Organizing IT purchases: Evidence from a global study

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1. Introduction

The idea that purchasing strategies and practices might vary considerably across different categories (i.e., homogeneous groups of goods and/or services that are also known as "commodities") is well-known in the purchasing literature (Monczka et al., 2010) as a result of a long-lasting debate about purchasing portfolio models (Gelderman and van Weele, 2005) since the seminal work of Kraljic (1983). Given that purchasing accounts for a large part of value creation, companies need differentiated approaches (i.e. portfolio models) to exploit the wide range of optimization opportunities available in purchasing (Wagner and Johnson, 2004; Olsen and Ellram, 1997; Dubois and Pedersen, 2002).

As a matter of fact, there has been increasing recognition that the purchasing function may have a significant role to play in an organization's pursuit of competitive advantage (Spekman 1994; Carter and Narasimhan, 1996; Ellram and Carr, 1994; Carr and Pearson 1999). However, much of the discussion has focused on the relative significance of the management of direct, revenue-generating expenditure on corporate success. There has been much less concern by academics about the efficacy and appropriateness of current approaches to the sourcing of indirect, or non-revenue-generating and support, expenditure. This is arguably because the effective management of indirect expenditure is unlikely to impact directly on competitive advantage.

Given this, and the relative paucity of academic writing about the management of indirect spend, this paper seeks to shed light on what major companies are doing in an area of expenditure representing indirect spend, i.e. information technology (IT). We choose IT as, on one side, it represents indirect goods and services (it is probably one of the most relevant indirect costs for a company – usually constitutes 30–60% of a firm's total expenditures, Orr, 2002) and, on the other side, offers several possibilities to study goods with very different characteristics, ranging from commodities (such as PC and laptops) to high-value non-standard products (such as servers and storage infrastructures), to non-physical products (such as software), to services and body rental. They are in some cases just an enabling factor, in others represent the cornerstone driving the organizational change. Many companies (such as IBM, Xerox, Philips Electronics, and Alcatel) reorganized their value chains in order to

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focus on few core activities increasing IT goods and services buying instead of internal solutions development (Quinn, 1992). This sometimes resulted in failures in IT goods or service supply (Kern and Willcocks, 2002; Hirschheim and Lacity, 2000). These failures have been related to mistakes due to IT purchasing management (i.e. lack of negotiation skills, contracting, and suppliers relationship management) (Grover, Teng 1996; Kern and Willcocks, 2002; Hirschheim and Lacity, 2000). Anyway clear indications about how to organize and manage IT purchasing are missing. We are therefore interested in identifying possible configurations of processes and organizations for IT purchasing by introducing a compelling research framework. We are not discussing pros and cons of make vs. buy, we just take for granted that many companies are spending more and more in IT purchasing (e.g., Cullen and Willcocks, 2003).

We model the IT purchasing process by considering both strategic decision-making (i.e. strategic purchasing) as defined by previous studies (e.g. Chen et al., 2005; Leenders et al., 2002; Monczka et al., 2010), as well as tactical activities (i.e. sourcing and supply, van Weele, 2004) in order to provide a thorough view, even if specificities might not emerge in all phases.

Considering the IT purchasing organization, we wonder what are the department/s devoted to buying IT and what is their structure as a result of roles involved (Fichman, 1992), level of decision making (Gonzalez-Benito, 2007) and span of control (Johnson and Leenders, 2001).

As a result, in this study we provide an extensive view of IT purchasing processes and organizations that companies might adopt. We draw evidence from empirical data and insights collected through a broad research initiative in collaboration with IBM. Since 2007, authors have been involved in several case studies, a dozen workshops, and several focus groups as well as meeting with managers aimed at investigating the complexity of IT business-to-business transactions. As far as IT purchasing is concerned, 12 representative case studies have been selected and developed by collecting in-depth information according to the research framework described in Section 3, in order to analyze the organization and processes adopted by large multinational companies to buy IT.

The paper is structured as follows: first, contributions coming from the IT and purchasing literature related to the process and organization for IT purchasing are critically analyzed. Then, research objectives and methodology are described. Next, results highlighting different approaches in terms of IT purchasing process management and organization are presented and discussed. Finally implications and conclusions are discussed.

2. An organizational perspective of IT purchasing

On one hand, the literature is quite rich in identifying the main drivers towards IT purchasing (i.e. cost reduction, cost variabilization, cost control, and focus on core competences) (Grover, Teng 1996; Hufnagel and Birnberg, 1989; Quinn 1992) as well as failure causes (i.e. lack of negotiation skills, contracting, and suppliers relationship management) (Grover, Teng 1996; Kern and Willcocks, 2002; Hirschheim and Lacity, 2000).

On the other hand, authors suggest that IT purchasing might require new structures (i.e. shared authority, responsibility) and processes management (i.e. coordination, joint process management) to assure the effectiveness of IT purchasing (e.g., Loh and Venkatraman, 1992). Anyway, when considering such aspects, authors mostly focus on the relation between the IT department and IT vendors rather than on processes and structure adopted by the buying firm. Partial exception is the study by Pinnington and Woolcock (1995), who propose to reconsider the whole organization for IT purchasing.

It is therefore worth to look at the purchasing and IT literature more in depth, in order to identify key variables that should be used to describe the process and the organization for IT purchasing.

2.1. The process of IT purchasing

To provide an overall picture of the IT purchasing process we identified its different phases thanks to different contributions in the purchasing literature. In the first phase of the IT purchasing process (hereafter called Strategic purchasing), different strategic decisions (e.g., make or buy decisions and portfolio strategy definition) are taken (Monczka et al., 2010; Chen et al., 2005; Leenders et al., 2002). Then, the sourcing phase regarding tactical activities, such as specifying needs, selecting and contracting suppliers, is performed (van Weele, 2004). Finally, the supply phase regarding operational activities, such as ordering, monitoring and post purchase activities (e.g. payment and invoicing), is accomplished (van Weele, 2004).

2.1.1. Strategic purchasing

Strategic purchasing is about taking different strategic decisions regarding the definition of general purchasing policies and portfolio approaches (Monczka et al., 2010) and supplier relationship management (Chen et al., 2005; Leenders et al., 2002; Cullen et al., 2005). The output of this phase consists in the definition of which products and services should be made in-house or purchased, what is the most suitable portfolio management approach, and how suppliers should be managed and evaluated.

As anticipated, most authors focus on IT make or buy decisions (Matthews, 2000), identifying drivers, such as cost savings (Due, 1992), better focus on core business (Grover, Teng 1996; Hufnagel and Birnberg, 1989; Quinn, 1992); internal IT department considered inefficient, ineffective, or technically incompetent (Lacity and Hirschheim, 1993); innovation availability (Teece, 2000; Utterback, 1971; Sage, 2000; Van de Ven et al., 1999).

Nevertheless, strategic purchasing involves other decisions, such as the definition of portfolio management strategies, supply relationships, and supplier strategic evaluation. Cullen et al. (2005), for instance, propose a portfolio model specific to IT purchasing or outsourcing that includes, among the others, relevant aspects such as scope grouping (i.e. which IT products and services are provided), geographical scope (i.e. physical locations that have been identified to receive particular IT goods or services, such as local or global), supplier grouping (i.e. how many suppliers provide outsourced services, allowing sole supplier, prime contractor, best-of-breed, and panel) and duration (in terms of short vs. long-term agreements).

Finally, supplier qualification, evaluation and relationship management have been frequently shown to be related to the IT purchasing or outsourcing effectiveness (King, 2007). Many firms that did little to monitor and manage the vendor relationship after recurring to IT purchasing or outsourcing have been surprised by negative outcomes (Cullen et al., 2005; King, 2007).

2.1.2. Sourcing

The sourcing phase regarding the IT purchasing process has been rather neglected in both IT and purchasing literature. Not surprisingly, most of the reasons for IT purchasing failures mentioned above (e.g. selection or negotiation problems) are related to aspects that have to be managed during this phase (e.g. Hirschheim and Lacity, 2000).

In general, the first step of the sourcing phase is the definition of specifications about the product or service to purchase (Van Weele, 2004). Both the purchasing department and the internal customer requiring goods or services, for instance the IT department or the final user, could be involved in this activity.

Next, possible suppliers are identified, either existing or new ones. Supplier selection usually consists in a multi-objective problem entailing tangible and intangible criteria in a hierarchical manner (Weber et al., 2000; Bhutta and Huq, 2002) that frequently determines trade-offs (e.g. lowest price against highest quality). It is therefore greatly important to choose selection criteria and ranking method consistently (Kannan and Tan, 2002). Traditionally, quantitative factors such as price, production capacity, and financial position are evaluated (Narasimhan et al., 2001), but literature and practice also emphasize factors like quality assurance, perceived risks, service performance, buyer–supplier partnership, cultural and communication barriers, trade restrictions, environment as well as factors specific to the purchased items (Simpson et al., 2002). Many techniques and approaches (ranging from mathematical modeling to qualitative methods) can be used to select suppliers, such as categorical methods, cost-ratio methods, linear averaging or weighted-point methods (Narasimhan et al., 2001). Supplier selection is not necessarily the end of sourcing: quite often it is followed by the negotiation of contractual arrangements with the supplier of choice. Several aspects influence this activity, such as agent characteristics, good characteristics, negotiation environment, and information parameters (Lomuscio, 2003). When negotiation is successful, buyer and supplier close the deal by signing a contract, which ends the sourcing phase.

Finally, sourcing might be supported by electronic tools aiming at increasing process efficiency by matching demand and supply. Main examples of electronic sourcing tools are: supplier databases, electronic auctions and requests for quotation, document management, and communication tools (Monczka et al., 2010).

2.1.3. Supply

As far as we know, there are no specific contributions regarding the supply phase for IT purchasing in both IT and purchasing literature. Anyway given the aim to provide a complete view of IT purchasing, we include all the phases of the purchasing process in our analysis.

In general, the supply phase deals with goods/service preparation, shipment, delivery, receiving and control, payment, and invoicing (Van Weele, 2004). Since these are mostly repetitive and operational activities with respect to strategic purchasing and sourcing, it is crucial to automate as much as possible the order–expediting–payment cycle through electronic procurement tools like electronic catalogs or electronic invoicing (Caniato et al., 2012).

2.2. The organization of IT purchasing

The proper design and execution of the purchasing process described above certainly is a crucial factor to ensure process efficiency and effectiveness but needs to be aligned with the organization managing such process. First of all, it is useful to analyze organizational roles involved in IT purchasing. Then, two crucial characteristics of the IT purchasing organization have to be investigated: degree of decision-making centralization and span of control.

2.2.1. Organizational roles involved

Concerning the organizational roles involved in IT purchasing, individuals within the company rarely have complete autonomy regarding purchasing decisions, adoption, and use of work place innovations such as IT tools. Management can encourage (or discourage) adoption explicitly (Leonard-Barton, 1988; Moore and Benbasat, 1991) or implicitly through reward systems and incentives (Leonard-Barton, 1987). Consequently, the decision making process of IT purchasing frequently involves complex interactions between many stakeholders (Fichman 1992). These stakeholders include the top management, users, the IT department and the purchasing department (Fichman, 1992; Weber and Current, 1993). Anyway stakeholders' involvement in the IT purchasing process is not an easy task. From one side, purchasing literature shows that in many companies the purchasing department is unable to early involve internal customers in order to define products specifications (e.g. Cox et al., 2005). On the other side, the IT literature highlights that the IT department is developing new competences to be an intelligent buyer and an effective contract manager (Pinnington and Woolcock, 1995).

2.2.2. Level of decision-making centralization

Concerning centralization, this means entrusting a unique group, department or business unit at the corporate level of IT purchasing decisions while decentralizing allows single business units to maintain control over resources (Gonzalez-Benito, 2007). The underlying trade-off is between efficiency/control deriving from centralization and flexibility/service level granted by decentralization (Dearden, 1990; Kim, 1990; Laberis, 1998; Meyer and Curley, 1991; Von Simson, 1995). Some contingency theories account for a fit between the IT centralization within a company and the company organizational structure (Olson and Chervany, 1980; Egelhoff, 1988; Leifer, 1988; Slater, 1998). As a consequence, a trade-off optimizing hybrid approach emerges, where IT architecture and support systems are centralized while solutions development and internal user support are left to single/local units. Authors like Gordon and Gordon (2002) investigate the perspective of multinational firms, given that geographical spread and business unit proliferation increase the need for a correct balance between centralization and decentralization.

2.2.3. Span of control

Finally, the role covered by the purchasing and IT departments in the IT purchasing process should be considered (i.e. span of control) (Kim, 2007; Johnson and Leenders, 2001, 2004, 2006). Span of control of the purchasing department refers to the extent to which the latter is formally responsible for purchasing activities rather than sharing such responsibility with other company departments (Kim, 2007). In the IT purchasing case, it is relatively common that the IT department is entrusted of specification definition and/or supplier selection (Johnson and Leenders, 2001). For this reason, there might be different levels of span of control (i.e. who is the operational and strategic owner) of the purchasing or IT department on the IT purchasing process.

3. Research questions

Even if the literature recognizes that firms require a new organization and process management to purchase IT (e.g. Loh and Venkatraman, 1992; Pinnington and Woolcock, 1995; Cox et al., 2005), to the best of our knowledge no study about this has been conducted yet. Consequently, several failures have been reported, especially due to problems related to IT strategic purchasing and sourcing (e.g. Grover, Teng 1996; Kern and Willcocks, 2002; Hirschheim and Lacity, 2000).

This paper is therefore willing to contribute to existing literature and business by, firstly, providing a comprehensive theoretical framework suitable to describe different configurations – process and organization – for IT purchasing and, secondly, by empirically

Table 1
Purchasing process phases.

Construct	Sub-construct	Item	References
Strategic purchasing	Make or buy	ITO strategy: no ITO; selective ITO; full ITO	Matthews (2000), Murray and Kotabe (1999), and King and Malhotra (2000)
	Portfolio approach	Scope grouping: hardware; software; service	Cullen et al. (2005)
		Geographic scope: global sourcing; local sourcing	Dibbern et al. (2004) and Cullen et al. (2005)
		Supplier grouping: Single sourcing; multiple sourcing; dual sourcing; hybrid solutions (single sourcing for some categories and multiple sourcing for other categories)	Treleven and Schweikhart (1988)
		Duration: long term agreement (36–48 months); medium term agreement (12–24 months); short term agreement (less than 12 months)	Cullen and Willcocks (2003)
	Qualification	Adoption of a web portal: none; internal database; web portal	Monczka et al. (2010)
	Supplier relationship management and strategic evaluation	Existence of a formal vendor rating; formal vendor rating; not formal vendor rating; other solutions	Lamming and Hampson (1996) and Cullen et al. (2005)
		Performance evaluated: operational; technical; financial; organization; others	Dulmin and Mininno (2003)
Sourcing	Supplier scouting, negotiation and selection	Selection criteria: operational; technical; financial; others	Songhori et al. (2011)
		Use of e-Sourcing for IT: high; medium–high; medium; low; none	Monczka et al. (2010)
Supply	Order fulfilment	Use of e-Procurement for IT: high; medium–high; medium; low; none	Monczka et al. (2010)

identifying when they might be adopted. Consequently, we have formulated two main research questions.

RQ1. What are the possible organizational configurations for IT purchasing?

This general research question has been deployed in two specific sub-questions. The first sub-question is focused on the process for IT purchasing in terms of strategic purchasing, sourcing, and supply phases. As a matter of fact IT offers several peculiar aspects to be analyzed after the make or buy decision is made, such as the portfolio management and sourcing strategy adopted to manage different IT categories, the criteria used to select and evaluate suppliers, the negotiation process, and so on. Given that different approaches can be used at each phase (e.g. Cullen et al., 2005), we aim at identifying typical configurations characterizing the process of IT purchasing. Table 1 illustrates main items that are analyzed.

We refer to variables presented in Table 1 to specify our first sub-question:

RQ1.1 How is the process for IT purchasing (i.e. *strategic purchasing, sourcing, supply phase*) *characterized in each configuration?*

The second sub-question aims at investigating the configurations for IT purchases in terms of organizational aspects: roles involved, level of decision-making centralization and span of control (of IT and purchasing departments). As shown in the literature review (see Table 2), different roles are involved to effectively manage the IT purchasing process (Fichman, 1992). Moreover, companies can distribute authority and IT purchasing-related decisions differently (Gonzalez-Benito, 2007).

We refer to variables presented in Table 2 to specify our second sub-question:

RQ1.2 How is the organization for IT purchasing characterized in each configuration (i.e., *organizational roles involved, level of decision-making organization, span of control*)*?*

The literature also emphasizes certain characteristics of the buying firm that might drive specific IT purchasing configurations. Drivers are mainly related to the IT strategic importance for the company as well as to the company purchasing maturity. As a consequence, we considered these firm's characteristics to interpret the adoption of different IT purchasing configurations. On one hand, both IT and purchasing literature suggest that IT strategic importance for the company does affect the purchasing approach (Kraljic, 1983; Roy and Aubert, 2002). In particular, we refer to Roy and Aubert (2002) that identify the following aspects: *IT technical maturity*, meaning the existence of IT competences inside the organization or the support of external experts; *IT relevance* as a core competence, meaning the perception of IT products as core elements for the company as well as the industry. On the other hand, while this aspect has been neglected in IT literature, it is quite common in the purchasing domain to address the level of maturity in managing purchasing activities (Gelderman and van Weele, 2005; Rai et al., 2006).

Given that these variables can also affect the way IT purchases are managed, we included them into our framework. In particular, the firm's purchasing maturity is measured in terms of *company total spending* (companies with higher spending are more strategically oriented to purchasing); *industrial sector* (some industries, such as manufacturing and telecommunication, are more strategically oriented to purchasing); and *purchasing status* (Cousins et al., 2006) (some companies entrust the purchasing department with strategic decisions and consequently tend to stress more purchasing authority). A proxy of the purchasing status is the

Table 2
Characteristics of the purchasing organization

Construct	Item	References
Roles involved	Department responsible for specs definition: purchasing; IT; internal client; others Department responsible for scouting, negotiation, and selection of suppliers: purchasing; IT; internal client; others	Fichman (1992) and Weber and Current (1993)
Level of centralization of IT purchasing decisions	Level of coordination and consolidation of IT purchasing decision at the corporate level: high; medium; low	Dai et al. (2005), Kim (2007), and Johnson and Leenders (2001, 2004, 2006)
Span of control	Operational owner of the IT purchasing process: purchasing; IT; internal user Strategic owner of the IT purchasing process: purchasing; IT; internal user	Kim (2007) and Johnson and Leenders (2001, 2004, 2006)

Table 3
Drivers affecting the IT purchasing configuration

Construct	Sub-construct	Item	References
IT strategic importance	IT technical maturity	Existence of internal IT competences (specialists; operational IT department; strategic IT department; other)	Fichman (1992) and Pinnington and Woolcock (1995)
		Support of external IT experts (consultant, intermediaries, etc.)	Pinnington and Woolcock (1995)
	IT relevance as a core competence	IT spending (million of € in hardware, software and services)	Loh and Venkatraman (1992) and Pinnington and Woolcock (1995)
		IT intensity of the firm industry sector	Roy and Aubert (2002)
Purchasing maturity	Purchasing importance	Impact of the purchasing activity on the firm core business	Reck and Long (1988) and Gonzalez-Benito (2007)
	Total purchases	Amount of money spent per year to acquire goods/services	Ellram and Billington (2001)
	Purchasing status	Number of levels between CPO and CEO	Johnson and Leenders (2006)

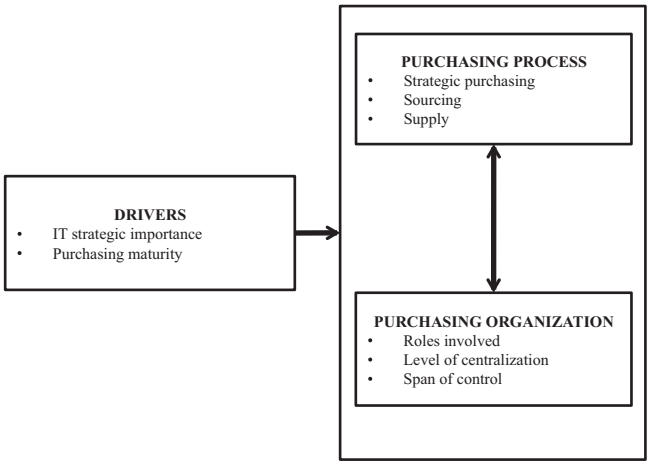

Fig. 1. Research framework.

number of hierarchical levels between the CEO and the CPO (i.e. the purchasing report level).

In the end, accordingly to elements presented in Table 3, we ask our second research question:

RQ2. How do IT relevance and purchasing maturity affect the adoption of different configurations for IT purchasing?

In order to answer research questions listed above, we develop the framework depicted in Fig. 1.

Blocks shown on the right side of Fig. 1 represent the core elements of our framework, which have been described in the literature review, i.e. purchasing process and purchasing organization, as well as the link with the research questions listed above. These elements should be studied in order to identify possible different IT purchasing configurations. Drivers will be analyzed to determine whether or not they can influence the adoption of different configurations.

4. Methodology

In order to pursue our goal, we adopted a case-based methodology, with the aim of gathering an in-depth understanding of the choices of the investigated companies. Case research comes to provide new and creative insights, develop new theory and have high validity with practitioners (Yin, 1994). Moreover, case-based methodology was also selected consistently with Dubé and Paré (2003), who described case study as relevant in the Information System discipline.

4.1. Research design

Our unit of analysis is IT as a purchasing category, meaning a homogeneous set of items that are purchased by the firm. This typically includes hardware, software, and related services. This is an original and tested approach in research (Luzzini et al., 2012), especially when purchasing strategies, processes, and organization are under scrutiny. Indeed, despite some commonalities across a firm's purchasing portfolio, different purchasing categories are normally managed differently. In particular, we investigate the peculiar characteristics of purchasing processes (i.e. strategic purchasing, sourcing, and supply) in the case of IT as well as the characteristics of the purchasing organization (i.e. roles involved, level of centralization, span of control) for IT.

To increase external validity multiple case studies were selected based on theoretical replication (Leonard-Barton, 1990). Specifically, we selected companies from different industrial sectors in order to compare possible different results, as suggested by the literature (e.g., Rai et al., 2006). For most companies IT typically represents indirect expenditure. Anyway we also investigate insurance, telecom, and IT service companies, where IT is expected to be more relevant as a purchasing category in order to emphasize potential differences in purchasing organization and processes. On the other hand, the sample is homogeneous for some parameters: for instance all the companies are medium and large multinational organizations, in which purchasing is pretty relevant in terms of both total spending and impact on

Table 4
Sample of analysis.

Company	Industry	Turnover (mln €)	Employees
A	Pharma	22,000	66,600
B	Insurance	40,000	30,000
C	Insurance	79,000	150,000
D	Automotive	806	4700
E	Soft drinks	12,000	66,000
F	Energy	8300	2300
G	Oil	86,100	73,000
H	Cement	6,000	24,000
I	Insurance	1900	2800
L	Investment service	5600	13,000
M	ICT service provider	12,000	56,500
N	Telecom	8300	8300

final performance, so the firm size and spread assure companies to be structured enough to purchase IT.

The final sample is composed of 12 firms, in order to be consistent with the ideal level of saturation proposed by Yin (1994). Table 4 illustrates main characteristics of the sample (the data are related to the corporation, in case of multinational companies).

4.2. Data collection

Data had been collected between 2007 and 2010; most of the interviews were conducted in the company's headquarter, except for A, E, and M that were conducted in the Italian branch.

Data were collected both through direct semi-structured interviews and through secondary sources (e.g. documents available in internet and provided by the company), to assure the triangulation of data and to increase the construct validity (Eisenhardt, 1989).

Different techniques were adopted to increase reliability. Firstly, multiple researchers were involved during the data collection (Dubé and Paré, 2003). Researchers' background spans across operations management and information technology, therefore allowing a good understanding of managerial issues related to IT purchasing processes and organization as well as of products and services under scrutiny. We conducted two to three interviews in each company and different roles were interviewed, such as Chief Procurement Officers (CPOs), IT specialists within the purchasing department or Chief Information Officers (CPOs), given that for this type of purchases different departments could be involved (Garrido-Samaniego et al., 2010). This approach allowed gaining different perspectives in the purchasing process as well as reaching the owner of the information for each issue analyzed.

Secondly, upon permission by the interviewee, researchers recorded the interviews to prevent information loss, and then transcribed and completed with the notes taken (Riege, 2003).

Thirdly, we created a case protocol (e.g. common interview protocol and shared general rules to conduct interview) based on the literature and a case study database (to share interview transcripts, field notes, and coding scheme) (Riege, 2003).

4.3. Data analysis

After the phase of data collection, data were analyzed. Multiple researchers participated to data analysis increasing results reliability (Riege, 2003).

According to the research questions, the unit of analysis is the the IT purchases category, and more specifically its purchasing process(es) and organization(s). First, data were coded according to the variables identified with the literature review to increase reliability and facilitate the replication of the study.

Then, both within- and cross-case analysis were performed to increase internal validity (Eisenhardt, 1989). Each case was singularly analyzed to identify main peculiarities and limitations: each researcher individually analyzed each case and results were shared to get a common interpretation. The within-case analysis allowed researchers to become familiar with each case study as a stand-alone entity allowing the identification of a unique pattern of each case before generalizing results (Eisendhardt, 1989). After that, a cross-case analysis was performed to identify common patterns among different companies and describe the main configurations used in terms of both purchasing process and purchasing organization. The cross-case analysis was performed at two levels. First of all, the cases were compared for each single variable of the research framework, with the purpose of understanding which are the commonalities among cases and which could be the drivers behind these commonalities. After this, as suggested by Eisendhart (1989), we selected a dimension (i.e. the IT purchasing drivers – IT strategic importance and purchasing maturity) to categorize the case studies.

Then, companies characterized by similar level of the drivers were compared to each other looking at all the variables, in order to identify an overall behavior in terms of purchasing process and organization. The results obtained through the cross-case analysis were used to fill in the next Tables 5–8; additional qualitative information was used to provide examples in the "Results" section.

5. Results

In order to summarize the key information emerging from case studies that allow to answer our research questions we articulate this section by looking respectively at the process and organization for IT purchasing as well as the drivers of different purchasing configurations.

5.1. Process for IT purchasing

In terms of IT purchasing processes, Table 5 illustrates different companies' behaviors according to variables introduced in the research framework.

5.1.1. Strategic purchasing

The strategic purchasing phase has been analyzed in terms of make or buy approach, supplier qualification, portfolio approach and supplier relationship management and strategic evaluation. As anticipated, we do not discuss in detail the make or buy decision, taking for granted that companies are increasing the level of IT goods and services purchased instead of developing them.

Almost all companies perform *qualification* of IT vendors. It aims at assessing supplier's generic financial and managerial characteristics and certifications: usually it is done through web portals or internal databases. Moreover we observe a growing trend towards transparency: qualification parameters are explicit and as objective as possible.

As for *portfolio approach*, we identify different approaches. Almost all firms in the sample treat IT as an all-in-one category at the corporate level, choosing single or dual sourcing from global suppliers and signing long-term agreements. Only few companies explicitly chose a hybrid strategy: relevant hardware investments (such as hardware, mainframes, storage and network infrastructures) and standard software licenses are directly negotiated with global producers with exclusive long-term agreements. In case of specific local needs, they are managed by subsidiaries. Not critical goods or services are sourced by multiple suppliers and contracts might be medium or short term according to the product/service.

Table 5
Cross-case analysis about the process for IT purchasing.

Company	Strategic purchasing				Sourcing	Supply
	Make or buy	Qualification	Portfolio approach	Supplier relationship management and strategic evaluation	Supplier scouting, negotiation and selection	Order fulfilment
A	Selective ITO	Web portal	• Scope: hardware and software • Geographic grouping: global • Supplier grouping: single sourcing (hardware), reseller (service) • Duration: long term	• Formal vendor rating • Operational (price) and technical performance	• Selection based on price and technical competences • Medium–high use of e-Sourcing (e-Auctions)	Low use of e-Procurement for IT
B	Selective ITO	None	• Scope: hardware and software • Geographic grouping: global, local (service) • Supplier grouping: multiple sourcing • Duration: long term	• Not formal vendor rating system • Technical and operational (price) performance	• Selection based on technical competences, trust and price • Collaborative approach • No use of e-Sourcing	High use of e-Procurement
C	Selective ITO	Internal database	• Scope: hardware, software and service • Geographic grouping: global • Supplier grouping: single sourcing • Duration: long term	• Ongoing evaluation • Multiple criteria including sustainability	• Selection, based on technical capabilities and service level and price • High use of e-Sourcing tools (communication tools)	High use of e-Procurement for IT
D	Selective ITO	Web portal	• Scope: hardware, software and service (maintenance) • Geographic grouping: global (hardware), local (software) • Supplier grouping: single sourcing for hardware and maintenance, multiple sourcing for software • Duration: long term (hardware), short term (software)	• Formal vendor rating system • Technical and operational performance	• Not clear criteria for supplier selection • Low use of e-Sourcing	Low use of e-Procurement for IT
E	Selective ITO	Web portal	• Scope: hardware and (standard) software • Geographic grouping: global • Supplier grouping: multiple sourcing • Duration: short term	• Formal vendor rating system • Technical and operational (price) performance	• First technical, then commercial selection of registered suppliers • Price is not the first priority • Low use of e-Sourcing	No use of e-Procurement for IT, but for other categories
F	Full ITO	Web portal	• Scope: hardware, software and service (maintenance) • Geographic grouping: global • Supplier grouping: single sourcing • Duration: long term	• Formal vendor rating system • Technical and operational (price) performance	• Not clear criteria for supplier selection • No use of e-Sourcing	Low use of e-Procurement for IT
G	Selective ITO	Internal database	• Scope: hardware, software and service • Geographic grouping: global, local (service) • Supplier grouping: multiple sourcing • Duration: long term	• Formal vendor rating system • Technical and operational performance	• Selection based on price and technical competences • Medium–high use of e-Sourcing (e-Auction)	High use of e-Procurement for IT
H	Selective ITO	Web portal auto-qualification	• Scope: hardware, software and (professional) service • Supplier grouping: single sourcing • Geographic grouping: global • Duration: medium term	• Formal vendor rating • Technical and operational (price) performance	• Selection based on price, reliability, experience • High use of e-Sourcing (e-Auction)	No use of e-Procurement for IT, but for other categories
I	Selective ITO	Internal database	• Scope: hardware, software and service • Geographic grouping: global • Supplier grouping: single sourcing • Duration: long term	• Formal vendor rating • Operational, financial and technical performance	• No specific negotiation policy • No e-Sourcing (planned)	Low use of e-Procurement for IT
L	Selective ITO	Web portal	• Scope: hardware, software and service • Geographic grouping: global • Supplier grouping: multiple sourcing • Duration: NA	• Balanced scorecard • Operational performance (quality and punctuality)	• Selection based on price • High use of e-Sourcing (e-Auction)	High use of e-procurement for IT
M	Selective ITO	Internal database	• Scope: hardware, software and service • Geographic grouping: global, local (service) • Supplier grouping: dual sourcing	• Not formal vendor rating system • Technical and financial performance	• Selection based on service level and price • Collaborative approach • Low use of e-Sourcing	Low use of e-Procurement for IT

Table 5 (*continued*)

Company	Strategic purchasing				Sourcing	Supply
	Make or buy	Qualification	Portfolio approach	Supplier relationship management and strategic evaluation	Supplier scouting, negotiation and selection	Order fulfilment
			• Duration: long term			
N	Selective ITO	Web portal	• Scope: hardware, software and service (software maintenance) • Geographic grouping: global • Supplier grouping: dual sourcing • Duration: long term	• Dedicated unit • Operational, financial, organization and technical performance	• Selection based on service level and price • High use of e-Sourcing (communication tools)	High use of e-procurement for IT

Table 6
Cross-case analysis about the organization for IT purchasing.

Company	Roles involved		Level of centralization of the IT purchasing decision at the corporate level	Span of control of the IT purchasing organization	
	Department responsible for specs definition	Department responsible for scouting, negotiation and selection		Operational owner of IT purchasing	Strategic owner of IT purchasing
A	Purchasing	Purchasing	High	Purchasing IT in case of IT projects	Purchasing
B	IT	Purchasing	Medium	Purchasing	Purchasing and IT
C	IT	Purchasing and IT	High	Purchasing	Purchasing and IT
D	IT and internal customer	IT	High	IT	IT
E	IT and purchasing	Sales	High	IT	IT
F	IT and purchasing	IT solution manager purchasing cares for commercial aspects	Low	IT	IT
G	Internal client and purchasing	Dedicated business unit under the purchasing responsibility	High	Purchasing	Purchasing
H	IT, supported by consultants or supplier	Purchasing	High	Purchasing	Purchasing
I	IT and purchasing	Purchasing for commodities and body rental purchasing and IT for relevant IT projects	Low	Purchasing	IT
L	IT and purchasing, supported by external consultants or suppliers (Rfl)	IT and purchasing	Medium	IT and Purchasing	Purchasing
M	Internal client, supported by company IT	IT and purchasing, in some cases supported by the client	Medium	Internal user	Purchasing and IT
N	Internal client supported by external consultants	Purchasing and internal client	High	Internal user	Purchasing

Table 7
Cross-case analysis about the IT strategic relevance.

Company	IT maturity		IT relevance as a core competence	
	Existence of internal IT competences	Support of external IT experts	IT spending (mln €)	IT intensity of the firm's industry
A	Specialists	Intermediary	7,5	Low
B	Operational IT dept.	Intermediary	100	High
C	Operational IT dept.	Intermediary	1000	High
D	Operational IT dept.	No	3,5	Low
E	Specialists	No	100	Low
F	Other (solution manager)	Intermediary and suppliers	24	Medium
G	Operational IT dept.	No	215	Medium
H	Specialists	No	Italy: 15	Medium
I	Operational IT dept.	Intermediary	69	High
L	Strategic IT dept.	Consultants	100	Medium
M	Strategic IT dept. (IT is the core business)	No	Italy: 20	High
N	Strategic IT dept. (IT overlaps the core business)	Consultants	800	High

Supplier relationship management and strategic evaluation generally includes operational performance (such as price, quality, lead time, and service level), adopted for all purchases, with no specific customization for IT, and technological capabilities. Only few companies evaluate IT suppliers on multiple criteria (e.g., balance scored card or including managerial and organizational performance).

Table 8
Cross-case analysis about the purchasing maturity.

Company	Purchasing importance in the industry	Total purchases (mln €)	Purchasing status
A	Medium	250	1st level
B	Low	600	1st level
C	Low	3500	1st level
D	High	500	2nd level
E	High	625	1st level
F	Medium	600	2nd level
G	High	24,000	1st level
H	High	200	1st level
I	Low	125	3rd level
L	Low	3000	1st level
M	Medium	10,000	1st level
N	High	3100	1st level

5.1.2. Sourcing

In all the companies in the sample, the sourcing stage starts with a Request for Purchase (RfP) by an internal user. Yet, companies differ in terms of *supplier selection criteria*. In most cases, price (or total cost of ownership) is the dominant supplier selection criteria followed by delivery lead time and service level. Only in few cases price importance reduces, whereas customization, innovativeness and service level become the dominant criteria.

Different criteria result in a different *negotiation strategy and use of electronic tools for IT*. Specifically, firms focusing on price criteria adopt an aggressive negotiation strategy and push the adoption of e-Sourcing (specifically e-Auctions); instead firms more concerned about customization, innovativeness and service level tend to adopt a more collaborative approach with IT vendors. Therefore they exploit electronic tools for communicating both within the buying company and with suppliers. However, some companies do not have specific negation policies and electronic tools in place.

5.1.3. Supply

The last phase of the purchasing process generally is rather transactional. As expected, little specificity emerged in relation to this phase. The only aspect worth mentioning is that we observed many efforts dedicated to process automation in order to reduce time and resources spent on these activities. Companies using *electronic procurement tools* for most commodities and indirect purchases adopt them also for IT in case of high-frequency and low-value transactions.

5.2. Organization for IT purchasing

Table 6 illustrates the organization of the companies in the sample for IT purchasing according to the variables of the research framework.

Cross-case analysis clarifies that IT and purchasing departments may cover different *roles*. Considering sourcing, a very common approach is that the IT department establishes technical requirements for supplier selection. Next, the purchasing department adds other requirements (i.e. price, delivery lead time, payment terms and conditions, etc.), analyses the supply market, selects suppliers and negotiates contracts. In few cases is the IT department or internal users with the support of external consultants to define all specifications and identify suppliers.

As for the *level of centralization*, decision-making is often centralized at the IT corporate department and managed by local subsidiaries only in case they have to buy customized software or services. When considering corporations made of different business units or even different legal entities, IT purchasing is often done connecting the IT department of the group with internal customers. Only few companies delegate the decision-making process at the local level.

Finally, the amount of activities under the purchasing and IT department direct control reflects the *span of control of the IT purchasing organization*. Three main approaches emerge. Some companies fully entrust the IT department, without a real involvement of the purchasing department; some others assign an important role to the purchasing department, which could be supported by other units such as IT department or internal users; finally, some companies assign operational tasks to one department, while strategic decisions are left to the other.

5.3. Drivers of the IT purchasing configurations

Tables 7 and 8 illustrate different companies' drivers according to variables introduced in the research framework.

Considering *IT strategic relevance*, even though IT is a part of indirect expenditures for most companies in the sample (i.e. the IT intensity of the firm industry sector is low or medium), case studies clarify that it could dramatically influence efficiency and effectiveness of everyday activity. The IT strategic relevance reflects how much the company feels to get competitive advantages from IT or, vice versa, perceives IT as a burden (Roy and Aubert, 2002; Lacity et al., 1996; Yang and Huang, 2000). IT strategic relevance is higher for companies where IT intensity of the industry is high and IT is part of the core business, rather than being part of indirect expenditures. This seems the reason why all the companies in the sample, but F, chose to maintain either an internal IT department (either with a strategic relevance or with just an operational support) or at least IT specialists inside the company while selectively outsourcing the provision of IT goods or services. As for F, the company totally entrusts an IT service provider but also maintains a so-called "solution manager" internally, who is in charge of controlling the supplier and acting as an interface between the latter and internal customers.

On the other side, in some cases the *company purchasing maturity* (Rai et al., 2006) emerged as another factor driving the IT purchasing approach related to the overall level of expenditures and the purchasing department status. Purchasing maturity represents the importance given to the purchasing department within the company. It is not strictly related to IT, but rather to the overall purchasing strategy of the firm.

6. Discussion

6.1. Configurations of IT purchasing: process and organization

The cross-case analysis illustrated so far led us to discover four main configurations of IT purchasing in terms of process and organization, as described in Table 9.

A very simple approach in terms of purchasing process and organization was called *Neutral*. Only D can be included in this group. In this case, no specific approach to IT purchasing process/organization can be identified. IT is simply treated as an indirect purchase without any specificity, focusing on price and the application of standard procedures. Indeed no advanced process or organization for purchasing indirect goods in general is found in this case. The few IT products acquired are fully managed by the IT department.

Next, we are able to define an *IT Oriented* configuration being the most attention dedicated to technical requirements for IT rather than on the purchasing process. The process of IT purchasing is very simple and unstructured and mostly managed by the IT department. The strategic purchasing is quite informal: a clear

Table 9
Configurations of IT purchasing.

Configuration of IT purchasing	Key characteristics of process for IT purchasing	Key characteristics of organization for IT purchasing
Neutral	No particular behavior for IT purchasing	
Purchasing oriented	• Web portal for qualification • Hybrid portfolio approach • Global/local sourcing • Formal vendor rating • Price criterion for vendor rating • Aggressive negotiation strategy • High use of electronic tools for sourcing/low for supply	• Sourcing performed by Purchasing department • High centralization • Purchasing department as strategic and operational process owner
IT oriented	• Formal qualification • Single sourcing • Global sourcing • Formal vendor rating • Operational and technical criteria for vendor rating • No specific negotiation strategy • Low use of electronic tools	• Sourcing process performed by IT department • Low centralization • IT department as strategic process owner • Purchasing department as operational process owner
IT strategic	• Structured qualification • Single sourcing • Global sourcing • Alternative vendor rating solutions • Multiple criteria for vendor rating • Collaborative approach • High use of electronic tools for coordination	• Sourcing in strong collaboration purchasing-IT departments • High centralization • Joint strategic and operational process ownership • Involvement of internal user

purchasing strategy is not always defined. Only the vendor rating activities are formally defined. Also the sourcing phase is unstructured: no specific criteria are adopted during supplier selection and technical specifications dominate the sourcing process; no specific rules are defined for the negotiation phase or electronic tools adopted. This is likely to result into single sourcing global contracts set up by the IT corporate department, exposing the company to IT vendors bargaining power. Concerning the organization, being considered a specialty, IT is left to specialists: the IT department is responsible for main decisions related to IT sourcing (e.g. specifics definition, supplier selection and negotiation) and acts as a strategic process owner (PO). The purchasing department is either not involved or just responsible of operational/administrative tasks. This is the case of firms where IT is definitely relevant for the business but is not the top spending category and generally they do not have a formal strategy to centralize and control the entire spending under the responsibility of the purchasing department.

Furthermore, we observe a *Purchasing Oriented* configuration. In this case, IT is considered a commodity. Strategic purchasing is formally managed: there is a structured qualification and evaluation process for suppliers related mainly to price and operational aspects. Concerning portfolio decision, both global and local sourcing can be adopted according to the IT scope: standard items are generally purchased through global contracts whereas commodities, which are tailored to specific needs (such as services or non-standard software), can be entrusted to local subsidiaries. Different sourcing strategies depending on the IT commodity characteristics are adopted: low value, standard and readily available goods/services might be split among multiple suppliers, whereas critical goods/services require single/dual sourcing strategies. Accordingly, selection and negotiation follow specific rules. Price is a primary selection and negotiation criteria, having set some minimum technical requirements. Quite advanced solutions are adopted, such as a formal vendor rating system, online supplier qualification, and electronic sourcing tools (specifically e-Auctions). Concerning the organization, strategic purchasing and sourcing processes (not just for IT) are usually centralized in the corporate purchasing department in order to stress purchasing rationalization and control. In particular, scouting, negotiation and selection activities are performed by the purchasing department while specifications can be defined in collaboration with the IT department as well as final users. As a consequence the purchasing department can be considered the main strategic and operational owner of the IT purchasing process.

Finally, we observe an *IT strategic* configuration, meaning that specific elements of both process and organization are tailored according to the IT requirements. In this case, IT is critical for the business, being a relevant share of the overall company spending and/or closely connected to the firm core business. Strategic purchasing is managed carefully. Concerning portfolio management decision, in many cases dual sourcing is adopted, thus assuring a back up supplier and reducing potential risks, geographical supplier grouping is centralized and long-term partnerships are usually preferred. Like in the previous case, local autonomy is allowed when required by the IT commodity specific characteristics. Suppliers are evaluated and then selected with a careful and formal procedure, also using ad hoc solutions for vendor rating. Besides, electronic tools are widely used to facilitate communications and collaboration within the organization and with suppliers in the sourcing process. Therefore concerning the IT purchasing organization, there is a close collaboration between IT and purchasing department in place, in order to jointly perform specifications definition, scouting, negotiation, and selection activities involving sometimes also the user. Consequently, the process ownership of the process is shared between purchasing and IT department. Finally, the IT purchasing decisions are often centralized in order to maximize volume aggregation. However, some authority is left to local subsidiaries in order to meet local requirements.

Building on the cross-case analysis performed in the results section and the identification of four configurations for IT purchasing we are able to state a research proposition answering the first research question (by considering both RQ1.1. and RQ1.2).

Proposition 1. *Four configurations for IT purchasing might be adopted: "Neutral", "IT Oriented", "Purchasing Oriented", and "IT strategic". Each configuration differs for the IT purchasing process management and the role played by IT and purchasing departments.*

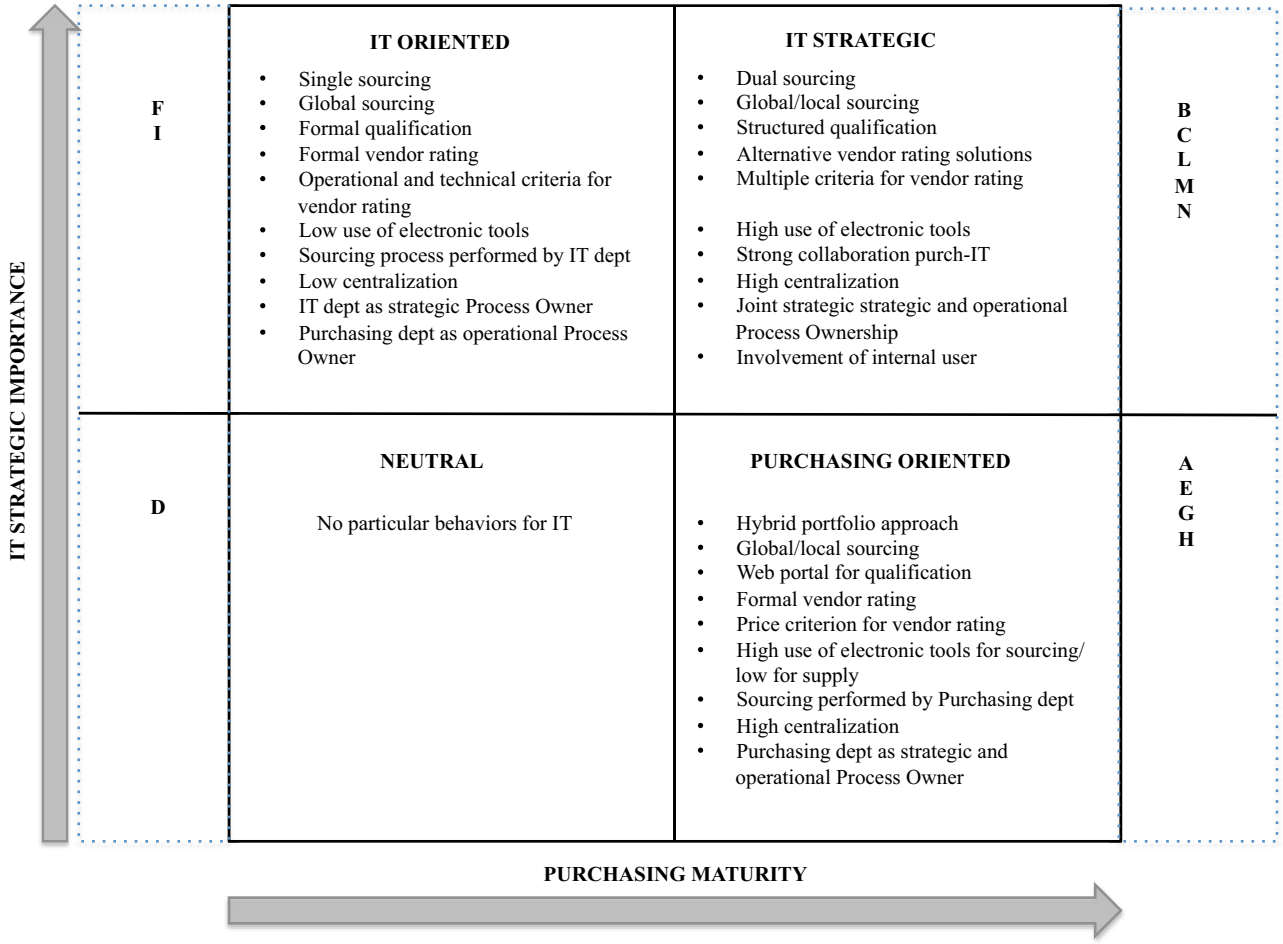

Fig. 2. Drivers of IT purchasing configurations.

6.2. *Drivers of IT purchasing configurations*

Besides making a distinction among different configurations for IT purchasing, the cross-case analysis suggests that the different configurations could be classified according to the main drivers suggested by the literature (namely IT strategic importance and purchasing maturity) as described in Fig. 2. As a matter of fact we did observe changing behaviors regarding IT purchasing depending upon such drivers. Despite the qualitative and exploratory nature of the study we observe possible thresholds that further research might investigate. As for IT strategic importance, firms in the sample tend to change their behavior towards IT when they operate in a IT-intense sector, which also means that the IT expenditure is high if compared to other firms. Furthermore, these are also firms where the IT department owns distinctive knowledge and skills, and it is therefore assigned a strategic role. As for purchasing maturity, the recognition of the purchasing department drives its corresponding authority inside the firm as compared to the IT department. When the CPO directly reports to the CEO, that certainly increases its status and the chance to say a word even for IT purchases. The report level seems also correlated to the overall impact of purchasing, in terms of importance of inputs provided as well as overall purchasing budget.

When both IT strategic importance and purchasing maturity are low, the *Neutral* configuration is adopted. Indeed, company D considers IT as a commodity and, at the same time, did not show a mature approach to purchasing. Consistently with our framework, no particular approach to IT was found.

When IT strategic importance is high but purchasing maturity is low an *IT Oriented* configuration is shown (Companies F and I). In this case, the purchasing function is still under development and IT is left to specialists, who show specific and proven skills.

When purchasing maturity is high, but IT strategic importance is low, we observed a *Purchasing Oriented* configuration (Companies A, E, G, and H). In this case, the weight of purchasing expenditures and the industry require to master purchasing capabilities in order to achieve sustainable competitive advantage. Instead, IT is not part of the core business nor specific IT skills were found. As a consequence, the purchasing department is managing the IT purchasing process like most of other categories.

Finally, when both purchasing maturity and IT strategic importance are high, specific elements of both purchasing organization and process are tailored according to the IT requirements, thus leading to an *IT strategic* configuration (Companies B, C, L, M, and N). In this situation good both purchasing and technical skills related to IT were found, therefore the firm needs to carefully design its configuration for IT purchasing by specifying "who" does "what" in order to make an effective IT systems and an efficient purchasing process.

Building on the cross-case analysis performed in the results section and the identification of the influence of drivers on the identified configurations we are able to state a research proposition answering the second research question.

Proposition 2. *The configuration of IT purchasing adopted by a firm ranges from "Standard" to "IT strategic", when the level of IT strategic*

importance and of purchasing maturity are respectively low or high. If IT strategic importance is high but purchasing maturity is low, the configuration adopted tends to "IT Oriented". Vice versa, if IT strategic importance is low but purchasing maturity is high, the configuration adopted tends to "Purchasing Oriented".

7. Conclusions

In this paper we analyzed, by means of 12 case studies in medium to large international firms, the process and organization for IT product and service purchasing, highlighting four alternative configurations (i.e. neutral, IT oriented, purchasing oriented, and IT strategic), and the drivers affecting the choice (i.e. IT relevance and purchasing maturity). We might conclude that IT can be sometimes considered a "special" category, requiring an approach that is different from other purchasing categories given that it can be both a direct and an indirect category and it is composed of very different sub-categories (e.g. hardware, software, services). However, this is not always the case: in some firms IT is treated just like any other purchasing category. This is likely to result into a shift in the control over IT spending from the IT to the purchasing department.

Another interesting conclusion regards the evolution of IT adoption in companies: there is a wide agreement on the diffusion of IT in every industry and for every business (Cox et al., 2005). This is mostly leading to a commoditization of IT: not only PCs and printers, but also servers, software, and basic services are moving towards a standardized supply market, despite the efforts of vendors to contrast this phenomenon. As a consequence, the purchasing approach is shifting from a partnership-oriented towards a more competitive one, bringing once again more responsibility from the IT to the purchasing department (i.e. moving from IT to purchasing oriented configuration). A partial exception is represented by IT-intensive industries (such as finance and telecommunications), where the strategic relevance of the most complex, innovative and customized IT hardware, software and services requires a strategic approach.

7.1. Theoretical contributions

The original contribution of this paper lays in its focus on IT purchasing in terms of purchasing process and organization. As a matter of fact, we are contributing to the purchasing literature, which is often missing peculiar aspects in terms of specific purchasing category strategies and practices. On the other hand, the IT literature has been enriched through a fresh look at ITO in terms of purchasing process and organization. Overall, we have been able to explain which are the possible configurations to adopt in order to buy IT. Besides, by identifying the main drivers for the selection of such configurations, we have also provided an explanatory contribution, showing a link between the industry (i.e. IT relevance), the company (i.e. purchasing maturity) and the purchasing configuration, in line with the contingency theory (Sousa and Voss, 2008).

In case of high IT strategic importance, the configuration identified (i.e. *IT Oriented*) shows that companies favor single sourcing strategies and entrust the IT department of the sourcing process. At the same time, supplier evaluation and monitoring are of critical importance. Instead, in a mature purchasing organization (i.e. *purchasing oriented*) the purchasing department acts as a process owner and lets IT vendors to compete to improve the buying efficiency, looking for the best tradeoff between purchase volume consolidation and local autonomy to acquire customized goods/services. Finally, when both IT strategic importance and purchasing maturity are found, a hybrid configuration is in place (i.e. *IT strategic*), implying – for instance – a close interaction between IT and purchasing department, as well as purchasing strategies aimed at optimizing the tradeoff between cost reduction and integration with suppliers, such as dual sourcing.

As all the case studies research, this study suffers from the limited numbers of companies involved. Anyway, some interesting relationships between drivers and IT purchasing process and organization emerged and they may be tested in future research.

7.2. Managerial contributions

Practitioners can find in this paper a useful benchmark for evaluating their own approach to IT purchasing, in terms of both process and organization. They can compare their own choices with those of a variety of large firms, which adopted different solutions.

In addition, the study gives them useful suggestions in terms of IT purchasing configuration selection, providing indications about how to structure the IT purchasing process and organization according to the company's IT and purchasing characteristics. In this way some problems characterizing ITO failures, related to vendor management and negotiation, might be avoided. This may also be useful for companies undergoing major restructuring, mergers and acquisitions, as well as cost rationalization projects. Nowadays companies often need to increase their purchasing maturity and bring under the purchasing department control and also categories that traditionally were managed autonomously by other units, and IT is very often a relevant and critical one. However IT is also more and more strategic in many industries and therefore shifting the focus excessively on costs and standardization may result counterproductive in the long run. Therefore the most advanced companies have found a good balance and partnership between the two units, although this requires time and effort to be achieved.

References

Bhutta, K.S., Huq, F., 2002. Supplier selection problem: a comparison of the total cost of ownership and analytic hierarchy process approaches. Supply Chain Manag.: Int. J. 7 (3), 126–135.

Caniato, F., Longoni, A., Moretto, A., 2012. Effective eProcurement implementation process. Prod. Plan. Control 23 (12), 935–949.

Carr, A.S., Pearson, J.N., 1999. Strategically managed buyer–supplier relationships and performance outcomes. J. Oper. Manag. 17 (5), 497–519.

Carter, J.R., Narasimhan, R., 1996. Is purchasing really strategic? J. Supply Chain Manag. 32 (1), 20–28.

Chen, I.J., Paulraj, A., Lado, A.A., 2005. Strategic purchasing, supply management, and firm performance. J. Oper. Manage. 22 (1), 505–523.

Cousins, P.D., Lawson, B., Squire, B., 2006. An empirical taxonomy of purchasing functions. Int. J. Oper. Prod. Manag. 26 (7), 775–794.

Cox, A., Chicksand, D., Ireland, P., Davies, T., 2005. Sourcing indirect spend: a survey of current internal and external strategies for non-revenue-generating goods and services. J. Supply Chain Manag. 41 (2), 39–51.

Cullen, S., Willcocks, L., 2003. Intelligent IT Outsourcing, Eight Building Blocks to Success, Oxford, UK p. 224.

Cullen, S., Seddon, P.B., Willcocks, L.P., 2005. IT outsourcing configuration: research into defining and designing outsourcing arrangements. J. Strat. Inf. Syst. 14 (4), 357–387.

Dai, R., Narasimhan, S., Wu, D.J., 2005. Buyer's efficient e-sourcing structure: centralize or decentralize? J. Manag. Inf. Syst. 22 (2), 141–164.

Dearden, J., 1990. The Withering Away of the IS Organization, Glenview, IL, USA, Scott, Foresman & Co., pp. 14–21.

Dibbern, J., Goles, T., Hirschheim, R., Jayatilaka, B., 2004. Information systems outsourcing: a survey and analysis of the literature. ACM SIGMIS Database 35 (4), 6–102.

Dubé, L, Paré, G., 2003. Rigor in information systems positivist case research: current practices, trends and recommendations. MIS Quart. 27 (4), 597–635.

Dubois, A., Pedersen, A., 2002. Why relationships do not fit into purchasing portfolio models—a comparison between the portfolio and industrial network approaches. Eur. J. Purch. Supply Manag. 8 (1), 35–42.

Due, R.T., 1992. The real costs of outsourcing. Inf. Syst. Manag. 9 (1), 78–81.

Dulmin, R., Mininno, V., 2003. Supplier selection using a multi-criteria decision aid method. J. Purch. Supply Manag. 9 (4), 177–187.

Egelhoff, W.G., 1988. Strategy and structure in multinational corporations: a revision of the stopford and wells model. Strat. Manag. J. 9 (1), 1–14.

Eisenhardt, K.M., 1989. Building theories from case study research. Acad. Manag. Rev. 14 (4), 532–550.

Ellram, L.M., Carr, A., 1994. Strategic purchasing: a history and review of the literature. J. Supply Chain Manag. 30 (2), 9–19.
Ellram, L., Billington, C., 2001. Purchasing leverage considerations in the outsourcing decision. Eur. J. Purch. Supply Manag. 7 (1), 15–27.
Fichman, R.G., 1992. Information Technology Diffusion: A Review of Empirical Research, MIT Sloan School of Management, Cambridge, MA, USA.
Garrido-Samaniego, J.M., Gutiérrez-Arranz, M.A., San José-Cabezudo, R., 2010. Assessing the impact of e-procurement on the structure of the buying centre. Int. J. Inf. Manag. 30 (2), 135–143.
Gelderman, C., van Weele, A., 2005. Purchasing portfolio models: a critique and update. J. Supply Chain Manage Summer, 19–28.
Gonzalez-Benito, J., 2007. A theory of purchasing's contribution to business performance. J. Oper. Manag. 25 (4), 901–917.
Gordon, S.R., Gordon, J.R., 2002. Organizational options for resolving the tension between IT departments and business units in the delivery of IT services. Inf. Technol. People 15 (4), 286–305.
Grover, V.C.M.J., Teng, J.T.C., 1996. The effect of service quality and partnership on the outsourcing of information systems functions. J. Manag. Inf. Syst. 12 (4), 89–116.
Hirschheim, R., Lacity, M., 2000. Information Technology Insourcing: Myths and Realities, ACM, pp. 99–107, (February 2000).
Hufnagel, E.M., Birnberg, J.G., 1989. Perceived chargeback system fairness in decentralized organizations: an examination of the issues. Mis Quart. December, 415–429.
Johnson, P.F., Leenders, M.R., 2001. The supply organizational structure dilemma. J. Supply Chain Manag. 37 (3), 4–11.
Johnson, P., Leenders, M., 2004. Implementing organizational change in supply towards decentralization. J. Purch. Supply Manag. 10 (4 and 5), 191–200.
Johnson, P., Leenders, M., 2006. A longitudinal study of supply organizational change. J. Purch. Supply Manag. 12 (6), 332–342.
Kannan, V.R., Tan, K.C., 2002. Supplier Selection and Assessment: their impact on business performance. J. Supply Chain Manag 38 (4), 11–21.
Kern, T., Willcocks, L., 2002. Exploring relationships in information technology outsourcing: the interaction approach. Eur. J. Inf. Syst. 11, 3–19.
Kim, K.K., 1990. Task characteristics, decentralization, and the success of hospital information-systems. Inf. Manag. 19 (2), 83–93.
Kim, S., 2007. Organizational structures and the performance of supply chain management. Int. J. Prod. Econ. 106 (2), 323–345.
King, W.R., 2007. The IS organization of the future: impacts of global sourcing. Inf. Syst. Manag. 24, 121–127.
King, W.R., Malhotra, Y., 2000. Developing a framework for analyzing IS sourcing. Inf. Manag. 37 (6), 323–334.
Kraljic, P., 1983. Purchasing must become supply management. Harv. Bus. Rev. 61 (5), 109–117.
Laberis, B., 1998. Recentralization: breaking the news. Computerworld 32 (26), 36.
Lacity, M., Hirschheim, R., 1993. The information systems outsourcing Bandwagon. Sloan Manag. Rev. October, 73–86.
Lacity, M.C., Willcocks, L.P., Feeny, D.F., 1996. The value of selective IT sourcing. Sloan Manag. Rev. 37, 13–25.
Lamming, R., Hampson, J., 1996. The environment as a supply chain management issue. Br. J. Manag. 7 (s1), S45–S62.
Leenders, M.R., Fearon, H.E., Flynn, A.E., Johnson, P.F., 2002. Purchasing and Supply Management. McGraw-Hill/Irwin, New York, NY.
Leifer, R., 1988. Matching computer-based information systems with organizational structures. Mis Quart. 12 (1), 63–73.
Leonard-Barton, D., 1987. Implementing structured software methodologies: a case of innovation in process technology. Interfaces 17 (3), 6–17.
Leonard-Barton, D., 1988. Implementation characteristics of organizational innovations. Commun. Res. 15 (5), 603–631.
Leonard-Barton, D., 1990. A dual methodology for case studies: synergistic use of a longitudinal single site with replicated multiple sites. Organ. Sci. 1 (1), 248–266.
Loh, L., Venkatraman, M., 1992. Determinants of information technology outsourcing: a cross-sectional analysis. J. Manag. Inf. Syst. 9 (1), 7–24.
Lomuscio, 2003. A classification scheme for negotiation in electronic commerce. Group Dec. Negot. 12 (1), 31–56.
Luzzini, D., Caniato, F., Ronchi, S., Spina, G., 2012. A transaction costs approach to purchasing portfolio management. Int. J. Oper. Prod. Manag. 32 (9), 1015–1042.
Matthews, J., 2000. More, better, faster: demand forces manufacturers to outsource. Silicon Valley North, 1–3.
Meyer, M.H., Curley, K.F., 1991. An applied framework for classifying the complexity of knowledge-based systems. Mis Quart. 15 (4), 455–472.
Monczka, R.M., Handfield, R.B., Guinipero, L.C., Patterson, J.L., 2010. Purchasing and supply chain management. Cengage Learning EMEA, Mason, OH, USA.
Moore, G.C., Benbasat, 1991. Development of an instrument to measure the perceptions of adopting an information technology innovation. Inf. Syst. Res. 2 (3), 192–222.
Murray, J.Y., Kotabe, M., 1999. Sourcing strategies of US service companies: a modified transaction-cost analysis. Strat. Manag. J. 20 (9), 791–809.
Narasimhan, R., Talluri, S., Mendez, D., 2001. Supplier evaluation and rationalization via data envelopment analysis: an empirical examination. J. Supply Chain Manag. 37 (3), 28–37.
Olsen, R., Ellram, L.M., 1997. A portfolio approach to supplier relationships. Ind. Market. Manag. 26 (2), 101–113.
Olson, M.H., Chervany, N.L., 1980. The relationship between organizational characteristics and the structure of the information services function. Mis Quart. 4 (2), 57–69.
Orr, B., 2002. The case for web-based procurement. ABA Banking J. 94, 4.
Pinnington, A., Woolcock, P., 1995. How far is IS/IT outsourcing enabling new organizational structure and competences? Int. J. Inf. Manag. 15 (5), 353–365.
Quinn, J.B., 1992. The intelligent enterprise: a new paradigm. Acad. Manag. Exec. 6 (4), 48–63.
Riege, A.M., 2003. Validity and reliability tests in case study research: a literature review with "hands-on" applications for each research phase. Qual. Market Res.: Int. J. 6 (2), 75–86.
Reck, R.F., Long, B.G., 1988. Purchasing: a competitive weapon. J. Purch. Mater. Manage Fall, 2–8.
Roy, V., Aubert, B.A., 2002. A resource-based analysis of IT sourcing. Database 33 (2), 29–40.
Sage, L.A., 2000. Winning the Innovation Race: Lessons from the Automotive Industry's Best Companies. John Wiley & Sons, New York.
Simpson, P.M., Siguaw, J.A., White, S.C., 2002. Measuring the performance of suppliers: an analysis of evaluation processes. J. Supply Chain Manag. 38 (1), 29–41.
Slater, D., 1998. The corporate skeleton. CIO 12 (6), 100–106.
Songhori, M., Tavana, M., Azadeh, A., Khakbaz, M.H., 2011. A supplier selection and order allocation model with multiple transportation alternatives. Int. J. Adv. Manufact. Technol. 52 (1-4), 365–376.
Sousa, R., Voss, C., 2008. Contingency research in operations management practices. J. Oper. Manag. 26 (6), 697–713.
Teece, D.J., 2000. Managing Intellectual Capital: Organizational, Strategic, and Policy Dimensions. Oxford University Press, Oxford.
Treleven, M., Schweikhart, S.B., 1988. A risk/benefit analysis of sourcing strategies: single vs. multiple sourcing. J. Oper. Manag. 7 (3 and 4), 93–114.
Utterback, J., 1971. The process of technological innovation within the firm. Acad. Manag. J. 14 (1), 75–88.
Van de Ven, A.H., Polley, D.E., Garud, R., Venkataraman, S., 1999. The Innovation Journey. Oxford University Press, New York.
van Weele, 2004. Purchasing and Supply Chain Management (Forth.). Cengage, van Weele.
Von Simson, E.M., 1995. The recentralization of IT. Compterworld 29 (51), 1–5.
Wagner, S., Johnson, J.L., 2004. Configuring and managing strategic supplier portfolios. Ind. Market. Manag. 33 (8), 717–730.
Weber, C.A., Current, J.R., 1993. A multiobjective approach to vendor selection. Eur. J. Oper. Res. 68 (2), 173–184.
Weber, C.A., Current, J.R., Desai, A., 2000. An optimization approach to determining the number of vendors to employ. Supply Chain Manag.: Int. J. 5 (2), 90–98.
Yang, C., Huang, J., 2000. A decision model for IS outsourcing. Int. J. Inf. Manag. 20 (3), 225–239.
Yin, R., 1994. Case Study Research: Design and Methods. SAGE Publications, Thousand Oaks, CA, USA.