Social capital, a theory for operations management: a systematic review of the evidence

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As Pfeffer (1993) states that until agreement is reached on a subject, progress may be slow. This paper converges the discussions on social capital in the operations management literature by way of a systematic literature review of 3- and 4-star journals. Human resource management, voluntary work and entrepreneurship were identified as minor themes within the review and thus potentially underexplored areas. Quality management, project management and new product development show significant use of social capital and particularly the role of social capital in the intrafirm environment. Finally, supply chain management shows the most significant use of social capital, particularly in explaining the characteristics of buyer–supplier relationships and how these impact inter-firm performance. Areas of future research are presented that draw on all forms of social capital to explore how they may be affect by contextual factors. The paper concludes by proposing a conceptual model of social capital for use within operations management.

Keywords: social capital; systematic review; operations management theory

1. Introduction

Starkey and Tempest (2004) presented social capital as an important theme in relation to strategic management research. Social capital was presented as taking a different approach to a Porterian, profit maximisation, view of behaviour (Porter 1980), considered as one that more effectively explains behaviour. The concept, a development of neo-classical views of economics, assists in explaining observations on both a micro and macro scale of analysis (Lin 2001). Essentially, it states that an individual’s available resources can be defined as not only those that they possess individually, but also those they are able to mobilize through social relations. Social capital is effectively a theory appreciating ‘it’s not what you know, but who you know’ and builds on what Granovetter (1973) described as the strength of weak ties. This states that resources accessed through weak ties will be more valuable than those accessed through stronger relational connections. The explanation given for this was that strong ties were developed between similar individuals who by definition would have similar contacts, so would have access to similar resources.

Sumatra Ghoshal represents a central figure in the establishment of social capital as a valid construct within management research. With Nahapiet, Ghoshal (1998) proposed a model of social capital consisting of a number of elements to explain both micro- and macro-level behaviours of individuals and groups. The model broke the concept into three main elements: cognitive, structural and relational. The structural dimension of social capital concerns the network of relations as a whole and includes aspects such as the strength of the ties, the position within the network and the extent of the network (ibid). The relational dimension reflects the roots of the relationships such as trust, respect and goodwill (ibid). Finally, the cognitive dimension facilitates common understanding and enables sense-making based on elements such as shared goals, norms and a common language (ibid). Within this particular piece of work, the model was used to explain how social capital could form the basis of a competitive advantage by promoting the creation of intellectual capital. This three-dimensional model of social capital was then empirically tested within a multi-unit company to show its effect on product innovation (Tsai and Ghoshal 1998).

Although the above highlights that the primary function of social capital theory was to provide insight into gaining access to valuable resources, it may also represent a control mechanism and help explain how communities behave. Relational capital in the form of trust developed through the repeated exchanges of resources between actors (Adler and Kwon 2002) may provide a control mechanism by limiting opportunistic behaviour, which can reduce the need for formal contractual agreements. Furthermore, trust is important when business activities...
themselves may be ambiguous and contracts cannot effectively define the terms of an arrangement, for example collaboration on new product development (Fey and Birkinshaw 2005).

Another means by which social capital can act as a control mechanism was highlighted by Robertson et al.’s (2003) work on social identity theory, which suggests that the behaviour of an individual depends on the particular identity they enact. The norms of a community shape these identities and control the behaviours of individuals in making them conform to that identity. This is known as cognitive capital, which can help to explain how communities behave. A shared understanding through shared experiences such as staff training activities (Ouchi 1979) may mean that those within the system will react similarly to a given stimulus. Combining with relational aspects, this may make it easier to access resources within the group rather than searching more widely to find more appropriate resources (Bresnen et al. 2005). Casciaro and Lobo (2005) colloquially term this phenomena as accessing ‘lovable fools’ rather than ‘competent jerks’. In mitigating this, Adler and Kwon (2002) stated the importance of having a mixture of strong ties to allow for a sense of ‘community’, and weak ties to more readily accept new information and new members.

Using a systematic literature review approach, the remainder of this paper identifies particular areas of operations management literature that are embracing the concept of social capital and how it is being employed. The following section presents the methodology used and a review of the quantitative findings from the systematic review. Sections 3 and 4 provide a descriptive account of the themes derived from this review and detail a number of operations management papers that use social capital. Section 5 reviews how the concept of social capital has been used within operations management and its usefulness to the field. The final section proposes directions for future research, provides a conceptual model and describes the value this research may offer.

2. Methodology
The method used in this study was a systematic literature review of the use of social capital within operations management. Tranfield et al. (2003) provides a systematic literature review methodology and highlights the value offered by the approach. Both Macpherson and Holt (2007) and Thorpe et al. (2005) employed adaptations of this methodology and provided the foundation for the approach used in this study. Table 1 below, summarises the process followed in this study and the results at each stage.

The starting point for the review was to identify the operations management journals to be included in the study. In order to include a range of disciplines within operations management and to report only on research of a high quality, three- and four-star operations management journals were selected from the Association of Business Schools journal ranking guide (www.the-abs.org.uk). Table 2 lists the journals, their ranking and the database used for the study. Although only searching three- and four-star journals limited the breadth of the search, it meant the searches were more easily replicable, which helps mitigate reliability concerns of this study. Furthermore, the approach taken in Macpherson and Holt (2007) and Thorpe et al. (2005) was to search online databases (for example, Ebsco), which meant there existed a high possibility of overlapping ‘hits’. Searching by journals, as in this study, meant that overlapping did not occur. All papers up to and including 2009 were included within the literature review.

The second step was to identify the search term(s) and to search the journals identified above. Consistent with the approaches of Thorpe et al. (2005) and Macpherson and Holt (2007), the titles, abstracts and keywords were searched for the single exact term of ‘social capital’. However, because of the size of the field, only seven papers were returned, and so the full text was also searched. A total of 73 studies were subsequently returned, and the number of papers extracted from each journal are listed in Table 2.

The third stage was to filter out any irrelevant references to social capital, following Thorpe et al. (2005) and Macpherson and Holt’s (2007) methodology, resulting in a total of 34 papers being removed. Five papers were removed because social capital was referenced in the biography or references, as part of an editorial comment or in a literature review (for example, Ketchen and Hult 2007b). Nine papers were removed because their reference to social capital was unrelated to the core argument of the paper, for example Craighead et al. (2009). Finally, 20 papers were removed because social capital was used indirectly, such as the use of relational capital to acquire tacit knowledge (Li et al. 2008) or the importance of trust in knowledge sharing (Cheng et al. 2008). This resulted in a selection of 39 papers that contributed to the formulation of the themes and the content of the literature review. Summaries of the papers contributing to the literature review can be found in the Appendix.
The fourth stage identified how the concept of social capital was used in the remaining 39 papers. Considering that the aim of this review was to explore how the construct is being used within the field of operations management, the entire papers were searched for reference to social capital. Compared to analysing only the titles, abstracts and keywords, papers were identified that not only use social capital as a central theme but also did so in a supporting way. This provided a deeper understanding of how the concept is used rather than just blindly reporting hits (for example, Lee 2009). Again, this was consistent with the aim of the research being to converge our understanding of the use of social capital theory within operations management. Consequently, those papers that extensively used key social capital terms (structural, relational and cognitive) were categorised as having social capital as a ‘central

Table 1. Summary of the systematic review process and results (adapted from Thorpe et al. 2005).

<table>
<thead>
<tr>
<th>Stage one</th>
<th>Stage two</th>
<th>Stage three</th>
<th>Stage four</th>
<th>Stage five</th>
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</thead>
<tbody>
<tr>
<td>Identify database</td>
<td>Identify search terms and citation searches</td>
<td>Exclusion analysis</td>
<td>Identify use of social capital</td>
<td>Categories resultant citations into themes</td>
</tr>
<tr>
<td>Key results</td>
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<td>Key results</td>
<td>Key results</td>
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<td>Databases (8)</td>
<td>Key results</td>
<td>Databases found (73)</td>
<td>Key results</td>
<td>Key results</td>
</tr>
<tr>
<td>Journals (11)</td>
<td>Key results</td>
<td>Biography (1)</td>
<td>Central theme (12)</td>
<td>Supply chain management (SCM) (21)</td>
</tr>
<tr>
<td></td>
<td>Key results</td>
<td>Editorial (2)</td>
<td>Explanatory (15)</td>
<td>New product development (NPD) (7)</td>
</tr>
<tr>
<td></td>
<td>Key results</td>
<td>Literature review (2)</td>
<td>Related (11)</td>
<td>Project management (PM) (3)</td>
</tr>
<tr>
<td></td>
<td>Key results</td>
<td>Unrelated (9)</td>
<td></td>
<td>Strategic alliances (SA) (4)</td>
</tr>
<tr>
<td></td>
<td>Key results</td>
<td>Indirect (20)</td>
<td></td>
<td>Continuous improvement (CI) (1)</td>
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<td></td>
<td>Key results</td>
<td>Total removed (34)</td>
<td></td>
<td>Quality management (QM) (3)</td>
</tr>
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</table>

Table 2. ABS operations management journals.

<table>
<thead>
<tr>
<th>Journal</th>
<th>ABS ranking</th>
<th>Databases used</th>
<th>Papers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journal of Operations Management</td>
<td>4</td>
<td>Sciedirect</td>
<td>23</td>
</tr>
<tr>
<td>Production and Operations Management</td>
<td>3</td>
<td>Wiley Interscience</td>
<td>9</td>
</tr>
<tr>
<td>International Journal of Production Economics</td>
<td>3</td>
<td>Sciedirect</td>
<td>19</td>
</tr>
<tr>
<td>International Journal of Operations and Production Management</td>
<td>3</td>
<td>Emerald</td>
<td>11</td>
</tr>
<tr>
<td>Supply Chain Management: An International Journal</td>
<td>3</td>
<td>Sciedirect</td>
<td>2</td>
</tr>
<tr>
<td>Reliability Engineering and System Safety</td>
<td>3</td>
<td>Ebsco</td>
<td>0</td>
</tr>
<tr>
<td>Manufacturing and Service Operations Management</td>
<td>3</td>
<td>Informaworld</td>
<td>6</td>
</tr>
<tr>
<td>IEEE Transactions on Engineering Management</td>
<td>3</td>
<td>Ebsco</td>
<td>3</td>
</tr>
<tr>
<td>Journal of Scheduling</td>
<td>3</td>
<td>Wiley Interscience</td>
<td>0</td>
</tr>
<tr>
<td>International Journal of Production Research</td>
<td>3</td>
<td>Informaworld</td>
<td>6</td>
</tr>
<tr>
<td>Production Planning and Control</td>
<td>3</td>
<td>Ebsco</td>
<td>0</td>
</tr>
</tbody>
</table>

The fourth stage identified how the concept of social capital was used in the remaining 39 papers. Considering that the aim of this review was to explore how the construct is being used within the field of operations management, the entire papers were searched for reference to social capital. Compared to analysing only the titles, abstracts and keywords, papers were identified that not only use social capital as a central theme but also did so in a supporting way. This provided a deeper understanding of how the concept is used rather than just blindly reporting hits (for example, Lee 2009). Again, this was consistent with the aim of the research being to converge our understanding of the use of social capital theory within operations management. Consequently, those papers that extensively used key social capital terms (structural, relational and cognitive) were categorised as having social capital as a ‘central
theme’, which yielded a total of 13 papers. The remaining papers were categorised as either ‘Related’, where social capital was explicitly referred to and used to explain findings or used to support a theoretical argument (for example, Mellat-Parast and Digman 2008), or ‘Explanatory’, where social capital was referred to indirectly via references to social capital-based papers; for example, Wisner et al. (2005) did not explicitly use social capital, however they did refer to Nunn’s (2002) work on using volunteering to build social capital.

Following Macpherson and Holt (2007), the fifth and final stage was to review the 39 papers to determine the thematic use of social capital. A selection of operations management books were reviewed to determine the main topics within operations management, as summarised in Table 3. The topic(s) in each paper were then assigned, noting that there were occasions where more than one topic was referenced; in these cases, items were listed under both topics. From the nine topics identified by the books (as indicated with an asterisk, *), six topics accounted for 35 of the papers. In addition to these topics, a further four non-operations management specific topics were identified from the papers (as indicated with a, ^), namely, strategic alliances, outsourcing, voluntary work and entrepreneurship. Given the similarities between strategic alliances, outsourcing, networks and supply chain management, these were aggregated to a single topic in our discussion. Consequently, four major themes (quality management, project management, new product development and supply chain management) and three minor themes (HR, volunteer work and entrepreneurship) were derived from the literature; these are presented in Table 3, together with the number of times each topic was referred to in the papers.

3. Minor theme descriptive analysis

3.1 Human resources

Koulikoff-Souviron and Harrison (2008) considered how human resource practices could be employed to institutionalise interdependent supply relations. This study, although indirectly, refers to the three dimensions of social capital suggested by Nahapiet and Ghoshal (1998). First, the alignment of HR practices reduced the likelihood of suppliers acting in an opportunistic manner and helped to develop intercompany trust, a factor in the relational dimension of social capital. Second, the authors note the influence of formal and informal aspects of a supplier relationship which pertain to the structural dimension of social capital. Finally, HR practices were also

<table>
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<tr>
<th>Major topics</th>
<th>Minor topics</th>
<th>No. times cited in papers</th>
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<tbody>
<tr>
<td>SCM* SA* Net* OS* NPD* PM* QM* PD* Tech* AP* HR* Ent* Vol*</td>
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<tr>
<td>Dilworth (1996)</td>
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<tr>
<td>Hayes et al. (2005)</td>
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<td>Heizer and Render (1993)</td>
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<td>Hopeman (1980)</td>
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<td>Nahmias (2004)</td>
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<tr>
<td>Slack et al. (2003)</td>
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<td></td>
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<tr>
<td>Greasley (2006)</td>
<td>1</td>
<td></td>
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<tr>
<td>Hill (1995)</td>
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<tr>
<td>Fogarty et al. (1991)</td>
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<td>Waters (1999)</td>
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<td>Schroder (1993)</td>
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<td>Martinich (1996)</td>
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<td>Total times cited in books</td>
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<td></td>
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<tr>
<td>No. times cited in papers</td>
<td>20 4 1 1 7 3 2 0 0 0 2 1 1</td>
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</tbody>
</table>

*Topic identified in operations management books; ^additional topic identified in papers.
QM = quality management, PM = project management, HR = human resources, SCM = supply chain management, PD = plant design, Tech = technology, AP = aggregate planning, Net = networks, NPD = new product development, SA = strategic alliances, OS = outsourcing, Ent = entrepreneurship, Vol = voluntary work.
stated as helping develop cognitive aspects as a result of regulatory control mechanisms being less effective. In concluding, the authors suggested that firms were better able to transfer knowledge across organisational boundaries given this foundation of human resource practices, a notion consistent with Tsai and Ghoshal (1998). Furthermore, the paper represents a proactive attempt to develop social capital within a group of firms. Alternatively, this approach has been employed within a group setting, where group-based performance measures affect worker behaviour (Singer et al. 2008). Building upon research that highlights social capital as a valuable resource (Mosey and Wright 2007), this work focuses upon variables that support its development. By giving managers direction on how to manage social capital, its potential negative aspects can be managed (Edelman et al. 2004).

3.2 Voluntary work
The human aspects of modern manufacturing techniques are often overlooked, which Small and Yasin (1997) suggest can lead to major difficulties when implementing new advanced approaches. To address this, research has looked for ways of increasing worker motivation within systems that may otherwise be seen as reducing the creative inputs of workers (de Treville and Antonakis 2006). This effectively built upon Quinn’s (1992) work outlining the value associated with workers who were not wholly motivated by pay. Although focusing upon not-for-profit organisations, Wisner et al. (2005) investigated how service design could promote the satisfaction of voluntary workers. With satisfaction being related to how long they will remain or even how much they donate to the firm, this has significant implications for not-for-profit organisations. Although relatively indirect, the reference made to social capital was significant as a result of volunteering representing an important means of building social capital (Putnam 1995). By employing such research in ‘for profit’ organisations, it may promote the development of a sense of community, enabling more effective collective action (Nahapiet and Ghoshal 1998). Importantly, in relation to other operations management topics, such ideas may also promote a positive organisational context, enabling innovation (Narasimhan et al. 2006) and supporting continuous improvement (Anand et al. 2009).

3.3 Entrepreneurship
From the discussions above, it is important to note the relationship between human resources and entrepreneurship. Human resources can be considered a foundation of dynamic capabilities (Eisenhardt and Martin 2000), with firms that possess them being intensely entrepreneurial (Teece 2007). In addition, an appropriate organisational context is necessary to support entrepreneurial activities of employees, ensuring they are able to identify and pursue opportunities, without fearing failure (O’Reilly III and Tushman 2008). In terms of the direct use of social capital in entrepreneurship, MacPherson and Holt (2007) outline social capital as an important avenue for future research within the field of small business growth. Mosey and Wright (2007) helped to address this, linking social capital to improved start-up performance when compared with the human capital of the founder. Social capital effectively enables entrepreneurs to access resources more effectively, which is critical in the early stages of a start-up. By reporting the role of corporate entrepreneurs in the strategic renewal of mature firms, Jones (2005) highlighted the relatively strong theoretical and empirical connections between entrepreneurship, operations improvement and social capital. Social capital was employed as a central theory of the work to help explain how corporate entrepreneurs are able to identify opportunities and exploit structural holes within the organisation. First, social capital was used to highlight the need to bring in outsiders to reduce negative relational inertia that may build up over time. Second, it was used to explain how the sense of community helped develop shared interpretations of the issues facing an organisation. In doing so, it made it possible for those within the organisation to be more effectively mobilised to pursue new opportunities.

These three minor themes represent interesting aspects of social capital within the context of operations management research. However, each of these papers could be published within other fields of management research because the main topics were not central to operations management. The next section considers the remaining topics covered by social capital research within operations management. As a result of the greater number of papers, a more critical review is possible.
4. Major theme descriptive analysis

Operations management is an inherently practical subject, orientated towards producing research that is of value to practitioners (Boyer et al. 2005). The following section presents the four major themes of quality management, project management, new product development and supply chain management. Within these, continuous improvement will be presented as a subsection of quality management as continuous improvement is part of many quality management frameworks.

4.1 Quality management and social capital

Quality management has been identified as an important foundation to assist firms in becoming world-class manufacturers (Flynn et al. 1999). White (1996) outlined how improvements in quality could have a direct effect on firm performance by lowering costs and increasing market share. Quality has also been identified as a means of developing additional capabilities in the form of cumulative capabilities theory (Ferdows and De Meyer 1990; Noble 1995, Flynn and Flynn 2004, Rosenzweig and Roth 2004). Within this research, evidence against the traditional trade-off between cost and quality was presented, showing that capabilities could be developed that mutually enhance both cost and quality (Boyer and Lewis 2002). Unfortunately, these approaches overlook the social side of operations such as staff buy-in and intrinsic motivation (de Treville and Antonakis 2006). One approach that addressed this shortcoming was Hoshin Kanri (Akao 1991). By introducing social interactions between different organisational levels when developing strategies, staff buy-in was promoted. In relation to social capital, the ‘catch-ball’ approach of Hoshin Kanri could represent the development of structural, relational and cognitive capital between managers and the rest of the organisation. By promoting a better understanding of the reasons behind a strategy, shared vision could be created, leading to more effective collective action.

Although only briefly referring to social capital, Choo et al. (2007) studied the implementation of a comprehensive quality management system—six sigma. Using Nahapiet and Ghoshal’s (1998) definition of trust in the context of six sigma implementation, they showed how an appropriate organisational context could be developed to support organisational members in knowledge creation and learning. This enabled those within the organisation to undertake both exploration into new approaches as well as the perfection of current approaches (March 1991, Levinthal and March 1993). Along a similar theme, Gutierrez Gutierrez et al. (2009) investigated factors affecting the success of six sigma initiatives. The authors used Tsai and Ghoshal’s (1998) work to outline the importance of developing a shared vision within a firm, a cognitive element of social capital. Although they were unable to significantly link this directly to firm performance, team work and statistical process control both helped develop a shared vision. Mellat-Parast and Digman (2008) and Panayides and Venus Yun (2009) explored the interface between quality management and strategic alliances within a network of firms. These studies examined how inter-firm relationships, in particular strategic alliances, may (or may not) benefit from quality management practices using social capital theory to explain these relationships. Trust and cooperative learning were identified as the critical factors in successful strategic alliances where trust supported knowledge sharing across firm boundaries, which enabled cooperative learning, which in turn promoted innovation.

Each of the four papers used social capital in a similar manner to address a gap present within operations management literature. Social capital was able to introduce softer elements that account for human behaviour within organisations. The next section considers the papers related to continuous improvement. With continuous improvement representing important aspects of quality improvement initiatives, the next section could represent a similar context, however more emphasis is given to improvement compared to control.

4.1.1 Continuous improvement and social capital

Within quality management, there is a need to not only control processes within organisations, but also to improve them. Importantly, continuous improvement aspects of quality management have the potential to reduce negative aspects that are associated with them, such as over-exploitation of current processes (Benner and Tushman 2003). Over-exploitation can lead to firms working to develop capabilities that are already obsolete (Tripsas and Gavetti 2000). Continuous improvement gives greater emphasis to the need to continually to change in order to remain competitive within a changing environment.

Segelod (2000) investigated how professional service firms invested in developing, and thus continuously improving, their employees. The study highlighted that these firms invested as heavily in development as
manufacturing firms, even though they did not have physical assets or infrastructure, which is consistent with the ever-increasing proportion of firm assets that are intangible (Neely 2005). Investment in these firms was in the form of training and the development of new knowledge, which represented their primary productive resources (Grant 1996). Although referring to social capital in directly, investment in social capital was outlined as an important precondition that supported individuals in working together, which could also promote commitment to project-orientated work (Yuan et al. 2009).

Using a longitudinal action research approach, Jørgensen et al. (2003) investigated processes to rejuvenate continuous improvement initiatives. Social capital was identified as an important resource as it supported collaboration and commitment, which in turn enhanced productivity. The study also showed that supporting knowledge exchange lead to knowledge creation, an important factor for creating organisational advantage (c.f. Nahapiet and Ghoshal 1998).

Continuous improvement can also promote organisational flexibility, enabling firms to continually change and develop their approaches to operating. Narasimhan et al.’s (2004) study proposed a two-element construct of manufacturing flexibility that emphasised both the ability to change and the ability to exploit opportunities. By pursuing flexibility strategies in both of these areas, firms were able to develop a flexibility competence. Depending upon a firm’s ability to convert this flexibility into market-facing improvements such as product customisation, firm performance was then positively affected. Although social capital was only referred to as a component of human capital, the study suggested that social capital amongst highly skilled workers in firms with a limited number of suppliers was likely to represent a strong influencing factor.

Overall, social capital’s link with continuous improvement is similar to that of quality management. In both themes, social capital represents a concept that demonstrates the need to invest in intangible social elements when attempting to operate in a manner that requires coordinated action. Without such investment, long-term improvements in performance may not be possible.

4.2 Project management and social capital

From its inception in complex military projects in the 1950s (Gaddis 1959), project management was viewed as the coordination of tasks and emphasised effective planning, scheduling and optimisation (Söderland 2004). Consequently, less attention was given to the social elements, an omission that has been addressed to a degree in recent years. An example is focus upon effective team formation to reduce issues with communication through the accumulation of social capital (Arthur et al. 2001, Grabher 2002). The following section describes how social capital is used in operations management in the context of project-orientated activities.

Ayas (1997) was the earliest published paper identified within this literature review, not only referred to Granovetter (1973), a foundation of subsequent work, but also defined social capital very effectively considering the date of publication:

“The social capital of a specific project can be represented by the relational network density, observed through the intensity, frequency, degree of informality and openness of communication patterns within the project and with all external members of the organization directly or indirectly involved” (pp. 62–63).

The work proposed the need to employ an integrative project management framework in order to promote corporate learning. Drawing heavily from organisational learning literature, practices were proposed that were able to promote both the short-term achievements and long-term capabilities of the firm. The development of social capital represented an important concept to help explain the need to invest indirectly in projects and not only focusing upon the tangible outputs they may have been formed to produce. The new resources created as a result of this investment could then represent shared organisational knowledge about corporate projects, which may in turn improve support of and commitment to them by the organisation as a whole. This is similar to the quality management literature reviewed above, where the investment in social capital supported the development of an organisational context supportive of development activities.

In other empirical studies, DeFillippi and Arthur (1998) highlight the need for the development of social capital to allow project-orientated organisations to work effectively through shared languages and experience. Grabher (2002) elaborated upon this in describing the need to invest in institutions that effectively create corporate identity amongst workers who may spend the majority of their time working ‘off-site’. Segelod (2000) stated that firms needed to invest heavily in these processes for developing corporate identity and acquiring new tacit knowledge, for example through shared experiences, or what Nonaka (1994) refers to as ‘socialisation’. 
Scott-Young and Samson (2009) applied the idea of developing a project-orientated corporate culture into the context of capital projects. Team-based practices were considered to be a key area of project management that may improve project performance. They suggested that social capital could be built between teams and project managers over the course of projects and that continuity of project managers would allow for more effective communication within projects, which would lead to project success. Along similar lines, Morton et al. (2006), consistent with Singer et al. (2008), paid specific attention to this by researching relationship management within project teams by considering specific organisational processes that support the development of social capital.

This section focused on specific organisational activities that may affect how individuals may operate together. Although having similarities with the section on quality management, each of the papers highlighted managerial implications that supported the development of social capital that may potentially feed into improved organisational effectiveness. The next section covers literature looking at a specific application of project management – new product development.

4.3 New product development and social capital

Throughout management literature, new product development is highlighted as an important activity for maintaining firm performance and providing new streams of revenue. Leonard-Barton (1992) further adds that new product development can help to renew capabilities of a firm and allow transformation to take place from inside the firm. Without new product activities, firms may become overly orientated towards processes and products that are no longer required by the market (Tripsas and Gavetti 2000). A key point of departure of new product development from project management is the need to engage a wider community of stakeholders within and outside of an organisation. By involving a greater number of stakeholders, the processes involved in new product development are considerably more complex than project management alone. Even though more complex, the development of social capital within new product development activities can form a foundation upon which more effective communication, knowledge transfer and knowledge creation can be built (Nahapiet and Ghoshal 1998). Fey and Birkinshaw (2005) identified these as processes that have significant effects on the market performance of new products through the creation of product-specific knowledge.

Building from this position, Smart et al. (2007) investigated processes of innovation that spanned firm boundaries. Within this, social capital was a core theme for identifying the elements of networked innovation. The result was specific themes that directed subsequent data collection, which, although focused around innovation, had numerous similarities with aspects of social capital. These included the transfer of knowledge, security (trust) and relationship management, which match theoretical and empirical work on social capital. Scott-Young and Samson (2009) then outlined how social capital developed within projects could be transferred to subsequent projects, enabling more effective networked innovation over time. Lee et al. (2005) used social capital as a major explanatory concept for research and development outcomes. Drawing directly from Nahapiet and Ghoshal (1998), social capital was found to contribute incrementally when combined with individual’s human capital (education, experience, etc). Social capital represented a means of accessing and acquiring human capital more effectively than insular learning.

Using an action research approach, Brookes et al. (2007) mapped the network of social capital between project members in two aerospace projects. Social capital represented a construct that directly affected managerial actions, rather than merely explaining particular phenomenon. Oke et al. (2008) highlighted the importance of the selection of project workers in addition to the processes that support the development of social capital. They emphasised that appreciating aspects of both the starting point, such as team selection, as well as the end point, such as project performance.

The above two sections outlined research that used social capital as a construct to explain important aspects of projects and project-orientated organisations. In particular, by considering the social aspects of project-orientated activities, it allowed the subject to move away from an overly-positivistic perspective that is often emphasised within the subject (Söderland 2004). Compared to quality management, project-orientated research allows greater focus on specific organisational activities. Rather than considering the organisational context in general, attention could be given to the process of addressing particular opportunities. This may allow an organisation to incrementally accumulate social capital through a series of product developments, which may in turn support organisation-level transformation in the form of a continuous improvement culture. The next section reviews supply chain management literature that uses social capital theory by primarily focusing upon inter-firm relationships.
4.4 Supply chain management a social capital

It is appreciated that firms no longer compete directly against one another and that internal capabilities may no longer be sufficient to create a sustainable competitive advantage (Porter 1996). This is mirrored in the growing importance of supply chain management (SCM), which suggests that individualist firm behaviour is inadequate and that competitiveness is thus a function of the extended supply chain (Lejeune and Yakova 2005). Consequently, social network theory highlights that the position of a firm within a network and the nature of these connections, as defined by its social capital, can influence organisational activities such as innovation (Gulati et al. 2000, Capaldo 2007). Social capital thus provides direction for firms to develop supply chain capabilities, enabling them to select and operate with appropriate alliance partners. The following section discusses a number of themes observed within the field of supply chain management that use the concept of social capital.

The majority of the papers use social capital to explain the variation in performance in buyer–supplier relations. Cousins et al. (2006a), for example, used the relational dimension of social capital to explore buyer performance; Lawson et al. (2008) used both the relational and structural dimension on buyer performance; and Krause et al. (2007) investigated the effects of all three dimensions in explaining performance in regard to supplier development activities. Adler and Kwon (2002) stated that trust in the form of relational capital can be a powerful control mechanism to prevent opportunistic behaviour. Ketchen and Hult (2007a) add that trust may also simultaneously promote the transfer of knowledge between partners and reduce transaction costs; Panayides and Venus Lun (2009) also relate trust to innovativeness. Adding to the discussion on relational capital and knowledge transfer, Cousins et al. (2006a) demonstrated the role of informal means of socialisation. Socialisation was defined as, ‘the process by which an individual acquires the social knowledge and skills necessary to assume an organizational role’ (Cousins et al. 2006a: 853). This was found to have a greater effect on performance than formal means, where relational capital mediated this relationship. Furthermore, supplier development activities may enhance performance in terms of quality, delivery and flexibility (Krause et al. 2007) and may support product development across organisational boundaries (Koufteros et al. 2007, Oh and Rhee 2008). On the negative side, however, the development of relational capital through long-term relationships may limit flexibility (Koufteros et al. 2007). Unfortunately, the greater attention given to relational over other components of social capital somewhat limits the theoretical contribution of these works (Krause et al. 2007).

Although research referring to cognitive and structural elements is limited, Krause et al. (ibid) do help to address this. The work suggests support for a relationship between cognitive capital, in the form of perceived shared values between buyer and suppliers, and performance in terms of cost, quality, delivery and flexibility. In the same study, Krause et al. also explored two aspects of structural capital: the buyers’ efforts to share information and supplier development activities. From these, only supplier development activities were significantly related to performance in terms of quality, delivery and flexibility. Also contributing to the under-researched elements of social capital, Lawson et al. (2008) suggested that structural aspects required specific attention to ensure valuable resources could be accessed through supplier relations. In addition to relational capital, structural aspects in terms of managerial communication and technical exchange were found to directly influence buyer performance improvements such as product and process design, product quality and lead time.

From an initial structural connection, relational capital may be developed over time. If interaction is prolonged, there may even be a potential of developed cognitive capital between actors, especially if relationships involve socialisation activities, for example job rotation. Singh and Power (2009) and Handley and Benton Jr (2009) then provide direction on means for developing stronger relationships with trading partners, such as customers, suppliers or outsourcing partners. These have been found to have a significant effect on alliance performance (Yang 2009).

Importantly, without the presence of valuable resources or the means of acquiring them, firms may have difficulty in benefiting from strategic alliances (Hamel 1991). Thus, social capital represents an important construct for explaining outcomes of strategic alliances. Building on the relational capital construct, two complementary themes within the supply chain literature were observed: organisational learning and innovation. Firstly, Mellat-Parast and Digman (2008) demonstrated that firms with quality management systems were more effective at strategic alliances. Being able to more effectively develop trust with partners, these firms were better able to engage in cooperative learning. Taylor (2005) also highlighted how trust was able to promote alliance-based learning while simultaneously promoting flexibility by reducing the need for formal contract-based relationships. Secondly, Panayides and Venus Lun (2009) suggest that the logical progression of organisational learning is the development of new intellectual capital in the form of innovations. Tsai and Ghoshal (1998) demonstrated this phenomena within a multi-unit firm where social capital allowed resources to flow freely to where they were needed, resulting in better
performance. Ireland and Webb (2007) and Smart et al. (2007) looked at this phenomenon in supplier relations and open innovation, respectively, and both found the development of trust important for promoting innovation. Primo et al. (2007) suggest that within the context of failure by going beyond what may be required by contracts, positive social capital could be developed. This may also be important in the event of a supply chain failure, where collective action is necessary to resolve cross-company issues. The result can be the development of improved supply chain sustainability, with greater focus on long-term mutual success rather than short-term contract-based relations (e.g. Vasileiou and Morris 2006). Zhang et al. (2009) found that suppliers were more willing to invest in technology with buyers who initiated cooperative actions that proactively developed relational capital.

The final theme identified within the supply chain literature is the role of community-based control mechanisms. Putnam (1995) considered the types of social capital specifically related to collective action, which are not directly related to individuals or specific relationships. Instead, these relate to social embeddedness and cultural norms, which represent community-based cognitive capital. This was the approach considered by Agarwal and Shanker (2003) where online transactions required community-based responsibility systems. Cadilhon (2003), Batt (2003) and Jiang (2009) produced similar findings, but in relation to managing suppliers in developing countries where direct involvement was often not possible and non-conformance to codes of conduct could have serious effects on corporate reputation. With greater difficulties related to the development of relational capital, peer-to-peer control mechanisms in the form of social norms, were found to have a much greater effect on adherence compared to threats or incentives. The work showed that relational capital was built between local firms, which mediated supplier conduct. Referring to social control mechanisms (Ouchi 1979), this could represent the development of a ‘preferred supplier’ identity that needed maintaining when dealing with multinational companies.

In sections 4.1 to 4.3, the studies consider relationships within the firm, between project team members (Brookes et al. 2007) or intra-firm members involved in innovation (Smart et al. 2007). SCM studies present different types of relationships that are external to the firm, such as buyer–seller relationships (Cousins et al. 2008). Consequently, the relationships within the firm can be viewed as finite and definable compared to open and infinite options available outside the firm. Hence, in studies of those relationships external to the firm, there may be an inherent tendency of respondents to select suppliers where communication is regular, routine or positive. Consequently, there may be a positive bias within these studies. Accordingly this represents an important issue that needs to be addressed to progress this field of research.

5. Discussion
The above discussion illustrates that social capital has been utilised in a wide range of applications in operations management. Social capital is able to do this by integrating different levels of analysis, from the individual to inter-organisational networks, as well as assisting in explaining behaviour at each level. Social capital’s relevance remains, even when applied to other fields of operations management such as the implementation of new technologies. For example Small and Yasin (1997) were able to link implementation policy with post-implementation performance, from the perspective of social capital, the process of implementation could be viewed as the accumulation of social capital that facilitates cognitive and behavioural changes necessary for the adoption of new approaches. As evidence for this, Koulikoff-Souviron and Harrison (2008) consider the role of policy in order to promote the development of social capital; however, compared to the work that used social capital to merely explain particular phenomena, policy-related work is in the minority but may offer the most direction to practitioners. Unfortunately, the above review shows that operations management is employing social capital to confirm observations, rather than building social capital theory. Notwithstanding this, such work’s contribution to validating constructs such as ‘trust’, which may tend to be overlooked from other perspectives, for example agency theory (Eisenhardt 1989). Appreciating the value of trust in buyer–supplier relations can lead to reduced transaction costs, minimal contracting and, as outlined within this review, more effective sharing of information, which can lead to enhanced innovative performance. However, what operations management’s use of social capital does not do effectively, is move away from network theory (Bell 2005), by emphasising more than social and institutional aspects of networks. Even more concerning than this, as highlighted by Lawson et al. (2008), is the limited use of structural capital for accessing new and valuable resources. Although socialisation techniques were included within some supply chain literature (Cousins and Menguc 2006, Cousins et al. 2006a, 2008), it could simply be viewed as a more concerted means of developing relational capital through both formal and informal means.
Although the work covered within this literature review only represents a very small portion of operations management literature (~0.55% of all three- and four-star journal papers), the work does cover a broad range of industries and contexts. The industries covered include clothing, agriculture, automotive and e-business, and countries include Australia, Vietnam and Chile. However, the majority of the research focuses on cross-industry research and large organisations within the United States and Europe. The wide range of applications, as well as showing the versatility of social capital, creates many opportunities for further research in the field of operations management. The next section considers this in relation to the work that has been present to propose how operations management could benefit from further research using social capital.

6. Future research and conclusion

This systematic review of literature has identified a number of interesting applications for the concept of social capital. Supply chain management represents an established topic of operations management research (Cousins et al. 2006b), which is reflected in its use of new theories. Even though publications in this area seem to recognise social capital as an established construct, its use can still be developed significantly. This may consist of more effective mapping of firms’ networks of suppliers instead of simply requiring participant firms to give information about a self-selected supplier. By using methodologies similar to Tsai and Ghoshal (1998), more insight than simply relationship strength could be gained. Although potentially difficult to operationalise in the supply chain context, Brookes et al.’s (2007) mapping of members’ social capital may be a possible methodology. Even though it may only be possible to conduct work with a small number of firms, the potential contribution to operations management theory may be significant. Subsequent theory confirmation could then be employed to confirm propositions on a larger scale, by possibly targeting particular types of buyer–supplier relationships.

The literature on social capital in supply chain management highlights three additional areas. First, Lawson et al. (2008) suggest that many studies in the supply chain context have focused on well-established relationships and have ‘not adequately incorporated less routine, more strategic and ad hoc exchanges’ (p. 457). Consequently, areas such as process improvement and operational entrepreneurial activities may benefit from more research with a social capital perspective. Second, with the exception of Krause et al. (2007) and more recently Carey et al. (2011), it was difficult to find studies that incorporate all three dimensions of social capital. Not only may such studies provide insight on the influence of the dimensions in different situations, they may also provide insight into how different capital may be accumulated. An example of this is Tsai and Ghoshal’s (1998) study that suggests relational capital (i.e. trust) is highly dependent and significantly related to cognitive capital (i.e. shared values) in the context of innovation. Finally, the literature reviewed above, particularly in the supply chain context, consistently promotes the positive aspect of social capital. Although somewhat contrary to the aims of this paper, awareness of pitfalls as well as benefits may be insightful for practitioners (as presented by Edelman et al. 2004). Hence, Villena et al.’s (2011) paper, ‘The dark side of buyer–supplier relationships: a social capital perspective’ is timely.

As an inherently social practice, project management has the potential to benefit significantly from employing social capital as a theoretical construct. The nature of projects requires a range of individuals to work closely to deliver measurable results. Without work considering the social capital that can be developed within projects and new product development, theoretical justification of project-orientated firms is difficult without functional silos to accumulate knowledge (Hobday 2000). Fortunately, Nahapiet and Ghoshal (1998) and Zhao and Anand (2009) highlight how teams of experienced professionals are able to effectively work together. Of all the sections, the range of contributions of this section potentially leaves fewest gaps in how social capital was employed. However, one particular area that could be developed is the role of supporting infrastructure within project-orientated organisations (Ayas 1997). Grabher (2002) presented these as the ‘boring institutions’ that support ‘cool projects’. This could be combined with case-based research that considers the need for policy decisions to reflect the requirements of the business and business environment. This type of research could potentially offer more constructive direction than simply ‘relationship management’ (Smart et al. 2007) and instead integrate socialisation activities with specific knowledge-sharing processes. The resulting developments of project-related commitment (Yang 2009; Yuan et al. 2009) may then provide important social control mechanisms with workers operating autonomously.

The development of a suitable organisational or network context (or community) was covered in many of the topics. The aim of this type of research was to create environments that promoted (or are at least conducive to) a particular type of behaviour. This helps reduce the need for direct incentives and sanctions, or helps intrinsically
motivate those within the system to behave in a certain way (de Treville and Antonakis 2006). This may be in the form of creative (Choo et al. 2007) or voluntary (Wisner et al. 2005) behaviour that can be important for supporting innovation. By building on this with complimentary work on organisational context such as organisational ambidexterity (Birkinshaw and Gibson 2004), more robust frameworks for the creation of a healthy organisational context could be developed. With the range of potential benefits and applications, a general framework could be seen as a means of giving organisations greater flexibility (Narasimhan et al. 2004). A particular element of this may be the promotion and support of entrepreneurial behaviour within the firm to identify and pursue new opportunities. The supporting organisational context would be critical to ensure fear of failure did not prevent risk taking.

The range of industries and countries covered within this literature represents the final area of future research. By using this range of contexts, it may be possible to contribute to social capital theory itself. Bredeillet et al. (2010) considered how cultural aspects affected different countries’ approaches to project management. Taking a similar approach, differences in the relative importance of aspects of social capital could be compared across contexts (industrial and cultural). Lin (2001) presented such an idea within the context of China where different forms of capital contributed to different degrees when individuals were looking for new jobs. Research of this type would enable the development of a social capital framework that was both contingent on the aims of the organisation, but also adapted to the requirements of the environment and context (both culturally and industrially).

Viewed in its entirety, this literature review offers a broad insight into the use of social capital within operations management. The resultant discussion enables the development of a conceptual model for use within, although not restricted to, operations management. From the applications considered, this model could potentially be used within a range of applications, including supply chain management, strategic alliances, project management, new product development or quality improvement. Each element of the model will be presented with examples of the literature contributing to its inclusion. From the model, a number of propositions will be given to outline theoretical relationships between the different elements of the model. Figure 1 represents how the initial social capital of an organisational activity would be made up of the three elements, which have the potential to affect the performance of the activity. This may be through effective cooperative learning (relational capital), collective innovative actions (cognitive capital) or access to valuable resources (structural capital). Each of these elements contributes to the initial social capital of an activity and promotes improved activity performance (P1). Importantly, the relationship may be affected by both the form of social capital and the type of activity being undertaken, which represent

![Figure 1. Conceptual model of social capital within operations management activities.](image-url)
important mediating variables. In particular, non-productive relational capital may negatively affect activity performance, which this model account for. This might include strong connections within a team that are non-activity related, such as a shared pastime or common dislike for a manager.

Proposition 2 (P2) then states that the social capital accumulated throughout the project will be moderated by organisational processes, such as human resources, team-based measures or relationship management. Proposition 3 (P3) then states how the performance of the activity will improve as the resulting social capital increases. As with P1, this will be dependent on the social capital development being of a productive form. This conceptual model will also enable particular organisational processes to be linked with the development of particular forms of social capital and their relationship with activity performance.

In conclusion, the above literature review shows the wide range of applications for social capital within operations management research but also the value of systematic literatures within the area of operations management. This systematic literature review has allowed the state of social capital research in operations management to be considered. Without such work, it may be difficult for this particular theme to be developed in a coherent manner. The review has also shown the acceptance and development of the concept, specifically within the subject’s top journals. Social capital seems able to contribute significantly to a field that has tended to focus upon numerical analysis rather than the social interactions that constitute an organisation (Meredith 1998). This review has not only contributed to knowledge on social capital but also identified opportunities for systematic literature review in other areas of operations management. Carrying out such work could allow topics such as continuous improvement, project management or problem solving to be reviewed in their entirety. Such work would allow particular topics to be considered specifically from an operations management perspective. Alternatively, the use of popular theories within operations management could be systematically reviewed, such as transaction cost economics or the resource-based view (Amundson 1998). This would allow the use of established theories to be critically reviewed in relation to the value they contribute to operations management as well as the practical insights they may provide. This should then support the formulation of coherent research stratagems for the different aspects of our discipline.

References


So


### Appendix

<table>
<thead>
<tr>
<th>Citation</th>
<th>Journal</th>
<th>Summary</th>
<th>Field</th>
<th>Use of social capital</th>
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<td>(Brookes et al. 2007)</td>
<td>IEEE</td>
<td>How social capital of NPD teams affects performance, use a mapping process to use SC as a management tool to affect performance</td>
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<td>Human and social capital considered in relation to the outcomes of product development activities, SC in incremental on human capital</td>
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<td>(Yuan et al. 2009)</td>
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<td>Software projects, coordination internally and externally, and transfer of tacit knowledge promotes better performance, sharing explicit knowledge as not affect trust, and project commitment then helps affect other processes</td>
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<td>(Smart et al. 2007)</td>
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<td>About innovation across a network, considered designorientated knowledge when configuring inter-organisational networks</td>
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<td>(Jones 2005)</td>
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<td>(Panayides and Venus Lun 2009)</td>
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<td>(Koufteros et al. 2007)</td>
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<td>Embeddedness in supply chain, innovation and quality as measures of performance, embeddeness promotes this, grey and black box integration</td>
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<td>(Cousins et al. 2006a)</td>
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<td>Better social ties with suppliers, looking at formal and informal socialisation for the development of relational capital</td>
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<td>(Lawson et al. 2008)</td>
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<td>(Ireland and Webb 2007)</td>
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<td>Supply chain to promote joint entrepreneurship and learning, using trust</td>
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<td>(Krause et al. 2007)</td>
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<td>(Batt 2003)</td>
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<td>(Oh and Rhee 2008)</td>
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<td>(Scott-Young and Samson 2009)</td>
<td>IJOPM</td>
<td>Looks at how to manage project teams needing to implement capital projects quickly</td>
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<td>(Primo et al. 2007)</td>
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<td>How firms manage supply chain failures and how to manage them to reduce dissatisfaction when failure occurs</td>
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<td>(Neely 2005)</td>
<td>IJOPM</td>
<td>Review of performance measurement literature</td>
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<td>(Kouliloff-Souviron and Harrison 2008)</td>
<td>IJOPM</td>
<td>Use of HR practices to institutionalise SM practices, may also be used to dissolve particular relationships</td>
<td>SCM/HR</td>
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<td>(Taylor 2005)</td>
<td>IJOPM</td>
<td>Success factors in alliances, most important one is openness and adaptability, learning as a central part of this</td>
<td>SA</td>
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<td>(Gutierrez Gutierrez et al. 2009)</td>
<td>IJOPM</td>
<td>Six sigma and statistical process control considered in relation to the success of quality improvement initiatives</td>
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<td>(Mellat-Parast and Digman 2008)</td>
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<td>How quality management practices affect strategic alliances and a firm’s ability to learn from them, importance of the role of trust and relations to promote learning</td>
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<td>(Handley and Benton 2009)</td>
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<td>Aspects of outsourcing practices that promote performance, including relationship management, contracting does not support performance</td>
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<td>(Cousins and Mengue 2006)</td>
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<td>Enhancing inter-firm relationships, socialisation as an important mechanism to improve supplier communication and performance</td>
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<td>(Narasimhan et al. 2004)</td>
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<td>Competences that allow flexibility from AMT and strategic sourcing, flexibility, but also an ability to make use of it, like absorptive capacity and dynamic capabilities, Yli-Renko 2001, SC and knowledge acquisition</td>
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<td>(Ketchen and Hult 2007a)</td>
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<td>Integrate supply chain, as supply chains compete, best value, not only focused around a particular performance metric</td>
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<td>(Ayas 1997)</td>
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<td>(Wisner et al. 2005)</td>
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<td>Volunteers in NFP organisations, service design to allow for this, and operational factors and their effect on loyalty. This will determine if they contribute or recommend to other potential volunteers</td>
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<td>(Zhang et al. 2009)</td>
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<td>(Agarwal and Shankar 2003)</td>
<td>SCM</td>
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<td>(Cadilhon 2003)</td>
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