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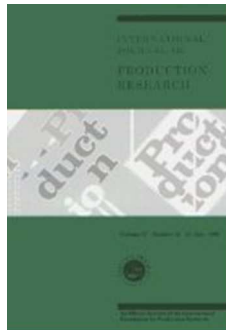
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Social Capital, a theory for Operations Management: A Systematic Review of the Evidence

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Abstract

As Pfeffer (1993) states, 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 showed the most significant use of social capital, particularly in explaining the characteristics of buyer-supplier relationships and how these impact interfirm performance. Future areas for research are identified as drawing upon all the aspects of social capital rather than focusing upon relational. The paper concluded 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 view of behaviour (Porter, 1980), profit maximisation, consider 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". The theory also builds upon what Granovetter (1973) described as the strength of weak ties. This states that resource accessed through weak ties will be more valuable than those accessed through stronger relational connections. The explanation given for this was 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

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3 aspects such as the strength of the ties, the position within the network and the extent of the
4 network (Nahapiet and Ghoshal, 1998). The relational dimension reflects the roots of the
5 relationships such as trust, respect and goodwill (Nahapiet and Ghoshal, 1998). Finally, the cognitive
6 dimension facilitates common understanding and enables sense making based on elements such as
7 shared goals, norms and a common language (Nahapiet and Ghoshal, 1998). Within this particular
8 piece of work, the model was used to explain how social capital could form the basis of a
9 competitive advantage by promoting the creation of intellectual capital. This three dimensional
10 model of social capital was then empirically tested within a multiunit company to show its effect of
11 product innovation (Tsai and Ghoshal, 1998).
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15 Although the above highlights the primary function of social capital theory was to provide insight
16 into gaining access to valuable resources, it may also represent a control mechanism and help
17 explain how communities behave. Viewing social capital as a controlling mechanism can be related
18 to the relational dimension. Relational capital in the form of trust developed through the repeated
19 exchanges of resources between actors (Adler and Kwon, 2002) may provide a controlling
20 mechanism by limit opportunistic behaviour which can reduce the need for formal contractual
21 agreements. Furthermore, trust is important when business activities themselves may be ambiguous
22 and contracts cannot effectively define the terms of an arrangement, for example, collaboration on
23 new product development (Fey and Birkinshaw, 2005).
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27 Another means by which social capital can act as a control mechanism was highlighted by
28 Robertson's (2003) work on social identity theory which suggests that the behaviour of an individual
29 depends on the particular identity they enact. The norms of the community shape these identities
30 and control the behaviours of the individuals to conform to that identity. This is known as cognitive
31 capital that can also help to explain how communities behave. A shared understanding through
32 shared experiences such as staff training activities (Ouchi, 1979), may mean that those within the
33 system will react similarly to a given stimulus. Combining with relational, this may make it easier to
34 access resources within the group rather than searching more widely to find more appropriate
35 resources (Bresnen et al., 2005). Casciaro and Lobo (2005) colloquially term this phenomena as
36 accessing "Lovable Fools" rather than "Competent Jerks". In mitigating this, Adler and Kwon (2002)
37 stated the importance of having a mixture of strong ties to allow for a sense of "community", and
38 weak ties to more readily accept new information and new members.
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43 Using a systematic literature review approach, the remainder of this paper identifies particular areas
44 of operations management literature that are embracing the concept of social capital and how it is
45 being employed. The following section presents the methodology used and a review of the
46 quantitative findings from the systematic review. Section three and four provides a descriptive
47 account of the themes derived from this review and details a number of operations management
48 papers that use social capital. Section five reviews how the concept of social capital has been used
49 within operations management and its usefulness to the field. The final section proposes directions
50 of future research, a conceptual model and the value this research may offer.
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2. Methodology

The method used in this study was one of a systematic 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 due to their rigour in reviewing the literature and for the systematic way of presenting findings. Table 1 below summarises the process taken in this study and the results at each stage.

Stage One	Stage Two	Stage Three	Stage Four	Stage Five
Identify Database	Identify Search terms and citation searches	Exclusion analysis	Identify use of Social Capital	Categories resultant citations into themes
Key Results	Key Results	Key Results	Key Results	Key Results
Databases (8) Journals (11)	Citations found (73)	Biography (1) Editorial (2) Literature Review (2) Unrelated (9) Indirect (20) Total removed (34)	Central theme (12) Explanatory (15) Related (11)	Supply chain Management (21) new product development (8) Project Management (4) Strategic Alliances(4) Lean (3) Quality Management (3) Human resources (1) Networking (1) Outsourcing (1)


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graph LR
    A[Identify Journals] --> B[Journal Search (73 Citations)]
    B --> C[Exclusion Analysis (39 Citations)]
    C --> D[Central theme (12 Citations)]
    C --> E[Supporting theme (26 Citations)]
    D --> F["Minor Themes  
- HR  
- Motivation  
- Entrepreneurship  
  
Major themes  
- QM  
- CI  
- PM  
- NPD  
- SCM"]
    E --> F
  
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Table 1: Summary of the Systematic review process and results (adapted from Thorpe et al., 2005)

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 below 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 any 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 exist which could inflate the number of “hits”. Hence for greater rigor in our search, multiple databases were used but given the relatively small number of “hits”, overlapping between the databases was easily managed. All papers were included within the search up to and included 2009.

Journal	ABS Ranking	Databases Used	Papers
Journal of Operations Management	4	Sciencedirect	23
Production and Operations Management	3	Wiley Interscience	0
International Journal of Production Economics	3	Sciencedirect	9
International Journal of Operations and Production Management	3	Emerald	19
Supply Chain Management: An International Journal	3	Emerald	11
Reliability Engineering and System Safety	3	Science Direct	2
Manufacturing and Service Operations Management	3	Ebsco	0
IEEE Transactions on Engineering Management	3	Ebsco	3
Journal of Scheduling	3	Wiley Interscience	0
International Journal of Production Research	3	Informaworld	6
Production Planning and Control	3	Ebsco	0
Total number of Papers			73

Table 2: ABS Operations Management Journals

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 key words were searched for the single exact term of “social capital”. However, due to the size of the field, where only 7 papers would have been returned, the full text was also searched. A total of 73 studies were returned and the number of papers extracted for each journal are listed in Table 2 above.

The third stage was to filter out any irrelevant references to social capital, following Thorpe et al. (2005) and Macpherson and Holt (2007), resulting in a total of 34 paper being removed. Five articles were removed as social capital was referenced either in the biography/references, as part as a editorial comment or in a literature review (for example Ketchen and Hult, 2007b). Nine papers were then removed as their reference to social capital was unrelated to the core argument of the paper, for example (Craighead et al., 2009). Finally, 20 papers were remove as 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 population of 39 papers that have been drawn from to identify the themes and used in this literature review. Summaries of the 39 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 articles. Considering the aim of this review was to explore how the construct is being used within the field of operations management, the entire articles was searched for reference to social capital. Compared to analysing only the titles, abstract and keywords, articles were identified that not only used social capital as a central theme, but also in a supporting way. This provided a deeper understanding of how the concept was used rather than just blindly reporting “hits” (ie Lee, 2009). Again, this was consistent with the aim of the research being to converge our understanding on the use of social capital theory within operations management. Consequently, those articles 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 12 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 referred to Nunn’s (2002) work on using volunteering to building social capital.

Following Macpherson and Holt (2007), the fifth and final stage was to review the abstracts of the 39 articles to determine the thematic use of social capital. A selection of operations management books were reviewed to determine the topics within operations management as summarised in table 3 below. The topic(s) in each article were then assigned, noting that there were occasions where more than one topic was referenced and in these cases, items were listed under both topics. From the nine topics identified by the books (as indicated with a *), with six topics accounting for 39 of the articles. In addition to these topics, a further four non-operations management specific topics were identified in the articles (as indicated with a ^), namely strategic alliances, outsourcing, voluntary work and entrepreneurship. Noting the similarities between strategic alliance, 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 and a presented in table 3 with the number of times each topic was referred to in the articles.

	Major Topics										Minor Topics		
	SCM*	SA^	Net*	OS^	NPD*	PM*	QM*	PD*	Tech*	AP*	HR*	Ent^	Vol^
Dilworth (1996)						1	1	1	1		1		
Hayes et al. (2005)			1			1			1	1			
Heizer and Render (1993)						1	1	1			1		
Hopeman (1980)					1		1	1			1		
Nahmias (2004)	1					1	1	1					
Johnson et al. (2007)	1					1	1	1					
Greasley (2006)	1					1	1	1					

Hill (1995)	1						1		1				
Fogarty (1991)							1	1			1		
Waters (1999)	1						1		1			1	
Schoeder (1993)								1			1	1	
Martiwich (1996)							1	1				1	
Total times cited in books	5	0	1	0		1	9	10	7	3	3	6	0
	6												
No. times cited in articles	20	4	1	1		7	3	2	0	0	0	2	1
	26												

* denotes topic identified in Operations Management books ^ denotes additional topic identified in articles
 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, Mot- motivation

Table 3: Theme identification and comparison

3. Minor Theme Descriptive Analysis

3.1 Human Resources

Koulikoff-Souviron and Harrison (2008) considered how human resource practices could be employed to institutionalize interdependent supply relations. This study, although indirectly, refers to the three dimensions of social capital suggested by Nahapiet and Ghoshal (1998). Firstly, 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. Secondly, the authors note the influence of formal and informal aspects of a supplier relation which pertain to the structural dimension of social capital. Finally, in addition to these structural and relational elements, HR practices were also stated as helping develop cognitive aspects due to regulatory control mechanisms being less effective. In concluding, the authors suggested that firms were better able to transfer knowledge across organizational 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 moderating variables that support its development. By giving managers direction on how to manage social capital, the potential negative aspects can be managed (Edelman et al., 2004).

3.2 Voluntary Work

The human aspects of modern manufacturing techniques are often over looked 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 who outlined the value associated with workers who were not wholly motivated by pay. Although focusing upon not-for-profit organizations, Wisner et al. (2005) investigated how service design could promote satisfaction of voluntary workers. With satisfaction being related to how long they will remain or even how much they donate to the firm,

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3 this has significant implications for not-for-profit organizations. Although relatively indirect, the
4 reference made to social capital was significant, due to volunteering representing an important
5 means of building social capital (Putnam, 1995). By employing such research in “for profit”
6 organizations, it may promote the development of a sense of community, enabling more effective
7 collective action (Nahapiet and Ghoshal, 1998). Importantly, in relation to other operations
8 management topics, such ideas may also promote a positive organizational context, enabling
9 innovation (Narasimhan et al., 2006) and supporting continuous improvement (Anand et al., 2009).
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11

12 **3.3 Entrepreneurship**

14 From the discussions above, it is important to note the relationship between human resources and
15 entrepreneurship. Human resources can be considered a foundation of dynamic capabilities
16 (Eisenhardt and Martin, 2000), with firms that possess them being intensely entrepreneurial (Teece,
17 2007). In addition, an appropriate organizational context is necessary to support entrepreneurial
18 activities of employees, ensuring they are able to identify and pursue opportunities, without fearing
19 failure (O'Reilly III and Tushman, 2008). In terms of the direct use of social capital in
20 entrepreneurship, MacPherson and Holt (2007) outlines social capital as an important avenue for
21 future research within the field of small business growth. Mosey and Wright (2007) helped to
22 address this, linking social capital to improved start up performance when compared with the
23 human capital of the founder. Social capital effectively enables entrepreneurs to access resources
24 more effectively, that is critical in the early stages of a start up. By reporting the role of corporate
25 entrepreneurs in the strategic renewal of mature firms, Jones (2005) highlighted the relatively strong
26 theoretical and empirical connections between entrepreneurship, operations improvement and
27 social capital. Social capital was employed as a central theory of the work to help explain how
28 corporate entrepreneurs are able to identify opportunities and exploit structural holes within the
29 organisation. Firstly, social capital was used to highlight the need to bring in outsiders to reduce
30 negative relational inertia that may build up over time. Secondly, it was used to explain how the
31 sense of community helped develop shared interpretations of the issues facing an organisation. In
32 doing so, it made it possible for those within the organisation to be more effectively mobilised to
33 pursue new opportunities
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40 These three minor themes, all represent interesting aspects of social capital within the context of
41 operations management research. However, each of these articles could be conducted within other
42 fields of management research due to the main topics not being central to operations management.
43 The next section considers the remaining topics covered by social capital research within operations
44 management. Due to the greater number of papers, a more effective, critical review will be possible,
45 rather than the more descriptive accounts of the 3 prior subsections.
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49 **4. Major theme Descriptive Analysis**

50 Operations management is an inherently practical subject, oriented towards producing research that
51 is of value to practitioners (Boyer et al., 2005). The following section presents the four major themes
52 of quality management, project management, new product development and supply chain
53 management. Within these, continuous improvement will be presented as a subsection of quality
54 management due to continuous improvement being part of many quality management frameworks.
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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 enhanced both cost and quality (Boyer and Lewis, 2002). Unfortunately, these approaches overlooked 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 a 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 perfecting 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. This study examined how inter-firm relationships, in particular strategic alliances, may (or may not) benefit from quality management practices with social capital theory used to explain these relationships. Trust and cooperative learning were identified as the critical factors in successful strategy alliances where trust supported knowledge sharing across firm boundaries which enabled cooperative learning which in turn promoted innovativeness.

Each of the three articles related to quality management 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 improve initiatives, although the next section could represent the same context, 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 organizations, but also improve them. Importantly, continuous improvement aspects of quality management have the

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3 potential to reduce negative aspects that are associated with them, such as over exploitation of
4 current processes (Benner and Tushman, 2003). Over exploitation can lead to firms working to
5 develop capabilities that are already obsolete (Tripsas and Gavetti, 2000). Continuous improvement
6 gives greater emphasis to the need to appreciate a continual need to change in order to remain
7 competitive within a changing environment.
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10 Segelod (2000) investigated how professional service firm invested in developing, and thus
11 continuously improving their employees. The study highlighted that these firms invested as heavily
12 in development as manufacturing firms, even though they did not have physical assets or
13 infrastructure, **which is consistent with the ever increase proportion of firm assets that are**
14 **intangible (Neely, 2005)**. Investment in these firms was in the form of training and the development
15 of new knowledge that represented the primary productive resources of these firms (Grant, 1996).
16 Although not referencing social capital work directly, investment in social capital was outlined as an
17 important precondition that supported individuals in working together, **promoting commitment to**
18 **project oriented work (Yuan et al., 2009)**
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22 Using a longitudinal action research approach, Jørgensen et al. (2003) investigated processes to
23 rejuvenate continuous improvement initiatives. Social capital was identified as an important
24 resource as it supported collaboration and commitment which in turn enhanced productivity. The
25 study also showed that supporting knowledge exchange lead to knowledge creation, an important
26 factor for creating organizational advantage (Nahapiet and Ghoshal, 1998).
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29 Continuous improvement can also promote organizational flexibility, enabling firms to continually
30 change and develop their approaches to operating. Narasimhan et al.'s (2004) study proposed a two
31 element construct of manufacturing flexibility that emphasised both the ability to change and to
32 exploit opportunities. By pursuing flexibility strategies in both these areas, firms were able to
33 develop a flexibility competence. Then dependant on a firm's ability to convert this flexibility into
34 market facing improvement such as product customization, firm performance was then positively
35 affected. Although social capital was only referred to as a component of human capital, the study
36 suggested that social capital amongst highly skilled workers, and with a limited number of suppliers
37 was likely to represent a strong moderating factors.
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40 Overall, social capital's link with continuous improvement is similar to that of quality management.
41 In both themes, social capital represents a concept that demonstrates the need to invest in
42 intangible social elements when attempting to operate in a manner that requires coordinated action.
43 Without such investment, long term improvements in performance may not be possible.
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49 ***4.2 Project Management and Social Capital***

50 From its inception in complex military projects in the 1950's (Gaddis, 1959), project management
51 was viewed as the coordination of tasks and emphasised effective planning, scheduling and
52 optimization (Söderland, 2004). Consequently, less attention was given to the social elements,
53 which has been addressed to a degree in recent years. An example is focus upon the need for
54 effective team formation to reduce issues with communication through the accumulation of social
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3 capital (Arthur et al., 2001, Grabher, 2002). The following section describes how social capital is used
4 in operations management in the context of project-oriented activities.
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6 Ayas (1997) was the earliest published article identified within this literature review, but
7 also early in relation to the concept of social capital. Having said that, not only did Ayas
8 (1997) refer to Granovetter (1973), a foundation of subsequent work, but also defined social
9 capital very effectively considering the date of publication:-
10
11

12 “The social capital of a specific project can be represented by the relational network density,
13 observed through the intensity, frequency, degree of informality and openness of
14 communication patterns within the project and with all external members of the
15 organization directly or indirectly involved.” P62-63
16
17

18 The work proposed the need to employ an integrative project management framework in
19 order to promote corporate learning. Drawing heavily from organisational learning
20 literature, practices were proposed that were able to promote both the short term
21 achievements and long term capabilities of the firm. The development of social capital
22 represented an important concept to help explain the need to invest indirectly on projects,
23 not only focusing upon the tangible outputs they may have been formed to produce. The
24 new resources created as a result of this investment could then represent shared
25 organisational knowledge about corporate projects, that may in turn improve support and
26 commitment towards them by the organisation as a whole. This is similar to the quality
27 management literature reviewed above, where the investment in social capital supported
28 the development of an organizational context supportive of development activities.
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34 In other empirical studies, DeFillippi and Arthur (1998) highlight the need for the development of
35 social capital to allow project-oriented organisations to work effectively through shared languages
36 and experience. Grabher (2002) elaborated upon this in describing the need to invest in institutions
37 that effectively create corporate identity amongst workers who may spend the majority of their time
38 working “off-site”. Segelod (2000) stated firms needed to invest heavily in these processes for
39 developing corporate identity and acquire new tacit knowledge, for example through shared
40 experiences, or what Nonaka (1994) refers to as ‘socialization’.
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44 Scott-Young and Samson (2009) applied the idea of developing a project-oriented corporate culture
45 into the context of capital projects. Team based practices were considered to be a key area of
46 project management that may improve project performance. Social capital could be built between
47 teams and project managers over the course of projects and that continuity of project managers
48 allowed for more effective communication within projects which led to project success. Along similar
49 lines, Morton et al. (2006), consistent with Singer et al. (2008), paid specific attention to this by
50 researching relationship management within project teams, considering specific organizational
51 processes that support the development of social capital.
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54 This section focused on specific organisational activities that appreciate how social capital may affect
55 how individuals may operate together. Although having similarities with the section on quality
56 management, each of the papers highlighted managerial implications that supported the
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3 development of social capital that may potentially feed into improved organisational effectiveness.
4 The next section covers literature looking at a specific application of project management, new
5 product development.
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8 9 **4.3 New Product Development and Social Capital**

10 Throughout management literature, new product development is highlighted as an important
11 activity for maintaining firm performance and providing new streams of revenue. Leonard-Barton
12 (1992) further adds that new product development can help to renew capabilities of a firm and allow
13 transformation to take place from inside the firm. Without new product activities, firms may become
14 overly oriented around processes and products that are no longer required by the market (Tripsas
15 and Gavetti, 2000). A key point of departure of new product development from project management
16 is the need to engage a wider community of stakeholders within and outside an organisation. By
17 involving a greater number of stakeholders, the processes involved in new product development are
18 considerably more complex than project management alone. Even though more complex, the
19 development of social capital within new product development activities can form a foundation
20 upon which more effective communication, knowledge transfer and knowledge creation can be built
21 (Nahapiet and Ghoshal, 1998). Fey and Birkinshaw (2005) identified these as processes that have
22 significant effects on the market performance of new products through the creation of product
23 specific knowledge.
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29 Building from this position, Smart et al. (2007) investigated processes of innovation that spanned
30 firm boundaries. Within this, social capital was taken as a core theme within a literature review for
31 identifying the elements of networked innovation. The result was specific themes that directed
32 subsequent data collection, which although focused around innovation, had numerous similarities
33 with aspects of social capital. These included the transfer of knowledge, security (trust) and
34 relationship management, which match theoretical and empirical work on social capital. Managerial
35 implications were then drawn from interviews in relation to processes that supported networked
36 innovation and the design of products. Scott-Young and Samson (2009) then outlined how social
37 capital developed within projects could be transferred to subsequent projects, enabling more
38 effective networked innovation over time. Lee et al. (2005) used social capital as a major explanatory
39 concept for research and development outcomes. Drawing directly from Ghoshal and Nahapiet
40 (1998), social capital was found to contribute incrementally when combined with individuals human
41 capital (education, experience etc). Social capital represented a means of accessing and acquiring
42 human capital more effectively than insular learning.
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48 Using an action research approach based on observational and retrospective work, Brookes et
49 al.(2007) mapped the network of social capital between project members in two aerospace projects.
50 Social capital represented a construct that could directly affect managerial actions, rather than
51 merely explaining particular phenomenon. Oke et al. (2008) highlighted the importance of the
52 selection of project workers in addition to the processes to support the development of social capital.
53 Oke et al. (2008) emphasised that managerial implications on new product development became
54 more meaningful by appreciating aspects of both the starting point, such as team selection, as well
55 as the end point, such as project performance.
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3 The above two sections outlined research that used social capital as a construct to explain important
4 aspects of projects and project-oriented organizations. In particular, by considering the social
5 aspects of project-oriented activities, it allowed the subject to move away from an overly positivistic
6 perspective that is often emphasised within the subject (Söderland, 2004). Compared to quality
7 management, project oriented research allows greater focus on specific organizational activities.
8 Rather than considering the organisational context in general, attention could be given to the
9 process of addressing particular opportunities. This may allow an organization to incrementally
10 accumulate social capital through a series of product developments, which may in turn support
11 organization level transformation, in the form of a continuous improvement culture. The next
12 section reviews supply chain management literature that uses social capital theory, that focused
13 upon inter firm relationships.
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19 ***4.4 Social capital in Supply Chain Management***

20 Within modern business, it is appreciated that firms no longer compete directly against one another
21 and that internal capabilities may no longer be sufficient to create a sustainable competitive
22 advantage (Porter, 1996). This is mirrored in the growing importance of supply chain management
23 which suggests that individualist firm behaviour is inadequate and that competitiveness is thus a
24 function of the extended supply chain (Lejeune and Yakova, 2005). Consequently, social network
25 theory highlights that the position of a firm within a network and the nature of these connections, as
26 defined by its social capital, can influence organizational activities such as innovation (Gulati et al.,
27 2000, Capaldo, 2007). Social capital thus provides direction for firms to develop supply chain
28 capabilities, enabling them to select and operate with appropriate alliance partners. The following
29 section discusses a number of themes observed within the field of supply chain management that
30 use the concept of social capital.
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35 The majority of the papers use social capital to explain the variation in performance in buyer-
36 supplier relations. Cousins et al. (2006a), for example, used the relational dimension of social capital
37 to explore buyer performance; Lawson et al. (2008) used both the relational and structural
38 dimension on buyer performance; and Krause et al. (2007) investigated the effects of all three
39 dimension in explaining performance in regards to supplier development activities. Adler and Kwon
40 (2002) stated that trust in the form of relational capital can be a powerful control mechanism to
41 prevent opportunistic behaviour. Ketchen and Hult (2007a) adds that trust may also simultaneously
42 promoting the transfer of knowledge between partners and reduces transaction costs, **with**
43 **Panayides and Venus Lun (2009) also relating trust to innovativeness.** Adding to the discussion on
44 relational capital and knowledge transfer, Cousins et al. (2006a) demonstrated the role of informal
45 means of socialization. Socialization was defined as "...the process by which an individual acquires
46 the social knowledge and skills necessary to assume an organizational role" (Cousins et al., 2006a;
47 p853). This was found to have a greater effect on performance than formal means, where relational
48 capital mediated this relationship. Furthermore, supplier development activities may enhance
49 performance in terms of quality, delivery and flexibility (Krause et al., 2007) and may support
50 product development across organisational boundaries (Koufteros et al., 2007, Oh and Rhee, 2008).
51 On the negative side however, the development of relational capital through long term relationships
52 may limit flexibility (Koufteros et al., 2007). Unfortunately, the greater attention given to relational
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3 over the other components of social capital does limit the theoretical contribution of these works
4 (Krause et al., 2007).
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7 Although research referring to cognitive and structural elements are limited, Krause et al. (2007)
8 does help to address this. The work suggests support for a relationship between cognitive capital, in
9 the form of perceived shared values between buyer and suppliers, and performance in terms of cost,
10 quality, delivery and flexibility. In the same study, Krause et al. (2007) also explored two aspects of
11 structural capital: the buyers' efforts to share information and supplier development activities. From
12 these, only supplier development activities were significantly related to performance in terms of
13 quality, delivery and flexibility. Also contributing to the under researched elements of social capital,
14 Lawson et al. (2008) suggested that structural aspects required specific attention to ensure valuable
15 resources could be accessed through supplier relations. In addition to relational capital, structural
16 aspects in terms of managerial communication and technical exchange were found to directly
17 influence buyer performance improvement such as product and process design, product quality and
18 lead-time. Furthermore, the paper details an analysis of covariance for the exogenous variables and
19 highlights a strong and significant relationship between the two antecedents of relational capital
20 (supplier integration and supplier closeness) and the two structural aspects (managerial
21 communication and technical exchange). This implies a correlation between relational and structural
22 capital, however the causality is not defined. This argument, although not emphasised directly in this
23 paper, is consistent with the findings of Tsai and Ghoshal (1998) who suggest a casuals relationship
24 between structural capital and relational capital. From an initial structural connection, relational
25 capital may be developed over time. If interaction is prolonged, there may even be a potential of
26 developed cognitive capital between actors, especially if relationships involve socialization activities,
27 for example job rotation. Singh and Power (2009) and Handley and Benton Jr (2009) then provide
28 direction on means for developing stronger relationships with trading partners, such as customers,
29 suppliers or outsourcing partners. These have been found to have a significant effect of alliance
30 performance (Yang, 2009).
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38 Importantly, without the presence of valuable resources or the means of acquiring them, firms may
39 have difficulty in benefiting from strategic alliances (Hamel, 1991). Thus, social capital represents an
40 important construct for explaining the reason for interest in strategic alliances. Building on the
41 relational capital construct, two complementary themes within the supply chain literature were
42 observed- organisational learning and innovation. Mellat-Parast and Digman (2008) demonstrated
43 that firms with quality management systems were more effective at strategic alliances. Being able to
44 more effectively develop trust with partners, these firms were better able to engage in cooperative
45 learning. Taylor (2005) also highlighted how trust was able to promote alliance based learning while
46 simultaneously promoting flexibility by reducing the need for formal contract based relationships.
47 Secondly, the logical progression of organisational learning promoted through the development of
48 trusting relationships, is the development of new intellectual capital in the form of innovations
49 (Panayides and Venus Lun, 2009). Tsai and Ghoshal (1998) demonstrated this phenomena within a
50 multi unit firm where social capital allowed resources to flow freely to where they were needed,
51 resulting in better performance. Ireland and Webb (2007) and Smart et al. (2007) looked at this
52 phenomena in supplier relations and open innovation respectively, and both found the development
53 of trust important for promoting innovation. Primo et al. (2007) suggest that within the context of
54 failure, by going beyond what may be required by contracts, positive social capital can be developed.
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3 This may also be important in the event of a supply chain failure, where collective action in
4 necessary to resolve cross company issues. The result can be the development of improved supply
5 chain sustainability, with greater focus on long term mutual success rather than short term contract
6 based relations (Vasileiou and Morris, 2006). Zhang et al. (2009) found that suppliers were more
7 willing to invest in technology with buyers initiated cooperative actions which proactively developed
8 relational capital.
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11 The final theme identified within the supply chain literature is the role of community-based control
12 mechanisms. Putnam (1995) considered the types of social capital specifically related to collective
13 action, which are not directly related to individuals or specific relationships. Instead these relate to
14 the sum of relational connections across a community that represent community based cognitive
15 capital. This was the approach considered by Agarwal and Shanker (2003) when on-line transactions
16 required community based responsibility systems. Cadilhon (2003), Batt (2003) and Jiang (2009)
17 produced similar findings, but in relation to managing suppliers in developing countries where direct
18 involvement was often not possible and non-conformance to code-of-conducts could have serious
19 effects on corporate reputation. With greater difficulties related to the development of relational
20 capital, peer-to-peer control mechanisms, in the form of "social norms", were found to have a much
21 greater effect on adherence compared to threats or incentives. The work showed that the relational
22 capital was built between local firms, which mediated supplier conduct. Referring to social control
23 mechanisms (Ouchi, 1979), this could represent the development of a "preferred supplier" identity
24 that needed maintaining when dealing with multinational companies.
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30 In sections 4.1-4.3, the studies consider relationships within the firm, between project team
31 members (Brookes et al., 2007) or intra-firm members involved in innovation (Smart et al., 2007).
32 SCM studies represent different types of relationships, that are external to the firm such as buyer-
33 seller relationship (Cousins et al., 2008). Consequently, the relationships within the firm can be
34 viewed as finite and definable compared to open and infinite options available outside the firm.
35 Hence, in studies of those relationships external to the firm, there may be an inherent tendency of
36 those returning information to select suppliers where communication is regular, routine or positive.
37 Consequently, as these studies attempt to correlate firm performance with elements of the buyer-
38 supplier relationship, there may be a positive bias within these studies. If this influences the results
39 of the work presented on supply chain management, this is an important issue that needs solving to
40 progress this field of research.
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45 5. Discussion

46 The above discussion illustrates the wide range of applications that social capital has been applied to
47 in operations management. Social capital is able to do this by integrating different levels of analysis
48 from the individual to inter organisational networks as well as assisting in explaining behaviour at
49 each level. Social capital's relevance remains, even when applied to other fields of operations
50 management such as the implementation of new technologies. Although Small and Yasin (1997)
51 were able to link implementation policy with post implementation performance, from the
52 perspective of social capital, the process of implementation could be viewed as the accumulation of
53 social capital which facilitates behavioural changes necessary for the adoption of new approaches.
54 As evidence for this, Koulikoff-Souviron and Harrison (2008) considers the role of policy in order to
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3 promote the development of social capital, however, compared to the work that used social capital
4 to merely explain particular phenomena, policy related work is in the minority but may offer the
5 most direction to practitioners.
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8 Unfortunately, the above review shows that operations management is employing social capital to
9 confirm observations, rather than building social capital theory. Notwithstanding this, such work's
10 contribution to validating constructs such as "trust", which may tend to be overlooked from other
11 perspective, for example agency theory (Eisenhardt, 1989), are important for developing the field.
12 Appreciating the value of trust in buyer-supplier relations can lead to reduced transaction costs,
13 minimal contracting, and as outlined within this review, more effective sharing of information which
14 can lead to enhanced innovative performance (Nahapiet and Ghoshal, 1998, Tsai and Ghoshal, 1998).
15 What operations management's use of social capital does not do effectively, is move away from
16 network theory (Bell, 2005), by emphasising what requires social capital to be defined as a separate
17 theory. Even more concerning than this, as highlighted by Lawson et al. (2008), is the limited use of
18 structural capital for accessing new and valuable resources. Although socialization techniques were
19 included within some supply chain literature (Cousins et al., 2006a, Cousins and Menguc, 2006,
20 Cousins et al., 2008), it could simply be viewed as a more concerted means of developing relational
21 capital through both formal and informal means.
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26 Although the work covered within this literature review only represents a very small portion of
27 operations management literature (~0.55% of all three and four star journal articles), the work does
28 cover a broad range of industries and contexts. The industries covered include clothing, agricultural,
29 automotive and e-business, and countries including Australia, Vietnam and Chile. However, the
30 majority of the research focuses on cross industry research and large organisations within the United
31 States and Europe. The wide range of applications, as well as showing the versatility of social capital,
32 creates many opportunities for further research in the field of operations management. The next
33 section considers this in relation to the work that has been present to this point to propose how
34 operations management could benefit from further research using social capital.
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40 **6. Future research and Conclusion**

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42 This systematic review of literature within operations management has identified a number of
43 interesting applications for the concept of social capital. Supply chain management represents an
44 established topic of operations management research (Cousins et al., 2006b), which is reflected in its
45 use of new theories to attempt to explain existing problems. Even though publications in this area
46 seem to recognise social capital as an established construct, its use can still be developed
47 significantly. This may consist of more effective mapping of firm's networks of suppliers instead of
48 simply requiring participant firms to give information about a self selected supplier. By using
49 methodologies similar to Tsai and Ghoshal (1998), more insight than simply relationship strength
50 could be gained. Although potentially difficult to operationalize in the supply chain context, Brookes
51 et al.'s (2007) mapping of member's social capital may be a possible methodology. Even though it
52 may only be possible to conduct work with a small number of firms, the potential contribution to
53 operations management theory may be significant. Subsequent theory confirmation could then be
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3 employed to confirm propositions on a larger scale, by possibly targeting particular types of buyer-
4 supplier relationships.
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6 The literature on social capital in supply chain management highlights three additional areas. Firstly,
7 Lawson et al. (2008) suggests that many studies in the supply chain context have focused on well
8 established relationships and have "not adequately incorporated less routine, more strategic and ad
9 hoc exchanges"(p457). Consequently, areas such as process improvement and operational
10 entrepreneurial activities may benefit from more research taking a social capital perspective.
11 Secondly, with the exception of Krause et al. (2007) and more recently Carey et al. (2011), it was
12 difficult to find studies that incorporate the use of all three dimensions of social capital. Not only
13 may such studies provide insight on the influence of the dimensions in different situations, they may
14 also provide insight into how different capital may be accumulated. An example of this is Tsai and
15 Ghoshal's (1998) study that suggests relational capital (i.e. trust) is highly dependent and
16 significantly related to cognitive capital (i.e. shared values) in the context of innovation. Thirdly, the
17 literature reviewed above, particularly in the supply chain context, consistently promotes the
18 positive aspect of social capital. Although somewhat contrary to the aims of this paper, awareness of
19 pitfalls as well as benefits may be insightful for practitioners (as presented by Edelman et al., 2004).
20 Hence Villena et al.'s (2011) "The Dark Side of Buyer-Supplier Relationships: A Social Capital
21 Perspective" is timely.
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27 As an inherently social practice, project management has the potential to benefit significantly from
28 employing social capital as a theoretical construct. The nature of projects require a range of
29 individuals to work closely together to deliver measureable results. Without work considering the
30 social capital that can be developed within projects, theoretical justification of project-oriented firms
31 is difficult without functional silos in which to accumulate knowledge (Hobday, 2000). Fortunately,
32 Nahapiet and Ghoshal (1998) and Zhao and Anand (2009) highlight how teams of experienced
33 professionals are able to effectively work together. Of all the sections, the range of contributions of
34 this section potentially leaves fewest gaps for further exploratory research. However, one particular
35 area that could be developed is the role of supporting infrastructure within project oriented
36 organisations (Ayas, 1997). Grabher (2002), presented these as the "boring institutions" that support
37 "cool projects". This could be combined with case based research that considers the need for policy
38 decisions to reflect the requirements of the business and business environment. This type of
39 research could potentially offer better direction than simply "relationship management" (Smart et
40 al., 2007) and instead integrate socialization activities with specific knowledge sharing processes.
41 **The resulting developments of project related commitment (Yuan et al., 2009, Yang, 2009) may then
42 provide important social control mechanisms (Jiang, 2009) with workers operating autonomously.**
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48 The development of a suitable organisational or network context (or community) was covered in
49 many of the topic areas. The aim of this type of research was to create environments that promoted
50 (or are at least conducive to) a particular type of behaviour. This helps reduce the need for direct
51 incentives and sanctions, or helps intrinsically motivate those within the system to behave in a
52 certain way (de Treville and Antonakis, 2006). This may be in the form of creative (Choo et al., 2007),
53 or voluntary (Wisner et al., 2005) behaviour that can be important for supporting innovation. By
54 building on this and complimentary work on organisational context such as organisational
55 ambidexterity (Birkinshaw and Gibson, 2004), more robust frameworks for the creation of a healthy
56 organizational context could be developed. With the range of potential benefits and applications, a
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3 general framework could be seen as a means of giving organizations greater flexibility (Narasimhan
4 et al., 2004). A particular element of this may be the promotion and support of entrepreneurial
5 behaviour within the firm to identify and pursue new opportunities. The supporting organisational
6 context would be critical to ensure fear of failure did not prevent risk taking.
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10 The range of industries and countries covered within this literature represent the final area of future
11 research. By using this range of contexts, it may be possible to contribute to social capital theory
12 itself. Bredeillet et al. (2010) considered how cultural aspects affected different countries
13 approaches to project management. Taking a similar approach, differences in the relative
14 importance of aspects of social capital could be compared across contexts (industrial and cultural).
15 Lin (2001) presented such an idea within the context of China where different forms of capital
16 contributed in different degrees when individuals were looking for new jobs. Research of this type
17 would enable the development of a social capital framework that was both contingent on the aims
18 of the organisation, but also adapted to the requirements of the environment and context (both
19 cultural and industrial).
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23 Viewed in its entirety, this literature review offers a broad insight into the use of social capital within
24 operations management. The result is literature able to contribute to the development of a
25 conceptual model for use within, although not restricted to, operations management. From the
26 applications considered, this model could potentially be used within a range of applications,
27 including supply chain management, strategic alliances, project management, new product
28 development or quality improvement. Each element of the model will be presented with examples
29 of literature contributing to its inclusion. From the model, a number of propositions will be given to
30 outline theoretical relationship between the different elements of the model. Figure 1 represents
31 how the initial social capital of an organizational activity would be made up of the three elements,
32 which have the potential to affect the performance of the activity. This may be through effective
33 cooperative learning (relational capital), collective innovative actions (cognitive capital) or access the
34 valuable resource (structural capital). Each of these element contribute to the initial social capital of
35 an activities and promote improved activity performance (P1). Importantly, the relationship may be
36 affected by both the form of social capital and type of activity being undertaken, which represent
37 important mediating variable. In particular, non productive relational capital may negatively affect
38 activity performance, which this model would allow for. This might include strong connections
39 within a team that are non activity related, such as a shared pass time or common dislike for a
40 manager.
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47 P2 then states that the social capital accumulated throughout the project will be moderated by
48 organizational processes, such a human resources, team based measures or relationship
49 management. P3 then states the activity performance will improve as the resulting social capital
50 increases. As with P1, this will be dependent on the form of social capital development being of a
51 productive form. This conceptual model will also enable particular organizational processes to be
52 linked with the development of particular forms of social capital and their relationship with activity
53 performance.
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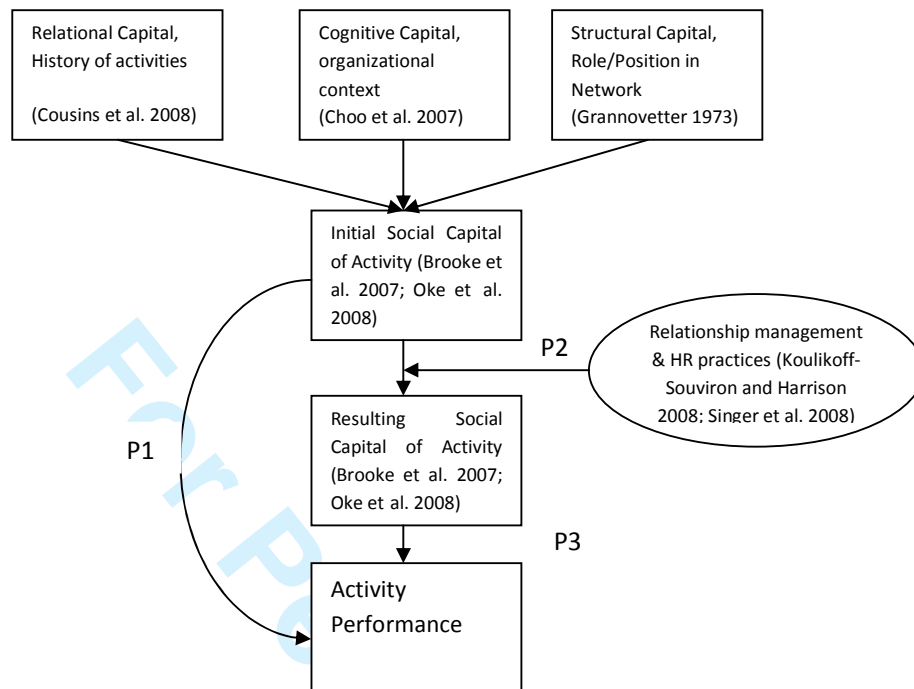


Figure 1:- Conceptual Model of social capital within operations management activities

In conclusions, 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. Even without such a review, the development of the field has 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 been able to contribute to social capital, but also by identifying 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 problems 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 insight operations management my provide the underlying theories.** This should then support the formulation of coherent research stratagem for the different aspects of our discipline.

Appendix

Citation	Journal	Summary	Field	Use of Social Capital
(Brookes et al., 2007)	IEEE	How social capital of NPD teams affects performance, use a mapping process to use SC as a management tool to affect performance	NPD	Central Theme
(Lee et al., 2005)	IEEE	Human and Social capital considered in relation to the outcomes of product development activities, SC in incremental on Human Capital	NPD	Central Theme
(Yuan et al., 2009)	IEEE	Software projects, coordination internally and internally, and transfer of tacit knowledge promotes better performance, sharing explicit knowledge as not effect, trust and project commitment then help affect other processes	NPD	Central Theme
(Smart et al., 2007)	IJOPM	About innovation across a network, considered design oriented knowledge when configuring inter organizational networks	Networks/ NPD	Central Theme
(Jones, 2005)	IJOPM	Corporate entrepreneurs, in regeneration, looking at how the role of social capital can promote this	Entrepreneurship	Central Theme
(Panayides and Venus Lun, 2009)	IJPE	How trust affects supply chain performance and innovativeness	Supply	Central Theme
(Morton et al., 2006)	IJPR	Looks at the role of relationship management to support project and product development	SA, NPD	Central Theme
(Koufteros et al., 2007)	JOM	Embeddedness in supply chain, innovation and quality as measures of performance, embeddedness promotes this, gray and black box integration	Supply	Central Theme
(Cousins et al., 2006a)	JOM	Better social ties with suppliers, looking at formal and informal socialization for the development of relational capital	supply	Central Theme
(Lawson et al., 2008)	JOM	SC to leverage value creation,	supply	Central Theme
(Ireland and Webb, 2007)	JOM	Supply chain to promote joint entrepreneurship and learning, using trust	supply	Central Theme
(Krause et al., 2007)	JOM	Social capital accumulation with suppliers, looking at structural, relational and cognitive forms of SC	supply	Central Theme
(Batt, 2003)	SCM	look at a supply chain in Vietnam	supply	Central Theme
(Oh and Rhee, 2008)	IJOPM	looking at factors that affect supplier collaboration in automotive industry	supply	Explanatory
(Jørgensen et al., 2003)	IJOPM	How facilitated self assessment can rejuvenate CI initiative	CI	Explanatory
(Scott-Young and Samson, 2009)	IJOPM	Looks at how to manage project teams needing to implement capital projects quickly	PM/ NPD	Explanatory
(Primo et al., 2007)	IJOPM	How firms manage supply chain failures and how to manage them to promote reduce dissatisfaction when failure occurs	Supply	Explanatory
(Neely, 2005)	IJOPM	Review of performance measurement literature	Perf Measurement	Explanatory
(Koulikoff-Souvion and Harrison, 2008)	IJOPM	Use of HR practices to institutionalise SM practices, may also be used to dissolve particular relationships	Supply/HR	Explanatory
(Taylor, 2005)	IJOPM	Success factors in alliances, most important one is openness and adaptability, learning as a central part of this	Strategic Alliance	Explanatory
(Gutierrez Gutierrez et al., 2009)	IJOPM	6 sigma and statistical process control considered in relation to the success of quality improvement initiatives,	QM	Explanatory

(Mellat-Parast and Digman, 2008)	IJPE	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	SA, QM, Supply	Explanatory
(Handley and Benton Jr, 2009)	JOM	aspects of outsourcing practices that promote performance, including relationship management, contracting doesn't support performance	supply/outsourcing	Explanatory
(Cousins and Menguc, 2006)	JOM	Enhancing interfirm relationships, socialization as an important mechanism, improve supplier communication and performance	supply	Explanatory
(Narasimhan et al., 2004)	JOM	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.	competences	Explanatory
(Ketchen and Hult, 2007a)	JOM	integrate supply chain, as supply chains compete, best value, not only focused around a particular performance metric	Supply	Explanatory
(Oke et al., 2008)	JOM	effect of strength of ties of brokers in NPD activities in relation to performance	NPD	Explanatory
(Singh and Power, 2009)	SCM	Looks at how to build strong relationships with trading partners.	Supply	Explanatory
(Segelod, 2000)	IJPE	Looks at how firms invest in the development of professional service groups, they invest at the same level of other firms	Project Management/ Capabilities	Related
(Singer et al., 2008)	IJPE	How do workers related to group based performance incentive measures	Human Resource	Related
(Ayas, 1997)	IJPE	Increase learning from projects through introducing an integrative framework	Project Management	Related
(Yang, 2009)	IJPR	Looks a relationship characteristics	Supply	Related
(Choo et al., 2007)	JOM	Learning and knowledge creation in quality improvement, how an approach can give different types of learning and create a sustainable comp advantage	Quality Management	Related
(Jiang, 2009)	JOM	How the governance, whether control, or peer to peer affects the likelihood that suppliers is developing countries will adhere to supply chain codes of conduct	Supply	Related
(Wisner et al., 2005)	JOM	Volunteers in NFP organisations, service design to allow for this, and ops factors and their effect on loyalty. This will determine if they contribute or recommend to other potential volunteers	Voluntary	Related
(Zhang et al., 2009)	JOM	relational capital to support the investment in technology that will contribute to a buyer supplier relationship, relational stress makes this more difficult	Supply/ Outsourcing	Related
(Vasileiou and Morris, 2006)	SCM	affect of various factors on the sustainability of a supply chain	Supply	Related
(Agarwal and Shankar, 2003)	SCM	Proposes methods for building trust within an e enabled supply chain	Supply	Related
(Cadilhon, 2003)	SCM	proposes a conceptual framework for the distribution of vegetables in south east Asia	Supply	Related

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Appendix

Citation	Journal	Summary	Field	Use of Social Capital
(Brookes et al., 2007)	IEEE	How social capital of NPD teams affects performance. Uses a mapping process to show that SC affects performance	NPD	Central Theme
(Lee et al., 2005)	IEEE	Human and Social capital considered in relation to the outcomes of product development activities	NPD	Central Theme
(Yuan et al., 2009)	IEEE	Software projects and transfer of knowledge. Trust and project commitment shown to affect other processes	NPD	Central Theme
(Smart et al., 2007)	IJOPM	Innovation in networks and considered design oriented knowledge when configuring inter organizational networks.	Networks & NPD	Central Theme
(Jones, 2005)	IJOPM	Corporate entrepreneurs and how the role of social capital can promote this corporate regeneration	Entre'ship	Central Theme
(Panayides and Venus Lun, 2009)	IJPE	How trust affects supply chain performance and innovativeness	SCM	Central Theme
(Morton et al., 2006)	IJPR	The role of relationship management in supporting project and product development	SA, NPD	Central Theme
(Koufteros et al., 2007)	JOM	Embeddedness in supply chain, innovation and quality as measures of performance	SCM	Central Theme
(Cousins et al., 2006a)	JOM	Investigated formal and informal social ties with suppliers in the development of relational capital	SCM	Central Theme
(Lawson et al., 2008)	JOM	Social capital to leverage value creation	SCM	Central Theme
(Ireland and Webb, 2007)	JOM	Using trust to promote entrepreneurship and learning	SCM	Central Theme
(Krause et al., 2007)	JOM	Social capital accumulation with suppliers using structural, relational and cognitive forms of SC	SCM	Central Theme
(Batt, 2003)	SCM	Supply chains in Vietnam	SCM	Central Theme
(Oh and Rhee, 2008)	IJOPM	Factors affecting supplier collaboration in automotive industry	SCM	Reference d
(Becker and Zirpoli, 2003)	IJOPM	How facilitated self assessment can rejuvenate continuous improvement initiatives	CI	Reference d
(Scott-Young and Samson, 2009)	IJOPM	How to manage project teams that need to rapidly implement capital projects	PM/ NPD	Reference d
(Primo et al., 2007)	IJOPM	How firms manage supply chain failures and how to reduce dissatisfaction when failure occurs	SCM	Reference d
(Neely, 2005)	IJOPM	Review of performance measurement literature	Perf Measurement	Reference d
(Koulikoff-Souviron and Harrison, 2008)	IJOPM	Use of HR practices to institutionalise SCM practices and dissolve unwanted relationships	SCM	Reference d

(Taylor, 2005)	IJOPM	Success factors in alliances. Most important is openness, learning and adaptability	Strategic Alliance	Reference d
(Gutierrez Gutierrez et al., 2009)	IJOPM	6 sigma and statistical process control considered in relation to the success of quality improvement initiatives	QM	Reference d
(Mellat-Parast and Digman, 2008)	IJPE	How quality management practices affect strategic alliances and role of trust and relations to promote learning	SA, QM, SCM	Reference d
(Handley and Benton Jr, 2009)	JOM	Aspects of outsourcing practices that promote performance, including relationship management	SCM & Outsourcing	Reference d
(Cousins and Menguc, 2006)	JOM	Enhancing interfirm relationships, supplier communication and performance. Socialization as an important mechanism	SCM	Reference d
(Narasimhan et al., 2004)	JOM	Competences that allow flexibility from AMT and strategic sourcing	Competences	Reference d
(Ketchen and Hult, 2007a)	JOM	Supply chain competition and multiple performance dimensions	SCM	Reference d
(Oke et al., 2008)	JOM	The effect of strength of ties of brokers in NPD activities in relation to performance	NPD	Reference d
(Singh and Power, 2009)	SCM	How to build strong relationships with trading partners	SCM	Reference d
(Segelod, 2000)	IJPE	How firms invest in the development of professional service groups	PM	Explanatory
(Singer et al., 2008)	IJPE	How do workers relate to group based performance measures	HR	Explanatory
(Ayas, 1997)	IJPE	Increase learning from projects through an integrative framework	PM	Explanatory
(Yang, 2009)	IJPR	Looks a relationship characteristics in supply chain alliances	SCM	Explanatory
(Choo et al., 2007)	JOM	Learning and knowledge creation in quality improvement	QM	Explanatory
(Jiang, 2009)	JOM	How governance policies affects supply chain codes of conduct	SCM	Explanatory
(Wisner et al., 2005)	JOM	Effect of service design on loyalty of volunteers in NFP organisations	Voluntary	Explanatory
(Zhang et al., 2009)	JOM	Contribution of relational capital in supporting investments in technology in buyer supplier relationships	SCM	Explanatory
(Vasileiou and Morris, 2006)	SCM	Affect of various factors on the sustainability of a supply chain	SCM	Explanatory
(Agarwal and Shankar, 2003)	SCM	Proposes methods for building trust within an e-enabled supply chain	SCM	Explanatory
(Cadilhon, 2003)	SCM	Proposes a conceptual framework for the distribution of vegetables in south east Asia	SCM	Explanatory

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Stage One	Stage Two	Stage Three	Stage Four	Stage Five
Identify Database	Identify Search terms and citation searches	Exclusion analysis	Identify use of Social Capital	Categories resultant citations into themes
Key Results	Key Results	Key Results	Key Results	Key Results
Databases (8) Journals (11)	Citations found (73)	Biography (1) Editorial (2) Literature Review (2) Unrelated (9) Indirect (20) Total removed (34)	Central theme (13) Explanatory (11) Referenced (15)	Supply chain Management (20) new product development (7) Strategic Alliances(4) Project Management (3) Quality Management (3) Human resources (1) Networking (1) Outsourcing (1)


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graph LR
    A[Identify Journals] --> B[Journal Search (73 Citations)]
    B --> C[Exclusion Analysis (39 Citations)]
    C --> D[Central theme (13 Citations)]
    C --> E[Supporting theme (26 Citations)]
    D --> F["Minor Themes  
- HR  
- Motivation  
- Entrepreneurship  
  
Major themes  
- QM  
- CI  
- PM  
- NPD  
- SCM"]
    E --> F
  
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Table 1: Summary of the Systematic review process and results (adapted from Thorpe et al., 2005)

Journal	ABS Ranking	Databases Used	Papers
Journal of Operations	4	Scencedirect	23

Management			
Production and Operations Management	3	Wiley Interscience	0
International Journal of Production Economics	3	Scencedirect	9
International Journal of Operations and Production Management	3	Emerald	19
Supply Chain Management: An International Journal	3	Emerald	11
Reliability Engineering and System Safety	3	Science Direct	2
Manufacturing and Service Operations Management	3	Ebsco	0
IEEE Transactions on Engineering Management	3	Ebsco	3
Journal of Scheduling	3	Wiley Interscience	0
International Journal of Production Research	3	Informaworld	6
Production Planning and Control	3	Ebsco	0
Total number of Papers			73

Table 2: ABS Operations Management Journals

	Major Topics										Minor Topics		
	SCM*	SA^	Net*	OS^	NPD*	PM*	QM*	PD*	Tech*	AP*	HR*	Ent^	Vol^
Dilworth (1996)						1	1	1	1		1		
Hayes et al. (2005)			1			1			1	1			
Heizer and Render (1993)						1	1	1			1		
Hopeman (1980)					1		1	1			1		
Nahmias (2004)	1					1	1	1					
Johnson et al. (2007)	1					1	1	1					
Greasley (2006)	1					1	1	1					
Hill (1995)	1						1		1				
Fogarty (1991)						1	1			1			
Waters (1999)	1					1		1			1		
Schoeder (1993)							1			1	1		
Martiwich (1996)						1	1				1		
	5	0	1	0									
Total times cited in books	6				1	9	10	7	3	3	6	0	0
	20	4	1	1									
No. times cited in articles	26				7	3	2	0	0	0	1	1	1

* denotes topic identified in Operations Management books ^ denotes additional topic identified in articles

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, Mot- motivation

Table 3: Theme identification and comparison

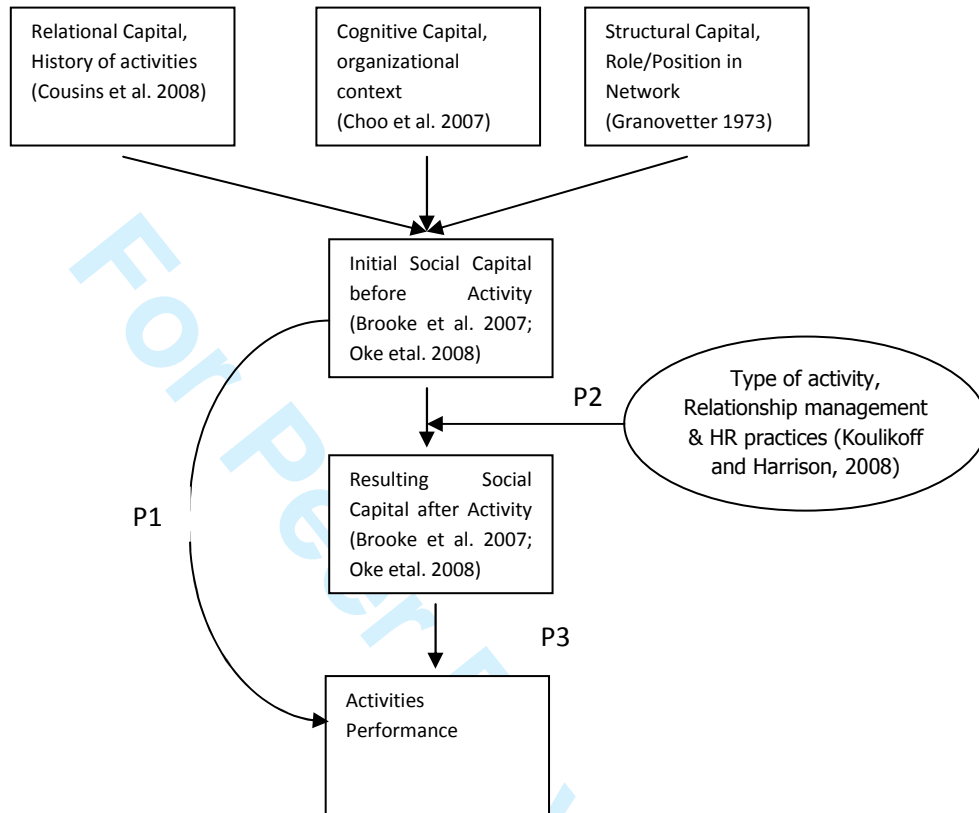


Figure 1:- Conceptual Model of social capital within operations management activities