Strategy alignment in purchasing and supply management: a systematic literature review and research framework on the performance impact

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Abstract: This paper studies the performance impact of multi-dimensional strategy alignment in purchasing and supply management (PSM) in a literature review (LR)-based analysis. In a first step, it evaluates the scientific state-of-the-art in a systematic LR by classifying, analysing and synthesising 29 empirical studies with reference to a conceptual framework and based on the methodologies used in the sampled papers. The results of the review indicate that coordinating purchasing strategies with: 1) goals and strategies at the corporate level; 2) other functional strategies; 3) the supplier base (and the corresponding contextual requirements) has a significant positive effect on performance. Building on the conceptual framework, we highlight managerial insights and develop a research agenda by identifying research gaps and pointing out methodological shortcomings of the sampled papers in a second step. Finally, we operationalise an integrated strategy alignment index and develop hypotheses that support future empirical research on holistic strategy alignment in PSM.

Keywords: procurement; sourcing; purchasing; supply management; strategy alignment; performance; literature review; content analysis; systematic overview; empirical research.


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1 Introduction

Notwithstanding the ongoing debates about the role of purchasing and supply management (PSM) in the company, researchers and practitioners nowadays broadly agree that systematically derived PSM strategies significantly influence the buying firm’s performance and competitiveness (cf., for example, the reviews of Zimmermann and Foerstl, 2014; Hochrein, 2014; Hesping and Schiele, 2015). The success of PSM strategies, however, strongly depends on how well the strategic action programmes have been aligned with goals and strategies at the corporate level, other functional strategies and the supplier base, and how well the requirements of the company’s environment (contextual factors) have been considered in formulating the PSM strategies. A multidimensional alignment of these three strategy dimensions is one of the central building blocks of a high-performing PSM department.

A closer look at the literature shows that a comprehensive synthesis of research on the strategy-alignment-performance link in purchasing is still missing. This research gap has, in part, already been addressed in PSM-specific tertiary studies that were published recently, such as in Fabbe-Costes and Jahre (2008), Hochrein and Glock (2012), Seuring and Gold (2012), Kache and Seuring (2014), Hochrein (2014) and Hochrein et al. (2015). Hochrein et al. (2015), for example, conducted a comprehensive tertiary study with 121 literature reviews (LRs) and showed in their thematic discussion of secondary research that strategy alignment and the achievement of strategic fit is quite under-researched at the secondary level and that the conceptualisation of performance outcomes highly varies within primary studies in general. Moreover, the authors noted that research on the practices-performance link should be analysed in detail considering the impact of contextual factors. The authors also suggested that LRs may be used as a starting point
for deriving managerial insights. Finally, they called for further secondary research on strategy alignment that could help to improve the comparability of future primary studies. Fabbe-Costes and Jahre (2008) analysed the relationship between supply chain integration (SCI) and performance and argued that a further investigation of supply chain performance measures as well as the concept of SCI itself may help to better understand how integration affects performance.

Also in light of the increasing attention LRs on the strategy-alignment-performance link received in other disciplines (such as information technology or supply chain management; see, for example, Fabbe-Costes and Jahre, 2008; van der Vaart and van Donk, 2008; Aversano et al., 2012), a detailed analysis of the influence of strategy alignment on PSM performance seems to be promising. The aim of this paper, therefore, is to analyse the state-of-the-art of research on strategy alignment in PSM with a special focus on the performance impact of strategy alignment. The paper aims to answer the following research question:

What are the most important insights that can be gained from empirical research on the performance impact of strategy alignment in purchasing and supply management, and which topics should be addressed in future research?

We further define the following research aims to guide our analysis in the following:

- **Research aim 1**: Identify and classify empirical studies on strategy alignment in PSM, analyse and synthesise the relationships and performance impacts studied in earlier research and critically assess the results obtained in the sampled works.
- **Research aim 2**: Develop a conceptual framework that consolidates evidence on the performance impact of strategy alignment in PSM and that helps to structure recommendations for practitioners and scientists.
- **Research aim 3**: Identify research gaps, both with respect to content and methodology, based on the conceptual framework and selected reference texts.
- **Research aim 4**: Operationalise an integrated strategy alignment index and develop hypotheses for future empirical research on holistic strategy alignment in PSM.

The primary objective of Research aim 4 is to propose an index that can easily be used to measure strategy alignment, which enables practitioners to easily assess the extent of strategy alignment in their company, and which enables researchers to formalise this concept in future empirical studies. The hypotheses developed according to Research aim 4 will support researchers in identifying promising research questions for future investigations.

The remainder of this paper is organised as follows: Section 2 first introduces the review methodology used in this paper and then systematically searches the literature for empirical works on strategy alignment in PSM. Section 3 first presents a descriptive analysis of the sampled papers and develops evaluation criteria for the further analysis. Section 4 then analyses the constructs and mechanisms used for aligning and operationalising strategies and goals in PSM at different levels and by involving different actors (i.e., the independent variables). Section 5 analyses constructs used in the sampled works for operationalising performance outcomes (i.e., the dependent variables). Section 6 then combines the results obtained in Sections 4 and 5 to develop a
conceptual framework of strategy alignment in PSM, systematically evaluates the causal relationships studied in earlier research, and critically evaluates the (partially conflicting) results obtained in the sampled papers. Efforts made to standardise terminology of alignment dimensions and performance outcomes constructs in the conceptual framework also enable us to derive recommendations for practitioners. Throughout Sections 3 to 6, we also derive propositions for future research based on methodological and content-related research gaps identified during our study of the literature. Section 7 then develops and operationalises an integrated PSM strategy alignment index (PSMAI) that helps to measure and improve holistic strategy alignment in PSM. The hypotheses developed in Section 7 could represent a starting point for future research on the strategy-performance link in PSM. Section 8 discusses the limitations of this work, and Section 9 concludes the paper.

2 LR methodology

To address the research aims formulated in Section 1, we conducted a systematic literature review (SLR) on the performance impact of strategy alignment in PSM. In general, SLRs are an established research methodology that help to synthesise existing knowledge in a systematic and transparent way and that support the identification of research gaps and the formulation of innovative research questions (e.g., Cooper, 2010). The review methodology used was developed with reference to

- the PSM-specific review of reviews of Glock and Hochrein (2011)
- the SCM-specific review of reviews of Hochrein et al. (2015)

To ensure objectivity, transparency and reproducibility in collecting and evaluating the review data, a review protocol containing information on inclusion and exclusion criteria, on keywords used during the literature search, and on the search strategy was prepared (see Table 1).

For the search strategy, both the search options and search strings used in the database searches were documented. After having specified the methodological references of this SLR, the following inclusion and exclusion criteria for paper selection were defined:

- **Content:** PSM was defined as the process of planning, implementing, evaluating, and controlling strategic and operative purchasing decisions for directing all activities of the PSM function towards opportunities consistent with the firm’s capabilities to achieve its long-term goals and plans (see Carr and Smeltzer, 1997, 2000; Carr and Pearson, 1999, 2002; Hochrein and Glock, 2012). However, only papers with a focus on the influence of strategy alignment in PSM (actively managed practices as independent or enabling/mediating/moderating variables) on the buying firm’s performance (performance outcomes as dependent variables) were included in the sample. Studies with an exclusive focus on supplier performance (SP) were excluded from the analysis.
Methodology: Only papers that reported the results of a large-scale empirical study were included in the sample. Case studies, conceptual works etc. were excluded from the analysis.

Time frame/language: Only papers written in English and that had been published in the initial time span from 1998 to 2013 were considered in the analysis. In the next step that succeeded the database search, this filter was dropped and relevant papers were included in the study without a constraint on their date of publication.

Publication outlet: Papers included in the sample had to be published in a peer-reviewed academic journal.

In the next step, 11 peer-reviewed journals with a special focus on PSM topics and empirical research methodologies were pre-selected (see Table 1; the journal selection methodology was based on Hochrein and Glock (2012) and the journal rankings cited therein). Subsequently, a list of keywords was defined, which was then used for searching the pre-selected journals using the database Business Source Premier (BSP). Keywords were defined in three groups: Group A ensures that the identified papers focus on a PSM-related topic (‘buy*’, ‘procurement’, ‘purchasing’, ‘supply’ and ‘sourcing’), Group B contains performance-related keywords (‘advantage’, ‘benefit’, ‘earning*’, ‘effectiveness’, ‘financial impact’, ‘gain’, ‘improvement’, ‘performance’, ‘profit’, ‘revenue’, ‘return’ and ‘value’) and Group C includes keywords that help to limit search results to empirical studies (‘analysis’, ‘data’, ‘empirical’, ‘statistical’, ‘study’, ‘survey’ and ‘test’). All keywords from Group A were combined with all keywords from Groups B and C to generate the final keyword list. Searching the pre-selected journals using the final keyword list resulted in 1198 hits that were added to our initial sample.

Subsequently, the keywords were used for a free search in BSP where the pre-selected journals were excluded. As the free search led to a prohibitively high number of results (12,292 hits, excluding hits from the pre-selected journals), the search of the pre-selected journals was complemented by a snowball search, in which all references cited in the selected works were checked for relevance, and by an author search, in which the publication lists of all (co-)authors contained in the sample were searched for further relevant works that may have been overlooked during our search of the literature.

In the final step of our literature search, the pre-selected papers were analysed for relevance in light of the inclusion and exclusion criteria defined above. The results of our search strategy are summarised in Table 1.

3 Analysis of the sampled papers

3.1 Descriptive analysis of the sample and development of evaluation criteria

Table 1 shows that our literature search and selection strategy identified 29 relevant papers. These papers appeared in 13 journals, where the following four journals published more than 60% of the identified works on strategy alignment in PSM (number of papers in brackets): JSCM (6), LIOPM (5), JOM (4) and JPSM (3).
Table 1  Results of the literature search and selection strategy

<table>
<thead>
<tr>
<th>Search strategy</th>
<th>Description of the search strategy</th>
<th>Hits</th>
<th>Relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journals</td>
<td>Search pre-selected PSM journals for relevant articles via BSP using specific search strings. Journal (Hits in BSP/relevant): International Journal of Integrated Supply Management (IJISM) (0/1); International Journal of Logistics Management (IJLM) (129/0); International Journal of Logistics – Research and Application (IJL-RA) (78/0); International Journal of Physical Distribution and Logistics Management (IJDPLM) (248/0); Journal of Business Logistics (JBL) (64/1); Journal of Operations Management (JOM) (135/4); Journal of Purchasing and Supply Management (JPSM) (78/3); Journal of Supply Chain Management (JSCM) (109/6); Supply Chain Management: An International Journal (SCMI) (322/0); Supply Chain Management Review (SCMR) (0/0); Transportation Research Part E (TRPE) (35/0)</td>
<td>1198</td>
<td>15</td>
</tr>
<tr>
<td>Author search</td>
<td>Search the publication lists of all (co-)authors contained in the 15 sampled papers</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Snowball search</td>
<td>Search the reference lists of all 18 relevant articles in a forward and backward search via BSP and Google Scholar to identify additional relevant articles.</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>29</td>
</tr>
</tbody>
</table>


As an example, the BSP search string for IJISM is given: (TI((buy* OR ‘procurement’ OR ‘purchasing’ OR ‘sourcing’ OR ‘supply’) AND (‘advantage’ OR ‘benefit’ OR ‘earning’* OR ‘effectiveness’ OR ‘financial impact’ OR ‘gain’ OR ‘improvement’ OR ‘performance’ OR ‘profit’ OR ‘revenue’ OR ‘return’ OR ‘value’) AND (‘data’ OR ‘empirical’ OR ‘statistical’ OR ‘study’ OR ‘survey’ OR ‘test’ OR ‘analysis’)) OR AB((‘buying’ OR ‘procurement’ OR ‘purchasing’ OR ‘sourcing’ OR ‘supply’) AND (‘advantage’ OR ‘benefit’ OR ‘earning’* OR ‘effectiveness’ OR ‘financial impact’ OR ‘gain’ OR ‘improvement’ OR ‘performance’ OR ‘profit’ OR ‘revenue’ OR ‘return’ OR ‘value’) AND (‘data’ OR ‘empirical’ OR ‘statistical’ OR ‘survey’ OR ‘test’ OR ‘analysis’)) OR SU ((‘buying’ OR ‘procurement’ OR ‘purchasing’ OR ‘sourcing’ OR ‘supply’) AND (‘advantage’ OR ‘benefit’ OR ‘earning’* OR ‘effectiveness’ OR ‘financial impact’ OR ‘gain’ OR ‘improvement’ OR ‘performance’ OR ‘profit’ OR ‘revenue’ OR ‘return’ OR ‘value’) AND (‘data’ OR ‘empirical’ OR ‘statistical’ OR ‘study’ OR ‘survey’ OR ‘test’ OR ‘analysis’)) AND IS 14775360.

To avoid structural and methodological biases in evaluating the data of the identified empirical papers, a set of related LRs on the impact of PSM strategies or SCM practices on performance outcomes was analysed in detail (i.e., Delbufalo, 2012; Fabbe-Costes and Jahre, 2007, 2008; Kannan and Tan, 2005; Leuschner et al., 2013, 2014; Mackelprang and Nair, 2010; Nakano and Akikawa, 2014; Shi and Yu, 2013; Sucky and Durst, 2013; Terpend et al., 2008; Zhang et al., 2011; Zimmermann and Foerstl, 2014; Hochrein, 2014; Hesping and Schiele, 2015). Building on these LRs, the following insights could be obtained for the development of evaluation criteria for the sampled papers:
Empirical survey-based categories: Our analysis of the literature indicated that the methodology-related categories country coverage, survey instrument, sample firms’ industries, time frame, sample firms’ size, sampling frame and respondents’ profile, sample size and effective response rates, unit of analysis, used theories, statistical techniques of analysis, data sources, mode of assessment and relativisation’ of subjective data had most often been used and should therefore also be employed in the present analysis (see, e.g., Soni and Kodali, 2012, 2013; Su and Gargeya, 2012a).

Content categories: Our analysis of the literature indicated that content-related evaluation criteria should be derived in a process that combines inductive and deductive elements. First, content categories should be developed deductively based on a pre-sample, which should then be verified inductively using the papers identified during the literature search. Our three-step approach of analytical category building was based on Leshem and Trafford (2007), Seuring and Müller (2008), Mayring (2010) and Hochrein et al. (2015). First, we deductively developed a list of content categories based on a pre-sample of selected papers (deductive category building) and adjusted the analytic categories during the coding process (inductive category refinement). To reduce subjectivism and randomisation in the case of only a single evaluator, iterative coding cycles were performed independently by all researchers. Subsequently, we compared the deductively and the inductively extracted constructs and found a high degree of consensus, which underlines the usefulness and applicability of the refined categories. To support the alignment of the content categories, the synthesis of key dimensions and the discussion of conflicting findings, we further developed a conceptual framework which leads to new insights in the field per se (see also Hochrein et al., 2015).

3.2 Analysing the methodologies used in the sampled papers

The papers contained in our sample were analysed in light of the survey-based evaluation criteria derived in Section 3.1 (a comparison of the methodological variables can be found in Appendix A using the link provided at the end of this paper). We summarise the results obtained in the following and give some recommendations for future research.

Country coverage

Analysing the geographical focus of the studies contained in our sample shows that most studies relied on single-country samples (25), and that only a few studies adopted a multi-national perspective (4). As a result, none of the studies created country-specific sub-samples, for example to analyse the moderating effect of country attributes on the performance of the company. Another interesting result is that 19 papers analysed samples that consisted exclusively of US companies, such that the US appears to be overrepresented in our sample. An immediate conclusion is that future studies should direct their attention to emergent countries such as China and India, as the economies of these countries are gaining more and more in importance. It is likely that country-specific attributes, such as culture, also influence the strength of the strategy-alignment-performance link (cf. Shi and Yu, 2013; Yang et al., 2013), which is why more research on country-specific factors is needed in this area.
Survey instrument

The survey instrument that has most frequently been used in the sampled papers are electronic mail surveys (23 papers), followed by web-based surveys (4 papers) and interviews/mail surveys (2 papers). The setup of the surveys in many cases followed the guidelines advocated by Dillman et al. (2009), among others. Building on these results, future research should more carefully evaluate the advantages and disadvantages of different survey instruments, as it has been shown that the survey instrument used has a major influence on the success of the survey (cf. Boyer et al., 2002; Braunsberger et al., 2007; Dillman et al., 2009). Especially web-based surveys, which were only used by a small number of papers in our sample, could be helpful in collecting large-scale data due to the low costs that are usually associated with this instrument and the fact that they can easily be implemented (cf. Bernardes, 2010; Bernardes and Zsidisin, 2008; Lawson et al., 2009; Schoenherr and Mabert, 2011).

Sample firms’ industries

The papers contained in our sample mainly relied on cross-industry settings (27) when compared with single-industry settings (2) (cf., for similar results, Su, 2013; Su and Gargeya, 2012b). One possible reason for this result is that a cross-industry setting makes it easier to collect large samples. In addition, the industry affiliation of a company can be used as a control variable in cross-industry settings (see, e.g., Baier et al., 2008; Carr and Pearson, 1999, 2002; David et al., 2002; González-Benito, 2010). To operationalise the industry affiliation of the companies contained in their sample, 14 studies used the standard industry classification, while the remaining studies used own classification schemes, or did not consider the industry affiliation at all. A closer analysis of the industry affiliations covered in the sampled papers shows that a broad spectrum of industrial sectors has been analysed; a strong focus on manufacturing firms (22) was observed, however. In light of the above results, future research should direct more attention to the service sector, which was found to be underrepresented in our sample. Clearly, insights obtained from the analysis of industrial companies cannot fully be transferred to service companies, which is why an in-depth analysis of the strategy-alignment-performance link in the service sector could lead to interesting new insights.

Time frame

The 29 papers contained in our sample are all cross-sectional studies that are based on a single data collection. None of the sampled papers classifies as a longitudinal study. Similar results have been obtained in the marketing literature (e.g., Rindfleisch et al., 2008) or in research on buyer-supplier relationships (e.g., Terpend et al., 2008). We therefore recommend that future research should put a stronger focus on longitudinal research designs to study how the strategy-alignment-performance link develops over time.

Sample firms’ sizes

Our analysis of the sampled papers shows that definitions of company size varied strongly from paper to paper, and that some of the sampled works did not document precisely how company size was measured. Nevertheless, a tendency to survey medium-sized and large companies could be observed. The studies of Carr and Pearson (2002),
Carr and Smeltzer (1999a, 2000), Chiang et al. (2012) and González-Benito (2010) used company size as a control variable; the work of Carr and Pearson (1999), however, is the only paper contained in our sample that analysed the impact of company size on the strategy-alignment-performance link in detail. To gain further insights into how size affects strategy alignment, future research should use established methodologies to measure company size, preferably by combining multiple measures and document company size adequately. In addition, more attention should be paid to the influence of company size on the strength of the strategy-alignment-performance link.

**Sampling frame and respondents’ profile**

In most of the studies surveyed in this paper, simple random or stratified random sampling was used. Interestingly, 17 studies based their sampling frame on the member database of the Institute of Supply Management (US). With the exception of Pagell and Krause (2002) and Carr and Smeltzer (1999b), who also interviewed managers from both purchasing and production departments, all other studies contained in our sample relied on a single (key) informant analysis by asking managers on high hierarchy levels in the company to respond to their questionnaires. Future research should direct more attention towards multi-informant approaches, which would both help to validate responses and to gain insights into the perspectives of different hierarchical levels in the company. In addition, we recommend using alternative sampling frames as well, and not to focus only on the member database of the Institute of Supply Management.

**Sample size and effective response rates**

The sample sizes of the works analysed in our survey vary between 89 (Goh et al., 1999) and 825 (Schoenherr and Mabert, 2011), and in addition response rates between 7.3% (Chiang et al., 2012) and 43.2% (González-Benito, 2010) were observed. Small samples or low response rates do not necessarily lead to poor results; they may, however, limit the set of statistical methods that can be applied to analyse the sample. To improve response rates, future research should consider using established methods directed towards this purpose, which have only infrequently been used in the studies contained in our sample (cf. Shi and Yu, 2013; Melnyk et al., 2012).

**Used theories**

While 19 of the sampled studies explicitly refer to an established theory, 10 papers did not base their analysis on an existing theory. Interestingly, 6 out of 19 works used more than a single theory; we did, however, not find evidence that single-theory studies operationalised their theoretical constructs in greater detail than multi-theory works. We found in addition that researchers used a relatively broad set of established theories, but that the resource-based view/the relational view (9) and the social network theory (3) were most frequently used. In light of these results, we recommend that future research should regularly refer to established scientific theories when developing hypotheses. A more diversified use of scientific theories could also help to generate new insights.

**Statistical techniques of analysis**

The statistical methods used in the sampled papers are summarised in Appendix C of the online supplement (by methods used) and Appendix B of the online supplement (by authors). All 29 studies contained in our sample used descriptive statistical methods.
The most frequently used methods for testing hypotheses were the (confirmatory) factor analysis, the regression analysis and structural equation models. Especially structural equation models, which are able to model complex relationships between independent and dependent variables, seem to be well suited to improve our understanding of the strategy-alignment-performance link. For future research, we recommend making use of the various improvement options for structural equation modelling suggested in the literature (cf., for example, Shah and Goldstein, 2006; Hair et al., 2012), which have not been used on a broad scale in the sampled papers.

The analysis of the methodological variables enabled us to derive several recommendations for future research. In addition, we note that empirical studies can, in principle, be analysed and integrated into meta-analyses (cf. Delbufalo, 2012; Leuschner et al., 2013), which could be a suitable tool to gain further insights into the strategy-alignment-performance link in PSM. In addition, revisiting some of the existing studies and repeating the data collection and evaluation process (with a different sampling frame, if applicable) could help to strengthen our understanding of how strategy alignment impacts performance. Finally, we recommend that researchers should describe the methodological setup of their studies in more detail in the future, as it was sometimes difficult to classify papers due to a lack of information on the methodologies employed.

4 Buying firm’s strategy alignment (independent variable)

This section presents the content categories that will later be used to analyse strategy alignment in PSM. Strategy alignment, in general, can be differentiated into three dimensions and fields of action. The vertical alignment (VA) dimension focuses on the coordination and integration of PSM strategies and goals with (superordinate) corporate, functional and competitive strategies (Baier et al., 2008; Watts et al., 1995). The cross-functional coordination and integration of PSM strategies (for example with the HR, marketing or finance department), in turn, is commonly referred to as horizontal alignment (HA) (cf. Carr and Smeltzer, 1997; Foerstl et al., 2013; Kathuria et al., 2007; Menda and Dilts, 1997; Narasimhan and Das, 2001; Pagell and Krause, 2002). Measures that focus on the joint definition of goals, the coordination of strategies, the harmonisation of planning processes and the intensification of communication between supplier and buyer are finally referred to as supplier-oriented alignment dimension.

Table 2 illustrates how the strategy alignment constructs have been conceptualised in the studies contained in our sample (cf. also Appendix D using the link provided at the end of this paper). As the constructs have been developed quite differently in the sampled works, we categorised the studies relatively broadly in a first step, and then narrowed the categorisation down to identify alignment clusters of related studies. A second aspect that became apparent during our analysis of the literature is that several studies used different terms to refer to constructs that have the same meaning and that were operationalised identically. To contribute to resolving this inconsistency, the terminology used in the sampled papers was standardised.
Table 2  Analysis of the strategy alignment constructs

<table>
<thead>
<tr>
<th>Author(s) (Year)</th>
<th>HA</th>
<th>VA</th>
<th>SA</th>
<th>Comments on Alignment-dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baier et al. (2008)</td>
<td>X</td>
<td>X</td>
<td></td>
<td>(HA integrative)/ VA (Group 2 purchasing competence)</td>
</tr>
<tr>
<td>Bernardes (2010)</td>
<td></td>
<td>X</td>
<td>VA (Group 1 strategic purchasing)</td>
<td></td>
</tr>
<tr>
<td>Bernardes and Zsidisin (2008)</td>
<td>X</td>
<td></td>
<td>VA (Group 1 strategic purchasing)</td>
<td></td>
</tr>
<tr>
<td>Carr and Pearson (1999)</td>
<td>X</td>
<td>X</td>
<td>SA/VA (Group 1 strategic purchasing)</td>
<td></td>
</tr>
<tr>
<td>Carr and Pearson (2002)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>HA/SA integrative/ (VA Group 1 strategic purchasing)</td>
</tr>
<tr>
<td>Carr and Smeltzer (1999b)</td>
<td></td>
<td>X</td>
<td>VA (Group 1 strategic purchasing)</td>
<td></td>
</tr>
<tr>
<td>Chen et al. (2004)</td>
<td></td>
<td>X</td>
<td>VA (Group 1 strategic purchasing)</td>
<td></td>
</tr>
<tr>
<td>Chiang et al. (2012)</td>
<td>X</td>
<td>X</td>
<td>Special construct (HA/VA Group 1 strategic purchasing integrative)</td>
<td></td>
</tr>
<tr>
<td>Cousins et al. (2006)</td>
<td></td>
<td></td>
<td>Special construct (HA integrative)</td>
<td></td>
</tr>
<tr>
<td>Das and Narasimhan (2000)</td>
<td></td>
<td>X</td>
<td>X</td>
<td>(HA integrative)/ VA (Group 2 purchasing competence)</td>
</tr>
<tr>
<td>David et al. (2002)</td>
<td></td>
<td></td>
<td>Special construct (VA)</td>
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<tr>
<td>Foerstl et al. (2013)</td>
<td>X</td>
<td></td>
<td>HA</td>
<td></td>
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<tr>
<td>Goh et al. (1999)</td>
<td></td>
<td></td>
<td>HA</td>
<td></td>
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<tr>
<td>González-Benito (2007)</td>
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<td></td>
<td>VA (Group 2 purchasing competence)</td>
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<tr>
<td>González-Benito (2010)</td>
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<td>X</td>
<td>Special construct (VA)</td>
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<td>Kern et al. (2011)</td>
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<td>X</td>
<td>(HA/SA integrative)/VA (Group 2 purchasing competence)</td>
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<td>Lawson et al. (2009)</td>
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<td>X</td>
<td>HA/SA mediating/VA (Group 2 purchasing competence)</td>
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<td>Narasimhan and Das (2001)</td>
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<td>X</td>
<td></td>
<td>(HA integrative)/VA (Group 1 strategic purchasing)</td>
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<td>Narasimhan et al. (2001)</td>
<td>X</td>
<td>X</td>
<td></td>
<td>(HA/SA integrative)</td>
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<td>Pagell and Krause (2002)</td>
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<td>HA</td>
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<tr>
<td>Paulraj and Chen (2005a)</td>
<td>X</td>
<td></td>
<td>VA (Group 3 strategic supply management)</td>
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<tr>
<td>Paulraj and Chen (2005b)</td>
<td></td>
<td>X</td>
<td>VA (Group 1 strategic purchasing)</td>
<td></td>
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<tr>
<td>Paulraj and Chen (2007)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>(HA/SA integrative)/VA (Group 3 strategic supply management)</td>
</tr>
<tr>
<td>Paulraj et al. (2006)</td>
<td></td>
<td>X</td>
<td>VA (Group 1 strategic purchasing)</td>
<td></td>
</tr>
<tr>
<td>Sánchez-Rodríguez (2009)</td>
<td></td>
<td>X</td>
<td>VA (Group 1 strategic purchasing)</td>
<td></td>
</tr>
<tr>
<td>Schoenherr and Mabert (2011)</td>
<td>(X)</td>
<td></td>
<td>Special construct</td>
<td></td>
</tr>
<tr>
<td>Shao et al. (2012)</td>
<td>X</td>
<td></td>
<td>SA</td>
<td></td>
</tr>
<tr>
<td>Su (2013)</td>
<td>X</td>
<td>X</td>
<td>SA/VA (Group 1 strategic purchasing)</td>
<td></td>
</tr>
<tr>
<td>Su and Gargeya (2012b)</td>
<td>X</td>
<td>X</td>
<td></td>
<td>(HA integrative) /VA (Group 1 strategic purchasing)</td>
</tr>
</tbody>
</table>

Abbreviations: horizontal alignment (HA); vertical alignment (VA); supplier-related alignment (SA); $X =$ considered; $(X) =$ partially considered.
Horizontal strategy alignment dimension

Table 2 shows that only three studies contained in our sample had a focus on horizontal strategy alignment (see also Appendix D using the link provided at the end of this paper). Pagell and Krause (2002) studied strategic consensus, i.e., the horizontal coordination of strategic priorities between PSM and production, as well as internal fit, which refers to the alignment of functional strategies with superordinate competitive strategies. Foerstl et al. (2013) defined cross-functional integration (mediating construct) broadly as interaction and collaboration of the PSM function with other functions, such as product development, production and manufacturing, and marketing. The authors used this mediating construct to study the relationship between talent management and performance management and purchasing performance. Goh et al. (1999) also used a broad definition of horizontal strategy alignment which they termed purchasing’s integration with other functions. The functions considered by this construct are the legal, research and development, advertising/marketing, engineering and accounting/finance functions.

Apart from these three studies, we identified 11 additional studies that define cross-functional strategy alignment as a part of an integrated strategy dimension that encompasses vertical and/or supplier-related alignment (SA) as well. Narasimhan et al. (2001), for example, studied purchasing’s interaction with different corporate functions (production, quality control, with engineering and research and development) and combined this interaction together with several other strategic activities in an integrated purchasing competence construct. Kern et al. (2011) used the same term to refer to a purchasing competence framework, which contains elements of HA in the category PSM authority (internal perception, cross-functional integration and functional transparency). Baier et al. (2008) defined the construct purchasing integration (PSM integration in the corporate planning process, PSM integration in the product development process, PSM integration in marketing and sales activities and PSM integration in mergers and acquisitions activities) and operationalised this horizontal dimension as one of several purchasing practices. Su and Gargeya (2012b) developed a strategic sourcing construct, where the horizontal interaction between purchasing and other corporate functions (e.g., manufacturing, marketing) was used as one of three indicators. Chiang et al. (2012) operationalised internal integration as a component of a superordinate strategic sourcing construct. Cousins et al. (2006) identified different patterns of purchasing function configuration and considered, among others, an internal integration construct in their analysis. Similar to Chiang et al. (2012), their internal integration construct involves two indicators that measure horizontal participation in product design and development; apart from this, their construct was operationalised differently than the one of Chiang et al. (2012). Paulraj and Chen (2007) studied cross-organisational teams as part of their strategic supply management construct, which encompasses both selected supplier-related and HA indicators. Das and Narasimhan (2000) operationalised their purchasing competence construct by referring to a purchasing integration component, among others. Purchasing integration, in this context, includes two indicators for horizontal integration of the product design and development process. Narasimhan and Das (2001) slightly modified the purchasing integration construct and again used two indicators for HA to operationalise it. Carr and Pearson (2002) developed an integrated purchasing/supplier involvement construct that measures both supplier-related and HA aspects. Lawson et al. (2009) finally operationalised a mediating socialisation
mechanisms construct, which involves the HA indicators cross-functional teams, joint workshops and co-location.

Supplier-related strategy alignment dimension

Table 2 shows that eight studies contained in our sample addressed the alignment of PSM strategies and goals with the supplier base (see also Appendix D using the link provided at the end of this paper). Again, the studies operationalised the way suppliers are accounted for in aligning strategies quite differently.

Carr and Pearson (1999) and Su (2013) used an intermediary buyer-supplier relationship construct to operationalise SA. Carr and Pearson (2002), in turn, employed an integrated purchasing/supplier involvement construct that encompasses both supplier-related and HA aspects. The integrated purchasing competence construct of Narasimhan et al. (2001) involves the SA indicator training for suppliers in quality and customer satisfaction as well as the SA (sub)construct buyer-seller relationship management that consisted of four further indicators. Kern et al. (2011), who developed a purchasing competence construct involving HA dimensions that have already been discussed above, also considered SA indicators in a category suppliers. Lawson et al. (2009) conceptualised SA as a mediating supplier integration construct. Paulraj and Chen (2007) considered the SA components long-term relationship orientation, inter-firm communication and supplier integration in defining a superordinate strategic supply management construct. Shao et al. (2012) also defined SA as a close coordination of strategies and goals between the supplier and the buyer, and operationalised their alignment construct using the two dimensions objective alignment and activity alignment.

Vertical strategy alignment dimension

Table 2 shows that 23 of the studies contained in our sample explicitly focus on vertical strategy alignment (see also Appendix D using the link provided at the end of this paper). A closer look at these studies shows that they can be differentiated further as follows:

- **Group 1** attaches particular importance to purchasing’s strategic focus, which can be achieved by aligning PSM strategies and goals with corporate goals and strategies. **Strategic purchasing/purchasing integration** constructs used in this group emphasise purchasing’s long-term focus, the involvement of purchasing in the strategic planning process of the company, a continuous evaluation of the strategic decisions made, and an evaluation of whether or not purchasing is considered strategic at the corporate level.

- **Group 2** uses the construct purchasing competence to evaluate the alignment of strategic PSM activities with superordinate strategy constructs.

- **Group 3** considers strategic purchasing as an essential and integral component of a comprehensive strategic supply management construct.

Special constructs for strategy alignment

Five studies contained in our sample defined strategy alignment using a set of quite different ‘special constructs’, which made it impossible to further group the independent variables used in these papers (see Table 2). As a result, we established an additional category that we termed ‘special constructs for strategy alignment’ and grouped the
concerned papers under this heading. In the following, we briefly categorise these papers and show how they relate to the alignment dimensions investigated in this review.

Chiang et al. (2012) examined the impact of strategic sourcing (operationalised using the items strategic purchasing, internal integration, information sharing and supplier development) and strategic flexibility on supply chain agility. Thus, they considered HA and VA in their analysis, but SA was only indirectly accounted for in formulating their study. Cousins et al. (2006) investigated different patterns of PSM function configuration (maturity levels determined by strategic PSM, PSM status, PSM internal integration and PSM skills), and the relationship between such patterns and organisational performance outcomes. They therefore took account of HA in their analysis (operationalised especially using the constructs strategic planning and purchasing status), but did not fully account for VA and SA. David et al. (2002) did not use HA, VA or SA as defined in this paper in the narrow sense. However, the alignment of product competitive strategy and organisational design in purchasing could best be assigned to the VA category.

González-Benito (2010) analysed the effect of purchasing and supply strategies on commercial and financial business performance (BP). Purchasing and supply strategy was conceptualised as a profile of generic competitive objectives, not as a set of purchasing practices deployed by the PSM department. Thus, he did not use HA, VA or SA as defined in this paper. However, the influence of corporate strategy on business strategy, which in turn has an effect on purchasing strategy, could be assigned to our VA category in a broader sense. Schoenherr and Mabert (2011) explored the causal linkages between the buyer’s objectives in determining procurement strategy, the environmental conditions that may influence this strategy as antecedents and the subsequent performance impact within the context of multi-item requests for quotation.

A closer analysis of the strategy alignment dimensions showed that the constructs used for operationalising the independent variables varied strongly across the works contained in our sample (strategic purchasing, for example, was considered as a self-standing construct in several studies, whereas it was assumed a sub-dimension of a superordinate construct in other studies). As a result, we recommend discussing the conceptualisation and operationalisation of constructs, dimensions and measures in more detail in future research. In our opinion, especially horizontal (cross-functional) alignment (see, for similar results, Kathuria et al., 2007; Menda and Dilts, 1997) and SA should receive more attention in the future (see, for similar results, Vachon et al., 2009).

5 Buying firm’s performance outcomes (dependent variable)

5.1 Conceptual framework for analysing buying firm’s performance outcomes constructs

As the selection and combination of alternative performance measures and dimensions appear to influence the research results and may explain the partly conflicting findings discussed within the sub-categories of Section 6.2, it is necessary to scrutinise the conceptualisation of the dependent variable(s) and the operationalisation of the buying firm’s performance outcomes proposed in the sampled papers (see Richard et al. (2009), Zhang et al. (2011), Shi and Yu (2013) for similar considerations). Therefore, Section 5 first systematically develops the dimensions of the analytical performance framework.
in Figure 1 to guide our further analysis. For consistent content category building, the performance outcomes groups are deductively developed, inductively reflected, and finalised during a recursive integration process and iterative coding cycles that were performed independently by at least two researchers (cf. Seuring and Müller, 2007; Hochrein et al., 2015).

**Figure 1** Analytical dimensions of buying firm’s performance outcomes

In a first step, we analysed *ex post* the performance categorisation of highly cited performance reviews (cf. Richard et al., 2009; Fabbe-Costes and Jahre, 2008; Van der Vaart and Van Donk, 2008; Zhang et al., 2011; Shi and Yu, 2013; Golicic and Smith, 2013; Molina-Azorín et al., 2009a, 2009b; Azevedo et al., 2011). As the performance constructs of empirical studies were analysed quite differently in these secondary studies, we deductively built a relatively broad classification using the categories *economic* and *operational* BP at the firm level as well as *operational manufacturing performance* (MP) and *operational purchasing and supply performance* (PSP) at the functional level. In a second step, we built on these a priori developed groups of BP, PSP and MP to inductively derive a more profound taxonomy from the sampled primary studies (*ex ante* analysis). The eBP outcomes were then adjusted during the coding process divided into ‘financial accounting-based’ and ‘market-based’ measures reflecting the fulfillment of a firm’s economic goals, while the oBP measures focus on a firm’s ability to gain competitive advantages by fulfilling customer requirements more efficiently than their competitors.

By reviewing the primary studies, we assigned (non-accounting-based) cost measures to oBP and systematised these internal key success factors via inductive category refinement along the competitive dimensions *cost, time/delivery, flexibility, quality* and *customer-related indicators*. Table 3 provides a synthesis of our evaluation and illustrates how the papers contained in our sample operationalised buying firms’ performance outcomes (see also Appendix E using the link provided at the end of this paper).
Table 3  Analysis of the buying firm’s performance outcomes-dimensions

<table>
<thead>
<tr>
<th>Author(s) (Year)</th>
<th>Economic BP</th>
<th>Operational BP</th>
<th>Manufacturing performance</th>
<th>Purchasing and supply performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Financial indicators</td>
<td>Market-based indicators</td>
<td>Cost indicators</td>
<td>Time/Delivery indicators</td>
</tr>
<tr>
<td>Baier et al. (2008)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Bernardes (2010)</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Bernardes and Zsidisin (2008)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Carr and Pearson (1999)</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Carr and Pearson (2002)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carr and Smeltzer (1999b)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chen et al. (2004)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Chiang et al. (2012)</td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Cousins et al. (2006)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Das and Narasimhan (2000)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>David et al. (2002)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foerstl et al. (2013)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goh et al. (1999)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>González-Benito (2007)</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>González-Benito (2010)</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Kern et al. (2011)</td>
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<tr>
<td>Lawson et al. (2009)</td>
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<tr>
<td>Narasimhan and Das (2001)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Narasimhan et al. (2001)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pagell and Krause (2002)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Paulraj and Chen (2005a)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Paulraj and Chen (2005b)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
### Table 3  
Analysis of the buying firm’s performance outcomes-dimensions (continued)

<table>
<thead>
<tr>
<th>Author(s) (Year)</th>
<th>Economic BP</th>
<th>Business Performance (BP)</th>
<th>Operational BP</th>
<th>Manufacturing and supply performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Financial indicators</td>
<td>Market-based indicators</td>
<td>Cost indicators</td>
<td>Time/Delivery indicators</td>
</tr>
<tr>
<td>Paulraj and Chen (2007)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Paulraj et al. (2006)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Sánchez-Rodríguez (2009)</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schoenherr and Mabert (2011)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shao et al. (2012)</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Su (2013)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Su and Gargeya (2012b)</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>6</td>
<td>3</td>
<td>8</td>
</tr>
</tbody>
</table>

Abbreviations: x = considered; (x) = partially considered.

### Business performance

At the firm level, BP can be differentiated into economic and operational performance outcomes. **Economic BP**, in turn, can further be differentiated into financial accounting-based and market-based economic BP. Appendix F provided in the online supplement to this paper shows that 15 of the sampled studies considered economic indicators to measure BP, while 14 studied did not use such indicators (see also Appendix E using the link provided at the end of this paper). Financial indicators that have been used are sales (growth), profit (as % of sales/growth/margin), return on investment (ROI), return on assets (ROA), return on equity (ROE), cost of goods sold (COGS), return on sales (ROS), earnings before interest, taxes, depreciation and amortisation (EBITDA) (growth/margin), net income before taxes (NIT), present value of the firm (PV) and labour productivity. ROA, ROI and Profit (% of sales) have thereby most frequently been used, even though it could be observed that single performance measures have only very infrequently been employed (David et al. (2002), for example, used the ROA as a single performance measure). **Market-based indicators** that measure the performance of a company in its market as well as its competitive position have been used as supplements to financial indicators (see Appendix F using the link provided at the end of this paper). The most frequently used market-based indicator is market share (MS), which could refer to the company’s major product (cf. González-Benito, 2007, 2010; Narasimhan et al., 2001), its (major) competitors (cf. Shao et al., 2012; Su and Gargeya, 2012b) or to different time intervals (cf. Carr and Smeltzer, 2000; Carr and Pearson, 2002). The
**Operational BP** was used in 13 of the sampled studies to measure the operative performance of the company (**key success factors**), where the competency indicators that have been used can be categorised along the competitive dimensions **cost (incl. inventory)**, **quality**, **time/delivery**, **flexibility/agility**, **innovation** and **customer-related indicators** (see Table 3). Paulraj and Chen (2005a, 2007) and Paulraj et al. (2006) considered quite similar items in operationalising their multi-dimensionally construct **operational buyer performance**, which are all based on the competitive dimensions introduced above. Pagell and Krause (2002) conceptualised operational **plant performance** also multi-dimensional using seven items. A closer comparison of the used indicators shows, however, that there are major differences in the operationalisation of the items. For example, Paulraj et al. (2006) and Paulraj and Chen (2007) measured **production costs**, whereas Pagell and Krause (2002) referred to **unit price of manufacturing and total costs**. Cousins et al. (2006) termed their multi-dimensional construct **production performance**, but used this construct to measure the performance of the company along the dimensions **product quality**, **delivery speed**, **delivery reliability** and **flexibility of production**. Bernardes (2010) and Bernardes and Zsidisin (2008) measured operational BP using a multi-dimensional **customer responsiveness** construct that considers the dimensions **time/delivery**, **flexibility** and **innovation**, and that exclusively focuses on the final customer. Chiang et al. (2012) developed a **supply chain agility performance** construct that contains a **customer responsiveness** dimension that is relevant to this SLR. This dimension was, however, operationalised with different indicators than those used by Bernardes (2010) and Bernardes and Zsidisin (2008), who also used an identically named **customer responsiveness** dimension. Chen et al. (2004) also measured operational BP using a **customer responsiveness** construct, which was, in contrast to the two dimensions mentioned before, operationalised using only the two items **rapid confirmation of customer orders** and **rapid handling of customer complaints**. In contradiction to these works, Paulraj and Chen (2005b) used only a single item to measure operational **buyer quality performance** (which they defined as **high-quality products that conform to quality specifications**). González-Benito (2007, 2010) used the **commercial performance** of the company in addition to its economic BP. The **commercial performance** was defined not only with the help of operational performance measures; instead, a set of quite different indicators was used, namely **sales growth**, **reputation and image**, **customer satisfaction**, **MS**, and **success of new product launches**. Narasimhan et al. (2001) measured BP using a **market-based economic indicator** (**actual percentage of MS for the firm’s principal product**) and two operational measures (**degree of achievement of quality improvement goals** and **degree of achievement of customer satisfaction goals**).

The above discussion showed that both **economic** (**accounting-/market-based**) and **operational BP** indicators have their distinct advantages and disadvantages. The use of accounting measures, for example, could be criticised as being influenced by inventory valuation, depreciation decisions or further accounting rules, and thus to incorrectly reflect intangible benefits of alignment activities. The accounting indicators partly track short-term outcomes, which makes it more difficult to trace long-term outcomes of alignment decisions. In contrast, market-based economic measures better enabled researchers to assess a company’s success on the market and the firm’s overall competitive position. Though the competitive position is influenced by the structure and attractiveness of the industry and the intensity of competition, the ability to compete effectively within the industry and to successfully meet a market’s requirements is of
high importance. While accounting-based measures were criticised for reflecting past benefits, market-based measures primarily concentrate on the expected influence of strategy alignment on a firm’s long-term performance.

As a result, future empirical studies on the strategy-alignment-performance link should simultaneously collect information on both types of indicators and first evaluate them independently. Subsequently, the indicators could be integrated into a multi-dimensional performance construct with balanced performance indicators (see, for similar recommendations, Shi and Yu, 2013; Venkatraman and Ramanujam, 1987). Table 3 shows in addition that innovation performance, which is gaining more and more in importance, has thus far only received attention in five studies, which could imply that additional research on this performance dimension in PSM could lead to interesting insights.

Manufacturing performance

Only two of the sampled studies operationalised operational MP at the functional level as a dependent variable. The MP constructs used by Das and Narasimhan (2000) and Narasimhan and Das (2001) are thereby based on the dimensions manufacturing cost reduction, quality performance (number of defects/production reduction), new product introduction time reduction performance, delivery performance (cycle time reduction goals, delivery speed and dependability) and customisation responsiveness (meeting customisation requests).

The impact of strategy alignment on the creation of value-added manufacturing processes and the achievement of manufacturing goals and, in turn, on (operational) MP has, however, received only a little attention in the literature so far. In our opinion, this clearly indicates that more research on this strategy-alignment-performance link is needed in the future.

Purchasing and supply performance

Nine studies contained in our sample operationalised operational PSP as a dependent (or mediating) variable at the functional level. It is worth noting that the terminology used to describe the constructs varied stronger than for the constructs used to operationalise BP. Alternative terminology that has been employed for operational PSP are purchasing operational efficiency (David et al., 2002), purchasing performance (Sánchez-Rodríguez, 2009; Kern et al., 2011; Foerstl et al., 2013), purchase performance (Schoenherr and Mabert, 2011), strategic supply performance outcomes (Shao et al., 2012), supplier relationship outcomes (Cousins et al., 2006), buyer performance (Lawson et al., 2009) and sourcing performance (Su, 2013). In addition, also a higher variance in the operational PSP indicators used was observed (see Table 3).

Foerstl et al. (2013) conceptualised operational PSP as a multi-dimensional construct consisting of the five items direct costs, total landed costs, quality, lead times and contribution to innovation. Kern et al. (2011) used similar PSP constructs and measured operational PSP using the indicators cost reductions, quality, delivery and flexibility. Similarly, Sánchez-Rodríguez (2009) employed the indicators cost of materials, quality of materials, on-time delivery, inventory performance and internal customer satisfaction. Whereas Kern et al. (2011) and Sánchez-Rodríguez (2009) operationalised operational PSP only as a dependent variable, it was used by Foerstl et al. (2013) as a mediating construct. Shao et al. (2012) also developed a mediating PSP construct, where the construct strategic supply performance outcomes were, in contrast to the three studies
mentioned before, split up into the dimensions cost saving, contribution to the sales increase, reduction of working capital and reduction of supply risks with four items per dimension. Schoenherr and Mabert (2011) developed a purchase performance construct for multi-item requests for quotation in business-to-business relationships, where (perceived) performance was measured by whether the bundle received competitive bids, whether bundling created internal synergies and savings, and whether purchase price savings were higher than expected. Su (2013) used the construct sourcing performance outcomes, which was operationalised in a quite abstract way using the three items purchasing function is very important to the overall company success, purchasing function adds value to the firm in production/operations/logistics and purchasing contributes to the firm’s bottom-line profit. Lawson et al. (2009) were more specific than Su (2013) in operationalising their buyer performance construct and linked positive PSP effects clearer to the respective buyer-supplier relationship. A quite similar construct, supplier relationship outcomes, was used by Cousins et al. (2006) in addition. David et al. (2002) finally put a stronger focus on internal relationships by operationalising efficiency with the three indicators purchasing amount per dollar of purchasing operating expenses, purchase amount per employee and inventory turnover.

We conclude that future research should direct more attention to an adequate discussion of the operationalisation and measurement of PSP. In addition, we recommend extending the operational PSP construct by an ecological/social dimension. From a methodological point of view, we suggest evaluating the strategy-alignment-performance link first for each performance dimension separately, and then to use an integrated construct in a second step. In this context, especially the impact of PSM on innovation performance needs to be studied in greater detail to give credit to the increasingly important role the suppliers play in the product development process (e.g., Castaldi et al., 2011). Finally, also the mediating role of PSP should be further analysed.

Overall, the analysis of the different buying firms performance outcomes constructs showed that our SLR confirms the findings of Richard et al. (2009), who reviewed 213 papers in management research and identified 207 different measures of performance outcomes. However, our deductively developed and inductively verified classification system leads to improved conceptual clarity of performance constructs and dimensionality. Although it has not been comprehensively discussed in this SLR so far, more research is especially needed on the relative strength of the impact of the different performance dimensions on eBP, oBP, MP and PSP.

5.2 Analysing the measurement of buying firm’s performance outcomes

While Section 5.1 indicated that an overall agreement on the conceptualisation of performance outcomes does not exist, this section now analyses the measurement characteristics of the dependent variable(s) as illustrated in Figure 1 (cf. Richard et al., 2009; Dess and Robinson, 1984; Venkatraman and Ramanujam, 1986, 1987).

Data sources

The studies contained in our sample in most cases used primary data (26 papers), while only four papers used secondary data (see also Appendix E using the link provided at the end of this paper). David et al. (2002), for example, exclusively used secondary data taken from Standard and Poor’s Compustat Database. Foerstl et al. (2013) employed both primary and secondary data, whereas Carr and Pearson (2002) and Carr and
Smeltzer (1999b) based their analysis on the data collected by Carr and Pearson (1999). As secondary data sources allow academics to replicate research studies and often provide access to a larger number of companies, this form of data collection has often been assessed as an increasingly important method in empirical SCM research (cf. Calantone and Vickery, 2010; Shi and Yu, 2013). Thus, it is surprising that only four of the sampled papers relied on this type of data. We therefore recommend that future research should make use of secondary data sources more often. To avoid biases, objective (secondary) performance data could be used to verify (subjective) self-reported data (cf. Schoenherr et al., 2012).

Mode of assessment

An analysis of the sampled papers further showed that both objective and subjective measurement techniques were used. Most of the sampled works, however, relied on subjective self-reported perceptual performance figures as substitutes for the company’s actual performance, which confirms the findings of van der Vaart and van Donk (2008) on SCI. Subjective performance data are based on the opinion and perception of the interviewee, which is why they are also often termed anticipated measures, perceptual measures, opinions or estimates. Objective performance data, in turn, relies on observable facts (internal (accounting) systems or standard records). Only Baier et al. (2008) and David et al. (2002) exclusively used objective measures. The works of Carr and Pearson (1999, 2002) finally used objective data to validate some of the subjective data that had been collected for their studies. It is worth noting that Dess and Robinson (1984), Venkatraman and Ramanujam (1987) and Wall et al. (2004) were able to show in their influential studies that so-called self-reported subjective performance data is strongly correlated with the objective performance reported by internal and external sources. To avoid biases, future research should more carefully weight the specific advantages and disadvantages of objective and subjective indicators than has been done in prior research so far. If both the study design and the effort to collect the data permit, both objective and subjective indicators should be combined (cf. Hartmann et al., 2012).

Relativisation of performance data

The third result of our analysis is that studies that collected subjective data had a major focus on the relativisation of performance data (perceptual measures relative to major competitors in the same industry or to that of a number of previous years). One advantage of relative performance data clearly is that assessing a company’s performance relative to its competitors within the same industry may help to minimise industry-induced effects. However, respondents may not always be able to assess their company’s performance relative to the performance of their competitors, which could introduce biases into the data. These aspects have, in our opinion, not been considered fully in prior research on strategy alignment in PSM.

Number of measures

With respect to the number of measures used in the sampled studies, we found that in most cases 4 to 5 indicators had been used. More comprehensive indicator systems were developed by Paulraj and Chen (2005a, 2007) and Paulraj et al. (2006), for example. Only the paper of David et al. (2002) differs from this pattern, as it only used the ROA as an indicator. Even though the number of measures used is not necessarily an indicator of the quality of a study, future research should nevertheless evaluate whether using more
than four or five indicators can help to get a more detailed view of how strategy alignment impacts performance.

Our analysis of the measurement of the buying firm’s performance outcomes led to some general insights. Even though self-reported managerial evaluations of performance often lead to similar results than objective assessments obtained from both internal and external sources, PSM academics should carefully weigh the use of objective and subjective measures in light of their particular research context to determine which assessment method is more adequate under the given conditions. Beyond the notable barriers associated with the collection of objective data, objective measures contribute to the study’s validity by avoiding respondent biases. Objective (secondary) performance data should at least be used to verify self-reported data and to detect perceptual biases. If practicable, both subjective and objective measures should be combined to better capture the multidimensionality of performance. As numerous constructs of interest are subjective in nature and some standards of objective measures strongly vary (e.g., across firms and industries), we agree with Fabbe-Costes and Jahre (2007) that PSM scholars should handle the use of measures, indicators and items with great care with respect to the constructs under study.

6  Performance impact of strategy alignment

6.1  Conceptual framework for analysing the impact of strategy alignment on the buying firm’s performance outcomes

This part combines the insights obtained in Sections 4 and 5 in an integrated framework (see Figure 2). This conceptual model supports the alignment of the content categories, the synthesis of key dimensions, and the discussion of conflicting findings, and it may thus lead to new insights in the field per se (cf. Blaney, 2008; Esper et al., 2010; Mentzer and Kahn, 1995; Tan, 2001; Hochrein et al., 2015). The three alignment dimensions studied here can influence BP independently from each other and/or jointly as well as directly and/or indirectly. As strategy alignment in PSM always depends on the specific context, and since PSM practices have to match the situational requirements (see David et al., 2002), we considered performance conditions and contextual factors in the conceptual framework in addition to performance measurement. In empirical studies, contextual factors could be taken account of by introducing control variables, mediating variables or moderating variables (see Baron and Kenny, 1986; Goldsby et al., 2013; Kerkfeld and Hartmann, 2012; Zhang et al., 2011).

6.2  Analysing the impact of strategy alignment of buying firm’s performance outcomes

In the first step of our analysis, we present the major research findings of each study in our sample in Appendix G provided in the online supplement to this paper. Subsequently, we give an overview of the most important research streams according to the categorisation presented in Table 2 (for a complete list of the hypotheses studied in the sampled works and the most important results obtained, see Appendices G and H using the link provided at the end of this paper).
Horizontal strategy alignment dimension

This stream of research analyses how HA between PSM and other corporate functions influences the performance of the company. Pagell and Krause (2002), for example, showed that an improved coordination between the purchasing and production department has a positive effect on performance at the plant level. With lower levels of uncertainty, the relationship between strategic consensus (cross-functional coordination with respect to strategic priorities) and performance becomes much more complex, however. Foerstl et al. (2013) studied the cross-functional coordination between purchasing and other departments as a mediating construct and showed that a stronger cross-functional integration (and functional coordination) positively impacts purchasing performance. Purchasing performance, in turn, was shown to have a positive impact on firm performance. Goh et al. (1999) also studied a HA construct they termed purchasing function’s integration with other functions, which covers different departments such as legal, research and development, advertising/marketing, engineering and accounting/finance. The authors showed that the relationship between the importance of purchasing and purchasing’s integration is not significant, but that HA in terms of regular, cross-functional meetings improves BP. Section 4 furthermore identified a set of papers that included HA indicators in superordinate integrated constructs (results concerning this type of constructs will be discussed below).

Supplier-related strategy alignment dimension

This stream of research analyses the findings of SA studies. The only study that focused exclusively on supplier-related aspects is the one of Shao et al. (2012). Their results...
showed that aligning own goals and strategies with those of strategic suppliers positively influences all elements of strategic supply performance outcomes (and that it especially leads to a reduction of working capital). The statistical tests thereby showed that the effect of objective alignment is stronger than the effect of activity alignment. In addition, it was shown that intermediary strategic supply performance outcomes (with the exception of the reduction of working capital) positively impact corporate BP outcomes. Apart from the work of Shao et al. (2012), Section 4 identified several studies that analysed SA indicators as part of a superordinate, integrated construct, even though the statistical analysis in some cases also focused on the individual dimensions of the constructs used. Carr and Pearson (1999), for example, found that cooperative buyer-supplier relationships and effective communication positively impact financial performance. Su (2013) also used a mediating construct, buyer-supplier relationship, to consider SA. In contrast to Carr and Pearson (1999), the authors were, however, unable to find a positive relationship between their horizontal buyer-supplier alignment construct and sourcing performance. Carr and Pearson (2002) also showed that their integrated purchasing/supplier involvement construct directly and positively impacts their strategic purchasing construct. Thus, it has an indirect positive effect on financial performance. The results obtained by Lawson et al. (2009) support the hypothesis that the SA construct supplier integration mediates the relationship between strategic purchasing and buyer performance. Similarly, the integrated purchasing competence construct of Narasimhan et al. (2001), which encompasses SA indicators, also has a significant positive impact on total quality management performance and customer satisfaction; an effect on MS could, however, not be verified. Paulraj and Chen (2007) used the SA constructs long-term relationship orientation, inter-firm communication and supplier integration to conceptualise their superordinate strategic supply management constructs. The authors did, however, not analyse the performance impact of the different construct dimensions separately. Kern et al. (2011) finally showed that purchasing management competence has a significant positive influence on different performance indicators. Interestingly, suppliers were found to be the stakeholder group with the highest performance impact.

Vertical strategy alignment dimension

As was shown in Section 4, studies on VA can be differentiated further. Papers assigned to Group 1 argue that a systematic involvement of the purchasing department in the strategic planning processes has a positive impact on the company per se. This, in principle, facilitates the development and implementation of innovative PSM practices. Hence, most of the studies assigned to this group use the construct strategic purchasing. Carr and Smeltzer (1999b) showed that strategic purchasing does not only positively relate to supplier responsiveness, changes in the supplier market, and supplier communication, but that above all, it has a direct influence on firm performance. Carr and Pearson (1999) confirmed a (direct and indirect) influence of strategic purchasing on supplier evolution systems, buyer-supplier relationships and financial performance. Carr and Pearson (2002) showed that purchasing/supplier involvement has a direct influence on the construct strategic purchasing, and that strategic purchasing, in turn, influences financial performance positively. One notable difference between both studies is that in Carr and Pearson (1999), the positive influence of strategic purchasing on firm performance was only found in large companies, Carr and Pearson (2002) were able to confirm this relationship for small- and medium-sized companies as well. Lawson et al. (2009) drew on the strategic purchasing construct of Carr and Pearson (1999) and
studied the influence of strategic purchasing on inter-organisational supply management practices (socialisation mechanisms, supplier integration and supplier responsiveness) as well as the resulting performance impact. The results indicate that strategic purchasing has a significant positive indirect effect on buyer performance, which is mediated by supplier integration. Sánchez-Rodriguez (2009) found a direct effect of strategic purchasing on supplier development and purchasing performance as well as an indirect effect of strategic purchasing on purchasing performance mediated by supplier development. Chen et al. (2004) identified a significant positive relationship between strategic PSM (communication, limited number of suppliers and long-term relationship orientation). In addition, the paths between long-term orientation and customer responsiveness, between communication and customer responsiveness as well as between customer responsiveness and financial performance were significant (the relationship between limited number of supplier and customer responsiveness was, in contrast, not significant). Paulraj and Chen (2005b) studied the influence of strategic purchasing on supply management as well as the influence of supply management on dyadic quality performance. As in Chen et al. (2004), they confirmed that strategic purchasing impacts all three dimensions of management practices (communication, supply base reduction and long-term relationship) positively. Buyer quality performance, however, was only influenced positively by communication. The study of Paulraj et al. (2006) found evidence that higher degrees of strategic purchasing lead to better supply integration. The effect of strategic purchasing on financial performance was, however, marginal in this study, whereas improvements in operational indicators (cost and flexibility indicators excluded) were significant. Bernardes and Zsidisin (2008) studied the indirect impact of the construct strategic supply management on customer responsiveness using the two intermediate constructs network relational embeddedness and network scanning. Their results show that a higher degree of strategic supply management improves customer responsiveness, both directly via scanning their supply base network and indirectly via relational embeddedness. In a follow-up study, Bernardes (2010) studied the relationship between strategic purchasing, network-relational embeddedness, network-shared cognition and customer responsiveness. The results confirmed again the positive relationship between strategic purchasing and relational embeddedness. Apart from this, the author found evidence for a positive impact of strategic purchasing on network-shared cognition and a positive impact of network-shared cognition on customer responsiveness. Su and Gargeya (2012b) operationalised strategic sourcing based on the items of Carr and Pearson (1999, 2002), Carr and Smeltzer (1999a, 2000) and Chen et al. (2004) and showed that strategic sourcing and sourcing capability positively influence firm performance. Su (2013) showed as well that strategic sourcing, defined similarly than the construct of Carr and Pearson (2002), positively impacts the constructs buyer-supplier relationships, supplier evaluation and sourcing performance. Chiang et al. (2012) defined a construct strategic sourcing that includes strategic purchasing and other components, and studied the influence of strategic sourcing on firm’s strategic flexibility and firm’s supply chain agility. The authors showed that strategic sourcing improves both firm’s (financial) performance and purchasing performance. In contrast to the studies just referred to that used a strategic purchasing construct, Narasimhan and Das (2001) used a related purchasing integration-construct and analysed its relationship to purchasing practices (supply base leveraging, buyer-supplier relationship development and SP evaluation) and MP. Statistical tests showed that purchasing integration positively moderates the relationship between purchasing practices and MP.
A second group of studies employed the holistic **purchasing competence** concept, which can be defined as ‘the capability to structure, develop and manage a buying firm’s supply base in alignment with the manufacturing priorities of the firm’ (Das and Narasimhan, 2000), and which can be operationalised using the dimensions **supply base optimisation**, **buyer-supplier relationship development**, **supplier capability auditing** and **purchasing integration**. The results of Das and Narasimhan (2000) show that **purchasing competence** has a significant positive impact on MP. Interestingly, **purchasing integration** (conceptualised as a component of purchasing competence) was found to be related to all MP dimensions. The hierarchy-specific **purchasing management competence** construct of Kern et al. (2011) also has a significant positive impact on operational performance, with an especially high impact on cost performance. González-Benito (2007) adapted the construct **production competence** and developed an alternative **purchasing competence** concept with two layers of fit: **strategic alignment** (purchasing integration as a fit between business strategy and purchasing strategic objectives/competitive priorities) and **purchasing efficacy** (fit between purchasing strategic objectives/competitive priorities and purchasing capabilities). The results indicate that purchasing efficacy has a positive effect on commercial and financial BP (for both purchasing efficiency indices). The hypothesis that purchasing’s strategic integration moderates the relationship between purchasing efficacy and BP positively was supported only for one of two indices, however. In addition, it was shown that both fit dimensions have to be supported to ensure that purchasing can contribute optimally to firm performance. Baier et al. (2008) differentiated measures into **strategic alignment** (i.e., establishing a link between corporate strategy and purchasing strategy) and **purchasing efficacy** (aligning specific purchasing practices with purchasing strategy/competitive priorities). The authors thus followed the recommendation of González-Benito (2007) and focused on the construct **purchasing practices** (and not, as had been common so far, on purchasing capabilities) and validated the construct **purchasing competence**. With respect to **strategic alignment**, the authors showed that ideal profiles of purchasing competitive priorities can be differentiated according to business strategy types and that deviations from ideal purchasing competitive priority profiles lead to lower financial performance. With respect to purchasing efficacy, the study confirmed in addition that deviating from an ideal purchasing practices profile again leads to lower financial performance.

The third group of papers studied the **strategic supply management** construct (with **strategic purchasing** as a component of this construct) and its impact on performance. Paulraj and Chen (2005a) showed that strategic supply management significantly influences buyer’s operational performance. In a follow-up study, Paulraj and Chen (2007) studied the performance impact of **strategic supply management**, which they conceptualised using the five components **strategic purchasing**, **long-term relationship orientation**, **interfirm communication**, **cross-organisational teams** and **supplier integration** (where the latter two had not been used in Paulraj and Chen (2005a)). The results show that an increase in the suppliers’ performance potential positively influences the buyer’s performance as well.

***Special constructs for strategy alignment***

Works summarised here study strategy alignment using constructs that cannot be assigned to any of the research streams discussed above. In contrast to his first study, González-Benito (2010) operationalised purchasing strategy using the four key
competitive factors cost, quality, time and flexibility (i.e., profile of generic competitive objectives). The author found that commercial and financial BP can be increased by assigning a relatively higher weight to flexibility and a relatively lower weight to logistics efficiency (reductions in stock levels and PSM prices). Top performers combine quality, dependability and flexibility as primary goals and use cost reductions as a secondary objective. Schoenherr and Mabert (2011) investigated the relationships between buyer’s objectives in determining PSM strategy, related influential factors, and the performance impact in the context of multi-item requests for quotation. Their results indicate that a stronger strategic orientation in defining PSM strategies explains a large share of the variation in buyer’s perceived performance. David et al. (2002) showed that a stronger congruency of product competitive strategy and organisational design characteristics in the purchasing function improves ROA. Companies following a cost strategy should use a central organisation, whereas companies pursuing a differentiation strategy can improve their performance when decentralising purchasing. Only under specific conditions, an increase in congruency was found to result in higher operational efficiency. Cousins et al. (2006) identified four different patterns of purchasing function configuration (strategic, celebrity, undeveloped and capable) and significant differences in supplier- and organisation-related performance outcomes across these four PSM function configurations. The cluster strategic purchasers identified by the authors appeared to be the most advanced PSM configuration with the highest performance outcomes. Chiang et al. (2012) showed that their strategic sourcing construct (with the components strategic purchasing, internal integration, information sharing and supplier development) positively impacts firm’s strategic flexibility (mediator) and supply chain agility.

Summary of key analytical results

Section 6.2 first presented an analysis of the most important research streams on the strategy-alignment-performance link. The independent and dependent variables and constructs are now systematically consolidated and related to each other with the objective of identifying research gaps, which is an additional contribution of the work at hand (see Hofmann (2010) for a similar analysis of corporate strategy and supply chain management). The dark cells presented in Figure 3 indicate that the respective combination of strategy alignment type and key performance dimension has been analysed in several of the sampled papers, while a white cell implies that the respective combination has not been investigated at all in the sample. Grey cells imply that the respective combination received an intermediate attention in the sampled papers. The sum signs presented at the top of a column and on the right side of a row show how frequently the corresponding dimension has been investigated in the sampled papers.

As an example, consider the combination of HA and operational performance. The corresponding dark grey cell contains the information ‘A8; A19-20; A23’. This means that the works abbreviated as A8, A19, A20 and A23 in the key of the figure analysed this particular strategy-alignment-performance link. The sum at the top of the corresponding row shows that operational performance has been studied in 17 of the sampled papers, while the sum sign at the right side of the corresponding row shows that HA has been the object of analysis in 15 of the sampled works.

Figure 3 can now be used to derive research gaps that could be of interest to future research effort; clearly, especially the white and light grey cells could imply promising research gaps. For example, it is surprising that we did not find a single paper that studies the impact of supplier alignment on MP (cell u). Given the fact that suppliers are
nowadays considered as an essential contributor to the performance of manufacturing firms, a detailed investigation of the strategy-performance link in this area could lead to interesting insights.

**Figure 3** Relational overview of strategy alignment and performance

Apart from this, an evaluation of the formulated and statistically tested hypotheses shows that only 18 out of 127 hypotheses could not be validated statistically (see Appendix H using the link provided at the end of this paper). The relatively small share (<15%) of non-validated hypotheses should, however, not be interpreted as an indicator that no further scientific investigation on the strategy-alignment-performance link is necessary; on the contrary, we believe that a further investigation of this topic is required and will probably lead to many interesting new insights.

In addition, **contextual research gaps** could be derived by referring to the integrated framework presented in Figure 2 and by considering the results presented in Appendix D provided in the online supplement to this paper. Our results show that prior empirical research has not captured contextual variables as well as moderating, mediating and control variables sufficiently. Thus, **mediating variables** were studied in 18 papers, while **control variables** were used in only 8 out of 29 papers. The most frequently used control variables are **SBU/firm/plant size** and **industry**. **Moderator variables** that were considered in only three papers received even less attention.

**Table 4** summarises the propositions for future research opportunities. The research agenda provided there was developed by synthesising the main findings presented above.
**Table 4  Research agenda and propositions**

<table>
<thead>
<tr>
<th>Research propositions (PR) on methodological variables</th>
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<tr>
<td><strong>PR 1: Country coverage</strong></td>
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<tr>
<td><strong>PR 2: Survey instrument</strong></td>
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<td><strong>PR 3: Sample firms’ industries</strong></td>
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<tr>
<td><strong>PR 4: Time frame</strong></td>
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<td><strong>PR 5: Sample firms’ sizes</strong></td>
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<td><strong>PR 6: Sampling frame and respondents’ profile</strong></td>
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<td><strong>PR 7: Sample size and effective response rates</strong></td>
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<tr>
<td><strong>PR 8: Used theories</strong></td>
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<tr>
<td><strong>PR 9: Statistical techniques of analysis</strong></td>
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</tbody>
</table>

**Research propositions on (in)dependent variables**

| PR 11: General advice | Discuss the conceptualisation and operationalisation of constructs, dimensions and measures in more detail. Consider horizontal (cross-functional) alignment and supplier-related alignment in future studies |
| PR 12: BP | Simultaneously collect information on both economic and operational BP indicators. Evaluate them first independently and then in an integrated way in a multi-dimensional performance construct with balanced indicators (e.g., with additional innovation performance indicators) |
| PR 13: MP | More research on the impact of strategy alignment on MP would lead to valuable insights |
| PR 14: PSP | The operationalisation and measurement of PSP should be extended by ecological and/or social measures. However, an integrated construct should only be measured having evaluated each performance dimension separately. Again, the impact of PSM on innovation performance as well as the mediating role of PSP need to be studied in greater detail |
Table 4  Research agenda and propositions (continued)

<table>
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<tr>
<th>Research propositions on performance outcomes measurement</th>
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<tr>
<td>PR 15: Outcomes measurement</td>
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<table>
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<tr>
<th>Research propositions on the performance-alignment-link</th>
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<tbody>
<tr>
<td>PR 16: Key analytical gaps</td>
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<td>PR 17: Contextual factors</td>
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<td>PR 18: Multidimensional PSMAI</td>
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</table>

Proposition 18 presented in Table 4 recommends developing a multi-dimensional strategy alignment-index to facilitate measuring the strategy-alignment-performance link. Section 7 develops such an index and presents further propositions on the strategy-alignment-performance link.

7  Development of a multi-dimensional strategy alignment-index

7.1  Basic concept and development of propositions

Appendices D and H provided in the online supplement to this paper show that the link between goals and strategies in PSM has thus far been analysed primarily by considering only a single selected alignment dimension. This is clearly not sufficient given the long-term focus of and the necessary holistic view on important strategic activities in PSM. As was explained in Section 4 and illustrated in the integrated framework in Figure 2, consolidating the different alignment dimensions and formulating a multi-dimensional PSMAI would be beneficial for future research in this area. Building on these ideas, we develop a strategy alignment-index in the following. The PSMAI will be developed based on the results of earlier sections of this paper as well as on selected papers published on SCI and supply chain collaboration (SCC) (cf. Fabbe-Costes and Jahre, 2007, 2008; Flynn et al., 2010; Leuschner et al., 2013). We note that especially multi-dimensional SCI studies as well as the paper of Simatupang and Sridharan (2005) delivered valuable input in developing the proposed index. As the results on the strategy-alignment-performance link obtained in prior studies were not always unambiguous, we considered only the most important and dominant relationships identified during our review of the literature.

The PSMAI proposed in the following consists of the three dimensions:

- vertical alignment (VA)
- horizontal alignment (HA)
- supplier-related alignment (SA),
such that we can describe the multi-dimensional alignment using the function $\text{PSMAI} = f(\text{VA}, \text{HA}, \text{SA})$ (cf. also Figure 4).

VA describes the strategic orientation (‘strategic character’) of the purchasing function per se as well as the alignment of the derived strategies and activities with the higher-ranked strategy constructs (cf. González-Benito, 2007). Based on this definition, we formulate the first elementary propositions:

**Proposition 1**: VA has a positive effect on the expected performance outcomes.
- **Proposition 1a**: VA has a positive effect on economic performance.
- **Proposition 1b**: VA has a positive effect on operational performance.
- **Proposition 1c**: VA has a positive effect on PSP.

HA measures the alignment of goals and strategies between different corporate functions. HA facilitates an improved inter-organisational collaboration, an improved understanding of the requirements of the respective functions, a reduction of conflicts (Goh et al., 1999), the generation of additional benefits (Carr and Smeltzer, 1997; Narasimhan et al., 2001) as well as efficiency, for example, in new product development. Based on this definition, we formulate the second elementary proposition:

**Proposition 2**: HA has a positive effect on the expected performance outcomes.
- **Proposition 2a**: HA has a positive effect on economic performance.
- **Proposition 2b**: HA has a positive effect on operational performance.
- **Proposition 2c**: HA has a positive effect on PSP.

SA finally refers to the harmonisation of the company’s strategies and goals with those of its supplier base. Thus, improved interorganisational coordination and communication processes as well as activities that aim on harmonisation (e.g., aligning IT-systems, using a common material classification, joint product development) can help to effectively reduce transaction costs, reduce quality problems or early/late deliveries or promote technological innovation (Shao et al., 2012). Based on this definition, we formulate the third elementary proposition:

**Proposition 3**: SA has a positive effect on the expected performance outcomes.
- **Proposition 3a**: SA has a positive effect on economic performance.
- **Proposition 3b**: SA has a positive effect on operational performance.
- **Proposition 3c**: SA has a positive effect on PSP.

The central proposition of this paper now suggests that a high value of the PSMAI-index, i.e., a high level of simultaneous alignment and harmonisation of goals and strategies along all three dimensions, leads to high-performance outcomes. The empirically verified
(isolated) performance impacts of the alignment dimensions reinforce each other, which leads to a multi-dimensional alignment-leverage-effect. Note that a similar argumentation can be found in related fields of research (e.g., Leuschner et al., 2013; Flynn et al., 2010). We thus formulate the following proposition:

**Proposition 4:** The higher the PSMAI value, the higher are the expected performance impacts.

**Figure 4** Concept of the multi-dimensional strategy alignment-index

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7.2 Research design and operationalisation of the constructs

After formulating Propositions 1 to 4, it is necessary to specify the research design and to operationalise the different constructs of the PSMAI. The three dimensions of the PSMAI (including their respective items) are based on the results of Section 4 and the analysis presented in Appendix D provided in the online supplement to this paper (independent variable). Measures and items were selected from the comprehensive SLR database with reference to related, particularly valid and highly significant items. In selecting the items for the PSMAI, we considered the t-value, validity and factor loadings presented in the original works where the items were taken from. In addition, the measures developed by Carr and Pearson (1999, 2002) that had frequently been used in the past were considered as well. Figure 5 summarises the multi-dimensional PSMAI construct and the corresponding items (see also Appendix I using the link provided at the end of this paper for an exact operationalisation of the used variables and their scientific background; to operationalise the SA dimensions, the primary studies on supplier development reviewed in Sucky and Durst (2013) were checked for adequate items as well). In Figures 5 and 6, $\delta_i$ is used to refer to measure $i$ with $i = \{1, \ldots, I\}$ and where $I$ represents the total number of measures. $\lambda_{ij}$ is used to refer to the link between measure $i$ and alignment dimension $j$ with $j = 1$ representing VA, $j = 2$ representing HA and $j = 3$ representing SA in Figure 5. In Figure 6, $j = \{1, 2, 3\}$ represents $j = \{PSP, oBP, eBP\}$. $\xi_j$ with $j \in \{1, 2, 3\}$...
refers to the alignment-dimensions \{VA, HA, SA\} in Figure 5 and to the performance-dimensions \{PSP, oBP, eBP\} in Figure 6. \(\Phi_{j,k}\) with \(j, k \in \{1, 2, 3\}\) finally represents the link between alignment dimension \(j\) and performance dimension \(k\). For a similar concept, the reader is referred to Hsu et al. (2006).

**Figure 5** Dimensions of the strategy alignment-index

The performance dimensions are defined based on the results of Section 5 and Appendix E provided in the online supplement to this paper (dependent variable). Measures and items were again selected from the comprehensive SLR database based on related, particularly valid/significant measures. Figure 6 summarises the multi-dimensional buying firm’s performance outcomes construct and the corresponding items (see also Appendix J using the link provided at the end of this paper for an exact operationalisation of the used variables and their scientific background).

The **operational PSP** contains measures to quantify the performance of purchasing at the functional level, and it considers monetary indicators (e.g., total cost of ownership) as well as quality-, time- and innovation-related aspects. The **operational BP** focuses on competitive factors at the corporate level and contains indicators of (end)
customer satisfaction. The economic BP finally includes financial and market-related parameters (see also Richard et al., 2009). The individual items of the performance constructs were, in addition, formulated ‘relative’ primarily.

Figure 6  Dimensions of the buying firm’s performance outcomes constructs
After conceptually developing the relevant constructs, we verified their validity and plausibility. In a next step, empirical data could be collected from interviewing purchasing managers using a (standardised) electronic questionnaire. We leave this task for future research.

8 Limitations of this paper

This SLR on strategy alignment in PSM has limitations. First, different methodological evaluation criteria were developed based on performance reviews published in related research streams. The categories that were selected are only one possible option for a systematic evaluation. Thus, future research could use additional or alternative methodological evaluation criteria. Secondly, the conceptual framework developed in this paper may be limited by the building blocks and variables used, although the content groups were deductively developed, inductively reflected, and finalised during a recursive integration process and iterative coding cycles. However, modifying selected structural dimensions or extending the analytical model per se could lead to additional insights. Thirdly, the SLR methodology used in this paper and especially the search strategy employed could be considered as a limiting element of this review. The dataset this study is based on was developed using a set of keywords and inclusion and exclusion criteria and based on a selection of scientific journals, and it is clear that a change in these parameters could have led to a different sample. Thus, the results obtained in this paper are valid for the 29 empirical alignment-studies contained in the sample, and generalising them may be difficult.

9 Conclusions and outlook

The primary aim of this study was to review the state-of-the-art of strategy alignment in PSM and the corresponding performance impacts. First, we conducted a SLR that thoroughly classified and methodologically analysed the identified primary studies and evaluated their content. The review showed that many research gaps exist with respect to the strategy-alignment-performance link, which was consolidated in a comprehensive research agenda. Subsequently, the study contributed to closing one of the identified research gaps by developing an innovative alignment index based on the results of the SLR.

By synthesising the results of 29 empirical studies, this study found the evidence that strategy alignment in PSM has a significant positive performance impact. We, therefore, recommend that PSM should more extensively be involved in strategic planning in the future, and that the goals of the various actors and the functions involved in the purchasing process need to be aligned much better. Purchasing managers should become aware of the multi-dimensional nature of strategy alignment and implement harmonisation activities to achieve significant performance improvements. Indeed, our review showed that more alignment – if it is adequately implemented – almost always leads to better performance in practice, which should motivate practitioners to improve their strategy alignment where possible. To enable managers to conduct strategic investments in PSM, it needs to be made sure that they receive the necessary support from corporate management.
References

The references preceded by ‘*’ are the 29 empirical studies analysed in this paper.


Strategy alignment in purchasing and supply management


Strategy alignment in purchasing and supply management


**Bibliography**


Online supplement

An electronic companion to the paper, containing the appendices and supplementary material, can be obtained under https://www.researchgate.net/publication/312083548_Strategy_Alignment_in_Purchasing_and_Supply_Management_A_Systematic_Review_and_Research_Framework_on_Performance_Impact#share and from the authors upon request.