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Procuring sustainably in social housing: The role of social capital

1.0 Introduction

Scholarly interest in sustainable procurement is growing as it is recognized that an organization's impact is a function of its procurement choices (Tate et al., 2012). Procurement has a critical role in sourcing sustainably and through its supplier development work it can positively change behaviors so that organizations act more sustainably. Equally, suppliers can provide resources that buyers can use and learn from (Cousins et al., 2004). Implementation of sustainable procurement practices though is not yet widespread (Tate et al., 2012). Specific areas identified in the literature as needing further research to understand and remove the barriers to implementation include; strategic sourcing and inter-organizational cooperation (Gold et al., 2010), education and training of procurement staff and suppliers (Lee and Klassen, 2008; Seuring and Müller, 2008), and supplier engagement (Carter and Easton, 2011).

The education of buyers and suppliers is important as this requires both parties to own and embrace sustainability. Pushing the issues back down the supply chain without internalizing the challenge and ethos of sustainability can create conflict and only surface-level change. Recognizing the inter-functional challenge of sustainability is at the heart of developing and understanding collaboration (Ellinger et al., 2006; Fawcett and Magnan, 2002; Schneider and Wallenburg, 2012) and supports the notion that sustainable procurement must extend to a wider network. A shift from controlling suppliers towards collaboration and incentivizing is identified as a success factor in previous studies (Carter and Dresner, 2001; Simpson, 2010; Vachon and Klassen, 2006) yet this narrow, linear approach to collaboration focused only on the buyer-seller dyad can be limiting and procurement must engage with broader networks particularly when addressing complex economic and social impacts and trade-offs (Hoejmose and Adrien-Kirby, 2012).

This study responds to the call by supply management scholars to move beyond mere descriptions of sustainable procurement and to explore its complexity (De Bakker et al., 2005; Hoejmose and Adrien-Kirby, 2012). Our response is to investigate sustainable procurement activity through the lens of social capital theory, which is a concept of emerging interest in procurement research (Cai et al., 2011; Cousins et al., 2006; Krause et al., 2007; Lawson et al., 2008). The positive relationship between accumulated buyer-seller social capital and improved buyer performance has been established in prior studies (Krause et al., 2007; Lawson et al., 2008), evidenced through operational and information linkages (Cai et al., 2011) and socialization processes (Cousins et al., 2006).

Based on this emergent social capital agenda in the procurement field we posit that the establishment of cooperative norms through social capital is important to drive sustainable procurement activity and address its challenge of inter-organizational cooperation (Gold et al., 2010). The overall aim of the paper is to bring together the topics of social capital and procurement to unearth new insights and explanations into how sustainability-related practices develop in organizations. As part of this synthesis we focus on the supply network, an approach identified as necessary but challenging for work related to sustainable procurement (Crespin-Mazet and Dantenwill, 2012).

We begin with an overview of the empirical context of the research, which is the social housing sector. The conceptual background of social capital and its relationship with

sustainable procurement is then explored, from which research hypotheses are developed. The methods and analysis procedures are outlined and justified before the results are presented. We then provide an analysis and discussion of the findings and our key contributions. The paper finishes with a section containing some concluding remarks, implications for policy development and suggested future work.

2.0 Empirical context

Social housing networks provide the empirical context for this study. In a European context, social housing describes residential properties owned by local authorities, or agents acting on their behalf, which are let to tenants at regulated affordable rents. CECODHAS Housing Europe represents 45 national and regional federations responsible for managing over 27 million social homes – approximately 12% of existing dwellings in EU member states. Similar provision, albeit often on smaller levels, exist in North America, Australasia and Africa/Middle East. Recipients of social housing are usually amongst the most vulnerable in a society and the sector is often characterized by high unemployment and social exclusion amongst tenants (Hills, 2007). In the UK, social housing is government-regulated and represents approximately a fifth of homes (Reeves et al., 2010). Homes are provided by Registered Providers (RPs), most of which have explicit social objectives (Gibb and Nygaard, 2006). RPs have broad remits typically involved with constructing new social homes, refurbishing and maintaining existing housing stock and increasingly they are tackling broader social and community issues.

An organization's role in sustainability is predicated on their ability to influence economic development and their access to resources and knowledge (Shrivastava, 1995). The significant economic and social impacts of social housing ensures sustainability is a core value for RPs and the issues sustainability raises are familiar to procurement professionals in the sector (Harwood and Humby, 2008). Beyond the rhetoric, sustainable procurement is impeded by the complexity of the industry's networks consisting of public sector regulators, third sector registered providers, private sector suppliers, procurement consortia, tenants and local communities (Clarke and Herrmann, 2004; Meehan and Bryde, 2011). In addition, the government regulates the move towards sustainable procurement in the sector, yet this can lead to a 'wait and see' mentality to change, driven by the desire to avoid punitive measures, or to gain incentives and funding. To illustrate the point, RPs' remits cover construction, maintenance and disposal of housing stock and is conducive to life cycle approaches, yet the absence of regulatory financial incentives to adopt these methods often leads to a predominance of short-term measures focused on reducing capital costs (Ford et al., 2011).

3.0 Conceptual framework and hypotheses development

The conceptual framework for the study is illustrated in Figure 1. Social capital is conceptualized as having three main elements: relational, structural and cognitive (Nahapiet and Ghoshal, 1998). We posit that there is a positive covariant relationship between the levels of sustainability-related social capital and sustainable procurement activity. However, it must be noted that the direction of the relationship is less clear, as the nature of the social capital and sustainable procurement constructs are likely to be interdependent. Hence, whilst we focus on aspects of the relationship we are not seeking to make any claims of causality.

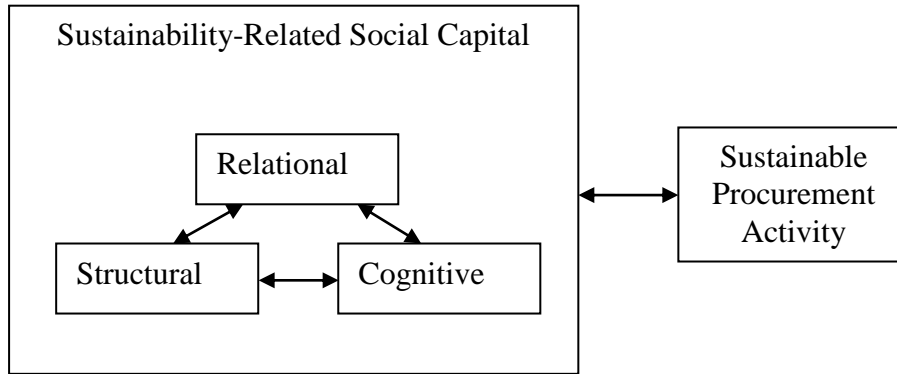


Figure 1: Conceptual framework of the dimensions of social capital and sustainable procurement activity

An overall proposition and three hypotheses are developed to frame our exploration of the relationship between the concepts of social capital, with its three constituent parts and sustainable procurement activity. In the next section we discuss each part of the conceptual framework in more detail and, from that discussion, derive the proposition and hypotheses.

3.1 Sustainable Procurement Activity

Much of the extant procurement literature has taken an attenuated view of sustainability, focused predominantly on environmental impacts (see, Ball et al., 2006; Dyllick and Hockerts, 2002; Tate et al., 2012) with economic and social dimensions lacking in many academic and corporate agendas (Diniz and Fabbe-Costes, 2007; von Geibler et al., 2006; Yongvanich and Guthrie, 2006). However, for the purposes of this study we take a more holistic perspective and define sustainable procurement as “the pursuit of sustainability objectives through the purchasing and supply process, incorporating social, economic and environmental elements” (Walker and Jones, 2012, p15), which integrates the three pillars of the triple bottom line (TBL) (Elkington, 1997). Sustainable procurement potentially changes the orientation and practice of the procurement function to ensure the three dimensions and temporal elements are considered throughout their decision making. This involves an increased engagement with, and sensitivity to, different stakeholder perceptions that demands good internal and external networks, beyond tier one suppliers (Schneider and Wallenburg, 2012). The exposure to these new stakeholders alters the traditional role of procurement and has the potential to create further changes in direction and decision making.

3.2 Sustainability-Related Social capital

Social capital is contextually defined (Nahapiet and Ghoshal, 1998), in this case to the goal of sustainable development, although it is broadly acknowledged as a valuable resource made available through the establishment of relationships (Dreyer et al., 2006). Social capital theory is emerging as a concept of interest in procurement research (Cai et al., 2011; Cousins et al., 2006; Krause et al., 2007; Lawson et al., 2008), which is perhaps unsurprising given the dominance of the relational view, where buyer-seller partnerships can deliver strategic advantage (Dyer and Singh, 1998) through accessing the other party’s resources, initiatives and innovation (Håkansson and Ford, 2002; Huemer et al., 2009).

In addition to the interest of social capital to the wider procurement field, there is sufficient justification for investigating the relationship between social capital and sustainable procurement specifically. The perceived value and importance of social capital to sustainability is recognized (Hansen et al., 2009; Sheate and Partidário, 2010; Walter et al.,

2007). This is predicated on the view that sustainable procurement brings considerable challenges, the scale and scope of which require knowledge-based network approaches as they cannot be overcome by the efforts of individual organizations (Passerini and Wu, 2008). Despite this acknowledgement, social capital research still tends toward an organizational focus (Cravens et al., 1996) leading to a gap in understanding social capital in wider inter-organizational, network or industry perspectives. An RP occupies a central position within their network and can potentially harness the power of the social capital available. Our overall proposition is:

P1: An accumulation of social capital in the supply network of social housing provision is related to higher levels of sustainable procurement activity in RPs.

3.2.1 Relational

The relational dimension of social capital refers to the nature and quality of relationships developed over time, and is evidenced through behavioral attributes including trustworthiness, shared group norms, obligations and identification (Davenport and Daellenbach, 2011). The trust implicit in these social ties can play a critical role in stimulating collaborative behaviors, yet the risk of over-embedding buyer-seller relationships emphasizes the potential for constraining social capital rather than enabling it (Cousins et al., 2006; Nahapiet and Ghoshal, 1998). Trust and socialization can stimulate integration (van Bommel, 2011) and it can facilitate interaction as the information received from these personally linked sources is seen to be more reliable and unique (Coleman, 1988; Tenbrunsel et al., 1999). Decision-makers in the procurement process need to ensure they have well-informed access to credible sustainability-related information. We posit that a build-up of relational social capital, which we define as a person's ability to become a credible source of sustainability-related knowledge by being well-informed on all aspects of sustainability, is positively related to sustainable procurement activity. This leads to our first hypothesis:

H1: The level of relational social capital in the supply network of social housing provision will be a significant predictor of sustainable procurement activity in RPs.

3.2.2 Structural

Structural social capital relates to the connections and social ties between parties (Inkpen and Tsang, 2005; Villena et al., 2011) that can be used to access information. As sustainability demands a move from a dyadic focus towards a network perspective, connected networks can access additional resources (Burt, 1992; Das and Teng, 2000). Coordination and dependency however can be difficult as information and knowledge become critical areas to control (Faisal, 2010), and access can be limited, particularly if these have commercial value and contractual sensitivities (Wycherley, 1999). Thus, the power structure surrounding who has access to knowledge is an important issue. Actors in brokerage positions affect critical links in the network and have strong positions through increased access and autonomy to monitor information. Network centrality can increase a stakeholder's ability to exchange or combine resources, add value through innovation (Gargiulo and Benassi, 2000; Tsai and Ghoshal, 1998) and can develop their social networks to create collaboration opportunities (Rozemeijer et al., 2012).

Empirical research shows relationship quality to be negatively related to knowledge acquisition (Cousins et al., 2006). While this sounds counter-intuitive, the explanation is that very close relationships operate to the detriment of other outside influences and shield organizations from other external sources of information (Cousins et al., 2006), thus limiting

the exposure to, and creation of, new knowledge (Edelman et al., 2004; Locke, 1999). The suggestion here is that to build structural social capital, organizations should promote knowledge sharing and relational approaches beyond the buyer-seller dyad and should seek to engage with the wider network to increase sustainable procurement knowledge reliability. Structural social capital in this context relates to access to creating and sharing sustainability-related knowledge. This leads to our second hypothesis:

H2: The level of structural social capital in the supply network of social housing provision will be a significant predictor of sustainable procurement activity in RPs.

3.2.3 Cognitive

Cognitive aspects of social capital centre on shared representations and meaning (Nahapiet and Ghoshal, 1998). With reference to sustainability, harnessing a collective vision of the diverse stakeholders in the network is essential, particularly for assessing social impacts (Hall and Vredenburg, 2003). Equally, the different elements of the TBL demand an integrative interpretation to foster goal congruency and avoid contradictory outcomes. An issue arising is that stakeholder consensus is difficult to achieve; thus, organizations revert to government regulations as this is the only agreed minimum standard (Giunipero et al., 2012). This can prevent organizations going 'over and above' what is legally required of them, as attempts to push the agenda forward can expose them to stakeholder conflict if different positions on preferred courses of action occur. It is important to operationalize social capital beyond shared meaning and to incorporate an understanding of the utility of this knowledge. Cognitive social capital in the context of sustainability is therefore, having a shared understanding with other actors and knowing how to implement sustainability-related approaches in practice. Our final hypothesis is:

H3: The level of cognitive social capital in the supply network of social housing provision will be a significant predictor of sustainable procurement activity in RPs.

4.0 Research method

Anchored in a deductive research approach, the research proposition and hypotheses were drawn from the gaps in prior literature and an online questionnaire was developed to test the hypotheses. Given the inherently relational nature of social capital the existing research base centers on qualitative studies, yet the need for quantitative approaches to empirical work on social capital is recognized (Edelman et al., 2004). To meet this need our study uses a survey as its primary method for data collection. Although there are limitations of how a questionnaire can fully tap into the socially constructed elements of social capital, there is prior support in the literature for this approach (Cousins et al., 2006) and building on prior scales (Nahapiet and Ghoshal, 1998) minimizes this limitation.

Following the steps set out by Cousins et al (2006), an online questionnaire was designed. An online survey reduces costs, minimizes environmental impacts and enables a broad reach. Although response rates are often relatively lower for online surveys than those reported for paper-based ones (Klassen and Jacobs, 2001), they usually have substantially fewer missing responses (Boyer et al., 2002).

Previously validated scales to measure sustainable procurement activity were used (Brammer and Walker, 2011; Carter, 2005; Carter and Carter, 1998; Carter and Jennings, 2004; Walker and Brammer, 2009, 2012). The scale captures a broader network context through the inclusion of supply chain elements beyond the dyadic interface. Social capital is recognized

as context dependent and thus requires adaptation for each research situation (Nahapiet and Ghoshal, 1998). Hence the three social capital scales were developed, building on seminal definitions of the dimensions (Nahapiet and Ghoshal, 1998) to ensure they captured the sustainability context relevant to social housing networks. The adaptations were confirmed for face validity and efficacy via exploratory interviews with fifteen procurement and sustainability professionals working in RP organizations. This provided a pre-test of the questionnaire and ensured sector-appropriate terms and contexts were used (Lui and Ngo, 2012).

The resultant final questionnaire comprised 15 statements to measure sustainable procurement and 21 for sustainability-related social capital, which was further broken down into sub-sections for relational (3 items), structural (7 items) and cognitive (4 items), which were measured using 5-point Likert scales. The scales are shown in table 1.

Table 1: Scales and reliability measures

Sustainable procurement activity ($\alpha=.90$)

- My organization has documented the life cycle impact of its products/service provision
- My organization has an environmental management system accreditation
- My organization monitors the sustainability credentials of the supply chain
- My organization ensures the safe incoming movement of products
- My organization trains staff in sustainability
- My organization has a sustainability action plan
- My organization has a waste reduction plan
- My organization has a sustainability policy
- My organization assesses the impact of procurement policy on the local economy
- My organization only uses suppliers whose supply chains do not exploit workers
- My organization only uses suppliers that do not contribute to local eco-systems destruction
- My organization only uses suppliers that do not contribute to human rights abuse
- My organization purchases from local suppliers
- My organization purchases from small to medium sized suppliers
- My organization works with/donates to charities or third sector organizations

Relational social capital for sustainability ($\alpha=.93$)

- My knowledge on sustainability is well informed
- My knowledge of sustainability is balanced across environmental, social and economic issues
- I have certainty on the credibility of my knowledge related to sustainability

Structural social capital for sustainability ($\alpha=.88$)

- I am involved in knowledge sharing on sustainability within my organization
- I am involved in new knowledge creation on sustainability within my organization
- I am involved in knowledge sharing on sustainability externally in my supply chain
- I am involved in new knowledge creation on sustainability externally in my supply chain
- My organization encourages its tenants to behave sustainably
- My organization encourage suppliers to behave sustainably
- My organization promotes sustainability in the wider network

Cognitive social capital for sustainability ($\alpha=.80$)

- I know how to implement environmentally sustainable approaches in my work
- I know how to implement socially sustainable approaches in my work
- I know how to implement economically sustainable approaches in my work
- There is a shared understanding of sustainability in the social housing sector

(N=135)

Table 1 also shows the reliability measures for each construct. Cronbach's alpha was used to test for scale validity and the resulting values of $\alpha=.90$ for sustainable procurement activity, $\alpha=.93$ (relational), $\alpha=.88$ (structural), and $\alpha=.80$ (cognitive) demonstrate excellent scale reliability. Summated scales were created for each construct to reduce the reliance on any single variable and thus minimize measurement error, as recommended for multiple regression (Hair et al., 2006).

The survey was electronically distributed to 500 named procurement professionals in UK social housing organizations by Procurement for Housing (PfH), a UK procurement consortium of RPs. PfH's members are representative of the wider RP population in terms of annual turnover, number of properties, scope of activities and geographical location. In addition, 100 non-PfH member organizations were contacted via an online database of RPs.

Following an initial return of 65 usable questionnaires, a subsequent reminder email was sent which led to a further 70 responses. The number of respondents in the second wave is considerably higher than the recommended number (30) for late respondents and therefore the results have a high confidence of generalizability (Lindner et al., 2001). To test for any significant differences between the early and late responders, respondents were grouped into two groups. Independent sample *t*-tests for both groups against the four summated scales indicate no significant difference between the two groups for any of the constructs at a 95% confidence interval: sustainable procurement activity $t(133)=.28$; $p=.783$; relational social capital $t(131)=.0.73$; $p=.942$; structural social capital $t(133)=-.53$; $p=.598$; cognitive social capital $t(130)=1.00$; $p=.316$.

The total sample of 135 represents a response rate of 22.5%. This response rate is slightly below the mean response rate of 31% for the 51 surveys published in the *Journal of Purchasing and Supply Management* (and its predecessor) from 1994 to 2012 (Melnik et al., 2012), though it is comfortably within the first standard deviation (SD) from the mean (SD=16.61%) and well above those surveys at the lower end of the scale in terms of response rates (range min. 4%- max. 95.6%). Further, the sample size of 135 observations meets the guidelines for the preferred ratio of observations to independent variables for robust statistical analysis of the data (15-20:1) with an actual ratio of 45:1, and is significantly higher than the recommended minimum ratio (5:1) (Hair et al., 2006).

Classification and demographic variables were included in the questionnaire to ensure a representative sample and to enable cross-analyses of data. Respondents came from a range of RPs in terms of number of employees and properties managed, as shown in table 2.

	% of sample
<i>No. of employees</i>	
1-24	7.5%
25-249	29.0%
249-500	23.4%
501+	40.2%
<i>Properties managed</i>	
Less than 1,000	16.2%
1,000-10,000	35.2%
10,000+	48.6%

5.0 Findings and discussion

The predictive quality of the three dimensions of social capital for sustainable procurement activity is tested through regression analysis, using the stepwise method, a common approach for exploratory model building (Bryde, 2008; Forza, 1995). Regression ANOVAs indicate that each social capital dimension is individually significant in predicting sustainable procurement activity: Relational ($F(1,132)=22.63, p=.000$), structural ($F(1,134)=110.33, p=.000$) and cognitive ($F(1,131)=44.80, p=.000$). The stepwise method of regression was selected as the literature provides strong theoretical justifications for the chosen predictors, supported by the ANOVA results, but does not provide enough evidence to deduce their relative importance (Field, 2000). Data were assessed for normal distribution (Agostinelli, 2002) and the assumptions of linearity and homogeneity of variance (Kinnear and Gray, 1997) were confirmed.

The correlation matrix was explored for collinearity and deemed acceptable as all correlations were under the recommended level of .90 (Hair et al., 2006). A sample of 100, with three potential independent variables (relational, structural and cognitive social capital) is able to detect relationships with R^2 values of approximately 18% at a power of .80 with the significance level set at .05 (Hair et al., 2006). Examining the adjusted R^2 value reveals relatively little loss in predictive power when compared to the R^2 value (.477 versus .481 respectively) indicating no over-fitting of the model. The three composite measures for each social capital factor (relational, structural, and cognitive) were loaded into the regression model as independent variables, with the composite measure of sustainable procurement activity as the dependent variable. Only one model was generated (see Table 3) that identifies structural social capital as a predictor of sustainable procurement activity, (adjusted $R^2=.48$). Both relational and cognitive social capital variables were excluded from the model.

Table 3: Regression scores for predictors of sustainable procurement activity

Model	R	R^2	Adjusted R^2	Std. error of the estimate	F	Sig.
1	.693 ^(a)	.481	.477	.477	115.73	.000

Coefficients						
Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		β	Std. error	β		
1	(constant)	.867	.143		6.045	.000
	Structural Social Capital	.597	.056	.683	10.758	.000

Excluded variables					
Model		β increase		t	Sig.
1	Relational social capital		-.131	-1.554	.123
	Cognitive social capital		0.39	.433	-.666

Model 1: Sustainable procurement activity = .597 x (structural social capital) + .867

The overall proposition (P1) asserts a positive relationship between social capital in the network and the extent of sustainable procurement activity and from the results is partly supported. The results of the regression analysis shows social capital as a holistic concept incorporating all three dimensions does not have a better fit and is not supported.

The hypotheses H1, H2 and H3 assert positive relationships between the individual dimensions of social capital (relational, structural and cognitive respectively) and sustainable procurement activity and although they are supported by the individual regression ANOVA scores, they are not wholly supported by the regression model. Splitting out the individual elements of social capital provides a more nuanced exploration of the effects and their relationships to sustainable procurement activity.

Model 1 from the stepwise regression (see table 3) only includes structural social capital as a significant predictor of sustainable procurement activity ($\beta = .87, p=.000$) and accounts for just under half of the variance in sustainable procurement activity ($R^2=.48$). This is an unexpected and noteworthy finding and supports H2: the level of structural social capital in the supply network of social housing provision will be a significant predictor of sustainable procurement activity in RPs. This result is important as it provides evidence that structural social capital in the network is a significant predictor of the extent of sustainable procurement activity. This adds support to studies in other sectors that recognize the increasing value of social capital in addressing sustainability (Hansen et al., 2009; Sheate and Partidário, 2010; Walter et al., 2007) through promoting collaborative network perspectives (Passerini and Wu, 2008).

Structural social capital as a significant predictor for sustainable procurement provides evidence for the role of knowledge creation in predicting sustainable procurement activity, as well as knowledge sharing. As sustainability is a complex and emerging concept, the creation of new knowledge (as opposed to sharing existing knowledge) is critical to enable organizations to solve the management problems they create. Structural hole theory (Burt, 1992) posits that social capital benefits emerge from the diversity of information shared within a network, adding further support for the importance of brokering social capital beyond the first tier supply boundaries to exchange and combine information and explore different stakeholder perceptions. Failure to explore knowledge and resource at the 'edges' of a network can stagnate the creation of unique knowledge thus leading to isomorphic, convergent approaches within organizational fields. The results suggest that prior models that only explore dyadic collaboration are too narrow in their approach.

The variables excluded from the model (relational and cognitive social capital) still require consideration, as the results are counter-intuitive and lead to the rejection of H1 and H3. Both of these variables are not significant at the $p<0.05$ level and add very low contributions to the overall model fit, as shown in the β increases in table 3.

The lack of a significant contribution of relational social capital to sustainable procurement activity (H1) is particularly revealing, as the procurement literature stresses the importance of supplier collaboration in this area to inform buyers' understanding of sustainability (Carter and Carter, 1998; Hartman et al., 1999; Krause et al., 2009; Vachon and Klassen, 2008; Walker and Phillips, 2009). One interpretation of this result is that the credibility and quality of buyers' knowledge, in relation to sustainable procurement activity, is less important than the creation and sharing of new knowledge within broader stakeholder networks. This provides evidence of the inherent complexities of sustainable procurement and is perhaps reflective of its current transitory, dynamic state with a lack of clear 'solutions' available (Tate et al., 2012).

Cognitive social capital captures the level of shared understanding of the TBL and crucially the knowledge of how to implement this in procurement. It is another significant result that this factor is excluded from the regression model and does not support H2. Cognitive social capital not being a predictor for sustainable procurement activity suggests that the focus for RPs is less on how to implement, but rather on creating new knowledge. Again, this supports the notion that sustainable procurement is still in its infancy, certainly in relation to implementation. Cognitive has the lowest mean out of all three social capital dimensions ($M=2.23$), placing this on the negative side of the 5-point rating scale, highlighting low levels of agreement by RPs on how to implement sustainable procurement. This is a noteworthy finding as it exposes potential conflicts between strategy and action. The regulated environment of social housing (Reeves et al., 2010) mandates sustainable approaches in social housing's regulatory framework and it has been suggested that sustainability legislation is a corporate driver for change (Bansal and Roth, 2000; Berns et al., 2009), yet these results provide evidence that action (as opposed to policy statements and objectives) is not well established in the sector.

6.0 Conclusions, implications for policy and practice, limitations and suggested future work

6.1 Conclusions

To conclude, we firstly return to our overall proposition, which is that an accumulation of social capital in the supply network of social housing provision is related to higher levels of sustainable procurement activity in RPs. The results of the study indicate that this is partly supported. The regression results illustrate that social capital's relationship to sustainable procurement is positive, yet counter-intuitively social capital as a holistic concept incorporating all three dimensions (relational, structural and cognitive) is not a better predictor than structural social capital as a singular dimension. The positive relationship between structural social capital and sustainable procurement activity further underpins the importance of taking a network perspective, i.e. exploring interactions beyond the buyer-seller interface, as increased access to knowledge from a range of sources increases the level of sustainable procurement activity.

The implication here is that RPs should harness the ideas and positions of a broader group of stakeholders in their networks, beyond tier one suppliers. If sustainable procurement is to bring a paradigm change, as opposed to delivering strategies that are only 'less harmful' or 'more efficient', new models of responsibility and accountability are needed, fuelled by innovation and a democratic decentralization of power. Equity through a utilitarian distribution of resources and benefit permeates all dimensions of sustainability. In order to address and accommodate these wider responsibilities to diverse stakeholders the development of sustainability now extends beyond corporate boundaries and its temporal orientation requires that the entirety of the supply chain is considered (Preuss, 2007; Shrivastava, 1995).

The study extends the conceptualization of sustainability-related social capital firstly through capturing knowledge creation as well as knowledge sharing, and secondly through considering measures that reflect relationships with tenants and the wider network, not just with suppliers. The structural dimension of social capital relates to interactions resulting from the stakeholder positions and configurations within a network (Granovetter, 1985; Tsai and Ghoshal, 1998). This is in contrast to relational elements that are embedded within established personal interactions (Nahapiet and Ghoshal, 1998). The results provide

empirical evidence of the need to conceptualize sustainability-related social capital beyond organizations' immediate buyer-seller relationships. Organizations must engage with other stakeholders on the edge of their traditional networks (Crespin-Mazet and Dontenwill, 2012). Structural social capital as a predictor of sustainable procurement activity highlights the importance of developing, sharing and accessing social capital with these new non-commercial groups. This will require procurement to interact differently than suggested in traditional buyer-seller collaboration models (Crespin-Mazet and Dontenwill, 2012; Hadjikhani and Thilenius, 2005; Teece, 2007).

The results of this study highlight the relative importance of access to a broad network over a narrower dyadic interface in sustainable procurement activity. This is important in ensuring breadth of engagement of the many is not compromised for depth of relationships with the few. The extant sustainability literature identifies that limiting social capital to homogenous networks can isolate less powerful or less connected stakeholders as well as creating barriers to change and innovation (Newman and Dale, 2005) and inertia (Garguilo and Benassi, 2000). This 'darker side' of social capital is commonly reported across management fields (Edelman et al., 2004; Edwards and Onyx, 2007; Hult et al., 2003; Locke, 1999; Squire et al., 2009). The inclusion of a broader network perspective in our structural social capital scale addresses this issue. Although the complexities of these networks (Cole and Powell, 2010; Ford et al., 2011; Meehan and Bryde, 2011) can create difficulties in agreeing common perspectives and goals, the results show that the search for new knowledge creation and knowledge sharing within these networks is positively associated with sustainable procurement activity. Current collaboration models do not take sufficient account of sustainability's dynamic environment and new stakeholder considerations resulting from the TBL (Foerstl et al., 2010). Our study confirms the importance of extending knowledge sharing measures beyond dyadic relations, and it demonstrates that this broader engagement with other stakeholders is a significant contributor to sustainable procurement activity.

6.2 Implications for policy and practice

The findings have a significant impact for policy development for the regulatory bodies involved with social housing as they must be cognizant of the diversity of stakeholders' views and provide mechanisms for their engagement. The low levels of cognitive social capital provide evidence that despite the regulatory pressure to act, action on sustainable procurement is not well established in the social housing sector. The implication for policy development is to ensure regulatory pressures is placed on implementation of sustainable procurement as opposed to the development of policy statements and objectives.

RPs need to recognize that others in their networks have knowledge and views on sustainability, which may be different to theirs, and they need to engage with these stakeholders to maximize the build-up of their own social capital. This will enable procurement to play a strategic leadership role in identifying and developing solutions within the social housing sector. However it needs to be noted that creating sectoral-based approaches for sustainable procurement, whilst favored by regulatory bodies, is not without problems. Given the tendency for isomorphism (DiMaggio and Powell, 1983), organizations working in the same sector frequently have comparable information. While this may enhance the perceived reliability of information (Villena et al., 2011) and create a normative environment (Coleman, 1988), the lack of uniqueness can limit its value and innovation potential. In dynamic and new fields, such as sustainability, the overreliance on insular approaches creates rigidity (Burt, 1992) and without access to unique knowledge an organization's ability to adapt to changing market needs can be impeded. The positive

relationship between structural social capital and sustainable procurement activity underlines the criticality of creating and sharing knowledge within a broad, heterogeneous network.

6.3 Limitations and suggested future work

A limitation of this study is that the quantitative approach adopted for the study does not allow for further interrogation of respondents' answers, and thus there is a potential for different interpretations of concepts by respondents. Further research is needed to further test the role of social capital, combined with a longitudinal design to explore if, and how, stakeholder views and sustainable procurement activities are adapted over time. However, this is not only a limitation of quantitative research; the underpinning assumptions of interpretation can be left unchallenged regardless of approach. It is important that studies of sustainable procurement and social capital go beyond the rhetoric and move towards understanding, action, and assessment, and we make a call for scholars to develop models of sustainable procurement that have an instrumental dimension to enable their implementation.

A further limitation of this study is that despite capturing social capital beyond the immediate buyer-seller dyad through the operationalization of the scales, the data is solely drawn from the perspective of the buyers. This raises questions as to how well the data accurately reflects the network perspective and we acknowledge this limitation. Given the complexity of the networks and ethical issues over access to potentially vulnerable tenant groups, this was primarily a pragmatic decision. In further defense of the research design, the primary decision-makers in the sustainable procurement agenda are likely to be in the buyer domain, certainly in a regulated public procurement environment, where tenders and commissions are buyer-led. Similarly, the prominent position of procurement within their own networks, covering suppliers throughout the supply chain, tenants, other RPs and procurement consortia, are likely to provide buyers with a greater potential to take a leadership role within these networks. In terms of future work, as results suggest that prior models that only explore dyadic collaboration are too narrow in their approach, we call for future exploration of networks and extended stakeholder relations in sustainable procurement research. This could be achieved through further in-depth case research of a number of social housing networks, with perspectives drawn from suppliers, regulators and tenants would be useful to test the conclusions drawn in this study. Given the international significance of social housing and the different regulatory and cultural contexts across the world, studies comparing sustainable procurement activity in different countries would be useful extension for further research.

Finally, although both relational and cognitive social capital are excluded from the regression model, the full role of these constructs needs further exploration to better understand the complex pattern of relationships between sustainability-related social capital and sustainable procurement activity. For example, in relation to the shared meaning represented in cognitive social capital, a key issue arising is "who's" shared meaning? Drawing on social constructionist views of shared meanings (Berger and Luckmann, 2011) raises interesting questions for further research in this area. The assumption that social capital developed amongst stakeholders creates goal congruency is perhaps naïve, particularly when dealing with emotive, multi-dimensional subjects like sustainability and organizations need to be open to potential challenge and worldviews. Given the complexity and breadth of the social housing networks, the knowledge domain of the various stakeholders may be different and distinct, aligned to their different interests and conceptualizations. For example, tenants in vulnerable groups may put more meaning on the social value outcomes of sustainable procurement, whilst regulators may favor quantifiable (and thus measurable) environmental targets.

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