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Strategic Purchasing and Performance: the Role of Supply Chain Innovation, Technology Orientation, and R&D Effectiveness

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Abstract

This paper illustrates how the Purchasing Department (PD), thanks to its involvement in strategic decisions, can stimulate business performance. In particular, this paper analyses the mediating role of supply chain innovation, technology orientation and R&D effectiveness. Based on a unique survey conducted on 131 Italian firms in the chemical industry, we performed a structural equation modelling path analysis to investigate the path leading to performance. We found that PD, when duly involved, plays a special role by acting as a *bridge* towards external players (i.e. suppliers and other partners) and, internally, by playing both a *bonding* (via sharing knowledge and expertise with other firms' departments) and *bridging* role (via stimulating the firm through innovation and R&D activities).This research provides an integrated view of how involving the PD in the firm's strategic decisions leads to higher organisational performance, thanks to the supply chain, the technology orientation, and the R&D effectiveness.

Keywords: Performance, Innovation, R&D, Supply Chain, Purchasing Department, Strategic Decisions.

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1 Introduction

The importance of managing Supply Chain (SC) relationships to gain a competitive advantage has been intensively studied (Lamming, 1993; Carter and Ellram, 2003; Chen et al., 2004; Petersen et al., 2005; Cousins et al., 2006; de Hemmer Gudme, 2017; Sheel and Nath, 2019; Najmi et al., 2020;). However, little attention has been paid to the specific firm's function that deals with suppliers, usually named Purchasing Department (PD) in contributing to the firm's value creation (Jain et al., 2009; Sheth et al., 2009; Paesbrugghe et al., 2017).

Extant studies have considered the PD as cost saving oriented division (Kurpjuweit et al., 2018) and as a competitive apparatus (among others, see: Speckman, 1989; Ellram and Carr, 1994; Stek and Schiele, 2021), especially with respect to innovation and new product development (NPD) (Ward et al., 1990; Krause, 2001; van Echtelt et al. 2008; Picaud-Bello et al., 2019; Gotz and Jankowska, 2020). However, most of contributions appear to have disregarded the path underlying the relationship between PD and organizational performance, having rather paid attention to the relationships between PD and performance (Nair et al., 2015; Difrancesco et al., 2022), technology

orientation and performance (Khin and Ho, 2019), R&D and performance (Santoro et al., 2019), or even strategic purchasing and performance (Paulraj and Chen, 2007; Kalaitzi et al., 2019). This is quite surprising since, especially in a world characterized by an increased complexity and velocity, where suppliers' role is even more crucial than before (Schoenherr and Wagner, 2016), a technology orientation is no more a nice to have attribute, but a must (Chen et al., 2014), and R&D effectiveness is needed (Piening and Salge, 2015), understanding the role of PD could improve firms' competitiveness.

Therefore, this paper aims at investigating how the PD is linked to organizational performance, disentangling the mediating role of three main factors: the supply chain (SC), the technology orientation, and the R&D effectiveness. In particular, we want to understand whether *PD matters in improving firm's performance;* whether *the PD is a driving force for the other value chain's functions;* and which is *the path through which the PD influences firm's performance.*

Based on a unique survey on 131 firms in the chemical industry, this research contributes to both theory and practice in unveiling the path that, starting from the PD, leads to the increase of organisational performance, thus enlightening the importance of involving the PD in the firms' strategic decisions rather than relegating it to more operational issues.

The paper is structured as follows. The next section proposes a literature review on the PD and the conceptual model. Then we present our conceptual model and subsequently we display the results. The last session is about discussion and conclusion, where the theoretical contributions, implications and limitations are presented.

2 Literature review and conceptual model

2.1 The Purchasing Department

The PD represents an essential division of any well-structured firm. Sarkis and Talluri (2002, p.18) include in the main tasks of the PD "*obtaining the product at the right cost in the right quantity with the right quality at the right time from the right source*" . In doing so, a crucial activity is supplier selection (Horst-Henning, 2005; Jain et al., 2009; Amid et al., 2011; Bai et al., 2019) and the integration, joint activities, and exchanges of knowledge and information of the PD with other departments (Sheth et al., 2009; Úbeda et al., 2015; Ashnai et al., 2019). The traditional role of the PD has been changing (Tate et al., 2010; Allal-Chérif et al., 2021) towards a more strategic, involved, and effective one (Chen et al., 2014; Patrucco et al., 2022). PD is now perceived important for value creation, for the increasing of quality, for partners' involvement, and, in general as a source of competitive advantage (Ellram et al., 2007; Werr and Pemer, 2007; Luzzini et al., 2015; Viale et al., 2022). Thanks to the above-mentioned studies, the importance and the new role of the PD is proved. We start from these studies to investigate more the link between PD and firm's performance.

2.2 Theoretical background

Many researchers underline the increased role of the PD (Chen et al., 2004) and its link with firm performance (Carr and Smeltzer, 2000; Carr and Pearson, 2002; Nair et al., 2015; Brandon-Jones, Knoppen, 2018; Difrancesco et al., 2022;).Carr and Pearson (2002) state that the involvement of PD in a strategic context leads to benefits in terms of performances, also organisational one (Viale, 2019). In recent years, many scholars have reconsidered the importance of the PD within the firm, including them while measuring *performances* (Beamon, 1999; Gunasekaran et al., 2001; Axelsson et al., 2002; Rafele, 2004; Fletcher and Polychronakis, 2007; Ashnai et al., 2019; Patrucco et al., 2022). The current literature shows several contributions about PD and performances

and scholars have analysed this from different point of views: financial performances (Carr and Pearson, 1999; Ellram and Liu, 2002; Chen et al., 2004; Cano-Olivos et al., 2019), commercial and financial (González-Benito, 2007; Rasit et al., 2019), purchasing and cost saving performances (Caniato et al., 2014; Patrucco et al, 2019), operational performances (Ambekar et al., 2020), manufacturing performances (Narasimhan and Das, 2001). Not all the studies focus on financial or business-related performances, among them it is worthy to mention Large and Thomsen (2011) and Fallahpour et al. (2021) that considered environmental performances.

Several studies have analysed the PD through an *organisational* lens (Johnson and Leenders 2006; Kim 2007; Juha and Pentti 2008; Driedonks et al. 2010). Among them, some have studied the influence of product complexity on the PD structure (Kotteaku et al. 1995; Andersen et al., 2021) or on product development (Lakemond et al., 2001; Schiele et al., 2021; Picaud-Bello et al., 2022); some others have looked to PD and SC management practices in specific sectors, such as luxury (Luzzini and Ronchi, 2010) and health care (Sidselrud, 1984; Verdin, 2019).

Organisational performance. Starting from the literature analysing PD through an organisational lens and the literature analysing performance, we noticed the need to deepen the performance results in terms of organisation. Some studies analyse the organisational issue in the outside environment, i.e. supply chain (Fynes et al., 2004; Wamba et al., 2020), hence investigating interorganizational relationships and performance. Furthermore, the PD is a boundary-spanning resource and there is an interest from the entrepreneurial side towards organisational behaviour and performance (Paulraj, 2011). Firms (Yamin et al., 1999), demand for a broader conceptualization of performance, based on the literature dating back to the 80's (Smith and Grimm, 1987; Tushman and Romanelli, 1985; Venkatraman and Ramanujam, 1986) that included, among others: market share, product quality, and marketing effectiveness. Li et al. (2006, p 111) rewrote this concept, stating that "organizational performance refers to how well an organization achieves its market-oriented goals as well as its financial goals".

From the results of the above-mentioned studies, we start our research that want to investigate the path having effects on organisational performance of a firm and that initiates from the PD.

Some scholars state that procurement is a critical tool for the firm's performances (Kapisch et al., 2016), while Luzzini and Ronchi (2011) analyse the organisational aspects for the innovation processes of the firm. From the literature we can then understand that the function of the "innovation-purchasing" is critical for a better result in terms of performances and relationships linked to innovation. It is therefore important to further comprehend these aspects by analysing more in detail the literature about innovation and performances.

Many studies underline how *innovation* is positively correlated with the economic performances of the firm (see, among others: Romer, 1990; Nadiri and Prucha, 1993; Aghion and Howitt, 1998; Mairesse and Mohnen, 2001; Santoro et al., 2019) or, to a larger extent, with several measures of firm performances (Arundel et al., 2003; El-Kassar and Singh, 2019). Klomp and van Leeuwen (2001) underline how (process) innovation directly strengthen firm's sales performances and employment growth. Focusing our attention to PD, several scholars have pointed out its role in developing new products (Atuahene-Gima, 1995; Nijssen et al.2002; van Echtelt et al. 2008; Schiele 2010 Picaud-Bello et al., 2019), underlying its important contribution in NPD (Bonaccorsi 1992; Hakansson and Eriksson 1993; Wognum et al. 2002; Cassia and Magno, 2019). Additionally, von Haartman and Bengtsson (2015) underline that, when purchasing globally, the role of PD is "crucial for product innovation" and therefore firms should then consider product innovation a first concern for their PD. Moreover Brandon-Jones and Knoppen (2018) underline how strategic purchasing impacts on the innovation performance of the firm. From this, we can determine a link between PD, performance and innovation. However, about the connection between PD and innovation, several studies must be considered. According to Lewis et al. (2010) dynamic process

is needed to coordinate PD and R&D, while Picaud-Bello et al. (2019) pointed out how PD might help R&D department in innovation if it renews and regenerates purchasing capabilities. Melander and Lakemond (2014) found that PD might support R&D facilitating innovation, especially under technological uncertainty. PD can reveal its role as a critical department for innovation and, more specifically, in R&D activities through jointly R&D and PD activities (Oh and Rhee, 2010), or thanks to the coordination of the prototyping activities carried out by purchasing, R&D and production departments (Van Echtelt et al., 2008). Furthermore, PD might have the role of informing, prioritising and mobilising R&D, and production, department (Wynstra et al., 2003).

The literature analysed and mentioned in this first part of the theoretical background stimulates the gather of a path that sees performance as the final step and the PD as the starting point. Therefore, we presume the relevance of R&D in reaching the firm's objectives and, furthermore, the *connection between PD and R&D and the involvement of the PD in the innovation process* and so in contributing to reach the defined performances.

2.3 Conceptual model

As shown in the previous section, the literature has analysed the contribution of the PD in helping the firm in its innovative processes; nevertheless, it is still unexplored how this happens. This is what we would like to examine.

Much attention has been attracted by the relation between *technology orientation* and *innovation* (see, among others: Gatignon and Xuereb 1997; Jeong et al., 2006; Gao et al., 2007; Khin and Ho, 2019). Technology orientation is positively correlated with innovation (Zhou et al., 2005; Adams et al., 2019), even if sometimes excessive technology orientation might lead to unsuccessful innovation (Kleinschmidt and Cooper 1991; Hortinha et al., 2011). Thus, the literature underlines the tight connection between technology orientation and innovation, and therefore we can corroborate that technology orientation is related with innovation.

Many scholars have strengthened the link between *supply chains (SCs)* and *innovation* (see, among others: Roy et al., 2004; Ageron et al., 2013; Golgeci and Ponomarov, 2013; Narasimhan and Narayanan, 2013; Oke et al., 2013; Zimmermann et al., 2016; Hahn, 2020). The firm and its customers contribute to the vale creation process, in which the SC is considered a crucial element (Narasimhan and Narayanan, 2013; Kamble et al., 2019), especially because this makes possible to access and exploit resources not available in the firm (Rese et al., 2013, Saenz et al., 2014; Shen et al., 2021). Therefore, the literature confirms that the SC can be considered a *source of innovation*.

The role of the PD. According to the literature, purchasing could be *strategic* or *nonstrategic* (Carr and Pearson, 2002). When strategic, the PD is considered a critical resource (Keough, 1993; Vecchi et al., 2020). Servajean-Hilst (2017) underlines the importance of purchasing functions in innovation, especially at the micro-level.

An interesting research question about purchasing and strategy is proposed by Cousins (2005). He focuses his attention on the strategic goals of the firm rather than the strategic consideration of the PD. Only considering itself as a differentiator the firm could then appoint the PD as a strategic tool and hence having a coordination of supply issues and overall strategic decisions. However, the role of the PD is still not well defined, since it might not act as full coordinator, while it might be more likely to involve some members of the PD in the product development team for innovation (Lakemond et al. 2001; Tchokogué and Merminod, 2021).

Considering the bridging function and the strategic role of the PD underlined by the literature analysed above, we believe that the PD could act as one of the starting points of the whole innovation path, also being a critical function that is able to influence it. Hence, we want to empirically test whether the stimulus of the PD influences the whole process.

Some researchers suggest that the PD is talented for acting as external and internal bridge, having a boundary-spanning function (Hallenbeck et al., 1999; Azadegan, et al. 2009; McIvor, 2009; Van Weele, 2009; von Haartman and Bengtsson, 2015). Thanks to this double role, the PD can bring knowledge, technology and innovation in the firm and then guide other departments in choosing the best option (Wynstra et al., 2003). PD can also manage internal sourcing processes, thanks to the thorough preparation of its managers, contributing to the innovation outcomes (Luzzini et al., 2015).

PD can be involved at several different levels, pertaining to four different managerial areas: product design, discussion of old/new projects with suppliers, guidelines' definition with the R&D department, directly putting in practice the decision of the general management about insourcing/outsourcing NPD (Wynstra et al., 2001). This reflects the integrative role also mentioned years ago by Carr and Smeltzer (1997). In case of technological complexity, PD's role augments its importance. While developing new products, firms might set organisational mechanisms to both have internal and external connections between the main functions. In this case the PD can play a relevant role, thanks to its engineers that might act as liaisons between functions (Wynstra et al., 2001)

Could we say that PD plays the same role in every firm? Indeed, not all the PDs, and therefore all the firms, act in the same way. A PD acting as an equal partner with other departments augments the firm's success, but only in some firms (Luzzini et al., 2015). This might depend on the employees' capabilities (Reck and Long, 1988), but also on how the PD is valued by the firm itself: the more essential is considered, the more it supports firm's strategic processes and NPD (Patrucco et al., 2017; Patrucco et al., 2022). The PD involvement might change from one firm to another. Some could give PD a strategic recognition, other a more clerical role, or an integrative or a supportive one (among others: Burt and Pinkerton, 1996; Carr and Smeltzer, 1997; Rozemeijer, 2008; Picaud-Bello et al., 2019). As reported by Paesbrugghe et al. (2017) (based on Reck and Long, 1988), some scholars found four different stages of the PD: passive, independent, supportive, and integrative. Hence not only we have variations among the type of firms, but also in the stage of the department itself when dealing with PD degree of independence. This affects the ability of the PD to act as a stimulus to innovation. Thus, we can state that the PD involvement is profitable for the whole firm. However, to the best of our knowledge, there is a lack in understanding how the PD could be a stimulus for innovation and hence for improving firm's performances. This is why the PD is the stimulus of performance increasing and so it might influence the whole path from the beginning. Then, considering the theoretical background analysed in the previous section, we believe it is better to build our pathway backward: starting from the role of the PD we move forward in the direction of firm's performances. By doing this we can spell out that the involvement of the PD means that the role of the SC as source of innovation has effect also internally to the firm and, consequently, that it affects technology orientation, influences the R&D thanks to the link between them and PD, and hence firm's performances. This because we believe the stimulus originates in the PD.

Therefore, analysing the current literature and relating all the different connections coming out from other studies, we can build a path starting from the stimulus of the PD that, going through the ability and tendency towards innovation, increases organisational performances. Hence, in Figure 1, is presented the conceptual model we built accordingly.

2.4 Hypothesis

Starting from the gap in the literature, our research interests, the conceptual model we have designed, we can develop our hypothesis. Following our line in search for a path connecting PD

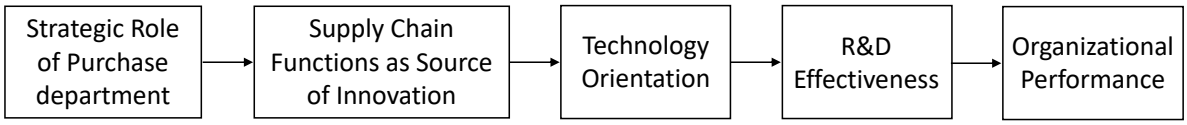

Figure 1. Conceptual model.

and organisational performance we had a backward route, we now want to define hypothesis onward. Hence, our hypothesis are:

- *Hp1* The involvement of PD in the strategic decisions has a positive effect in turning the SC functions as source of innovation;
- *Hp2* When the SC functions are source of innovation, they foster the technology orientation;
- *Hp3* The technology orientation has a positive effect on the R&D effectiveness;
- *Hp4* The effectiveness of R&D, pushed by technology orientation, SC and PD, has a positive effect on the firm's organisational performance;
- *Hp5* When playing a strategic role, the PD acts as stimulus for improving organisational performance of the firm, thanks to a path involving the SC, the technology orientation of the firm and the R&D effectiveness.

3 Methodology

Following Cao and Zhang (2011) and also Kalaitzi et al. (2019), we based the item generation of constructs on the review of the literature and on theoretical foundation; then each item has been then validated thanks to experts from ADACI during a pre-test. We collected information about structural and strategic nature of the firms and the role of the PD in the innovation processes through a survey. The sample was conducted in 2019 and it was composed by 131 firms based in Italy operating in the chemical industry, whom average age is 38 years. Amongst them there are start-ups and very well-established companies (eight of them being older than one century). As in Carr and Smeltzer (2000), we administered the survey to a sample of purchasing managers and executive directors.

The questionnaire included questions on PD's role, performance, innovation results, and technology orientation and was mainly answered by entrepreneurs, senior managers or the equivalent. We individuated the firms and the persons to interview together with ADACI. ADACI is the Italian association of purchasing managers and their contribution was fundamental for both contacting and selecting the firms and, within them, the managers/entrepreneurs to involve in the process. The choice of the industry was also done during a focus with some experts from ADACI. Involving ADACI in our process was helpful for designing the questionnaire together with field experts having same roles of the targeted interviewed. Furthermore, ADACI helped us in promoting the survey and pushing consulted people to fill the questionnaire, also with the aim to prevent response bias.

Few previous studies analyse the strategic aspects of the PD. Cammish and Keough (1991), started to analyse the strategic role of purchasing, assigning to the PD a higher role that previous studies. More recently Camarero Izquierdo et al. (2015) linked the strategic aspect of purchasing with performances. We built our measure *Strategic Role of Purchase department*, starting from these studies for investigating the role of the PD. However, our perspective is different from the two studies cited above, being the one we propose, to the best of our knowledge, a new perspective of analysis. This represents the novelty of our research.

For the *Supply Chain Sources of Innovation* we based our background on Von Hyppel (1988) and Sroufe (2017), maintaining the theoretical basis then adapting it to our model. With this

we want to assess which functions/departments are critical in introducing innovation, i.e. act as sources of innovation.

For the *Technology Orientation* we considered the theory presented in Gatignon and Xuereb (1997), Sainio et al. (2012), and Zhou and Li (2010).

To assess the degree of success of the R&D activities based on the goal set by the firm, we use the measure *R&D Effectiveness* (De Luca et al., 2010)

Finally, we conceptualize *organizational performance* as the degree to which the firm reached (a) its own strategic targets, (b) main competitors' performance, and (c) general industry's performance (we built this item similarly to: Petersen et al., 2005; De Luca et al. 2010). According to Dess and Robinson (1984), the subjective measures represent a good proxy for organizational performance under specific conditions, that also apply to this case.

For all of them we used a five-point Likert scale (Likert, 1932) and we then use the items for building the measure, following the suggestions of the theory, or proposing a new measure. All the Measures Description and Properties are reported in Table 1.

Table 1. Measures Description and Properties.

Measure	Item Description	Sources
Organiz. Performance (five-point likert scale) $\alpha = 0.824$ AVE = 0.625	Please rate your firm's overall performance in the last three years with respect to: 1. Its own stated objectives 2. Main competitors' performance 3. Industry's performance	Petersen et al., 2005; De Luca et al., 2010
R&D Effectiveness (five-point likert scale) $\alpha = 0.866$ AVE = 0.595	To which degree, during the last three years, has the R&D function of your firm reached its tasks in terms of: 1. New innovative project generation; 2. New patents; 3. Quality and relevance of scientific results; 4. Reputation, within the sector, thanks to the obtained scientific results; 5. Production of new knowledge within your market/technological domain; 6. Ability to attract and recruit new scientists with high knowledge and competencies	De Luca et al., 2010
Supply Chain Sources of Innovation (five-point likert scale) $\alpha = 0.876$ AVE = 0.548	How much each of the following position or function are crucial in introducing (technological, process related or organisational) innovation within your firm? c) Quality manager d) Purchasing manager e) Marketing/sales manager f) R&D manager g) Production manager i) HR manager	Von Hippel (1988); Sroufe (2017)

Measure	Item Description	Sources
Technology Orientation (five-point Likert scale) $\alpha = 0.872$ AVE = 0.552	With reference to your technology orientation, to what degree do you agree with the following statements: 1. We use sophisticated technologies in our new product development 2. Our new products are always at the state of the art of the technology 3. Technological innovation, based on research results, is readily accepted in our organization 4. Technological innovation is readily accepted in our program/project management	Gatignon and Xuereb (1997), Sainio et al., (2012) and Zhou and Li (2010)
Strategic Role of the Purchase department (five-point Likert scale) $\alpha = 0.742$ AVE = 0.509	To what degree, within your firm, the purchasing department: a) Participates in taking strategic decisions made by the top management; b) Participates in inter-functional teams for the executive implementation of the firm's strategies; c) Helps other functions only during negotiation for the purchase of products/material selected by other people in the firm.	New

Table 2. Descriptive Statistics and Correlation.

		[1]	[2]	[3]	[4]	[5]
[1]	Org. Performance	1.000				
[2]	R&D Effectiveness	0.163	1.000			
[3]	Supply Role	0.286	0.126	1.000		
[4]	Technology Orient.	0.299	0.675	0.085	1.000	
[5]	Innovation Sources	0.301	0.331	0.212	0.357	1.000
	Mean	3.501	2.347	3.593	3.065	3.331
	Std. Dev.	0.769	0.932	0.936	1.018	0.926
	Min	1	1	1	1	1
	Max	5	4.5	5	5	5
	No of Obs.	131	131	131	131	125

Table 2 displays the correlation between all independent and dependent variables and include some descriptive statistics as well.

As shown in Table 2, none of the companies reach the maximum value in the Likert scale (5 is the maximum) for R&D effectiveness. We performed pairwise deletion of missing values. The matrix shows positive correlations, and particularly a moderate positive correlation between technology orientation and R&D effectiveness, while a weaker positive correlation between the other couples of variables.

4 Results

We performed a structural equation modelling path analysis, whom results are shown in Figure 2, while Table 3 presents the results of the path analysis. From that we can confirm the existence of a significative path leading to a positive influence on the organisational performances.

Table 3. Paths Analysis.

Paths	Overall model		
	Std. Coeff.	S.E.	z
Supply Chain Sources of Innovation			
← Strategic Role of the Purchase department	0.260*	(0.139)	1.87
Technology Orientation			
← Supply Chain Sources of Innovation	0.445***	(0.118)	3.77
R&D Effectiveness			
← Technology Orientation	0.896***	(0.126)	7.13
← Age			
Organizational Performance			
← R&D Effectiveness	0.103**	(0.052)	1.97
χ^2	319.26		
p	< 0.001		
RMSEA	0.068		
CFI	0.918		
SRMR	Not reported because of missing value		

Note: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.
Method of estimation: Maximum likelihood with missing.

According to the AVE values, which are higher than 0.5 for all the variables, determining a satisfactory convergent validity. We also tested for common method bias (Harman's one-factor test). We computed both the Comparative Fit Index ($> .90.$) and the Root Mean Square Error of Approximation ($< .08$) as indices of fit. Factors loading are: 0.3 for Strategic Role of the Purchase department » Supply Chain Sources of Innovation, 0.4 for Supply Chain Sources of Innovation » Technology Orientation, 0.9 Technology Orientation » R&D Effectiveness, and 0.1 for R&D Effectiveness » Organizational Performance.

For a better comprehension of the results, we would like to start from *Supply Chain Functions as Source of Innovation*. It has a positive and significant ($p < 0.01$) effect on the *Technology orientation*. Therefore, Hp2 is confirmed. Successively, the *Technology orientation* has a positive and significant ($p < 0.01$) effect on the *R&D Effectiveness*, that in turn has a positive and significant ($p < 0.05$) effect on the organisational performances, as predicted. Hence, we can also confirm Hp3 and Hp4. Now, we want to analyse whether Hp1 (when the PD is involved in the strategic decisions, it has a positive effect in turning the SC functions as source of innovation) is confirmed or not. We can notice that the *role of the PD* has a positive and significant ($p < 0.1$) effect on the *Supply Chain Functions as Source of Innovation*, so Hp1 is validated. If we now analyse the path and the hypothesis from the starting point (i.e. *Strategic Role of the Purchasing*

Department), until the final step (i.e. *Organisational Performance*), the structural equation model analysis confirms (making possible to have a full significant chain with a positive effect from the beginning to the very end) Hp5, stating that the Pd, if involved in strategic decision, acts as stimulus for improving organisational performance of the firm, thanks to a path involving the SC, the technology orientation of the firm and the R&D effectiveness.

5 Discussion and conclusion

From our analysis, it came out that the stimulus to the firm's performances is influenced by the PD. The path presented in Figure 1 is confirmed by our results. Even if in our model we built our path back to front, for a better understanding we are now going to analyse it forward, following the order of the hypothesis. The stimulus starts from one department of the firm and has effects into many other ones: not only the R&D department, but also all the others involved in innovation and affected by the impact on performances. One starting point of this process can be the PD. However, the current literature, to the best of our knowledge, has rarely taken into consideration such possibility (Cousins, 2005). Therefore, someone might ask how it is possible to have such effective path coming from a sometimes-considered nonstrategic department. The PD can exert a strategic role because it can work internally to the firm exploiting its ability to build a bridge between firm's departments, but also between the firm and other SC's players (among others: Luzzini and Ronchi, 2011; Caniato et al., 2014). This is possible thanks to the strategic role assigned to the PD, which is in line with the research of Chen et al. (2014) and Patrucco et al. (2022). Furthermore, our analysis confirms what has already been stated by the literature (among others: Oke et al., 2013; Zimmermann et al., 2016): the SC can be a source of innovation. Furthermore, our results link the strategic role of the PD in being a bridge between the firm and the SC with the ability of the latter to cause innovation. Analysing further this connection we observe that some scholars have examined the bonding and bridging effect among firms (Kavanaugh et al., 2003; Martínez-Pérez et al., 2016). Applying this perspective for studying our results, we can assess that the PD plays a *bonding* and *bridging* role internally to the firm, as well as other players are impersonating externally in the chain. This confirms the role of the PD already underlined by Paulraj (2011). The literature has underlined how crucial is to integrate the various functions within the firm (Kahn, 1996; Moses and Ahlstroem, 2009) with effects on performances (Maltz and Kohli, 1996), too. The present research, using the proposed path, demonstrates that thanks to this special role, the PD can stimulate the firm via innovation and R&D activities for increasing the performances. As shown in our path, and also supported by the literature (Jeong et al., 2006; Zhou et al., 2005), the connection in the path continues linking innovation and technology orientation. Then the peculiar role of the PD has a positive effect, as shown in the results, for R&D because of its support (Melander and Lakemond, 2014), joint activities (Oh and Rhee, 2010), and its coordination's role (Van Echtelt et al., 2008). Finally, the link between PD and performances, also specifically with organisational performances, proposed by the literature (Carr and Pearson, 2002; Viale, 2019) has been confirmed by our results.

From this analysis, we can confirm what also emerges from Vecchi et al. (2020) in public procurement: Pd has a strategic role. Even if Vecchi et al. (2020) recognized this role in an emergency and crisis period, we can assess that this is true anytime. Furthermore, thanks to the positive results and the confirmation of all the hypothesis, we can state that this behavior (i.e. strategic role of the PD) leads to a significant and positive impact for firms' organizational performances boosted by SC, technology orientation and R&D effectiveness.

6 Managerial and theoretical implications

This research provides implications both for researchers and practitioners. Amongst the practical implications for managers there is the advice to involve more the PD in the strategic decisions of the firm and to stress more its intra-firm bonding and bridging role. For purchasing managers, the recommendation is to exploit more their knowledge and links, and to exert more their stimulator role. In such a complex environment where firms have to compete each firm's department must contribute to reach the final goal. It is therefore crucial the PD role in the path towards innovation; purchasing managers should be conscious that this is amplified when the PD plays a bonding and bridging role. Furthermore, they should increase their knowledge and competences to favour this role.

From a scientific point of view, this research represents, to the best of our knowledge, the first one about the role of the PD as a possible starting point and an influencing factor of a chain involving innovation and R&D aiming to increase the firm's performances. This study represents a first step towards a deeper understanding of the new role of PD. The originality of this paper lies on building and empirically testing its existence a path moving from the PD towards organisational performances. The previous literature analysed disjointly the connections between the proposed elements. Mainly, previous research focused their attention on single connections between two steps (e.g. PD and SC). To the best of our knowledge, this is the first study demonstrating the stimulus role of the PD, involving the SC and all the other firm's departments for having a positive effect on the organisational performances, thanks to technology orientation and R&D effectiveness.

7 Limitations and Future Research

Being a very first study on this issue, the research has some limitations. The main limitation concerns the number of surveys collected, due to the small sample. Furthermore, we limited our study to one country (Italy) and one sector (chemical) and we performed a cross-sectional analysis. Hence, further studies on this topic should extend the research to more sectors and several other countries. This study also points out the need for more studies analysing the role of the purchasing department, shedding the lights on the possible outcomes of a higher involvement of it in more strategical issues, rather than in purely operational ones. The present research represents one of the first steps into this field, while more studies are strongly needed and should be encouraged.

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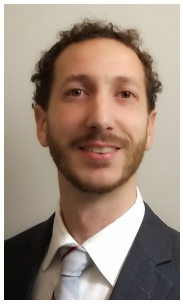
Biographies



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