Assessing the use of External Grand Theories in Purchasing and Supply Management research

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Abstract

The paper examines the extant management literature on Purchasing and Supply Management (PSM) to assess the underpinning role of external grand theories (EGTs) – i.e., established theories drawn from other areas of economics, management and other social sciences. We perform an extensive and systematic literature review of 1,055 papers in the 20 top management journals for the time period 2002-2010, bypassing a keyword search in favour of a complete scanning of a total of 14,943 articles. Results show an analysis and classification of the most commonly used EGTs borrowed to underpin research on PSM. We also match research topics, methodologies and unit of analysis with EGTs. Finally, we investigate what is the nature of the research – exploratory, theory building and theory testing – supported by EGTs. Analyses find PSM to be poorly rooted in EGTs, which confirms PSM relatively lower theoretical maturity when compared with other disciplines. Transaction Cost Economics and the Resource Based View prove to be the most frequently adopted frameworks. Other theories emerge as interesting opportunities in combination with specific topics and methodologies.

Keywords: Purchasing and Supply Management; External Grand Theories; Systematic Literature Review

Article classification: Literature Review

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1. Introduction

For more than two decades, Purchasing and Supply Management (PSM) has gained significant academic interest (e.g., Harland et al., 2006). More and more research, both conceptual and empirical, has been performed, and the focus of investigation has continued to broaden, including contractual relationships, partnership development, portfolio management, vendor assessments, vertical integration and the make or buy dilemma and organisational issues for purchasing functions.

The surge in academic interest is caused by the growing strategic relevance of the purchasing function as a consequence of various trends, including increasing outsourcing, the globalisation of trade and the advent of electronic procurement (e.g., Ramsay and Croom, 2008). In addition, PSM has drawn specific attention from business schools, and various topics are taught more frequently in both open enrolment programs and corporate training courses. In short, from the "real world" perspective of practitioners, PSM certainly appears to be a field, a body of expertise and maybe a discipline. However, this is not automatically true from an academic perspective because unless the theoretical foundations of PSM are solid and extensive enough, it is difficult to qualify the field as an established scientific discipline. Indeed, the need for wider and more substantive use of theory in the broad field of operations management, including PSM, has long been suggested (Schmenner and Swink, 1998).

In this study, our primary aim is to assess and profile the theoretical foundations of the impressive amount of academic contributions in the field of PSM over the last decade.

In order to approach this stream of research, we ground on two underlying assumptions. The first one is quite obvious or at least widely recognised: good research in management fields must be theoretically rooted (see e.g., Mentzer, 2008), and, more generally, theories are necessary to create frameworks capable of both describing and predicting phenomena in a certain field (Hunt, 1991). The second assumption refers to the seminal contributions of Kuhn (1962) about "paradigmatic sciences": a body of knowledge turns into a scientific discipline – a so-called "normal science" – only if and when it is rooted in theories.

Considering PSM research so far, we acknowledge – firstly – that other relevant studies (e.g. Harland, 2006; Chicksand et al. 2012, see below for more) testify a lack of internal theories. By internal theories (IR) we mean theories based on new constructs specifically developed for the PSM field, to create frameworks capable of both describing and predicting purchasing behaviour and supply management of firms. As a matter of fact, despite the abundance of conceptual models developed within PSM and Supply Chain Management at large (SCM), the diffusion of IR that are recognized and widespread across the research community is negligible. In fact, theories internal to PSM are still under debate, they do not usually have standard labels, and they are partially untested. Ultimately, the evidence of theories internal to PSM is debatable.

Secondly, as happened for other emerging managerial disciplines (e.g. Stock, 1997; Baskerville; Dulipovici, 2006; Caniato et al. 2010 and Kauppi et al. 2013), theories originally developed outside the research domain represent a potential boost for the development of the PSM discipline. Therefore, we expect that in order for PSM to become an established discipline, it would be a natural path to borrow *external grand theories (EGTs)* i.e., established and highly abstracted theories already developed in more mature fields of management, economics and other social sciences.

The concept of grand theory is not new in management research: Swamidass (1991) defines grand theories as general or unified theories that are able to provide a comprehensive view of reality, typically solving conflicts arising from middle-range theories or empirical generalisations. The author also identifies specific characteristics of grand theories in operations management: (i) they explain phenomena by explaining interactions of variables in the system, and consequently they can predict the value of one or more variable in the system; (ii) they allow to piece together various parts of evolving knowledge into an organized whole; (iii) they stimulate new research; and (iv) they have

practical implications. Similarly, Wacker (1998) defines a theory based on four criteria (i.e. conceptual definitions, domain limitations, relationship-building, and predictions) and identifies the characteristics of a good theory.

The use of EGTs should be seen positively for a relatively young field of knowledge. In fact, EGTs, when used properly, may allow scholars to develop empirical investigation in new fields for which IR are not established yet. By adapting concepts and capturing connections between socio-economic and organizational concepts applied in other managerial and economic fields EGTs may underpin a process of knowledge extension and differentiation which may help the evolution of a body of knowledge into a discipline (Harland et al., 2006; Halldorsson et al., 2007; Luzzini and Ronchi 2010, 2011; and Chicksand et al., 2012).

Following this line of argument, we believe it is important to assess which EGTs are used in PSM and for what purpose. In this regards, we intervene in a scientific debate initiated by Harland et al. (2006), whose contribution, published in IJOPM, has the following evocative title: "Supply management: is it a discipline?" It is not our purpose to follow up this issue and to determine whether or not PSM can be considered an established discipline. Rather, we do intend to assess the level of maturity (in theory terms) of PSM, focussing on EGTs, given the virtual absence of IR developed within the PSM field (confirmed by the aforementioned studies as well as our evidence),

The debate on the use of theories was recently extended to adjacent fields by two other contributions – Defee et al. (2010), who focused on both Supply Chain Management (SCM) and logistics, and Chicksand et al. (2012), who focused on purchasing and SCM.

Following our objective, we start by investigating the extant literature dealing with the use of theories in PSM. This directly leads us to identify research gaps and consequently frame our research questions (see section 2). The rest of this article is organised as follows: in section 3, we analyse previous literature reviews on PSM to understand why further investigation is needed; in section 4, we introduce and discuss the most commonly used EGTs; in section 5, we present our methodological approach for this study, including criteria for selecting journals and extracting and coding articles; in section 6, we present and discuss the findings; and in section 7, we present our conclusions. In section 8, we assess limitations and possible avenues for future research.

2. Overview of PSM theoretical maturity

Harland et al. (2006), based on an analysis of a limited number of papers – only 41 – concluded that, though the internal coherence of the field is high, supply management was still immature and not yet established because there was not enough evidence of a robust theoretical debate. Six years later, Chicksand et al. (2012) tried to assess theoretical perspectives in purchasing and supply chain management by analysing the 16-year production of three top journals in the field – JSCM, JPSM and SCMIJ. They concluded that purchasing and supply chain management – as an integral and broad field – has not fully developed a robust and rich theoretical base because less than 40% of the total papers are more or less theoretically grounded. Looking at their data, we calculate that the percentage drops to 19% if only EGTs are considered. On the basis of a much more extensive literature review, they draw conclusions in line with Harland et al. (2006): essentially, there has not been much progress toward the maturity of the discipline in the second half of the past decade.

Defee et al. (2010) examined an adjacent area mostly focused on logistics and found that half of the scientific production reported in five top academic journals – IJLM, IJPDLM, JBL, JSCM and TJ – from 2004 to 2009 is theoretically grounded. However, from their data, it is impossible to derive the percentage of papers based on EGTs.

Focusing on PSM, a previous work of ours (Spina et al., 2013) confirmed that only a minority – approximately 10% of research papers in a vast sample of 1,055 papers from 2002 to 2010 – shows a clear and explicit theoretical background.

In this study, we regard these findings as starting points for our analysis. In particular, with regard to Chicksand et al. (2012), we grant that the field on the whole is still in its infancy. They

contend that PSM and SCM taken together do not pass Fabian's tests for considering a discipline mature (Fabian, 2000) – coherence, quality as measured by methodological standards, and breadth and depth as measured by the prevalence of deductive approaches over induction and inference. Their overall conclusion is that PSM and SCM still have a way to go to gain the status of a fully established academic discipline.

However, beyond the general conclusion about the immaturity of the discipline, we think that there are at least three main issues that deserve further investigation.

First, the existing literature reviews (LR) aimed at assessing theoretical foundations focus on a broad field with continuously expanding and blurring boundaries, which includes extremely diverse subjects from purchasing to supply chain management and logistics. Obviously, there are good reasons to assume a broad scope, and some of the renowned academic journals in the field indeed show a broader and combined scope intentionally. However, LRs that assume a broad scope may fail to capture the evolution of a specific part of the field. In particular, we think that PSM deserves a specific LR assessing its theoretical foundations, distinct from supply chain management at large and even more from logistics. Therefore, we make a distinction between PSM and the wider concept of Supply Chain Management (SCM) defined by Metz (1998) as "a process-oriented approach to managing product, information, and funds flows across the overall supply network, from the initial suppliers to the final end consumers". Instead, following Monczka et al. (2010), we refer to PSM as the "strategic approach to planning for and acquiring the organisation's current and future needs through effectively managing the supply base". In fact, PSM has increasingly been consolidated as an autonomous field of enquiry, a part of SCM and distinct from logistics. In the end, we regard PSM as a stand-alone academic discipline – though not yet fully established – within the broader field of SCM, which is in line with what Larson and Halldorsson (2002) define as the unionist perspective of this issue.

Second, most theories already found to underpin research on PSM are external (see Chicksand et al., 2012) and show the characteristics of grand theories – established, renowned, widely used for a variety of studies in different fields. Very few if none are found to be internal – i.e., originally developed to explain specific phenomena related to PSM. This fact is not necessarily a sign of weakness for the discipline. Given the practical relevance of the field, there is nothing wrong with the adaptation of generic or more general theories to the specific domain of purchasing. For this reasons, in this study, we definitely looked at a much wider set of academic journals compared to previous LRs, convinced that relevant scientific contributions to PSM can be found beyond the 3-5 distinctive specific journals.

Third and more importantly, we intend to link underpinning EGTs to the features of the papers, including i) the unit of analysis, i.e., the buyer, the supplier, the dyad or the whole supply network; ii) the research methodologies used; iii) the specific topic investigated, e.g., practices, performance, tools and organisational aspects; and iv) the type of research conducted. Concerning this last classification, according to Wallace (1971), research can be classified into three different groups – exploratory, theory testing and theory building. Theory testing refers to studies testing specific assumptions for the field that are not necessarily based on EGTs. Similarly, theory building refers to studies that seek to create new theories for the discipline not necessarily rooted in EGTs.

In summary, when comparing our study with extant contributions, on the one hand, we narrow the scope by focusing on PSM to capture its specificity, leaving out SCM and logistics. On the other hand, we enlarge the investigated sources considerably to include dispersed contributions that explicitly refer to EGTs.

Following the above line of argument, the objective of this paper is to seek answers to three questions:

RQ1. To what extent does PSM research borrow and/or adapt EGTs, and, in particular, which EGTs are most adopted?

RQ2. How are EGTs used to conduct research on PSM? In particular,
- *a. To focus on different units of analysis – i.e., the Buyer, the Supplier, the Dyad Buyer-Supplier or the whole Supply Network;*
- *b. Through different research methodologies – surveys, case studies, simulation, etc.;*
- *c. To investigate different topics – practices, performance, tools, organisational aspects, etc.*

RQ3. To what extent are EGTs used to support different types of research – i.e., exploratory, theory testing, and theory building research?

On the whole, the answers to the above questions will provide an in-depth view of the theoretical foundations of PSM, not merely quantitative – how much of the production has solid theoretical foundations – but also qualitative and informative – which EGT really matters for which type of topic and how do EGTs support different research purposes.

3. Previous literature reviews on PSM

LRs on PSM can be divided in two groups: specific and generic. Specific LRs focus on a narrower subject involving only one or a few topics. Countless LRs of this type have been produced recently. For example, Johnsen (2009) reviewed 30 articles on supplier involvement in new product development; Quintens et al. (2006) investigated 123 papers on global purchasing; and Wu and Barnes (2011) reviewed 140 articles on the very specific issue of partner selection in agile supply chains. Other specific LRs focus on specific research methods. For example, Dubois and Araujo (2007) investigated case-based research in PSM. Geographical focuses are also present. For example, Jiang et al. (2007) investigated a total of 144 papers on China-related research on purchasing and sourcing systems. Finally, emerging trends have been reviewed very recently. For example, Miemczyk et al. (2012) analysed 113 papers more or less connected to sustainable PSM. Given the limitations of the topics, LRs of this type aim to investigate all relevant contributions to the topic to the best of authors' knowledge.

By contrast, generic LRs consist of broad overviews of the discipline, addressing a comprehensive set of subject areas. Their intent is mainly to describe the topics, theories and methodologies most commonly used in the field. Longitudinal analyses are frequently implemented to highlight evolutionary trends. LRs of this type require significant effort to analyse a large number of articles and code them properly according to the descriptive goals. As a consequence, most authors decide to limit the time span, the number of sources considered, or the number of papers analysed (e.g., Carter & Ellram, 2003; Wynstra, 2010; Zheng, et al. 2007). As already noted, the boundaries of the discipline are blurred and expanding. Therefore, generic LRs often differ from each other in the domain considered. Table 1 reports the list of LRs that we have been able to analyse. We have classified such reviews as either PSM only or SCM at large based on the previous definitions of PSM (Monczka et al., 2010) and SCM (Metz, 1998) to which we have referred and in line with the unionist perspective of the issue (Larson and Halldorsson, 2002). Ellram & Carr (1994), Harland et al. (2006), Wynstra (2010), Zheng et al. (2007) and Spina et al. (2013) focus specifically on PSM, whereas Burgess et al. (2006), Carter & Ellram (2003), Giunipero et al. (2008), Defee et al. (2010) and Chicksand et al. (2012) address SCM at large.

Obviously, for the purpose of our study, we primarily look at generic LRs on both PSM and SCM. Specific LRs are of minor interest. Only three generic LRs listed in Table 1 specifically focus on the issue of the theoretical foundations of the discipline – Harland et al. (2006), Defee et al. (2010) and Chicksand et al. (2012) (already introduced in the above discussion) – whereas three others

address the issue only marginally as part of the overview provided – Carter and Ellram (2003), Giunipero et al. (2008), and Spina et al. (2013).

Many LRs – both specific and generic – are keyword based, which means that reviewers usually search for articles using academic search engines (e.g., Scopus, Google Scholar) introducing a few selected keywords. Among the generic LRs listed in Table 1, four out of ten are keyword-based LRs considering multiple journals. A fifth paper may join this group: even though it is not explicit, we might reasonably assume that the study by Ellram and Carr (1994) is keyword based. The other five studies are not keyword based. In particular, four studies, Carter and Ellram (2003); Defee et al. (2010); Wynstra (2010); and Chicksand et al. (2012,) code all articles published in a limited number of PSM journals, whereas Spina et al. (2013) scan and filter all articles of a wider set of journals before selecting and coding all papers relevant to PSM (see the next section for details).

Our overview of generic LRs on PSM confirms that further analysis is needed to profile the theoretical background of the discipline. In particular, in our view, the two most relevant and recent LRs – Defee et al. (2010) and Chicksand et al. (2012) – do not focus on PSM alone; instead, they include interconnected but distinct fields such as logistics and SCM at large. In addition, both studies do not link underpinning theories' research methodologies, investigated topics, and type of research, which we think would help in understanding and profiling the theoretical stance of PSM, which still has a way to go before becoming a fully established scientific discipline. To this end, we think that given the breadth of the discipline, its early stage of development, and the fact that it borrows theories from other managerial fields, a comprehensive LR on PSM should look at a wider array of journals compared to extant reviews, which is exactly what we have tried to do.

TABLE 1
Generic literature reviews on PSM and SCM

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4. External Grand Theories (EGTs) commonly used in PSM

In this section, we introduce the EGTs that are most frequently used to conduct research on PSM. Such EGTs are drawn from the broader areas of management, economics and social sciences. We consider twelve different theoretical perspectives, combining previous analyses and contributions (e.g. Chicksand et al. 2012; Shook et al. 2009; Defee et al. 2010 and Luzzini et al. 2012). Namely, we consider Transaction cost economics (TCE), the Resource-based view (RBV), Knowledge-based theory (KBT), Contingency theory (CT), Game theory (GT), Resource dependency theory (RDT), Social exchange theory (SET), Agency theory (AT), Institutional theory (IT), Network theory (NT), Information processing theory (IPT) and Dynamic capabilities (DC).

In order to define this list, we exclusively counted on explicit mentions of theories within coded articles (see the next section for more details about the literature review). Therefore we entirely rely on what authors say about the theoretical background of their works. As a result, we came up with a list of all theories mentioned in our sample (see Spina et al., 2013). Since the vast majority of such theories are EGTs we decided it was worth to investigate the subject more in depth. So we checked the consistency of our list of theories with other studies from domains close to PSM (e.g. Harland et al., 2006; Defee et al., 2010 and Chicksand et al., 2012) and we found it is consistent with theories found by other scholars. The list of twelve EGTs provided in Table 2 is the result of this cross-check: we focused our analysis on the most recurring theories in our sample of articles, that are also the theories mentioned by the referenced studies.

Table 2, though not exhaustive, provides the key premises of each theory and illustrative implications for PSM.

TABLE 2
Most common External Grand Theories (EGTs) in PSM

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5. Research methodology

To answer our research questions and overcome the limitations of existing LRs, we performed an extensive LR of the field of PSM. Our LR methodology is already described in Spina et al. (2013), where we presented an overview of the contributions in the field with no specific focus on the theoretical background of PSM and the use of EGTs. We will now summarise our methodology for the reader's convenience, additional information about the classification framework can be found in the appendix. All the details that we did not repeat here might be found in our previous manuscript.

To overcome the limitations of existing LRs, we chose to analyse a broad number of journals over a broad time span, avoiding the keyword search in favour of a complete scanning to overcome the risk connected with inconsistent terminology. Given our structured methodology, this choice led to a large amount of work in terms of paper collection and analysis.

We defined our methodology based on generic LRs of PSM (e.g., Ellram and Carr 1994, Zheng et al. 2007 and Wynstra 2010) and SCM (e.g., Carter and Ellram 2003, Burgess et al. 2006 and Giunipero et al. 2008), as well as some LRs in different fields, such as Social Sciences and Medicine (e.g., Stuck et al. 1999 and Tseng et al. 2008).

Therefore, our methodology can be articulated in four systematic steps: (1) source identification, (2) source selection, (3) source evaluation, and (4) data analysis (e.g., Hart 1998; Bryman 2012). Before describing these steps in detail, it is worth mentioning that all the researchers involved in this project are experienced academics in the field, meeting the fundamental requirement of having previous knowledge in the domain of interest (Mayring 2000). Furthermore, because narrative LRs have been heavily criticised in the field of management for their subjectivity (Fink 2009; Hart 1998), we decided to adopt the principle of systematic reviews used in the medical sciences, which are rigorous, replicable, scientific and transparent (Cook et al. 1997).

5.1 Source Identification

We decided to focus our research on academic papers published in peer-reviewed journals in the English language listed on the SCOPUS database. Journals are generally considered as the broadest and most common media for the research community and are generally used to disseminate new findings from validated research results (through the review process). Conference papers, master's theses, doctoral dissertations, textbooks, news reports, and unpublished working papers, which are referred to as "grey literature" (Bryman 2012), were excluded. This choice is in line with the aim of the study: we want to investigate rigorous academic research, coming only from validated sources. This approach is common in similar studies (e.g., Giunipero et al. 2008). As far as the time span is concerned, we covered the period of 2002-2010, which is broad enough to provide a longitudinal perspective.

5.2 Source Selection

Within the SCOPUS database, we selected journals that either have an explicit focus on PSM or are general management journals (including PSM) with a high scientific impact. From these journals, we extracted all papers related to PSM. The content and quality criteria adopted for the selection are now described.

To identify the topics falling within the PSM domain and to select our sources accordingly, we used the most common PSM textbooks (van Weele 2009, Monczka et al. 2010, Lysons and Farrington 2006). These textbooks allowed us to formulate a classification framework, which was

discussed and revised by the research team through an iterative process (the framework is reported in the appendix). Ultimately, we identified the "why" (i.e., strategic competitive priorities in relation to PSM), "what" (i.e., PSM processes), and "how" (i.e., PSM practices and organisation) as main classification guidelines.

Leveraging the classification framework, i.e., the content that could be considered pertinent to PSM, we identified three groups of journals. The first group includes journals with an explicit focus on PSM (e.g., Supply Chain Management: an International Journal, the Journal of Supply Chain Management and the Journal of Purchasing and Supply Management). The second group includes journals from the Marketing and Operations Management fields, which frequently publish papers related to PSM. Indeed, Operations Management journals (such as the Journal of Operations Management and the International Journal of Operations and Production Management) often offer PSM-related papers because PSM developed mostly within the larger OM community and is often seen as a part of this larger field. In addition, some Marketing journals, particularly those focusing on business-to-business relationships (e.g., Industrial Marketing Management), often address PSM topics, such as customer-supplier relationships. Finally, the third group consists of general management and economics journals that published at least 3 papers in the field of PSM in 2010.

To select journals with a high scientific impact, we considered the Source Normalised Impact per Paper (SNIP) provided by the SCOPUS database. In our analysis, we included only journals with a SNIP above the mean (Moed 2010). SNIP is defined as the ratio of the journal's citation count per paper and the citation potential in its subject field. It allows a direct comparison of sources in different subject fields. Indeed, citation potential is shown to vary not only between journal subject categories (i.e., journals in the same field) but also between journals within the same subject category. However, SNIP, in comparison with other indicators, such as the SCImago Journals Rank (SJR), corrects for such differences.

At the end of this journal selection process, we selected 20 international journals (Table 3) to be included in our analysis.

The last step of the source selection process was the identification of papers to be included in our LR. As already discussed, we decided to avoid the use of a keyword-based selection to overcome the risk connected to a lack of consolidated terminology. Therefore, we scanned all papers published in the 20 journals shown in Table 3 considering the title, the abstract, and, in some cases, even the full text to clarify ambiguities. We included and analysed in detail only those papers that covered at least one of the PSM topics included in our classification framework. Overall, we scanned 14,943 papers published in the 20 journals considered over the time span of 2002-2010. Out of those papers, 1,055 articles (7.1%) were included in our dataset as relevant to PSM.

TABLE 3
Journals Included in the Analysis

5.3 Source Evaluation

To classify the papers in our database, we adopted the classification framework mentioned above. We also registered general metadata (e.g., authors, year of publication, journal, volume and issue); the research subject in terms of the sector, type of purchase, company size, geographical scope and unit of analysis; and the conceptual and methodological characteristics (e.g., the research approach, research method and theory used).

To perform this step of the methodology, the classification framework was described in detail in a codebook. Three independent researchers performed the validation of the codebook because this step was crucial for ensuring the reliability of the coding activity. To this end, they independently classified all papers published in 2010 by the Journal of Purchasing and Supply Management. The three classifications were then compared. Lastly, the framework and the codebook were revised until

the reliability was considered sufficient. We obtained a final reliability of 96.3%, calculated as the number of fields coded in the same way by all three researchers over the total number of fields in the codebook. The researchers then coded all the articles in the database.

5.4 Data Analysis

We built a Microsoft Access database according to the research framework and recorded information regarding all 1,055 papers. This step is the starting point in conducting the analyses presented in the next section. We conducted several types of analyses, including calculations of the absolute cumulative figures across the time span, longitudinal analyses of the trends over the time span and cross-sectional analyses among different topics.

6. Findings and Discussion

The systematic literature review described in the previous section led us to answer the three main research questions discussed in the introduction of the paper.

RQ1. To what extent does PSM research borrow and/or adapt EGTs, and, in particular, which EGTs are most adopted?

As already noted, PSM research does not present an extensive adoption of EGTs. Only 102 papers (10%) of the full sample really rely on one or more grand theories from management, economics and other social sciences. In total, we registered 143 incidences of EGTs, with some papers referring to multiple EGTs.

This evidence must be compared with the 19% of SCM papers rooted in EGTs reported by Chicksand et al. (2012). In this regard, SCM appears to be more mature and theoretically grounded than PSM alone. However, looking in more detail at the longitudinal trend in the last decade, an interesting pattern emerges. Until the year 2005, the theoretical foundation of the field of PSM was negligible; only 11 papers out of 301 were rooted in EGTs (3.7%). In the years 2006-2010, the percentage of theoretically grounded papers increased to 12.1% (91 papers out of 754). This increase might suggest a breakthrough in the maturity of the field, which is promising for the future. The relative low share of articles rooted in EGTs might partially depend on the journals included in the sample. Some general management journals oriented to business professionals (like Harvard Business Review) or journals largely relying on mathematical modelling (like Management Science) naturally incline to avoid the use of EGTs. Still, the quality of these journals and the potential contribution to the discipline is a good reason to include them in the sample.

Overall, 138 out of the 143 occurrences concern the twelve main theories we explicitly considered, while only five relate to other theories (critical realism theory, multi-attribute utility theory, organizational culture theory, real options theory, social capital theory). By looking at the different theories in more detail, it is evident that the most adopted EGTs are the TCE and the RBV of the firm. We detected 57 occurrences concerning TCE and 27 occurrences concerning RBV. Both TCE and RBV can explain and describe the traditional and relevant make-or-buy dilemma and the consequent customer-supplier relationship (e.g. Ramsay, 2001), which is one of the topics covered most by PSM literature.

RQ2. How are EGTs used to conduct research on PSM? In particular,

a. *To focus on different units of analysis – i.e., the Buyer, the Supplier, the Dyad Buyer-Supplier or the whole Supply Network*
b. *Through different research methodologies – e.g., survey, case studies, simulation etc.*
c. *To investigate different topics – e.g., practices, performance, tools, organisational aspects, etc.*

Within the overall sample, we find different numbers of papers for each unit of analysis (see Table 4). The buyer perspective is the most studied, followed by the supply network and dyadic perspectives. Only a few papers in the last decade focus their attention on the pure supplier perspective (51 overall). This absolute trend is confirmed among the EGT-grounded papers (42, 32, 25, 3). Between 9% and 11% of papers focusing on the first three perspectives are based on EGTs. In contrast, only 6% of supplier-focused papers rely on EGTs, which suggests opportunity for research focused on the supplier perspective and rooted in EGTs (e.g., customer attractiveness - Schiele, 2012).

While TCE is adopted across the different units of analysis, it seems that RBV fits more with the buyer and the supply network perspectives. As a matter of fact, RBV explains how companies leverage their resources and others' resources to create a competitive advantage. For this reason, it is reasonable to focus on the buyer itself and the supply network as a source of resources. In contrast, research studies focusing on the dyad might be more interested in the relationship itself, which might be better investigated through TCE concepts.

Knowledge Based Theory (KBT), the third EGT adopted in the sample, seems more suitable for studying the buyer perspective (7 contributions), which might be due to its focus on how knowledge management practices within a firm impact purchasing and supply processes, and how buyers exploit knowledge to increase their performance, e.g., through their absorptive capacity (e.g., Jansen et al. 2005).

TABLE 4
EGTs and units of analysis

After considering the unit of analysis, it is interesting to explore which research methodologies are adopted and whether some methodologies rely on EGTs more than others (see Table 5). Our sample reveals that survey-based papers are much more rooted in EGTs; 58 out of the 427 papers based on surveys make explicit use of EGTs (14%). This result is consistent with the main purpose and approach characterising survey-based research: surveys are generally used to test hypotheses and constructs built upon a solid theoretical background (see also the discussion about the type of research below – RQ3).

The other widely adopted methodologies (conceptual and case studies) show percentages of EGTs below 10%. Experiment-based papers appear to be less theory grounded than all the others (only 3%). Only literature reviews and collaborative research studies present percentages above 10%, with 17% and 10% EGT adoption, respectively. Since literature reviews are based on previous knowledge and contributions, it is not surprising that they are grounded in grand theories. However, in both cases (literature review and collaborative research), the numbers are not large enough to draw significant conclusions, especially regarding collaborative research studies.

TABLE 5
EGTs and research methodologies

Finally, research studies focus on specific units of analysis through different research methodologies to investigate specific topics (see Table 6). As reported in the classification framework, we have identified four main clusters of topics: strategy, processes, practices, and organisation.

Focusing our attention on the strategy domain and the definition of key competitive priorities, the analysed sample shows that those papers investigating the innovation performance within the field of PSM rely more on EGTs than all the other contributions (14%).

Among the key purchasing and supply processes, contract management proves to be more theory grounded than others because 11 papers out of 63 adopt EGTs (15%). This might be because management and economics disciplines widely cover this subject. TCE-based constructs, for example, well explain contract issues: in fact, 9 of those 11 papers are based on TCE. Contract management is followed by portfolio management (13%, but with a low absolute number of papers), supply network configuration (13%), supplier management (12%), negotiation (12%). Not surprisingly, Game Theory plays an important role in studying negotiation.

These data also show a low number of papers focused on portfolio management and requirements definition. This gap, and the relevance for practitioners of these topics, might create good opportunities for future research.

Among papers studying different purchasing practices, those focused on outsourcing, risk management, centralisation and cooperative purchasing appear more theoretically grounded, though the last two show a lower absolute number of papers. As previously discussed, the outsourcing (make-or-buy) decision is a key element of PSM and is well explained by both TCE and RBV assumptions. TCE is also widely adopted by papers focused on risk management.

On the contrary, those papers analysing ePurchasing, lean and efficient practices do not make explicit use of EGTs. This is most likely due to their focus on pure operational practices and tools and a limited proximity to higher-level management and economics disciplines. However, this evidence also suggests a possible future opportunity for EGT-based papers focused on these practices.

Finally, approximately 11% (in line with the 10% of EGT-based papers overall) of papers focused on organisational aspects rely on EGTs, without relevant differences across the different dimensions considered.

TABLE 6
EGTs and PSM topics

RQ3. To what extent are EGTs used to support different types of research – i.e., exploratory, theory testing, theory building research?

Different types of research should make different uses of EGTs (see Table 7). Our sample confirms this assumption and reveals that theory testing papers are more grounded in EGTs than other types of research. In fact, 20% of the theory testing papers are based on EGTs (48 out of 245). This result is not surprising because theory testing papers should test specific hypotheses based on a previous theory. However, that percentage might still be considered quite low, and there might be an increased effort in the future to root hypotheses on previous theories to further develop the field of PSM.

By contrast, exploratory and theory building papers are generally less rooted on EGTs. Respectively, 9% and 6% of such papers make use of these theories. The data also show that TCE is widely adopted within exploratory research studies.

TABLE 7
EGTs and types of research

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7. Conclusions

The research aim of this paper is to assess and profile the theoretical foundations of the scientific literature on Purchasing and Supply Management over the last decade. In particular, we investigate the role of External Grand Theories borrowed from more established disciplines of management and economics. We build on previous contributions – namely, those of Chicksand et al. (2012) and Defee et al. (2010) – with three major steps forward. First, we focus on Purchasing and Supply Management alone, within the broader area of Supply Chain Management and Logistics, which form the wider scope of previous reviews. This is relevant because, PSM as a managerial practice is often taught separately from Logistics and SCM and also pertains professional communities which are separate from those of Logistics and SCM. Second, we enlarge the investigated sources considerably to include top journals in adjacent fields, far beyond the few established journals of SCM. Third, we investigate the relation between EGTs and the specific topics and methodologies of PSM papers, as well as the unit of analysis and the intrinsic nature of research conducted.

To pursue this general aim, we formulate three key research questions (see the Introduction) on the extent and modalities of use of EGTs to support research on PSM.

Based on our findings from a dataset of 1,055 papers in 20 top journals, we are able to draw concluding remarks regarding our three original research questions. Regarding RQ1, we can affirm that the field of PSM is not grounded extensively in EGTs. This finding is also confirmed in our comparison with the broader SCM field, which, according to Chicksand et al. (2012), shows greater, though still limited, adoption of EGTs. However, our findings display clear differences between the first and second halves of the past decade, showing a strong increase and suggesting a growing trend of theoretical foundations.

In case a study does not ground on an EGT it does not necessarily mean that it is absolutely atheoretical, but it does mean that it is not referring to a shared and recognized theory. As a matter of fact, theories internal to PSM are still under debate, they do not usually have standard labels, and they are partially untested. Having said that, the research might be based on some internally developed yet not widespread theories, also referred to as middle range theories (Swamidass, 1991). Or, it might be based on variables and conceptual models defined by previous studies that have not yet become a theory. Or again, they might point in the direction of defining new theories, ultimately internal to the field

Therefore, with this study we are not in the position to assess the quality of a research basing on the presence or the absence of an EGT. We believe the quality of the articles is ensured (generally speaking) by the peer-review process typical of the academic journals in our sample. Good articles might discuss new and valuable empirical data or describe emerging phenomena unless any theory is explicitly mentioned.

Yet, as argued in the introduction, PSM maturity as a research field is positively related to the use of theories (Kuhn, 1962; Hunt, 1991). Therefore, considering the corpus of PSM discipline, we believe that its maturity is still relatively lower when compared to other disciplines, but it is definitely increasing, as the use of EGTs increases.

To this regard, we suggest two possible directions for the field, which are not mutually exclusive but rather complementary. On the one hand, there is a need to increase the adoption of EGTs to root research in the consolidated theoretical frameworks of management and economics at large, in order to both strengthen the theoretical foundations and to facilitate the recognition by the broader management research community. On the other hand, there is the possibility and need to develop internal theories – an issue that we do not investigate in this study – in order to become a truly autonomous field, in line with the recommendations of Harland et al. (2006). This is what SCM at large is also doing, as shown by Chicksand et al. (2012). It seems that to succeed in this direction, greater effort in terms of theory formulation and testing is needed. As already highlighted, according to Kuhn (1962), a body of knowledge can qualify as a normal science or scientific discipline only if and when it is rooted in solid and widely acknowledged theories. Theories used to underpin research

in a certain domain can be either borrowed and adapted from adjacent and established disciplines or developed from scratch, which normally brings about a breakthrough or so-called paradigmatic change. Though we have not studied the latter dynamics – the internal development of theories – and therefore lack irrefutable evidence, it seems to us that, all in all, the theoretical foundations of PSM – both external and internal – are still weak and do not suffice to qualify the discipline as mature.

According to our data, within the limited adoption of EGTs, unsurprisingly, the two dominant theories are TCE and RBV. However, all of the twelve theories have been found in at least one case. In addition, a few other EGTs have been found as well. This result provides some useful hints for future research; though it is clear that TCE and RBV represent the "natural" path to EGTs for PSM, there is a much broader spectrum of theories that can be adopted, with interesting potential for innovative contributions.

Moving to our second research question (RQ2), we have found several areas of investigation where the theoretical background is definitely poor, if not absent, which possibly offer opportunities for future research and support the development of the field. The supplier perspective, for example, is heavily under-investigated in general, though recent studies show great interest and potential for providing useful contributions (e.g., Schiele 2012), particularly if tackled with an appropriate theoretical background.

In terms of research methodology, survey-based studies already show a relatively high level of adoption of EGTs (but still low in absolute terms), whereas case-based studies are definitely under-developed as far as theoretical foundations are concerned. It seems that many scholars writing in the field avoid the use of EGTs. Therefore, continuing adopting qualitative methodologies is advisable, but there is clearly a chance to strengthen the use of EGTs in combination with such approaches to increase the theoretical maturity of PSM research.

In addition, our analysis of the researched topics shows a scattered situation, with some topics more based on EGTs than others and some EGTs better suited to tackle specific subjects/topics (e.g., Game theory for negotiation, Agency theory for customer-supplier or cross-functional relationships, and Institutional theory for sustainability). These results provide hints for future development, guiding the choice of the appropriate EGT for some topics, and also show areas clearly in need of additional work, where no EGT has yet been adopted.

Finally, considering RQ3, we highlight that the theory testing papers show relatively good use of EGTs, whereas the theory building papers are definitely poor from this perspective. This finding could be interpreted as an attempt to develop brand new theories, specific to the field; however, much more could be done in the direction of adapting established theories from other fields (i.e., EGTs) to provide stronger foundations.

In summary, we conclude that there is still a great amount of work to be done for the field of PSM to achieve theoretical maturity. We have tried to provide suggestions and clear indications in this direction, with the aim of supporting researchers in their efforts to develop this quickly growing field.

8. Limitations and future developments

We recognise a first significant limitation of our research in the fact that we focus on EGTs while bypassing the issue of internal theoretical development, which is also needed for a complete assessment of a scientific discipline. This gap can serve as a stimulus for further enquiry about internal middle range theories (or even grand theories), in order to understand whether or not they share the characteristics of established theories (e.g. Swamidass, 1991; Wacker, 1998).

Considering our analysis about the use of EGTs, a second relevant limitation is related to the aim of the study. We mostly perform a quantitative assessment of the use of EGTs, therefore we avoid to enter the debate about the quality of the studies in our sample. We rather discuss the maturity of PSM discipline in theory terms. Yet, we do believe some qualitative insights might be drawn by looking at how EGTs are used, according to our research questions. Still, future research might

discuss the quality of PSM studies depending on the presence of theories, through both qualitative (e.g. paper content analysis) and quantitative analysis (e.g. bibliometric analysis).

Thirdly, we do not investigate to what extent EGTs are adapted in order to study PSM-related phenomena. For example, RBV is often applied to study buyer-supplier relationships as well as TCE is applied to model outsourcing configurations. Such theories require to be adapted – if not refined and/or modified – in order to fit the target research domain. Future research might investigate how frequently EGTs are adapted to study PSM-related phenomena and how PSM contributed to the advancement of such theories.

Fourthly, considering the research method adopted, our journal sampling criteria has looked at the quality of publications (measured through the SNIP indicator) and the relevance for PSM (we included the journals that published at least 3 papers about PSM topics in 2010). As a consequence, we are able to report results not only regarding classic PSM journals, but also regarding top journals that from time to time publish relevant PSM studies. The latter case allows to pick seminal articles that might lead new streams of literature to emerge and consequently favours the birth of new streams on classic PSM journals. Of course, the choice of thresholds in terms of quality and relevance of journals is partially subjective and is also connected to the methodology adopted (full scan of all articles published into a journal as opposed to the common keywords-based search). Future studies might experiment different sampling criteria, which are consistent with the type of literature review conducted.

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TABLE 1
Generic literature reviews on PSM and SCM

Authors	Year	Domain	# articles	# journals	Time range (years)	Keyword based	Description
Ellram & Carr	1994	PSM	20	n.a.	30	n.a.	Review of the purchasing strategy literature in the past 30 years. More quantitative studies are required to determine the role of the purchasing function in corporate strategy.
Carter & Ellram	2003	SCM	764	1 (JSCM)	35	No	Full review of JSCM track of publication, including the analysis of research method, subject category, research design, and individual/institution contribution.
Burgess et al.	2006	SCM	100	31	1985-2003 (19)	Yes	Review of randomly selected SCM articles to clarify conceptual and methodological characteristics of the domain.
Harland et al.	2006	PSM	41	n.a.	1980-2005 (26)	Yes	Review of papers dealing with conceptual definitions and theory in supply management. Addresses explicitly the issue of PSM as a scientific disciplines
Zheng et al.	2007	PSM	42	13	9	Yes	Review of PSM publications dealing with future of PSM to identify hot topics (strategy, structure, systems, and tasks)
Giunipero et al.	2008	SCM	405	9	10	Yes	Review focusing on the existing trends and gaps in the SCM literature, covering an analysis of content categories, supply chain level, sample population, industry, and research method.
Defee et al.	2010	SCM	683	5	2004-2009 (6)	No	Makes an inventory of theories in logistics and SCM research. More than half the production results theoretically grounded
Wynstra	2010	PSM	351	1 (JPSM)	15	No	Full review of JPSM track of publication, including the analysis of authorship, content, and impact.
Chicksand et al.	2012	SCM	1,113	3	1994-2009 (16)	No	Assesses theoretical perspectives in purchasing and supply management. Conducts a citation analyses to compare theoretical vs atheoretical papers.
Spina et al.	2013	PSM	1,055	20	2002-2010 (9)	No	Provides a comprehensive view of PSM research in terms of research types, methodologies, unit of analysis, topics and most adopted theories. Performs longitudinal analyses to detect trends.

TABLE 2
Most common External Grand Theories (EGT) in PSM

Theory	Selected references	Key premises	Illustrative implications for PSM
Transaction cost economics (TCE)	e.g. Coase (1937) Arrow (1970) Williamson (1975)	Transaction costs are "the costs that attend completing transactions by one institutional mode rather than another". They are usually divided into three main groups: information costs, negotiation costs, and monitoring costs. Three forms of transaction governance are supposed to affect the level of transactions costs: market, hybrid, and hierarchy. The governance mode minimizing transaction costs is the preferred one. The principal attributes of transactions are asset specificity, uncertainty, and frequency.	Make-or-buy decisions is probably the widest field of application. In this context, transactions costs are considered as determinants of the form of vertical coordination, which ranges across a continuum, from spot market to full vertical integration. In between, a wide number of alternative buyer-supplier collaborative relationships arise. In general, TCE recommends the adoption of purchasing practices that minimize transaction costs, which can be measured by looking at the characteristics of the category exchanged between buyer and supplier.
Resource-based view (RBV)	e.g. Barney (1991)	Resources are strengths or weaknesses of a firm, or tangible and intangible assets tied to a firm. Resources are the source of enduring competitive advantages in case they are valuable, rare, inimitable and non-substitutable.	On the one hand, a firm should not outsource resources that create competitive advantage. On the other hand, an extension of RBV suggests that competitive advantage may emerge partly from resources held beyond the boundary of the firm, therefore buying and alliances may be vehicles for obtaining capabilities. So a firm should pick sources with complementary capabilities. Another key argument is whether purchasing itself provides sustainable competitive advantage.
Knowledge-based theory (KBT)	e.g. Kogut and Zander (1992) Nonaka (1994)	Not far from RBV, it focuses on knowledge as a key resource. The primary role of the firm is to integrate, create, store, and apply knowledge (especially tacit) through different mechanisms and tools depending upon the types of knowledge that need to be integrated.	Knowledge management across buyer-supplier relationships or supply chains are a source of competitive advantage. Knowledge integration also works across functions, leading to consider whether or not purchasing knowledge resources impact on purchasing performance.
Contingency theory (CT)	e.g. Hofer (1975) Sousa and Voss (2008)	There is no best way to manage an organization. Better performance result from adopting the appropriate level of a structural variable that fits the contingency. Research usually proceeds by identifying important contingency variables that distinguish between contexts; grouping different contexts based on these contingency variables; and determining the most effective internal organization designs or responses in each major group.	The results obtained from purchasing practices depend on contingent factors, such as the mix of relevant competitive priorities and the characteristics of the supply market. Purchasing managers will be more successful by building strengths in only specific purchasing practices rather than by attempting to improve across all the dimensions at the same time.
Game theory (GT)	e.g. Von Neumann (1928) Nash (1950) Parkhe (1993)	Models situations of conflict and cooperation between rational decision-makers. After the initial application to zero-sum games, it has been applied to many type of games and in many research fields. The famous Prisoner's dilemma suggests that the incentive to cheat in cooperative ventures occurs because each partner finds it advantageous to maximize his own gains at the expense of the venture.	GT can be used to model competitive or cooperative situations arising in the supply chain where multiple actors with conflicting objectives are present.
Resource dependency theory (RDT)	e.g. Emerson (1962) Pfeffer and Sanalcik (1978)	Any corporation is an open system, dependent on contingencies in the external environment, but environmental constraints are removable if an organisation is able to sufficiently arrange the external social support and resources respectively. Within corporations, power and dependence are aligned to the possession, the use and the access of valuable and necessary resources. Three critical factors exist that affect the degree of dependence: the importance of the resource, the extent to which the interest group has discretion over the resource, and the extent to which there are limited alternatives.	Scholars use RDT in order to predict organisations' response in terms of purchasing and supply chain practices to environmental uncertainties. Examples are the adoption of just-in-time purchasing, vertical coordination, or strategic supply management. In general, a firm should enhance the dependency of suppliers and alliance partners by becoming less dependent on suppliers when the resource is important and there are few sources , and viceversa more dependent on suppliers when the resource is unimportant and there are many sources.
Social exchange theory (SET)	e.g. Blau (1964) Emerson (1976) Morgan & Hunt (1994)	Originally applied to studies of marital satisfaction and family life quality, refers to activities directed toward establishing, developing and maintaining successful relations. Relationships providing more rewards than costs will yield enduring mutual trust and attraction. The theory further asserts that the actions of individuals are motivated by the reward (not necessarily monetary) that these actions are expected to bring from others.	SET can be used to study buyer-supplier or supply chain relations of dependence based on power, organizational justice, exchange rules such as reciprocity, and psychological contracts. Interpersonal factors entailing psychological rewards, such as respect and trust, might dominate over exchanges of money and goods, even in the context of business-to-business relations.

Agency theory (AT)	e.g. Jensen & Meckling (1976) Arrow (1985) Bergen et al. (1992) Eisenhardt (1989)	Focuses on mutual contractual arrangements between two or more entities, internal or external to the firm. The delegation of authority within a hierarchical relationship is necessary to complete a task and the "agent" works on the "principal's" behalf. Common agency problems arise as a consequence of information asymmetry and goal incongruence between the principal and the agent. Monitoring and incentives are typical measures to reduce the agency problem.	When one buying firm delegates responsibility to one or more suppliers, the buyer need to monitor supplier and provide proper incentives. Inside the firm, the purchasing department should align with the internal customer.
Institutional theory (IT)	e.g. Di Maggio and Powell (1983) Kauppi (2013)	Internal and external "institutional" pressures force firms to behave in certain ways and not behave in others as organizational isomorphism increases organizational legitimacy. Typical mechanisms for isomorphism are mimetic, normative, and coercive.	Institutional pressures do influence firms in adopting certain practices (e.g. electronic tools, sustainable purchasing) but do not always lead to successful outcomes. The role of uncertainty and the relationship between different pressures should be considered. Firms operates, on the one hand, to conform to pressures but, on the other hand, they can try to shape them.
Network theory (NT)	e.g. Granovetter (1973) Gulati, (1998) Uzzi and Lancaster (2003)	Models interactions or social relations through nodes and ties, where nodes are the individual entities within the networks, while ties are the relationships between entities. Actors are not independent but rather influence each other through mechanisms such as transmission and bonding. Therefore a network can be used to analyze the social capital of individual entities but also the passage of social capital among entities. As a result, the various aspects of dyadic social capital might generalize to the network such that social capital becomes a property of the collective. Furthermore, the quality of the dyadic relations between actors (i.e., their social capital or embeddedness) can affect the performance and behavior of both the individual actors and the dyads.	The connectivity of a focal firm in a supply network may confer or, conversely, hinder access to important resources. So, for instance, a firm must choose suppliers that are central to the network.
Information processing theory (IPT)	e.g. Thompson (1967) Galbraith (1973) Tushman and Nadler (1978)	Information processing refers to the gathering, interpreting, and synthesis of information in the context of organizational decision making. Organizations process information to reduce uncertainty deriving from the environment. The structure of an organization influence its information processing capacity and analyzing mechanisms.	The purchasing department should structure according to the information processing needs characterizing the environment. In particular, the organizational structure and the information processing tools adopted must fit the complexity and uncertainty of a given category or supply market.
Dynamic capabilities (DC)	e.g. Mahoney and Pandian (1992) Teece et al. (1997) Eisenhardt and Martin (2000) Helfat et al. (2007)	Resource possession is a necessary but not sufficient condition for competitive advantage. Dynamic capabilities are a firm's capacity to integrate, build and reconfigure internal and external resources using organizational processes to respond to changes in the competitive environment and to design new value creating strategies that are supposed to achieve high levels of competitive advantage.	The management of supply chain relationships (referring to concepts like integration, coordination, or communication and to the use of tools like e-commerce) can be considered a dynamic capability itself. Both capabilities on the supplier and the buyer side can be studied as a source of competitive advantage.

TABLE 3
Journals Included in the Analysis

N	Identified Journals	SNIP 2010	Papers on PSM in 2010	Total papers on PSM 2002-2010	Total papers scanned 2002-2010
	PSM related journals				
1	Journal of Supply Chain Management	2.640	8	81	165
2	Supply Chain Management: an Int. Journal	2.621	20	105	393
3	Journal of Purchasing and Supply Management	1.637	25	142	215
	Marketing and Operations Management journals				
4	Journal of Operations Management	6.556	15	59	407
5	Int. Journal of Production Economics	2.927	32	145	1986
6	Journal of Marketing Research	3.921	3	8	487
7	Int. J. of Operations and Production Management	2.756	12	67	544
8	Industrial Marketing Management	2.666	23	123	799
9	Int. Journal of Production Research	1.801	30	97	2497
10	Production Planning and Control	0.911	8	27	566
	General Management and Economics journals				
11	Strategic Management Journal	5.780	3	19	579
12	Organization Science	4.307	6	8	480
13	Research Policy	3.921	4	15	952
14	Journal of Management Studies	3.856	7	16	565
15	Technovation	3.624	5	15	799
16	Management Science	3.745	7	55	1210
17	Journal of Product Innovation Management	3.406	7	16	337
18	Decision Science	2.900	8	25	230
19	European Economic Review	2.258	6	14	674
20	Harvard Business Review	1.951	5	17	1058
	Total		**234**	**1,055**	**14,943**

TABLE 4
EGTs and units of analysis

Unit of analysis	No EGT	EGT	**Total**	TCE	RBV	KBT	CT	GT	RDT	SET	AT	IT	NT	IPT	DC	Other EGT	**Total**
Buyer	379	42	**421**	25	13	7	4	4	2		3	1		1	1	3	**64**
Dyad	208	25	**233**	14	4	2	3	3	2	4		1				1	**34**
Supplier	51	3	**54**	1							1					1	**3**
Supply network	315	32	**347**	17	10	3	3	1	1	1		2	3	1			**42**
Total	**953**	**102**	**1055**	**57**	**27**	**12**	**10**	**8**	**5**	**5**	**4**	**4**	**3**	**2**	**1**	**5**	**143**

TABLE 5
EGTs and research methodologies*

Methodology	No EGT	EGT	**Total**	TCE	RBV	KBT	CT	GT	RDT	SET	AT	IT	NT	IPT	DC	Other EGT	**Total**
Survey	369	58	**427**	33	13	8	6	1	3	4	1	2	2	1		1	**75**
Conceptual	301	17	**318**	9	4	1	1	3	1					1		2	**22**
Case study	228	21	**249**	12	8	1	3	2			1	1	1				**29**
Experiment	31	1	**32**					1		1							**2**
Simulation	28	2	**30**					1							1	1	**3**
Literature review	20	4	**24**	4	2	2			1		2	1				1	**13**
Collaborative research	9	1	**10**	1													**1**
Total	**986**	**104**	**1090**	**59**	**27**	**12**	**10**	**8**	**5**	**5**	**4**	**4**	**3**	**2**	**1**	**5**	**145**

*The total does not necessarily sum up at 1,055 since few papers may belong to more than one category at the same time.

TABLE 6
EGTs and PSM topics*

Strategy	No EGT	EGT	**Total**	TCE	RBV	KBT	CT	GT	RDT	SET	AT	IT	NT	IPT	DC	Other EGT	**Total**
Cost	245	24	**269**	17	6	5		4	1	1	1	1					**36**
Time	70	4	**74**		2	1		1	1								**5**
Quality	103	7	**110**	1	3	2		1	1			1	1		1		**11**
Flexibility	51	4	**55**	1	2	2			1								**6**
Innovation	97	16	**113**	9	4	3	2						2				**20**
Sustainability	59		**59**														
Total	**625**	**55**	**680**	**28**	**17**	**13**	**2**	**6**	**4**	**1**	**1**	**2**	**3**		**1**		**78**
Processes	No EGT	EGT	**Total**	TCE	RBV	KBT	CT	GT	RDT	SET	AT	IT	NT	IPT	DC	Other EGT	**Total**
Portfolio management	13	2	**15**	2	1												**3**
Supply network configuration	58	9	**67**	6	2	2		1	1		1	1	1			1	**16**
Reverse marketing	133	4	**137**	2	1	1							1			1	**6**
Supplier management	30	4	**34**	2			1		1				1				**5**
Vendor rating	35	2	**37**	2					1								**3**
Requirements definition	8		**8**														
Negotiation	43	6	**49**	3				3		1							**7**
Contract management	63	11	**74**	9	1					2							**12**
Execution	27		**27**														
Total	**410**	**38**	**448**	**26**	**5**	**3**	**1**	**4**	**3**	**3**	**1**	**1**	**3**			**2**	**52**
Practices	No EGT	EGT	**Total**	TCE	RBV	KBT	CT	GT	RDT	SET	AT	IT	NT	IPT	DC	Other EGT	**Total**
Outsourcing	142	29	**171**	20	13	7	2	2			1	1				1	**47**
ePurchasing	123	4	**127**	1	1			2							1		**5**
Local/Global	72	10	**82**	7	4		1	1	1			1					**15**
Risk management	67	13	**80**	11	2	2	1				2						**18**
Efficiency	69	1	**70**	1													**1**
Supplier involvement	55	8	**63**	2	2	1	2			1		1					**9**
Lean procurement	24		**24**														
Centralization	7	2	**9**		1		1										**2**
Cooperative purchasing	4	1	**5**	1				1									**2**
Supply base reduction	5		**5**														
Total	**568**	**68**	**636**	**43**	**23**	**10**	**7**	**6**	**1**	**1**	**3**	**3**			**1**	**1**	**99**
Organisation	No EGT	EGT	**Total**	TCE	RBV	KBT	CT	GT	RDT	SET	AT	IT	NT	IPT	DC	Other EGT	**Total**
Micro structure	65	9	**74**	2	1		3	1		2						1	**10**
Macro structure	58	9	**67**	2	3	1	4										**10**
Purchasing dept. performance	20	3	**23**		1		1									1	**3**
Relationship management	332	40	**372**	25	7	3	1	3	4	4	1	1		2		4	**55**
Total	**475**	**61**	**536**	**29**	**12**	**4**	**9**	**4**	**4**	**6**	**1**	**1**		**2**		**6**	**78**

*The total does not necessarily sum up at 1,055 since few papers may belong to more than one category at the same time.

TABLE 7
EGTs and types of research

Type of research	No EGT	EGT	**Total**	TCE	RBV	KBT	CT	GT	RDT	SET	AT	IT	NT	IPT	DC	Other EGT	**Total**
Exploratory	368	34	**402**	26	8	7	4		2		3	2		1		1	**54**
Theory building	340	20	**360**	9	7	1	1	5					1			3	**27**
Theory testing	245	48	**293**	22	12	4	5	3	3	5	1	2	2	1	1	1	**62**
Total	**953**	**102**	**1055**	**57**	**27**	**12**	**10**	**8**	**5**	**5**	**4**	**4**	**3**	**2**	**1**	**5**	**143**

Appendix – Articles classification framework

Variable	Values
Methodology	Literature review, Case study, Survey, Simulation, Experiment, Delphi, Collaborative research, Conceptual
Type	Exploratory, Theory building, Theory testing
Sector	Manufacturing, Services, Public administration, Health care
Type of purchase	Goods, Services
	Direct, Indirect, Capex
Company size	SME, Large
Geographical scope	Continent, Country
Unit of analysis	Buyer, Supplier, Buyer-supplier, Supply network
Why (competitive priorities)	Cost, Time, Quality, Flexibility, Innovation, Sustainability
What (processes)	Portfolio management (purchase classification, spending analysis), Network configuration (sourcing strategy), Reverse marketing (market intelligence), Supplier management, Vendor rating, Specs definition, Negotiation, Contracting, Execution (order, expediting, invoicing, payment)
How (practices)	Centralization, Cooperative purchasing, Outsourcing/Make or buy, Local/Global sourcing, Lean procurement, Efficiency (pricing methods, batch sizing, learning curves, requirements), e-Purchasing (e-Sourcing, e-Procurement, e-Auctions), Supply base reduction, Supplier collaboration (supplier development, early supplier involvement, suppliers association), Risk management
How (organization)	Macro-structure (organizational units), Micro-structure (job definition, competences), Performance of the purchasing department
How (relation)	Partnership, Power, Trust