Learning difficulties: collaborative inter-organisational information system use within United Kingdom retail supply networks

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Abstract

Inter-organisational information systems (IOIS) have been introduced to support collaborative retail supply relationships, yet how these systems are used is not well understood. This paper presents analysis of an ideographic case study of a dynamic United Kingdom grocery sector supply network. Using Archer's (1995) social change theory, we explore how changes to buyer-supplier relationship structures re-conditioned individual actors' situational logics in a way that created network learning difficulties. Our analysis shows how actors' inter-organisational information system use reinforced pre-existing bargaining positions and improved already powerful actors' relative negotiating strength. This paper demonstrates the value of multi-level analysis in furthering understanding of the complex relationships between processes of network and individual learning.

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Introduction

Difficulties managing network organisations, those 'clusters of firms or specialist units co-ordinated by market mechanisms instead of chains of command' were predicted over fifteen years ago (Miles and Snow 1992: p.53). These authors argued that network failure might be avoided by the development of self-renewal competencies (to rectify faulty, external relationships and voluntarily embrace enhanced relationships beyond those explicitly contracted). However, evidence of managers' previous organisational and operational design efforts suggested errors of extension or modification were likely to be repeated. Where networks are dynamic, theory suggests extensive failures occur when organisational expertise becomes too narrow and the organisation's role is assumed by other firms. Failure may also result from well-intentioned managerial modification. The imposition of mechanisms to limit opportunism, as well as the formation of exclusive relations with a limited number of parties dampens potential benefits. However, the extent to which such network changes can be 'managed' has been questioned (Golfetto, Salle et al. 2007).

Stewarding or directorial notions of managed change have been differentiated from learning by a group as a group, what Knight and Pye (2004) refer to as network learning. Yet, in some parts of the organisational learning literature, information systems have been portrayed as a means by which dominant organisational-level actors can implement inter-organisational change by altering the costs and benefits associated with organisational actors' actions ('discipline') and restricting the range of actions available ('domination') (Lawrence, Mauws et al. 2005). However, empirical studies show that, even internal information system developments may result in unintended, if not contrary outcomes (Newell, Scarbrough et al. 2001). Critically-inclined studies within the information systems domain suggest these outcomes may be more dramatic and contradictory within inter-organisational settings (Schultze and Orlikowski 2004; Vaast and Walsham 2005). The relationship between dynamic network learning and actors' information system use is less clear. In this paper, we use Archer's social change theory as an analytical frame to analyse an ideographic case study of collaborative inter-organisational information systems use within a United Kingdom retail supply network. This paper addresses the question, in this dynamic network, *why did actors' inter-organisational information system use present learning difficulties*?

The remainder of this paper is structured into five sections. Firstly, interest in collaborative inter-organisational information system use across United Kingdom retail supply networks is charted. Secondly, we introduce our multi-level theoretical framework and explain the rationale behind our research methods and case selection. In the third section, we focus on the grocery sector and narrate the divergent outcomes of actors' inter-organisational information system use in two buyer-supplier relationships. We then discuss our analysis, highlighting some limitation of this study. Finally, this paper concludes with the implications for theory, management practice and future research.

Using collaborative inter-organisational information systems in retail supply

Retail trans-nationals can be viewed as complex ‘relational networks’: a combination of social structures and ongoing processes constructed transformed or reproduced through asymmetrical and evolving power relationships (Dickens et al.2001 cited by Wrigley, Coe and Currah, 2005). These organisations are dispersed across geographically-disparate locations, whilst at the same time connected by increasing global, logistical supply chains. This territorial and network embeddedness has particular implications for supply network dynamics (Wrigley, Coe et al. 2005; Wrigley and Currah 2006). There has been rapid and dramatic industry consolidation as retail transnationals have upgraded logistical infrastructures, shortened supply networks, introduced new intermediaries, quasi-formal contractual systems and private/ international quality and safety supply chain standards as well as centralised their procurement systems (Wrigley, Coe et al. 2005).

Inter-organisational information systems have been an essential ingredient in a number of recent change programmes and imply the need for collaborative learning. Initiatives known variously as ‘Quick Response’, ‘Efficient Consumer Response’, ‘Continuous Replenishment Planning’ and ‘Collaborative Planning Forecasting and Replenishment’ are based on the premise that shared benefits can be derived through collaborative action on cost reduction, efficiency savings and customer service improvements (Cooke 1999; Giunipero, Fiorito et al. 2001). These ‘programmatic’ (Mouzas and Araujo 2000) change initiatives attempt to improve the co-ordination and responsiveness of supply networks through the exchange of retail sales data.

Many argue that information systems enable the seamless and efficient flow of information flow between collaborating partners (for example Levary 2001). Information sharing, it is suggested, facilitates inter-organisational co-ordination and can improve the efficiency and effectiveness of inter-organisational relationships (Wang and Seidmann 1995; Rabinovich, Bailey et al. 2003). However, not only have the benefits reported been disappointing, but also asymmetrical (Wang and Seidmann 1995; Jun, Cai et al. 2000). This somewhat mixed evidence doesn’t seem to have prevented increased interest in inter-organisational information system use to support buyer-supplier coordination across the United Kingdom retail sector. Inter-organisational network coordination is considered a key source of competitive advantage, the network a strategic asset and ‘organisational learning’ the critical mechanism by which individual firms attempt to improve or consolidate their position (Gereffi, Humphrey et al. 2005).

Of particular interest here is the form that these retailers ‘back office’ technologies take (Wrigley, Coe et al. 2005; Wrigley and Currah 2006). Given the sheer number of innovation sites, these authors recognise not only immense potential for innovation but also, the mediating effects of inter-firm bargaining processes on organisational innovation (Wrigley, Coe et al. 2005). Like Johnston and Lewin (1996) they identify an urgent need for research which penetrates below the surface of large surveys and informal dialogue to lift the ‘unusually tight veil of secrecy’ that surrounds the back office regions of these large, public companies (Wrigley and Currah 2006: p.350). Since, whilst structural changes may be a result of technological product characteristics, more often, Gereffi et al. argue, they depend upon the effectiveness of particular industry actors and the social processes surrounding the development, dissemination and adoption of standards and codification schemes. How these changes in inter-firm retail supply relationships are played out requires much fuller attention.

Yet, there has been surprisingly scant attention paid to the learning dynamics of supply networks (Lane 2001). Yet using collaborative inter-organisational information systems within retail buyer-supplier relationships raises some interesting dilemmas. Compared with collaboration within cooperative strategic alliances, competitive collaboration has been characterised as a learning race, pursued through distinctly different learning processes (Hamel 1991). In competitive collaborations, organisational partners are motivated not by value creation, but by value capture: extracting value from their partners either through bargaining over economic benefits or internalising their partners' skills. Under these conditions, inter-organisational learning can pose a dilemma (Larsson, Bengtsson et al. 1998). Focussing on relationships between competitor firms, Bengtsson and Kock (2000) argue that individual actors can, at any one time, only act either in competition or collaboration. How collaborative inter-organisational information systems may be used within competitive supply networks has also received little empirical attention (Hartono and Holsapple 2004).

If retail networks partners are to release the potential benefits, evidence of buyer-supplier collaborations in other sectors suggests that political factors need to be better understood. Drawing upon a 'market-as-networks' approach (Mattsson 1987), recent attempts to 'open the network' have led some buyer-supplier theorists to theorise the co-existence of collaboration and competitive behaviours: questioning the rigidity of earlier developmental stage frameworks (Zerbini and Castaldo 2007). The theoretical conceptions of organisational buyer-supplier partnerships constrain understanding, specifically in relation to complex internal organizational processes and management action (Bresnen 1996). Significant and sustained theoretical development in the buyer-supplier relationship domain, has found organisational buyer-supplier relationships to be both more durable and more dynamic than neo-classical economic market theories predict (Ford 1990; Hakansson and Snehota 1995; Gadde and Hakansson 2001; Hakansson and Waluszewski 2004).

Interactional models (Boddy, Macbeth et al. 2000) provided a relational alternative to individualistic, nomothetic theories of market behaviour; highlighting the complex, multi-layered patterns of conflict, cooperation, power and dependence through which buyer-supplier relationships are constructed over recurrent transaction episodes (Hakansson and Snehota 1995; Hakansson and Waluszewski 2004). Research interest in the dynamic, emergent nature of these relationship development processes has increased (Cox 1996; Cox 2001; Cousins 2002; Macbeth 2002). However, despite this extensive research by the Industrial Marketing and Purchasing group and others, like the inter-organisational relationship literature, the majority of buyer-supplier theory remains focused at the organisational level.

A multi-level theoretical frame

When Brass et al. (2004) took stock of the antecedents and consequences identified by organisational-level research, they identified a gap. Little was known about the interactions *between* individual, group and organisational levels; their review highlighted the need for multi-level theories. This desire to understand the linkages between macro and micro social processes is not a new one. Barley (1990) discussed the problem in his study of technology and structural alignment in radiology work. Since then, there have been significant developments in theory. In this section we outline how Archers' (1995; 1996; 2000) morphogenetic/ morphostasis[1] theory of social change provided a framework to support analysis of the links between multiple levels of analysis.

Shifting from organisational-level agency (Araujo and Harrison 2002) to homogeneous, stratified entities (structures, cultures and people) gives the analytical traction needed for a multi-level analysis. We use morphogenetic theory as an analytical lens with which to explore actors' inter-organisational information system use within dynamic network structures. This analytical lens shows how interactions between pre-existing structures, cultures and agency serves to position actors' within particular situational logics.

Morphogenetic social change

People take on roles in networked organisations where distinct ideas already circulate. Archer's (Archer 1995; Archer 1996) analytic dualism enables exploration of network stability and change through examination of the interaction between people and the structures and cultures (ideas) with which they engage. Structural entities are dependent upon physical and material resources (e.g. goods, stores, factories). Distinct, homogenous social roles emerge (e.g. buyers and suppliers). Ideas like competition and collaboration stand in logical relationship to one another. Agents' viewpoints and interests become the focus of attention. Margaret Archer offers a graphic metaphor of social change as 'a wild zig-zag as social groups struggle to wrest the wheel from one another, often taking them where no one wants to go' (1995, p. 81-82). Over time, these actors' actions alter structural and cultural configurations, and their agency. A relational, multi-level analysis of network learning is accommodated since, though agency is conditioned, actors remain free to do otherwise.

The interactions between structures, cultures and people produce first, second and third order properties. Institutional properties between complementary and contradictory structural entities emerge from their relationship (see figure 1). These may be external or contingent (two or more entities exist without one another) or necessary and internal (where they are inter-dependent). Cultural emergent properties surface from logical interactions between different ideas. These depend upon whether or not ideas (A and B) are contradictory or complementary, dependent or independent. Where ideas are logically inconsistent, constraining contradictions emerge. Actors are conditioned to manipulate others such that this logical inconsistency remains unrecognised and unvoiced (Archer 1995, p.231). Where A and B are complementary and internally-related, concomitant complementarities exist. Where there is logical inconsistency between ideas that mean both cannot be upheld simultaneously, competitive contradictions result. Unlike constraining contradictions, here there is no necessary relationship. Rather, contradictions are produced through social interaction.

[1] Morphogenetic/morphostatic cycles are 'those processes which tend to elaborate or change a system's given form, structure or state or, for morphostasis, those processes in a complex system that tend to preserve the above unchanged' (p75)

Finally, contingent complementarities offer a range of independent, complementary opportunities.

	Contradictions		Complementarities	
	Necessary	Contingent	Necessary	Contingent
Situational logic	**Correction**	**Elimination**	**Protection**	**Opportunism**
Cultural emergent properties				
Cultural system level	Syncretism	Pluralism	Systematisation	Specialisation
Socio-cultural level	Unification	Cleavage	Reproduction	Sectionalism
Structural emergent properties				
Social system level	Compromise	Competition	Integration	Differentiation
Social interaction level	Containment	Polarisation	Solidarity	Diversification

Figure 1 Cultural and structural morphogenesis/ morphostasis at the systemic and social levels (adapted from Archer 1995, p. 303)

These structural and cultural configurations position agents in distinct situational logics. These configurations condition (but do not determine) actors' subsequent social behaviours during social interaction. In the cultural sphere, Archer identifies four possible resultant effects of these stratified interactions: syncretism; pluralism; systematisation; and specialisation. Whether or not particular configurations produce social change depends upon the relationships between these structural and cultural 'parts' (what Archer refers to as systemic interaction) and observed relationships between people. Systemic relationships may be necessary or contingent, contradictory to or complementary with pre-existing conditions (both structural as well as cultural). The propensity for socio-cultural stability or change results from the relative orderliness or disorderliness of emergent institutional properties with the interests and agency of individual actors and the collective organisational groupings from which they emerged.

Research methods

This paper draws on data collected in a grocery supply network; one of four retail supply networks (merchant timber; fast-moving, grocery consumer goods; branded department store fashion and multiple retail of own-label clothing), studied as part of PhD research exploring inter-organisational information systems use in the United Kingdom retail sector and that demonstrated cooperative collaboration (Hamel 1991) Data collection focused on category development, particularly how actors used a bespoke, product data warehouse that we refer to as 'categorysales'. The categorysales information system was an extensive relational database. Developed by their American parent, this bespoke, repository enabled retail sales data to be collated and shared between a leading United Kingdom grocery retailer (Grocer Co) and their supplier partners. This study researched categorysales use between Grocer Co retail buyers (Grocer Co) and four suppliers in different product categories, Glass Co, Can

Co, Wrap Co and Box Co. The primary activities and organisational characteristics of these organisations are shown in figure 2.

Organisation	GB1 Grocer Co	GS3 Glass Co	GS2 Can Co	GS4 Wrap Co	GS1 Box Co
Primary activities	Global retail store operator	Production distribution and marketing of premium drinks	Production and dealer of all kinds of beers, drinks and foodstuffs	Development, production, distribution and marketing of branded foodstuffs	Development, distribution and marketing of superior FMCG brands
Headquarters	USA	UK	Belgium	US	US
Retail stores	6,100	None	None	None	None
Relative turnover (2006)	17	1	1	1	3.8
Logistics and supply chain activities	14 countries	5 Countries	30 countries	2 Countries	80 countries
Focal subsidiaries	United Kingdom	Europe	UK	Europe	Western Europe
UK store locations	315	None	None	None	None
Turnover (% group sales)	9%	40%	27%	Not published	23%
Employees (approx %)	10	n/a	15 (Western Europe)	25	25 (Western Europe)

Figure 2 Grocernet buying and supplying organisations

Data collection methods included non-participant observation; semi-structured interviews and documentary review. Over a three-month period, instances of these buyer and supplier actors', individual and joint, information system use were observed. Semi-structured interviews with category development managers as well as categorysales users enabled the history of these organisations buyer-supplier relationships to be probed. Interviews were recorded, transcribed and coded to identify structural positions, roles and ideas. These concepts were used to adduce the emergent properties of the buyer-supplier relationships that emerged in particular dyads. Two of these changing relationships are explored in this paper. Buyer-supplier relationships between Grocer Co and Can Co and Glass Co represented polar: one of these relationships going from strength to strength, whilst the other appeared to have suffered a severe setback.

Grocernet

All large, profitable and growing, these organisations marketed and distributed branded fast moving consumer goods (FMCG) through over 300 retail stores across the UK. Supply partnerships were central to this mission. With the advent of this Categorysales system, newly differentiated supplier roles were created. Whilst every supplier could generate Categorysales data reports for their own products, new supplier roles were introduced with the advent of Categorysales system use. Category advisors' were expected to make use of this data to develop Grocer Co-specific market insights for the category as a whole. In addition to data on their own products, these suppliers were granted cross-category Categorysales access: which included sales data related to the products of their category competitors'. One supplier in each category was selected to advise Grocer Co on these category development opportunities. As one Wrap Co manager commented, this shifted the basis of competition from gaining existing category market share to which category advising partnership offered the greatest growth potential. Though later, Grocer Co decided to introduce another category supplier role. Here, non-advising suppliers were sometimes appointed to 'validate' this advice on an 'as required' basis.

Findings

With the introduction of Categorysales, an array of possible buyer-supplier relationships between Grocer Co and their category suppliers emerged. In this section we focus on two buyer-supplier relationships that were, initially at least, between Grocer Co and Category advising suppliers. One, between Grocer Co and Can Co, continued satisfactorily from both perspectives. The other resulted in Glass Co loosing their category advising status and moving back into the ranks of other category suppliers. These contrasting outcomes are interesting since, as figure 2 shows, in many other respects these two advising organisations possessed very similar characteristics. Further, these advisorships were held within closely-related categories with some of the same Grocer Co buying team involved in both relationships.

Can Co: sustained value creation and relationship satisfaction

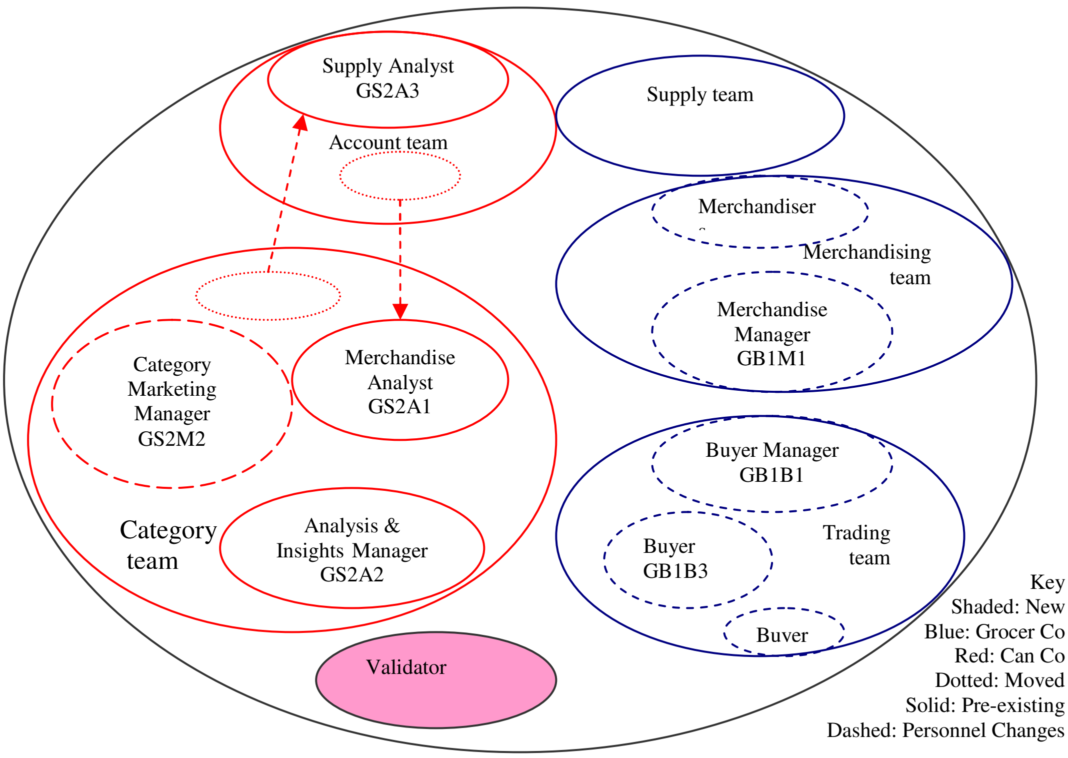

Figure 3 Category advising actors: Grocer Co and Can Co

Structurally separated from their account team, Can Co's advisory team was headed up by Mark[2] (GS2M1). As category marketing manager, he and his experienced, two-strong team provided Grocer Co with category-specific marketing advice. Helen (GS2A2) used Categorysales to produce routine and ad hoc management reports whilst Bill (GS2A1) focused on category planograms (detailed visual merchandising plans that specified which and how many products were presented in store). Can Co took a flexible approach to category team resourcing. A supply analyst, Tom (GS2A3) had recently moved from the category team back into the Can Co-focussed, account team (see figure 3).

Before they gained cross-category access to categorysales data, Mark, Bill and Helen were required to sign individual confidentiality agreements, preventing them from the disclosure of category information. This produced unusual internal dynamics between Can Co's category and account teams. As Mark (GS2M1) explained,

> *Internally, within our business, people will come up and ask you question and I'll say, sorry, I can't tell you that. Which is funny. Because you still work for them. And people higher up within our business, you can't tell your boss certain things. Which is odd*
>
> *Mark, Can Co category marketing manager (GS2M1)*

Whilst category team personnel were employed by Can Co, their allegiance to the 'category' superceeded their line managers' authority. This limited the extent to which these individuals could share insights gleaned from categorysales data within their own organisations. These tensions between network collaboration and internal hierarchical control where not only felt by category advisors, as the appointment of a new Grocer Co trading director clearly demonstrated.

Grocer Co's new trading director introduced a more aggressive stance towards commercial negotiations. Even Alice, a buyer manager convinced of the benefits of advising felt the tension between network cooperation and competition. As she explained,

> *'You wouldn't normally be in conflict with your category captain. And we weren't in conflict, but we were negotiating quite heavily… we were having group meetings with our Trading Director, where he's saying what you should be doing to suppliers. And the first couple of group meetings, Bill (GS2A1) was at them, and I raised it with my boss to say, I don't really think it's appropriate Bill's there, because he could, at the end of the day go back to Mark's boss and say, actually they were saying this that and the other and these are the tactics. And at the end of the day, you've got to think of it like warfare'*
>
> *Alice, Grocer Co buyer manager (GB1M1)*

This tough negotiating stance created both problems and opportunities for Can Co's category team members. During annual trading negotiations, Bill (GS2A1) was physically separated from the trading team with whom he normally worked. Further, the regular weekly meetings held between Alice (GB1B1) and Mark (GS2M1) were temporarily suspended,

[2] To preserve confidentiality, pseudonyms are used throughout this paper

> *'Everything was thrown up in the air ealier this year, we were told [Bill (GS2A1)] had to leave the trading floor and I wasn't able to go in and see [Grocer Co]. We were told they were going through a lot of trading negotiations and we weren't able to come in for that point of time'*
>
> *Mark, Can Co category marketing manager (GS2M1)*

Despite earlier promises to keep trade and advising relationship seperate, even exemplary collaborative advisorships suffered. This ideational shift in Grocer Co's trading strategy had direct effects on Bill use of categorysales.

Promotional effects were difficult to isolate from underlying sales trends. Despite formal and legally-binding individual confidentiality agreements, rival category suppliers were suspicious of advisors' impartiality. In an attempt to allay these concerns and capitalise on suppliers' marketing expertise more broadly, Grocer Co formalised 'validators' Bill found recommending competitors' brands was easy, whereas advice to list Can Co products might later be seen by 'validators' as favouritism,

> *'It's very easy to make recommendations on competitors' brands, if those recommendations are true in terms of space, because why would I do it? It's quite stressful to make recommendations about one of our own brands.*
>
> *Bill, Can Co merchandise analyst (GS2A2)*

Validator roles gave non-advising suppliers the right to review and comment on category advisors' recommendations. The competitive contradictions that emerged from relationships between category advisors and validators led to situational logics of elimination: validators were conditioned to make the worse of any advice they perceived would undermine Bill as an advisor. This contrained adviors' agency – and the use of categorysales data.

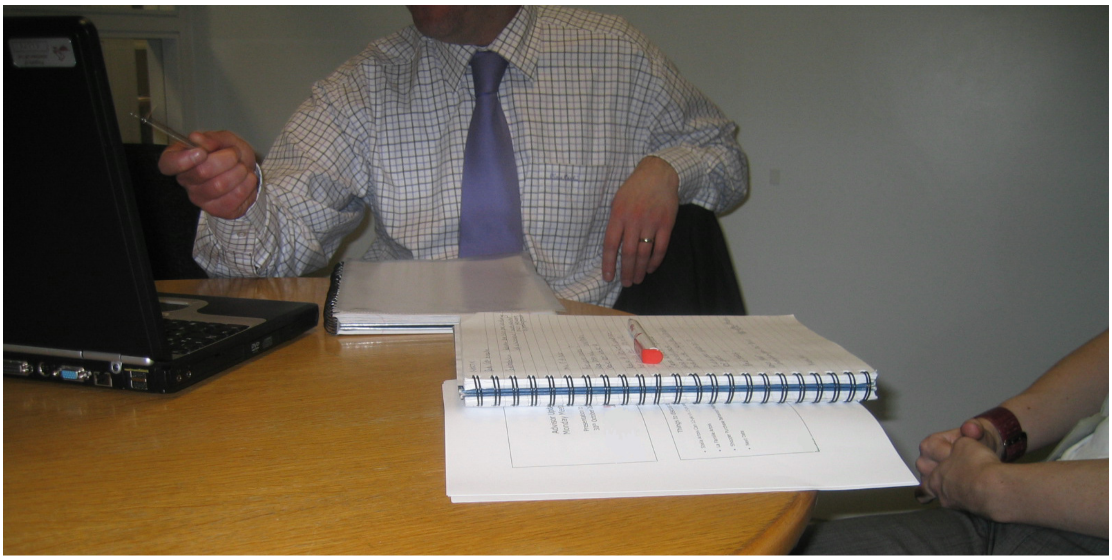

Figure 4 Mark, Can Co's category marketing manager (GS2M1) interprets his latest market research for Julie, a new-in-role Grocer Co buyer (GB1B3) (right)

For Mark however, the outcome was somewhat different. Mark built a relationship with Julie, a specialist category buyer relatively new to this Grocer Co department (figure 4). Within this category, both parties were satisfied with Can Co's category advising,

> *'I would like to see it developing, but it's fairly easy to say that it could be exactly the same, and that's no bad thing'*
> *Mark, Can Co category marketing manager (GS2M1)*

Despite category team changes and shifting individual agencies, particularly related to the usefulness of Categorysales data, Alice and Mark both expressed satisfaction with their advising relationship. Glass Co's relationship with Grocer Co resulted in a rather less mutually- satisfying outcome. However, the effects of this tougher negotiation stance were more dramatic for Glass Co.

Glass Co: losing advisor status

Like Glass Co's category development manager, Sophie (GS3M1) was responsible for the provision of category-specific marketing advice to Grocer Co. However at Glass Co, a single business analyst provided support for category management reporting and development activities. Initially, their analyst produced standardised weekly sales reports for Grocer Co's trading team as Helen had done (see figure 5).

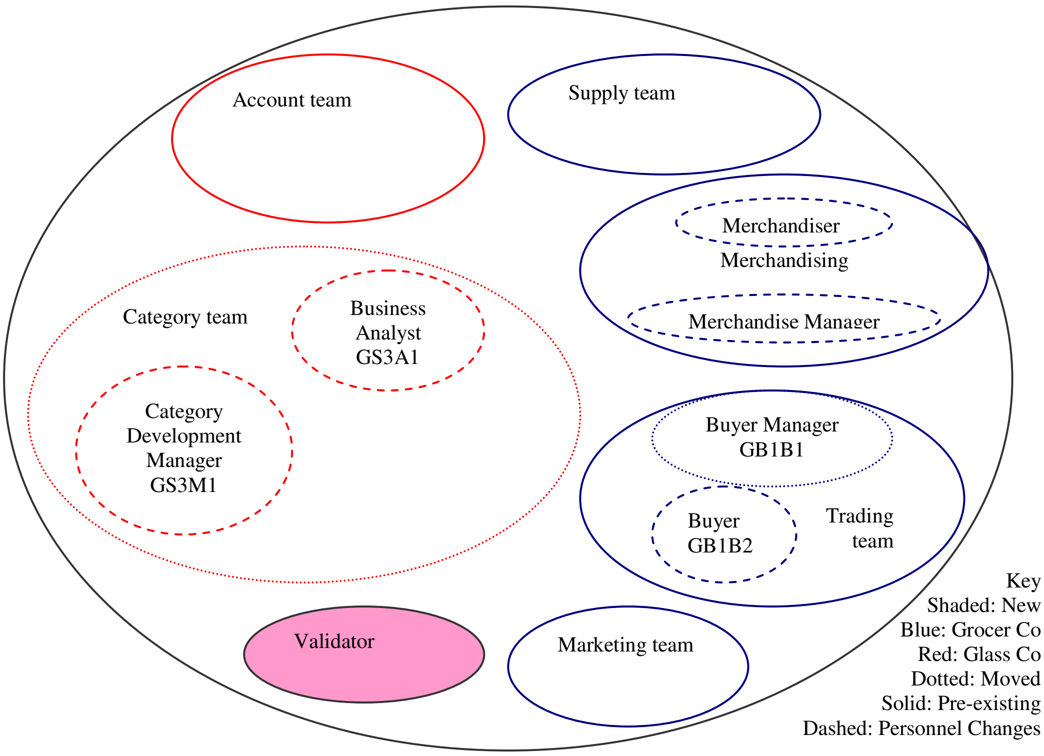

Figure 5 Category advising changes: Grocer Co and Glass Co

A new analyst, Derek (GS3A1) soon identified additional opportunities as he began the careful analysis of store-level Categorysales data. Importantly, there appeared to be ways to maximise seasonal sales peaks though more targeted replenishment,

> *'It's only when I got hooked on the thing and realised what it could do um that we exploited a much bigger play on what we could get from it. Not least of all maximising Christmas, in what we could do by getting the right stock in the right place and keeping it there'*
>
> *Derek, Glass Co business analyst (GS3A1)*

These supply-focused interventions were well received by Grocer Co. During the run up to periods of peak trading and range change, Derek spent 2-3 days a week at Grocer Co's head office. Included in trading team away day events, his job objectives and performance appraisals were jointly-agreed between Glass Co and Grocer Co. However, unlike previous buyers, the current incumbent Alan showed no interest in category planning. As Sophie (GS3M1) explained,

> *'He generally just wanted to run it like he wanted. He also doesn't believe in category plans, so when I suggested to him that <leading retail competitor> had a 5 year plan and <another retail competitor> had a 3 year plan, why doesn't he even have a one year plan, he said he thinks category plans are a load of rubbish (.) in slightly stronger language'*
>
> *Sophie, Glass Co category development manager (GS3M1)*

This disinterest in collaborative, long-term category development was coupled with increasing emphasis on short term profitability. Rather than discounting, Glass Co's business focused on premium brand development. Consequently, they were increasingly ill-placed to provide discounting advice. These contingent incompatibilities became increasingly evident as the competitive climate intensified. Trading relationships between the two organisations became increasingly strained. Despite the official demarcation between advising and trade relationships, Derek (GS3A1) had no hesitation in linking the eventual loss of their advisorship to Glass Co account teams' refusal to accede to improved average margin demands. Indeed, this negotiating tactic was confirmed by Alice, Grocer Co's buyer manager (GB1B1),

> *'We cut their category access off and then that was bought into negotiations with them in a commercial sense. Because we're arguing with them, we don't want them to have our category data. And that will become a commercial discussion, because it is a commodity. If you want to be our [Advisor], what's it worth to you?...You know, you're not doing the right job and if we're not getting on with you and if you're not giving us the funded promotions we're not going to give you our category data'*
>
> *Alice, Grocer Co buyer manager (GB1B1)*

Whatever the benefits of collaborative category development, access to Categorysales data was used as a bargaining chip in trading negotiations. And, as the Sophie (GS3M1) explained, although Grocer Co's marketing team might look upon her proposed developmental initiatives with interest, without Alan's commitment and Glass Co account team support there was little hope of them coming to fruition,

> *'Anything that you propose to marketing, they'll go, oh yes, that's interesting, oh but it depends what the trading terms are, and they can't influence the trading terms. Nor can we, that's down to the*

account managers. Whatever you propose has to pretty much go through the buyers and the account managers'

Sophie, Glass Co category development manager (GS3M1)

Without the support of the buyer and at odds with the strategies of their own account team, Glass Co's category advising team found their development work thwarted and their advisorship status rescinded. Without even the need to generate the standardised Categorysales reports and with access only to logistical information about his own products, Derek (GS3A1) was soon re-deployed to work for the Glass Co category team for another grocery retailer.

Discussion and conclusions

Conceptualising these new supplier roles as structural entities, helps explain how emergent buyer-supplier relationships altered with Categorysales use. Grocer Co differentiated between their suppliers. As well as category supplier, new supplier roles of category advisor, validators were created. Distinct structural properties emerged from these relationships (figure 6). From a Grocer Co viewpoint, relations with category advisors were contingent compatibilities (relationships which *may* provide highly compatible with the interests of particular groups). Once a category advisor was appointed, validating suppliers became a necessary incompatibility (validator roles were necessarily and internally linked to category advisors though, since these were competing suppliers, their relationship with category advisors was marked by incompatibilities). The relations between category advisors and other category suppliers were similarly characterised. These structural changes were accompanied by cultural difficulties.

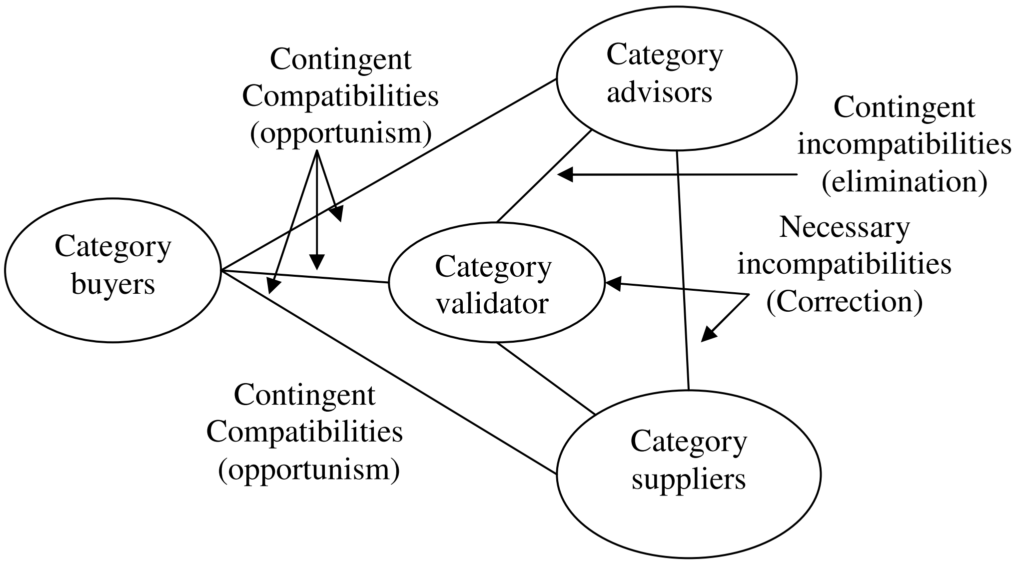

Figure 6 Emergent buyer-supplier structures at Grocernet

Rather than exclusively competitive and adversarial buyer-supplier relationships suppliers' use of Categorysales data lead to an engagement in cooperative collaboration. Though this was primarily limited to chosen category advisors, on occasion collaboration was extended to other suppliers who, as validators were required to comment upon their competitors' advice. For Grocer Co, this simultaneous engagement in both competition and cooperation, led to 'constraining contradictions'. In attempts to sink the contradictions between retaining fair competition and engaging in meaningful collaboration, Grocer Co instigated strict individual confidentiality agreements and category advising team personnel were formally segregated from the account teams within their organisations. Grocer Co desired collaboration to gain the benefit of advisors' market insight, however concerns that these organisations may place their own interests ahead of Grocer Co's led to increasingly competitive relationships between particular, erstwhile homogeneous, category suppliers.

Whilst similar cultural properties emerged from the mix of competitive supply and collaborative advice given by validators, distinct cultural properties emerged from the new supply relationship between category advisors and validators. Validators were asked to comment on the category advice provided by the main category competitor. Here, the combination of competitive supply and alternative collaborative advice set up a 'competitive contradictions' between these groups. There were bonuses associated with conflict, or, as Archer (1995, p.241) describes the situational logics of elimination, the bonuses of conflict (unseating the category advisor) meant validators were 'conditioned to make the worst of it'.

Given the continued cultural dominance of competition, even when these cooperative buyer-supplier relationships were mutually acknowledged to be beneficial, adversarial behaviours were reinforced. Despite category advisors' extensive resources and relatively favourable positions, the possibilities for inter-organisational learning were limited by the properties that emerged from the cultural relations between category advisors and validators. As Glass Co's experience shows, Grocer Co maintained its' powerful network position and influence by retaining the prerogative to appoint- and switch- advisors.

Grocer Co and their supply partners participated in a dynamic network. These were independent businesses engaged in temporary value chain alliances. Individual actors' inter-organisational information systems use was conditioned by complex situational, network logics. Our analysis revealed radical structural change (Knoben, Oerlemans et al. 2006) as actors used inter-organisational information systems to improve their individual bargaining power and relative, negotiating strengths. Glass Co's relationship with Grocer Co was a narrow one: focused only on the management of logistical supply. When Grocer Co no longer saw this as a crucial aspect of a category advisors' role, Glass Co found their negotiating position undermined and their category-wide use of categorysales rescinded. This is an illustration of extension failure (Miles and Snow 1992).

Subtle adjustments to individual roles meant Can Co maintained their advisory relationship, despite a similar change in the position of their supply analyst (who reverted to their key account team) and increased competitive pressure. Whilst this indicates learning by a group, as a group, this learning was limited. Grocer Co's imposition of supplier validators was coupled with a reliance on a small group of Category advisors'. Category advice from other suppliers fell on deaf ears. This illustrates network modification failure (Miles and Snow 1992).

Few studies are without limitations. Our analysis was retrospective and focused on a single supply network. Our analytical framework cannot be used to predict network learning outcomes nor actors' inter-organisational information systems use. As Archer

(1995) explained, actors remain free to do otherwise. Further, non-participant observation was coupled with recollections of management action (Partington 2000) elicited during semi-structured interviews. This enabled category advisory relationships to be traced; however these accounts must be treated with some scepticism. This was not a longitudinal study. Instead, our research design exploited the opportunities afforded for cross-sectional exploration of technological change at different developmental phases, what Barley describes as ‘synchronic’ design (1986; 1988).

Conclusions and implications

This paper makes both empirical and theoretical contributions to the inter-organisational learning literatures. By providing insight into contemporary United Kingdom practice, our study adds to and extends existing retail studies that document programmatic change initiatives in the German retail sector (Mouzas and Araujo 2000). Beyond these empirical findings, we argue this method may be used to support future research into dynamic network relationships. Our case narratives illustrate how ‘analytic dualism’ provides a practical means by which to unpack the relationship between institutional change and individual action over time (Archer 1995; 1996).

These two narratives raise questions about the pathology of information system control in an inter-organisational setting. For, whilst organisational-level agency has been recognised (Araujo and Harrison 2002), our findings demonstrate the importance of changes in individual actors’ situational logics when considering the relationship between individual actors’ agency and the socio-cultural conditions of contemporary buyer-supplier relationships. Further research at this sub-organisational level is needed in other empirical settings. How individuals manage in conflicting conditions would also seem to present an interesting line for network learning research.

This study may also be of interest to practitioners. Although Archer’s own analytic histories extent over centuries, morphogenetic/ static processes also operate in localised settings (Archer 1995 p 274). Here, we used theory to illuminate how the structural and cultural changes associated with inter-organisational information system use loaded individual actors’ with discrepant situated logics. This approach sheds new light on the learning difficulties individual actors face when network change is attempted through inter-organisational information system implementations. Given the complexities of embedding collaborative behaviours between even these sophisticated organisational actors, the logics of discipline and domination upon which information systems are premised may, as Miles and Snow (1992) predicted, prove to be a (management) step too far.

Further research may also raise questions for competitive policy. Government-sponsored reports suggest that monopsonic[3] competition problems are prevalent across retail sector. Increasing consolidation within the sector, accompanied by a shift from local to national retailer chains has increased cause for concern (Dobson and Waterson 1996; Dobson, Waterson et al. 1998). These authors called for further investigation into the circumstances when, either by agreement or through dominance

[3] Where a firm, or a group of firms obtain from suppliers more favourable terms than those available to other buyers or would otherwise be expected under normal competitive conditions (Dobson, Waterson et al. 1998)

inter- or intra- brand effects (at the manufacturer or retailer level respectively) are experienced as a result of extended contractual arrangements.

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