoluteness of the cross-functional integration/NPD performance linkage has emerged in time. For instance, too much diversity in the innovation processes may lead to diminished efficiency (Henard and Szymanski 2001). This outcome is reasonable, especially analyzing how increasing the level of integration within an organization requires significant resource commitments (Banki and Pinsoneault, 2005). Other elements making integration potentially underperforming deal with knowledge ambiguity (e.g. Levin and Cross, 2004; Simonin, 2004; Szulanski et al., 2004): tacitness, specificity and complexity of the underlying knowledge to be transferred from function to function have been observed as constituting elements of knowledge
ambiguity, decreasing the attitude of functions to collaborate (e.g., Zhao and Armand, 2009), but also making integration-oriented policies either ineffective or inefficient (e.g., De Luca and Atuahene-Gima, 2007).

In general, two main causes hindering integration within a company have been detected in literature: (i) the existence of conditions enhancing the convenience of a poor integration and (ii) the existence of barriers to integration.

As for the first point, whereas environmental conditions diminish uncertainty, organizational units are prone to isolate themselves from the other ones to increase internal efficiency (e.g., Thompson, 1967). At the opposite side, integration may be detrimental in case of high turbulence, as it makes the single parts more subject to the effects of changes on the other parties’ side (Brown et al. 2002). Barriers, instead, refer to those factors that hinder the establishment of an integration, besides the actual desirability by the top management (Hitt et al. 1993). Two main categories of barriers have been studied so far: (i) specialization barriers and (ii) political barriers. Specialization barriers refer to sharp diversity among the integrating units, making dialogue difficult and homogenization of the goals substantially impossible (Mintzberg, 1979). Political barriers refer to the personal factors potentially impacting on the favourability towards integration (e.g. Hitt et al. 1993).

In conclusion, interpreting M-SCM integration as “the bigger-the better” variable is overly simplistic: different forms of interface may lead to superior performance in different environments, hence a contingent approach is necessary to understand the causes pushing companies towards different forms of M-SCM interface. In the following, some of the possible causes will be analyzed and the conceptual framework of the study is presented.

3. Conceptual framework

Figure 1 summarizes the conceptual framework adopted in this study. The framework defines three set of variables:
- The M-SCM interface archetype, i.e. the solution adopted by the company to manage the M-SCM interface;
- Firm-level variables, i.e. the characteristics of the firms structurally leading the company to privilege a certain M-SCM interface archetype;
- NPD-level variables, i.e. the NPD process-specific variable which lead companies to adopt a specific M-SCM interface archetype.

In the following, these macro-variables will be detailed and their mutual linkages discussed

![Figure 1: Conceptual framework of the study](image)

3.1 M-SCM interface archetypes

Given the contingent approach adopted in this study, every case of M-SCM interface is to be considered essentially unique. As a result it is necessary to lead back particular cases to archetypes to support interpretation. In this study we will endorse Thompson’s (1967) classification of interfunctional interface, which detects three archetypal forms:
- **pooled interdependence**: each part makes a discrete contribution to the whole and is supported by the whole organization. Each part does not necessarily depend on, or support, every other part directly. This is the situation in which SC and marketing do not share information and carry out their activities independently.
- **sequential interdependence**: a serial relationship exists among different parts, so that the output of a part is the input of another one. This is the situation in which SC or marketing generate knowledge (in the form of plans, budgets or other) which represent one of the inputs for the other function.
This model, widely adopted even recently in literature (e.g. Semadeni and Cannella, 2011; Huemer, forthcoming; Jayanth and Nachiappanc, 2010), seems particularly suited to the goals of the study as it classifies interfaces according to the extent to which the functions or the units analyzed need and use inputs/outputs of the counterpart in their activity. This is particularly significant in the case of M-SCM interface in NPD, as integration and collaboration has been generally observed in terms of knowledge transfer (e.g., Paton and McLaughin, 2008), hence understanding whether such knowledge is mutually shared, not-shared or unidirectionally shared lies at the core of the interpretation of the phenomenon.

3.2 Firm-level variables

In this study we identify three firm-level variables: intra-firm trust, market orientation and absorptive capacity.

Intra-firm trust. Intra-firm trust is the belief by a firm employee/function that another firm’s employees/functions will behave as expected (Gulati and Nickerson 2008). Literature contends that intra-firm trust is a key driver for efficient internal knowledge transfer and sharing. Knowledge transfer and sharing between marketing and SCM is difficult due to the structurally different cultural backgrounds of the employees working in the two functions: SCM experts largely focus costs and manufacturing technologies, whereas marketing experts on price and product functions (Doll et al., 2010). Intra-firm trust benefits the intra-firm relationships by lowering transaction costs (Gulati 1995; Sako 2006), encouraging desirable behaviours (Ryu, So and Koo 2009, Madhok, 1995), and facilitating conflict management (DeChurch, Hamilton and Haas 2007; Ring & Van de Ven, 1994). So, intra-firm trust should encourage units to exchange and share knowledge, hence create the basis for more interdependent interfaces. Hence:

Proposition 1: higher levels of intra-firm trust encourage sequential and reciprocal interdependence between marketing and SCM.

Absorptive capacity. Absorptive capacity refers to the organization-wide ability to recognize, assimilate and apply new external knowledge (Cohen and Levinthal, 1990; Zahra and George, 2002) and to transfer it to third parties (Lane et al., 2006). Hence, when an organization denotes high levels of absorptive capacity, it is more learning oriented and it interacts frequently with external organizations (Gupta and Govindarajan, 2000; Szymanski, 1996). In this perspective, high levels of absorptive capacity (at company level) should be associated to high interactivity and high learning orientation of the internal functions as well (Simons, 1991). Hence:

Proposition 2: higher levels of absorptive capacity encourage sequential and reciprocal interdependence between marketing and SCM.

Market orientation. Market orientation is the orientation of a company endorsing the marketing concept (e.g. Deshpandé and Webster, 1989; Olson, 1987). It refers to the ability by the company to generate intelligence about the marketing system (customers and competitors), to spread it to all the units directly or indirectly involved in the relationship with customers and to develop interfunctional coordination to timely respond to changes in the marketing system (Kohli and Jaworski, 1990; Jaworski and Kohli 1993; Narver and Slater 1990). Market orientation, hence, has been associated to the ability by the firm to establish collaborative relationships among units to increase the ability to develop organization-wide responses to customer requirements. Unsurprisingly, market orientation has been positively associated to learning orientation (Slater and Narver, 1995) and innovativeness (Lukas and Ferrel, 2000). Hence:

Proposition 3: higher levels of market orientation encourage sequential and reciprocal interdependence between marketing and SCM.

3.3 NPD Project-level variables

In this paragraph, the variables at the project level potentially impacting on the M-SCM interface are presented. In fact, as affirmed above, the idea behind this study is that not only structural, company-level variables have an impact on the M-SCM interface nature, but also NPD project-level variables depicting specific contingencies may encourage a deeper or lighter interdependence between marketing and supply-chain management.

NPD uncertainty. Literature highlights that uncertainty is the first and foremost variable moving the need for interdependence (e.g. Perrow, 1970). In particular, higher uncertainty drives a higher need of integration (Thompson 1967), up until a level in which uncertainty is so high that the advantages of integration are exceeded by the costs and the risks for integration (Pinsonneault and Kraemer 2002). Since the objective of this paper is particularly focused on the M-SCM interface, and being integration a dialogical process, NPD uncertainty is here analysed under two concurrent viewpoints:

- demand-side uncertainty, related to the uncertainty in NPD about market size, needs and characteristics;
- supply-side uncertainty, related to the uncertainty in NPD about the inbound supply-chain and the internal operations in terms of technology, partners/suppliers to involve, etc.
Generally, the lower the uncertainty of the task, the lower the need for integration by the unit (Thompson, 1967). Therefore, it may happen that different units seek for different levels of integration depending on the level of uncertainty each of them is experiencing. When the integrating units experience a symmetric level of uncertainty, it is likely to hypothesize that, in absence of adverse contingencies, they will concurrently reach the level of integration they both expect. On the contrary, if one of the two functions perceives more uncertainty than the other one, it is likely that the unit experiencing higher levels of uncertainty will either try to (i) in case of manageable levels of uncertainty, look for stronger collaboration with the counterpart, which in turn will not need so much collaboration and will rather act as information provider, depicting a sequential interdependence; (ii) whereas uncertainty reaches very high levels, tend to isolate itself, discouraging higher forms of integration.

**Proposition 4:** low levels of uncertainty are associated to pooled interdependence in M-SCM interface.

**Proposition 5:** high levels of uncertainty are associated to pooled interdependence in M-SCM interface.

**Proposition 6:** asymmetric levels of uncertainty in different units are associated to sequential interdependence in M-SCM interface. In particular:

1. Whether the higher uncertainty is on the demand-side, the sequence of information exchange will be from marketing to SCM
2. Whether the higher uncertainty is on the supply-side, the sequence of information exchange will be from SCM to marketing

**NPD phase.** A NPD process passes through five phases, conceptually different in terms of prerogatives and type of tasks carried out (Handfield et al. 1999): (i) idea generation, (ii) business/technical assessment, (iii) product/process/service concept development, (iv) product/process/service engineering and design and (v) prototype build, test and pilot for operations. As shown by Chiesa et al. (2010), early phases in NPD are more explorative in nature, and in these phases creativity is effectively used to innovate as well as to anticipate constraints. Then, as the NPD process goes by and the concept is frozen, the degrees of freedom for designers reduces and decision making is more efficiency-oriented. Hence:

**Proposition 7:** Sequential and reciprocal interdependence are more diffuse in early phases NPD than in the late phases.

### 4. Methodology

Explorative case study research methodology was chosen, since, as shown in the literature review, academia still has not a definitive operationalization of the constructs, especially the ones related to M-SCM interface, hence a structured, quantitative research is still premature (Eisenhardt and Graebner, 2007; Lamberti and Noci, 2012), and because several important variables (such as trust, innovativeness and uncertainty) are hardly assessable through explanatory studies (Yin, 2003). Multiple case study approach was chosen since it allows both an in-depth examination of each case and the identification of contingency variables that distinguish each case from the others. Furthermore, multiple case studies are appropriate when attempting to externally validate the findings from a single case study, through cross-case comparisons (Eisenhardt, 1989). Therefore, they typically yield more robust, generalizable and testable interpretations of a phenomenon than single case study research (Eisenhardt and Graebner, 2007).

The study investigated the Italian branch of a multinational company operating in the electric apparel/home automation industry; the industry was chosen in order to analyse a context in which the technological content of the supplies is high. In these industries, in fact, knowledge ambiguity between marketing and supply-chain management units should be lower than in other industries (e.g., Chiesa et al., 2009), as product managers (belonging to the marketing units), for instance, need a strong technical background. We selected and studied two innovation projects that were concluded (or were about to be concluded) by two distinct divisions shortly before our analysis started. The choice of looking at two different divisions within the same company seemed to us the best mix between the possibility to tap diversity in the firm-level factors identified and the absence of paramount external factors (e.g. size, age or competitive strategy) potentially impacting the M-SCM, but less intriguing in terms of managerial implications. We decided to include a successful and an unsuccessful project with the purpose to contrast them and to identify more straightforwardly the reflection of M-SCM interface on the success of the NPD process. This “polar types” sampling logic is especially suited to inductive, empirically-based investigations, where the evidence is used to reveal relationships between critical research constructs (Eisenhardt and Graebner, 2007).

We gathered information basically through direct interviews based on a semi-structured questionnaire comprising a set of open questions for each of the relevant areas of investigation in our reference framework: questions were asked about topics such as the nature and the structure of the project, the relationship between marketing and supply-chain management along the NPD, the project management, the role of other functional areas in the NPD process and the outcomes achieved at an organizational, project and market level of the NPD process. Structured data gathering and analysis enhance the reliability of the research (Yin, 2003). At the outset of each case, a relationship was established with a senior manager from the selected division. We asked her/him to identify a project that was suitable for our analysis. For each project, we undertook semi-structured interviews with key informants from marketing, R&D, Logistics and/or SCM. Secondary information was collected in the form of project documentation. These secondary information sources were triangulated with data drawn from the interviews, ensuring construct validity (Yin, 2003). Data
and information gathered through the case studies were recorded in a database and manipulated before being analysed. In particular, we applied data categorisation and data contextualisation (Miles and Huberman, 1984), to reveal unforeseen relationships between events and circumstances.

5. Results

For confidentiality reasons, the company name of the analysed firm, i.e. Company A, is imaginary and figures have been rearranged to preserve anonymity.

5.1 Organization

Company A is divided in four divisions, each one responsible for a specific market, i.e., home automation, residential electrical devices, industrial electrical devices, tertiary electrical devices. Each division is independent from the others and has a separate governance, although they share staff functions at corporate level, e.g., corporate marketing that is involved in pure institutional and internal communication. Each division is organized into functions, among which: R&D, Commercial, Purchasing, Production, Logistics, and Engineering (i.e. Product Industrialization).

Company A’s marketing units at divisional level are organized into three sub-functions: (i) Product Marketing, that is in charge of the identification of new market needs and trends and proposes ideas for new products, is led by the divisional R&D director, (ii) Trade Marketing, that is basically involved in commercial activities, is led by the divisional Commercial Director, and (iii) Purchasing Marketing, whose main activities are supply market scouting and suppliers selection for new products, is led by the divisional Purchasing Director. It should be noted that Purchasing Marketing acts as interface between suppliers, R&D and engineering during NPD process managing supplier involvement in NPD.

5.2 Supply Chain

Although its final customers are the end users of electrical devices, Company A’s direct customers are the wholesalers, that supply installers with the devices they place in the end users home/buildings.

Company A owns 4 production facilities in Northern Italy. Each site is dedicated to the production of specific appliances. 80% of the production is managed Make To Stock and products are stored in 2 main warehouses.

Suppliers are mainly located in Northern Italy. To increase efficiency, supplier base has been drastically reduced around 10 years ago to reach its present size. Partnerships and collaborative relations with the most important suppliers are in place.

5.3 The analysed projects

The projects analysed in this work are two:

- **product K**, an electrical device aimed at radically innovate tertiary electrical device markets by introducing a new system based on new materials, formats and technologies;

- **product CD**, a line extension of the already existing home automation system, i.e. an energy consumption controller, with enhanced customer features, and moderate level of technological innovation.

In the next paragraphs, the NPD processes, with a specific focus on the M-SCMarketing interface, of both the studied projects will be presented to ground the following discussion.

5.4 Product K: a case of “failure”

Product K is a buildings’ illumination management system aimed at satisfying the need of facility managers and large contractors in ventures, such as hospitals or offices, to efficiently manage both illumination and energy consumption.

Product K is extremely innovative for company A from both the technology and the market perspective. On the one hand, it involves technologies never used before by the company, i.e. new cutting systems for tubes and new materials, and on the other hand, the target market is substantially new for the company. Hence both demand- and supply-side uncertainty at the outset were significantly high.

The development process of product K can be divided into two phases: (i) phase 1, that we will call Outsourcing and (ii) phase 2, that we will call Involvement of Purchasing Marketing.

5.4.1 Phase 1: Outsourcing

R&D, jointly with Product Marketing, generated the idea to develop product K. Although company A has strong internal knowledge in design and engineering, the product design was initially outsourced to an external supplier (S1). This provider designed the product without interacting with the company and chose also the suppliers for the new technologies.
According to the Logistics Director, the final release of the project delivered by S1 to company A presented a main problem related to the suppliers’ choice. S1 proposed two suppliers for a critical component, i.e. long tubes: one located in Central Europe and one in Western Europe. However, company A’s Logistics Department proposed to change them for two reasons: (i) too high costs and (ii) low suppliers’ reliability. Indeed, the complexity and novelty of the developed system, along with the newness of suppliers to company A and their low quality performance, increased the need for interactions among company A and the suppliers to control and adjust the products and the production processes. Therefore, the choice of suppliers located far away from the company site would have determined higher costs for managing the changes (e.g., extra costs for transportation), and communication problems could have occurred, as mutual coordination was made hardly possible by physical distance. Hence, company A had to find new suppliers closer to its facilities.

Supplier selection was crucial due to the strong impact of purchasing costs on total cost of product K. In facts, unlike the other products of company A, in which the 80% of costs is generated by manufacturing processes taking place inside the company itself (Make), 93% of the costs of product K derives from purchasing (Buy).

5.4.2 Phase 2: Involvement of Purchasing Marketing

In order to overcome the above mentioned problems, the released project was handed to a team composed by Logistics, R&D, Purchasing Marketing, Product Marketing and Engineering. The team is in charge of enhancing the project designed so far, defining the supply chain of product K, production ramp-up schedule and product launch in the market. Logistics and R&D collaborated to design the supply chain of product K. To find new suppliers, Purchasing Marketing and Product Marketing were involved too. Product Marketing was involved since the Logistics director finds product marketers highly aware of supply-side market. Decision-making in the project was generally self-managed by subunits and highly interactive. R&D Director stated: “we speak different languages, but they become more and more similar during project”. As the Purchasing Marketing noted: “We call each other every day. We decide together when to fix the meetings depending on what we have to do.” In facts, not scheduled meetings are held in addition to the standard meeting, that takes place every 15 days and to which a member of every functions involved in the project participates.

Curiously, despite all the interviewees recognized the importance of the project, nobody was able to indicate the project manager. This highlights the absence of a strong leadership along the process.

The supply chain of product K is composed of seven main suppliers. Like all the other company products, all the finished products are to be sent to a finished product warehouse owned by company A.

The material flows among suppliers are complex, and it occurs that suppliers are also customers of company A. This increase the need of information sharing (orders, plans, etc.) to ensure that the supply chain will efficiently deliver on time. Indeed four out of seven suppliers as well as company A deliver their components to the plant of one assembler, called supplier FX. FX, in turn, delivers some components to two other suppliers that also supply the finished product warehouse of company A.

FX plays a pivotal role in the supply chain. It has been chosen due its high reliability. Indeed Logistics Director stated: FX is “not a supplier. FX is a partner”. Company A and FX have been working together for several years, now. To process K, FX had to invest in a new welding line for some of the components.

Besides FX, also the other suppliers strongly collaborate with A during the product development by pro-actively providing solutions and information. In two cases, the suppliers provided useful information to re-design the product so to solve technical problems in the assembly phase while reducing purchasing costs as well. For instance, in a case, Product Marketing proposed various versions of a lamp, to meet every need for customization of the lamp (e.g. emergency light, duration of the emergency light), but some variants required more powerful battery to avoid the risk of emergency light battery running down. As the R&D director noted: “the idea was good, but our suppliers, that had a better market overview since they were historically our customers for some components, told us that some of the items would have had a demand of no more than 5 pieces/year, as they were too specific. Their suggestion was that only two main configurations were really required and that the problem of power duration could have been solved by postponing the choice of the battery pack for emergency lights.” Therefore it has been possible to reduce finished product variety, thus stock holding costs.

Finally, also installers showed a collaborative behaviour: Company A installed a pilot product K platform in one of the company A’s warehouses and asked installers to experiment on it and to provide feedbacks, which ended in useful suggestions for incremental improvements.

Nonetheless, the poor management in the early phases of NPD, joint with the lack of project leadership, came out in a very unsuccessful result. Despite A generally has a very strict compliance to timelines, product K’s launch was postponed twice, and even if the product had to be ready by the end of 2009, the actual launch is expected around October 2011. Moreover, the need to redesign some parts, to scout suppliers and design again the supply chain, results in costs higher than 150% of the expected budget for the project. Finally, and noticeably relevant for the goals of this study, managers showed very low levels of satisfaction with respect to the outcomes and to the way the people involved in the project actually work. So, generally the perception of failure was clearly perceivable during the interviews.
5.5 Product CD: a case of success

Product CD is an add-on to an existing home automation platform-based product line. CD allows for visualize, through a user friendly interface, the energy consumption of a house. The Product Marketing of Home Automation division had the idea to develop product CD, to anticipate the expected regulations for energy consumption control in housing in several European countries. Both R&D and Product Marketing worked on the preliminary idea. The objective was to act as first mover in this market, that was supposed to be flowering in Italy in the near future.

Product Marketing, supported by R&D, developed a Marketing plan that explained the new functions the product has to perform as well as how they should integrate in the company products offer, i.e. how the new product catalogue should look like. After Marketing plan approval, R&D and marketing co-operated to explore product feasibility. When enough evidence of feasibility were gathered, the marketer and R&D manager presented the project to the marketing director, which in turn presented it to the divisional manager and the commercial manager. CEO is informed about the financial figures forecasts.

Table 1 presents a summary of the results of the two projects.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Product K</th>
<th>Product CD</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-SCMarketing Interface</td>
<td>In Phase 1 - pooled interdependence: no interaction between S1 and Company A.</td>
<td>Each department contributes with its knowledge to the project; Sequential interdependence with R&amp;D is the “orchestra conductor”</td>
</tr>
<tr>
<td></td>
<td>In Phase 2: Interactive interdependence: team work based on strong trust among functions but leadership and guidance is lacking</td>
<td></td>
</tr>
<tr>
<td>Supply Side Uncertainty</td>
<td>High: new processes also for suppliers, new suppliers</td>
<td>Low: known technology and suppliers, existing platform</td>
</tr>
<tr>
<td>Demand Side Uncertainty</td>
<td>High: radical innovation for the company and the market</td>
<td>Medium-Low: innovation pushed by expectation on regulations, it was an incremental innovation: add-on on existing product line</td>
</tr>
<tr>
<td>M-SCMarketing Interface in the different project phases</td>
<td>In the early phases: pooled interdependence, later phases: interactive</td>
<td>No change all along the project</td>
</tr>
<tr>
<td>Project performance</td>
<td>Low: 2 launch postponements; 2 years of delay on launch; costs higher than 150% of the budget</td>
<td>High: time to market 2 years, commercial success</td>
</tr>
<tr>
<td>Trust</td>
<td>High internal, i.e. among company’s functions, and external trust, i.e. among supply chain partners.</td>
<td>High internal trust and external trust</td>
</tr>
<tr>
<td>Absorptive capacity (related to knowledge external to company A)</td>
<td>… of the functions involved in the project&lt;br&gt;High:&lt;br&gt;In Phase 2, the team involved strongly external players such as installers and suppliers and extracted important inputs for the refinement of the project.</td>
<td>…of the functions involved in the project&lt;br&gt;Low - Medium: the idea was based on knowledge coming from external informers. No interaction with customers. Low involvement of suppliers</td>
</tr>
<tr>
<td>Market orientation</td>
<td>…of the functions involved in the project&lt;br&gt;High:&lt;br&gt;Market-driven approach to innovation&lt;br&gt;Strong attention to the customer needs (e.g. installers)&lt;br&gt;High levels of market intelligence dissemination</td>
<td>…of the functions involved in the project&lt;br&gt;Medium: No direct involvement of customers in NPD&lt;br&gt;Substantially technology-push approach</td>
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</table>
Product Marketing and R&D refined the technical features; in parallel, and without involving Product Marketing (quoting Product Marketing: “We [Product Marketing] had already said what we had to say”), R&D went on working with Engineering department for production processes design and with Logistics and Purchasing for component and supplier selection. Indeed, since the product is an extension of an existing product line and it is based on a technology known to the company, no radical changes to the existing supply chain have been done. Suppliers were consulted during the phase of detailed design of the product. The results of such work is the detailed design of the new product, that R&D could share with Product Marketing, Engineering and Quality departments. After approval of the design by these managers, a first prototype was created, then the industrialization and the pre-series were launched.

As for market forecast a strong involvement of Trade Marketing was necessary, as the product is particularly new for the market, hence the market knowledge by commercial direction was useful to provide more consistent estimates.

All along the NPD process, buyers interacted with R&D only, as R&D is the formal project manager. A strong trust between R&D, marketing and buyers exists as all the actors have a sound technical background, making it possible to carry out a decoupled team management (R&D and marketing on one side and R&D and Logistics/buyers on the other side) without creating ambiguity. One of the interviewed from Product Marketing stated: “Purchasing guys know the supply market and know how to do their job”. R&D director stated that there is a “very good relationships” between R&D and all the other functions.

The project lasted 2 years and a half and was a complete success, both in terms of time to market and commercial success at the first launch. The first year was fully dedicated by Product Marketing to define the Marketing plan and the feasibility. Then a strong organizational commitment was in place: five R&D technicians and a product marketer were formally dedicated (part-time) to the project. A project leader, coming from the R&D division, managed the whole project and coordinated the whole team. Interviewees, besides observing the outcomes in terms of budget and timeline compliance, generally demonstrated high levels of satisfaction for both project management and project outcome, depicting the project as an organizational success.

6. Discussion

In the glance of the evidence gathered, it is possible to provide, starting from the assumption that two cases cannot be generalized but still they can represent a good starting point for grounding a better understanding of phenomena, a preliminary discussion and refinement of the research propositions advanced in this work.

Proposition 1: higher levels of intra-firm trust encourage sequential and reciprocal interdependence between marketing and SCM.

This proposition finds a significant support looking especially at the CD case, where the authoritativeness of the R&D department and the mutual trust between R&D and marketing, on the one hand, and R&D and supply-chain management, on the other hand, have led to an effective, interactive (hence conceptually close to reciprocal) interdependence along the NPD process. In the case of product K, the choices in M-SCM interdependence never appeared as particularly connected to a trust issue, but rather to other organizational, contingent and managerial issues. In this respect, it seems that proposition 1 finds a support in evidence, but also that probably other variables (discussed below) have a greater momentum in influencing the M-SCM interdependence.

Proposition 2: higher levels of absorptive capacity encourage sequential and reciprocal interdependence between marketing and SCM.

Even if absorptive capacity is depicted as a firm-level variable (Covin and Levinthal, 1990), in this case it appeared appropriate to analyse it at a project level, due to the fact that the projects were run and managed by different divisions operating in different sites, with different resources and with limited strategic synergies. This makes it possible to consider the two cases as developed by two quasi-firms. In the case of product K, absorptive capacity is manifestly high, as the project team not only tries to interact with external third parties in order to get new knowledge, but also continuously interact to source new information and actually uses it to refine its work. Such an interaction encouraged in practice the high levels of interdependence. In the case of product CD, instead, the functions involved in the project have shown limited interest in sourcing information from third parties, following the project plan and, probably also for this, having a minor need for interacting and fine-tune along the project. As a result, proposition 2 finds a preliminary support.

Proposition 3: higher levels of market orientation encourage sequential and reciprocal interdependence between marketing and SCM.

Similarly to absorptive capacity, also market orientation may be led back to a project-level (or better at a division level) in our study. The effect of market orientation appears quite connected to absorptive capacity: the project team of product K have assumed a stronger market-driven approach, leading them to interact more continuously with external third parties and making the information sourced from them more influential in carrying out the project. As a result, this information hase recursively contributed to modify the scenarios, the assumptions and the ideas about how to develop the project, requiring higher levels of interaction by the functions involved. This argument clearly supports proposition 3, even if it must be noted that the absence of a
clear project leadership may have increased the “permeability” of the organization to external information and hence enhanced the need for coordination among functions.

Proposition 4: low levels of uncertainty are associated to pooled interdependence in M-SCM interface
Evidence presented in this study provides a partial support to this proposition. In fact, the project characterized by lower levels of uncertainty (product CD) actually show low levels of sequential or reciprocal interdependence between marketing and SCM; yet the interdependence is not properly “pooled”, but rather “mediated”; in that a third party (R&D department) plays a pivotal role decoupling marketing and SCM and diminishing their interdependence, but keeping a sequential interdependence with both. This point suggests that Thompson’s (1967) taxonomy is probably to be refined to get the complexity of the M-SCM interface in practice. This point will be deepened in the final part of the paragraph.

Proposition 5: high levels of uncertainty are associated to pooled interdependence in M-SCM interface
Also this proposition is just partly confirmed by the cases. In fact, product K development, characterized by very high levels of uncertainty, has shown a structurally pooled interdependence at first, which actually turned out as a failure, but also a reciprocal interdependence later on, with no substantial improvements. Nonetheless, quite clearly, both the cases show a general orientation by companies, in case of strong uncertainty or difficulties in communication among the functions, at least not to encourage interaction.

Proposition 6: asymmetric levels of uncertainty in different units are associated to sequential interdependence in M-SCM interface. In particular:

6.1 Whether the higher uncertainty is on the demand-side, the sequence will be from marketing to SCM
6.2 Whether the higher uncertainty is on the supply-side, the sequence will be from SCM to marketing

No specific evidence on this point has emerged in the case due to the substantial symmetry of uncertainty among functions.

Proposition 7: Sequential and reciprocal interdependence are more diffuse in in early phases NPD than in the late phases.
Results suggest that the M-SCM interface during NPD process is substantially independent from project phase. In fact, in none of the analysed projects the configuration has been changed along the process, or at least due to causes attributable to the NPD process. Nonetheless, it can be observed that final phases are more formalized and structured in both the cases, probably for a diminished uncertainty, and this enhances possible forms of pooled interdependence oriented to an increase in efficiency. This outcome is consistent to Chiesa et al.’s (2010), which observe that the final stages of NPD tend to encourage more rigid and isolated organizations.

The results of the case study research, hence, substantially suggest that our framework, endorsing Thompson’s (1967) theory, may represent a good starting point for understanding the nature of M-SCM interface. In fact we have observed two of the three main archetypes proposed, i.e. pooled and reciprocal. As a matter of facts, in the early stages of product K NPD process, a clear pooled approach in which SCM and marketing are totally isolated from each other can be observed. Similarly, later on in the project, when the need to recover the delays and the desire to overcome the problems experienced in the first step of the project became pre-eminent, a strong reciprocal interdependence emerged, with SCM and Marketing continuously exchanging information and plan, participating in each other decisions and developing joint plans.

Nonetheless, Thompson’s (1967) taxonomy needs some adaptations to become a powerful tool for understanding M-SCM interface: observing product CD’s case, it is clear how the substantial absence of direct contacts between SCM and Marketing is not to be interpreted as a pooled interdependence between SCM and Marketing, but rather as a twofold sequential interdependence between R&D and each of the two functions. In this case, M-SCM interface is not present, because a third actor (R&D) has the formal and substantial authority to be the only referent of both SCM and Marketing.

Therefore, we can state that Thompson’s (1967) classification does not fully catch the complexity of M-SCM interface, especially because it may happen that such an interface is managed indirectly by third parties.

The case of product CD, where SCM and Marketing are not integrated since they interact only with R&D but not among themselves, is a case of success that can be counterintuitive, considering the large amount of literature eulogizing and encouraging SCM and marketing integration.

We believe that this is because, despite its relevance, literature has moved from the assumption that M-SCM integration is a desirable situation by itself, focusing on the principles and practices favouring such an integration; our outcomes support the idea that probably different levels of integration or different interfaces are more effective than others according to specific contingencies, hence our idea of assuming a contingent perspective when analysing M-SCM appears promising for developing a deeper knowledge on the topic.

7. Managerial implications

It is widely recognized that bringing in NPD projects both Marketing and SCM managers can feed into the marketing concept and foster product availability at launch, efficiency and edge in the market. This research has shown that when involving SCM and Marketing managers in NPD projects, M-SCM interface should be designed carefully prior NPD project launch. In fact, the way
SCM and Marketing managers interact during NPD can determine NPD project success.

Since Supply Chain and Marketing departments are often two separated organizational silos, breaking the barriers dividing them is a difficult task. To reach this goal, actions to improve and assure communication flows between them are to be taken. Information can flow directly from one point to the other, or can be managed and directed by a third party. Our research has shown that in some cases, since SCM and Marketing managers “speak” two different languages, the complexity connected with allowing the experts from both sides to interact directly is not counterbalanced by a real benefits, but it might result in extended decision making time. Therefore, it is advisable to use a dis-intermediated approach, by interposing another structure, with the role of translator and project planner, between the two departments.

When planning the M-SCM interface, various elements have to be taken into account. Indeed, both company features and NPD project features are to be evaluated. M-SCM interface’s design requires to understand the potentials for exploiting the benefits of collaboration, i.e. understand whether there are the prerequisite for a successful collaboration. First of all, trust between the different functions inside the same company and in the suppliers, is one of the key success factors of a productive collaboration. Trust has shown in all the analysed cases to foster information sharing and communication and reduce problem solving time.

Since having SCM and Marketing managers working together in team has a cost, in terms of time and coordination efforts, a differentiated approach in terms of M-SCM interface should be followed depending on the relevance and expected benefits of the project itself. Strategic and radical innovation project should be developed involving directly both Marketing and SCM; less innovative and project associated to lower uncertainty could be managed through a dis-intermediated approach. A balanced approach to M-SCM interface design for NPD projects might help in reducing managerial complexity and focus the organization on selected and strategic projects.

8. Conclusions

In this paper we advance that the nature of the M-SCM interface during NPD projects is strongly influenced by a number of contingencies. The M-SCM interface can range from a purely “pooled” interface, in which SCM and marketing are two distinct and unrelated functional areas in the company, to integrated, reciprocally-interdependent functions continuously exchanging information and knowledge, passing through situations in which one of the functions provides information to the other, hence interdependence is unidirectional. The contingencies that might affect the choice of M-SCM interface are, at firm level, (i) intra-firm trust, (ii) absorptive capacity and (iii) market orientation, and, at NPD project level, (iv) phase, ( and (v) uncertainty.

A case study was conducted in a multinational company and two projects were investigated. The first one was a case of failure characterized by two phases, whereas the second project is a success project.

The case study results suggest interesting insights on M-SCM interface and pave the way for future research. First, we observed that Thompson’s (1967) classification does not fully catch the complexity of M-SCM interface, indeed we observed a case in which M-SCM interface is managed indirectly by third parties, in the case R&D department. Secondly, contextual factor may determine the need to choose a different type of M-SCM interface. Put differently, the level of integration among the firm departments should be chosen depending on contextual factor, thus suggesting that integration is not always the best performing solution. Finally, the impact of the different contingent variables on the choice of the archetype has been analysed.

We reckon that the study has limitations suggesting possible developments. First of all, a case study on a single company, yet it emphasizes the discrepancies in the contingent variables, limits our outcomes in terms of generalizability. Enlarging the sample with more companies from the same and from different industries could provide a stronger confirm about the outcomes of the study and help refine the conceptual framework. Second, even if we observed a case of success and a case of failure, the objective of our study was not to identify whether the structure of the interface had (or could have had) an impact on the overall success of the NPD process. This point represents the immediate evolution of the study and we encourage further research effort in order to actually test the generalized optimism on the role of M-SCM integration in the pursuit of firm performance. Our main outcome suggests that probably a “one-best-way” in M-SCM for accomplishing the whole corporate potential does not exist and rather the decisions about the M-SCM interface should consider more deeply the specific contingencies, avoiding the ideological preferences for more or less integrated interfaces that often have characterized research on the topic.

References


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Received October 2012  
Accepted October 2012  
Final acceptance in revised form November 2012