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Agency Theory and Supply Chain Management: Goals and Incentives in Supply Chain Organisations

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Abstract

Purpose Agency theory (AT) offers opportunities to examine how the risk of opportunism can be prevented or minimised along supply chain organisations using incentives to achieve goal alignment.

Methodology The study presents evidence of how members of such organisations achieve goal alignment through the use of incentives by empirically examining two complete supply chain organisations, including final customers, within the UK agri-food industry using a case study methodology.

Findings The findings show that contractual goals can be divided into two different categories, shared supply chain organisational goals, and independent goals of each individual participant. In addition to monitoring ability, incentives can also be classified into short term financial and long term social incentives. Product attributes, in particular credence attributes, are also identified as having implications for both goals and incentives.

Research limitations The supply chain perspective and case study methodology mean that the research findings cannot be generalised to other supply chains. A further limitation of the research is the use of different methods of data collection at the final customer point.

Practical Implications Managers must ensure that appropriate incentives for all departments and individuals are designed to deliver the strategic goals of the supply chain organisation.

Originality/Value of paper A complete supply chain perspective is adopted, using multi-methods to collect empirical data. A revised Agency theoretical model of supply chain relationships is developed.

Key Words:

Agency, goals, incentives, supply chain organisations

Classification:

Research paper

Introduction

Operations Management (OM) research has been criticised in the past for the limited use of social science theories and research methodologies which can help explain, describe and understand organisational behaviour (Flynn *et al,* 1990). More recently, and in the same vein, calls have emerged for OM research to apply theories from other disciplines such as economics (Grover and Malhotra, 2003), and to reflect economic activity by focusing on sectors other than manufacturing, such as services and retail (Slack *et al,* 2004).

Within the OM literature, Supply Chain Management (SCM) also known as Demand Chain or Value Chain Management, is recognised as growing in importance for both academic and practitioner communities (Grover and Malhotra, 2003; Slack *et al*, 2004; Mabert and Venkataramanan, 1998; Pannirselvam *et al,* 1999; Selen and Soliman, 2002). However, OM research in SCM to date has been limited by a number of factors, including a paucity of case and field research methodologies; a focus on theory testing as opposed to theory building; a reluctance to apply and integrate multiple theories from other disciplines; a pre-occupation with functions rather than processes; and a research focus on buyer:supplier relationships at the industry level, rather than the supply chain level of analysis (Flynn *et al,* 1990; Pannirselvan *et al,* 1999; Maloni and Benton, 1997; Hines *et al*, 2002; Ketchen and Giunipero, 2004; Grover and Malhotra, 2003; Slack *et al,* 2004; Meredith, 1998). Existing empirical research into supply chains tends to be narrow, usually focusing on one link in a supply chain, and adopts a one-sided perspective of the buyer:supplier relationship. Assuming that supply chains are demand driven, then a complete supply chain level of analysis must include all links in the chain, including the final customer or consumers (Ketchen and Giunipero, 2004). Finally, the literature is concentrated on a limited cluster of industries with common characteristics, in particular consumer goods retailing, computer assembling and automobile manufacturing (Burgess, Singh and Koroglu, 2006). Maloni and Benton (1997) note that OM research into supply chain partnerships should consider such aspects as perishability and environmental concerns.

More recently there have been calls for researchers to make greater use of organisational theories in order to understand operations management (OM) in general and supply chain management (SCM) in particular (Ketchen and Hult, 2006). Burgess, Singh and Koroglu (2006) note that of the literature that does use organisational theories, a transaction cost economics (TCE) approach predominates. However, the TCE approach notes that firms see competition based on the costs of competing in the market place, and that to survive, the decision to make or buy is based on the desire to produce at lower costs (McNally and Griffin, 2004; Cousins, 2005; Ettlie and Sethuraman, 2002). On the other hand, the emergence of "best value supply chains" that seek competitive advantage based not only on cost, but also speed, flexibility and quality, requires an approach that identifies the benefits for supply chain members (Ketchen and Hult, 2006). Agency theory (AT) offers opportunities to examine how the risk of opportunism can be prevented or minimised along supply chains using reward structures to achieve goal alignment (Ketchen and Hult, 2006; Zsidisin and Ellram, 2003).

This research responds to these gaps in knowledge by investigating two complete supply chains for a perishable product, namely fresh beef, in the UK agri-food industry. It examines contractual relationships within supply chain organisations, including the final customer, using an Agency theoretical approach and a case study methodology, and offers empirical evidence of the incentives employed to achieve both individual and organisational goals. The paper discusses the importance of product, market and industry characteristics on supply chain relationships, and identifies directions for future supply chain research using a revised Agency theoretical framework.

The paper is presented in five sections, beginning with a literature review. The research context of the UK agri-food industry is then outlined, followed by details of the three stage research process and case study methodology. The results are then presented, with the final section devoted to a discussion and conclusion.

Literature Review

Supply Chain Management

The concept of Supply Chain Management (SCM) has developed over time from having an intra-organisational focus on logistics to becoming focused on wider inter-organisational issues. Although practitioners and academics use the term widely, there is no universally agreed definition (Dubois *et al*, 2004). The main tensions arise between those who adopt a functional perspective and view SCM as an overall term for logistics - managing the flow of materials and products from source to user - with the focus on operational issues. Here, the underlying assumption is that management of the supply chain is driven by a need to improve speed and efficiency, and as a result, performance (Heikkilä, 2002:749). Others view supply chain management as a management philosophy concerned with the management of supply and demand across traditional boundaries – functional, organisational and relational – and recognises that by doing so, organisations will gain commercial benefits (New, 1997). This perspective notes that the emphasis should be on customer pull rather than supplier push, aiming to meet the needs of specific customer segments (Vollmann *et al,* 2000) by creating customer value (Christopher, 2004), with the focus on processes rather than functions. Supply chain management can therefore be defined (Burgess, Singh and Koroglu, 2006) as "the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole" (Mentzer *et al*, 2001:18). Taking this view further, Ketchen and Giunipero (2004) note that some supply chains may be viewed as organisations because they fulfil Leavitt's (1965) criteria for organisational form where members are strategically, operationally and technologically integrated. They propose a definition of a "supply chain organisation":

"A supply chain organisation is a relatively enduring interfirm cooperative that uses resources from participants to accomplish shared and independent goals of its members" (Ketchen and Giunipero, 2004:55).

With supply chains increasingly becoming of interest to OM researchers, there have been calls for the greater use of organisational theories such as Transaction Cost Economics and Agency Theory in order to describe, explain and predict supply chain phenomena (Ketchen and Hult, 2006). Of particular interest are the individual goals of supply chain members, and their relationship with other organisations in the supply chain. The next section briefly describes TCE and Agency theories.

Transaction Cost Economics and Agency Theory

Transaction Cost Economics is primarily concerned with identifying the conditions in which different organisational forms will be most efficient. The aim of TCE (Williamson, 1975) is to explain, and possibly to predict, the institutional arrangements by which transactions, which differ in their attributes, are negotiated, enforced and adjusted (McGuinness 1987) whilst accepting that transactions between parties will be unavoidably incomplete. Institutional arrangements range from transactions on the spot market to those within the firm. The critical dimensions in which transactions differ can be classified as the frequency with which transactions occur, asset specificity and the degree of uncertainty. TCE accepts that in addition to the nature of the transactions themselves human behaviour will also affect the costs of organising transactions, namely *bounded rationality*, a cognitive assumption, and *opportunism,* a behavioural assumption (Williamson, 1991). The importance of the assumption of bounded rationality in TCE is that by accepting that human agents cannot deal efficiently with large volumes of complex data, the prospect of complete contracting has to be rejected. In discussing the problems associated with opportunism, where firms are driven by self-interest, Williamson (1975) explains that it is not necessary for all agents to be regarded as opportunistic to identical degrees, but that it is difficult to discover *ex ante* which agents are less opportunistic than others. Both the nature of the transactions and the assumptions regarding human behaviour have implications for supply chain management. Within the OM literature, the TCE framework has been used to explore the make-or-buy decision (see for example, Nesheim, 2001; Ettlie and Sethuraman, 2002; Williams *et al* 2002; Grover and Malhotra, 2003).

Transaction Cost Economics developed from the "make or buy" problem originally identified by Coase in 1937, whereas the origins of Agency Theory, according to Williamson, lie with the identification of problems associated with the separation of ownership and control. Agency theory is concerned with situations in which one party, namely the principal, requires a second party, namely the agent, to undertake an action on the principal's behalf. The dyadic approach of the theory is concerned with the design and form of a contract which ensures that the agent will act in the best interests of the principal, and that the overall costs to the agency relationship of ensuring such behaviour are minimised, but not eliminated, given environmental uncertainty and information asymmetry. Agency relationships are context specific in that everyone can act as either a principal or an agent, depending on the specific circumstances at any point in time (Bergen *et al.*, 1992).

Important assumptions regarding individual behaviour and motivation are central to the Agency problem. Individuals are assumed to be motivated by self-interest, have different risk preferences leading to a divergence of goals between the principal and agent (Jensen and Meckling, 1976; Strong and Waterson, 1987; Eisenhardt, 1989; Bergen *et al.*, 1992). This utility maximising assumption has also been interpreted as one of bounded rationality and opportunistic behaviour (Barney and Ouchi, 1986; Williamson, 1988; Kochhar, 1996). Both environmental uncertainty and information asymmetry are also assumed, which have important implications for the design of institutions that govern an agency relationship. Agency theory recognises that realised outcomes will be partly determined by environmental factors such as market economic conditions, competitors' actions, and technological changes (Bergen *et al*, 1992) that are beyond the control of either principal or agent. Information asymmetry describes how principals are unable to perfectly observe the actions of their agents, and self interest on the part of agents will make them reluctant to share that information with the principal – the "lemons" situation (Akerlof, 1970; Stiglitz, 2000). Two specific problems associated with information asymmetry are Adverse Selection and Moral Hazard. Adverse Selection, or hidden information, is when an agent misrepresents his skills or abilities in an effort to elicit a contract. The literature notes there are three strategies, all incurring costs, to overcome this pre-contractual informational problem: *screening*, in which a principal may incur costs in order to collect additional information on the true abilities of the prospective agent; *signalling*, which may be used by some agents to indicate to principals they have the desired characteristics, and *self-selection*, in which a principal can invest in devices which may increase the costs relative to the benefits to an agent of sending a false signal (Bergen *et al,* 1992).

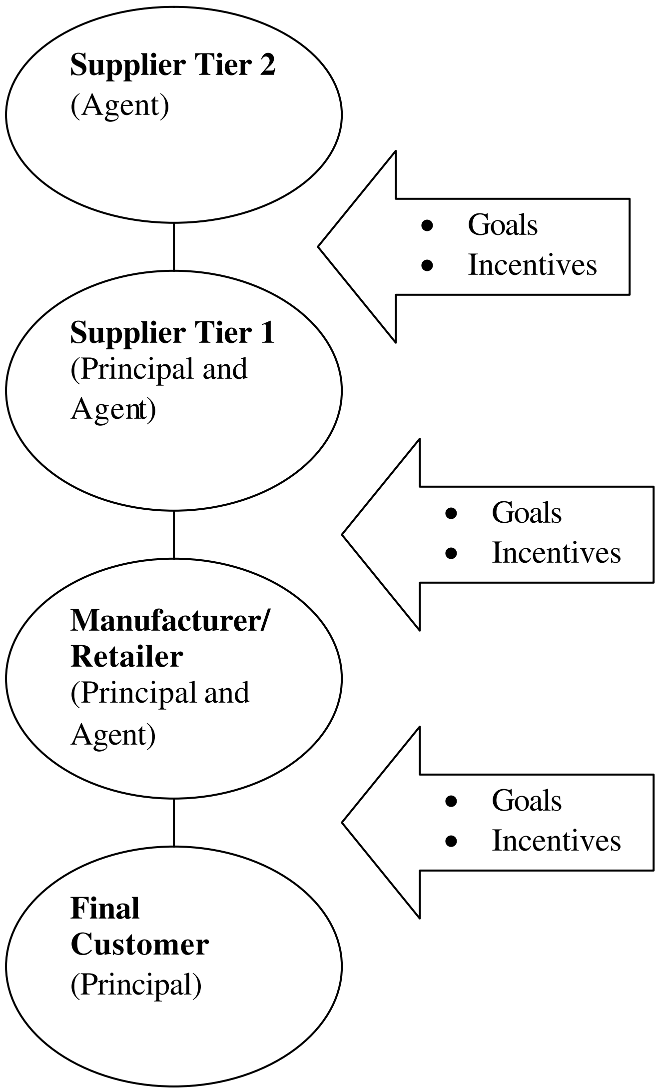
Moral Hazard, or hidden action, is usually associated with post-contractual problems that emerge after a principal and agent have engaged in a relationship. The agency problem becomes how to structure an agreement that employs incentives in order to induce an agent to serve the principal's interest even when their actions and information are not observed by the principal (Pratt and Zeckhauser, 1985). Incentives are described by Jensen as "the difference in (expected) well offness between taking one action as opposed to another, that provides incentives and results in choice. An individual takes action A over action B because he or she expects A to result in better outcomes" (1994:2). Therefore, the nature of the incentives offered in a principal-agent relationship will drive the behaviour of the agent (Kerr, 1975; Besanko *et al* 1996; Gibbons, 1998). Within Agency theory, and in addition to rewards and penalties, the ability to monitor an agent's behaviour by the principal is also viewed as an incentive (Holmstrom, 1979).

The role of incentives within an agency relationship is therefore of prime interest to participants within supply chain organisations in order to ensure that both individual firm and organisational goals are met. Not only can Agency theory can be applied to contractual relationships between firms, but can also be used to examine implicit social contracts, such as that between as a seller and ultimate consumer. "In addition, the ultimate customer can also be viewed as engaging in an agency relationship as he or she attempts to gain accurate product information and desired product benefits from a supplier who may be viewed as his or her agent" (Bergen, *et al* 1992:56).

To summarise, the TCE approach to supply chain management focuses on cost minimisation, whereas an Agency approach examines the incentives used to ensure all parties' interests within a supply chain are aligned. Of particular interest are supply chain organisations – those supply chains that are strategically, operationally and technologically integrated (Ketchen and Giunipero 2004). Agency theory research concentrates on examining dyadic relationships between one principal and one agent. By adopting a supply chain perspective, members can act as both principal and agent, and it is all the relationships along the supply chain that are of interest, in particular goals and incentives. By adopting a demand perspective, this begins with the final customer or consumer acting as a principal and their relationship with the supplying firm, which then impacts upon the relationship with their subsequent suppliers (Figure 1).

"Take in Figure 1"

Figure 1: Principal Agent Relationships within Supply Chain organisations



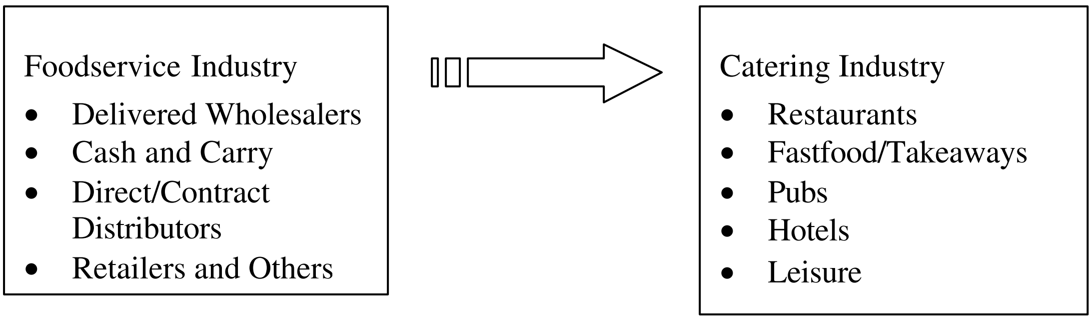
Therefore, this research seeks to investigate how members of such organisations achieve such goals through the use of incentives by empirically examining two complete supply chain organisations, including final customers, within the UK agri-food industry. Specifically, the research questions to be addressed are "what are the goals and incentives for Principal and Agent to act co-operatively, and how do they differ along the supply chain?"

Research Context

Morgan *et al* (2006) highlight the importance of context as interfirm cooperation differs across industries. Responding to calls for OM research to examine industries other than consumer goods, automobile and computing, this research examines complete supply chains in the UK agri-food industry. Food retailing is dominated by eight multiple retailers with the top four supermarkets accounting for over 68 per cent of the total grocery market, worth £123.9 bn in 2005 (IGD, 2005). Purchasing power is therefore concentrated in a handful of buyers, which has impacted upon suppliers upstream. In response to competitive pressures, including consolidation, increased price competition and low food price inflation, UK food retailers use own brands in order to gain consumer loyalty and competitive advantage, particularly in crucial destination categories such as fresh beef. Own brands, as defined by Davis (p.31) are positioned as niche, high quality products sold at a premium price, supported by strong technical and quality control involvement from the retailer. Retailers do not produce own brand products, but delegate the task of production to their suppliers, usually large primary processors who source product from a variety of marketing channels such as auction markets or farmer cooperatives. Such a strategy has implications for the structure of contractual relationships, as any variations in quality can undermine the brand positioning and horizontal competitiveness of the retailer (Collins and Burt, 2000). Competitive pressures also affect the strategies of those marketing channels serving the catering sector; ie delivered wholesalers, cash and carry operators, direct/contract distributors and independent retailers, known as the foodservice sector (see Figure 2), worth £34.5 bn in 2005 (IGD, 2005).

"Take in Figure 2"

Figure 2. Foodservice Distribution Channels for the Catering[1] Industry



The nature of product quality attributes is of particular interest to such supply chain organisations, and is ignored in the OM literature. Some attributes of food products are obvious, such as packaging, labelling, appearance and smell; some cannot be ascertained until after consumption, such as taste and juiciness. Animal welfare, organic production and food safety may not ever be known; therefore the nature of product attributes can be classified into Search, Experience or Credence attributes. Northern (2000) notes that the classification of attributes may change as the product undergoes different processes and moves down the supply chain. Buyers and sellers of such products are subject, therefore, to both imperfect information and information asymmetry. It is proposed therefore, that product quality attributes impact upon on the goals and incentives of supply chain organisation members, including final customers.

Methodology

[1] Excludes the Cost sector, i.e. catering in staff canteens, health care, education and services.

The case study methodology is identified as being the most appropriate where the objective is to enhance understanding and to gain insight of contemporary phenomena, can consist of either qualitative, quantitative data or both, can incorporate multiple data collection methods and by doing so, includes both the *positivistic* and the *phenomenological* philosophical orientation of research (Eisenhardt, 1989; Seale, 1998; Ghauri *et al* 1995, Meredith, 1998). Yin (1989) proposes that the major advantage of using a case study approach, compared to other research strategies, is that it yields opportunities to use many different sources of evidence, and that by using multiple sources of evidence to examine the same phenomenon, triangulation occurs, improving the validity of the research and minimising problems associated with construct validity.

The case study approach is suitable for theory refinement (Voss *et al* 2002), and so an embedded multiple case design incorporating two complete supply chain organisations, each consisting of final customers, retailer, processor, and farmers, was adopted. Following the development of the theoretical model and identification of the constructs through the literature review, a three-stage research plan was developed, involving both exploratory and explanatory research (Table 1).

"Take in Table 1"

Table 1 Three Stage Research Plan

STAGE	FOCUS	LEVEL	METHODOLOGY	OBJECTIVES
One	Wide	Stakeholder Representatives	Interviews, Documents, secondary data	Explore drivers of change in contractual relationships along the supply chain; Generate interview guide.
Two	Intermediate	Key Industry Players	Interviews, Documents, secondary data	Pilot interview guide; refine research questions; Identify complete supply chain organisations
Three	Narrow	Two Supply Chain Organisations: a) Retailer b) Processor c) Farmers d) Customers	Interviews, Documents, secondary data, focus groups, mail survey	Examine Goals and Incentives between Principal and Agents along two complete supply chain organisations; revise theoretical model.

As an initial step, exploratory interviews were held with representatives of stakeholders (government, consumers, retailers, processors and farmers) using a broad semi-structured interview guide in order to gain an overview of the drivers and effects over time of changes in contractual relationships. Secondly, key industry players (food retailers) were contacted through an industry association (Voss *et al,* 2002), and interviewed by the researcher using a more detailed interview guide, which focused on identifying the elements of specific principal-agent contractual relationships. The objective of these pilot interviews were to test the suitability of the interview guide, to gain the co-operation of key industry players, refine research questions and identify case studies of complete supply chains for the third stage of the research plan. During Stage Two of the research process, two food retailers agreed to participate in the case study research, one operating in the retail sector and the second one in the foodservice sector.

The third stage of the research plan examined contractual relationships at each point within two complete beef supply chains, using different data collection methods according to the characteristics of each sector (Table 2). Following the agreement of the food retailers to participate in the supply chain research, an introductory letter was sent to the respective first tier suppliers to explain the objectives of the research and identify the most appropriate person for the interview. This snowballing technique was also employed to identify and gain the agreement of the second tier suppliers, namely the farmer producer groups. In-depth interviews, using the same pre-tested semi-structured interview guide used in Stage Two, so ensuring triangulation, in addition to archived data, was used at the retailer, processor and farmer level.

Customers could only be identified following the agreement of the rest of the supply chain to participate, although in the theoretical model drive supply chain behaviour. At the food retail level, four focus groups were held with customers who had brought the beef product. Focus group research is a method of collecting qualitative data from homogeneous individuals, typically identifying a range of perceptions, attitudes and beliefs on a predetermined range of subjects, and must be rigorous, systematic, defensible and verifiable (Krueger and Casey, 2000). The purpose is not to infer, generalise or make statements about a population, but to provide insights into beliefs and perceptions regarding a situation. Recruitment took place on location and randomisation was controlled through a screening process, namely to identify those purchasers of the beef product of interest. The focus group discussion guide was informed both by the original interview guide used at the previous stages, and the questionnaire used in the mail survey in the foodservice supply chain. The administration and execution of the focus groups was informed by recommended practice (Krueger and Casey, 2000). Field notes were maintained by the researcher (Eisenhardt, 1989) and all interviews and focus groups were recorded, transcribed, and coded (Voss *et al,* 2002).

"Take in Table 2"

Table 2. Case Studies: Retail Supply Chain and Foodservice Supply Chain

SECTOR	**PRODUCT**	**RETAILER** ***FOCAL FIRM***	**PROCESSOR** ***TIER ONE SUPPLIER***	**FARMERS** ***TIER TWO SUPPLIER***	**CUSTOMERS**
Retail	Product X	Retailer A *(interview with Buyer)*	Supplier B *(interview with Operations Manager)*	Producer Group C *(interview with CE)*	Consumers *(focus groups)*
Foodservice	Product Y	Cash and Carry D *(interview with Buyer)*	Supplier E *(interview with Operations Manager)*	Producer Group F *(interview with CE)*	Catering Customers *(mail survey)*

In the foodservice supply chain case study, the population of those catering customers who had purchased the beef product was known, and a mail survey was undertaken. In total, 4,476 pubs, hotels and guesthouses had bought the beef product during the previous 12 months. The original sample size of 3,000 was chosen in order to minimise sampling error, and allow for non-response and ineligible questionnaires. Using proportionate sampling, a probability sample was selected using a computer-generated list of random numbers (Salant and Dillman, 1994). The requirements of the Data Protection Act 1998 precluded any direct communication between the researcher and the customers of the foodservice retailer. As a result, the company administered the survey as designed by the researcher. A total of 442 were returned, and following the removal of ineligible and unusable responses, 304 usable questionnaires resulted in a response rate of 10.2 per cent. A number of statistical tests using SPSS were carried out to analyse the data, including exploratory factor analysis which revealed the existence of the theoretical constructs of Credence, Search and Experience attributes as underlying dimensions of the construct of the buying goals of the customer acting as Principal.

Within case analysis of each complete supply chain organisation was initially performed but reported in detail elsewhere (*References removed*). Cross-case analysis seeks to increase the internal validity of the findings through the use of multiple data sources and triangulation (Voss *et al*, 2002). The cross case analysis of the two complete supply chain organisations, which is the focus of this research, is discussed below.

Results

The research findings are classified in terms of the identified theoretical constructs of Goals and Incentives at each point in the supply chain. A summary is presented in Table 3, followed by a discussion of the findings.

"Take in Table 3"

Table 3: Summary Research Findings

	ROLE	GOALS FOR PRINCIPALS	INCENTIVES FOR AGENTS
CUSTOMER	PRINCIPAL	Desired Product Attributes	
FOCAL FIRM (RETAILER)	AGENT PRINCIPAL	Meet Customer Goals Increase market share Consistent quality and supply	Brand loyalty Regulators' monitoring ability
TIER 1 SUPPLIER (PROCESSOR)	AGENT PRINCIPAL	Meet Customer Goals Access to market	Asset specificity Financial Market information Monitoring ability
TIER 2 SUPPLIER (FARMERS)	AGENT	Meet Customer Goals Access to market	Asset specificity Financial Market information Monitoring ability

The case studies comprise the supply chain for one of the smaller, niche food supermarkets, as well as the supply chain for a cash and carry food retailer. The structure of the food retailing industry has implications for the smaller retailers, who have difficulty in obtaining regular supplies of fresh beef from the very large processors who serve the top four supermarkets. In times of scarcity, both retailers stated that they often found they were unable to secure regular supplies of product because of the high demand and power of the main supermarkets over the large processors. Environmental uncertainty is a characteristic of the market for beef, with weather, disease, perishability and contamination affecting both supply and demand. Consumers cannot detect before purchase or consumption whether beef is contaminated, nor can they tell whether beef will taste as expected, as neither outcomes can be determined from a visual examination of the product. Both retailers took a decision to develop a differentiated, own branded fresh beef product, developed to guarantee taste and to source it from a dedicated supplier, in order to ensure traceability. In return, the processors only serve the retailer, and have no other significant customers. There are no formal written contracts between any of the parties. For both retailers, acting as principals, agents were chosen on the basis of past experience, their ability to meet the required specification and volumes, and willingness to invest in the relationship. However, for both retailers, the most important factor in choosing dedicated suppliers was whether they felt they could work with the individuals and help them develop – "like-minded, progressive people who understand the (…) business" (Meat Buyer Retailer A). From a theoretical perspective, Adverse Selection problems were managed through screening, signalling and self-selection. Previous experience of the agent's abilities minimised the costs associated with acquiring information on the agents' true abilities; agents signalled their characteristics to the principal through investment in the desired technology, institutions and facilities, for example proprietary quality assurance schemes and third party monitoring in the form of audits and inspections, in order to ensure product safety and quality. The opportunity for self selection was achieved by requiring the processors to act as a sole supplier to the retailer, thereby increasing the costs to the agent relative to the benefits of sending a false signal.

For both catering customers and individual consumers, acting as principals, goals were expressed as desired product attributes. Referring to the nature of product attributes and the associated information asymmetry, these were notably Experience attributes such as flavour, taste and consistency, but also the Credence attributes of food safety, animal welfare and origin, both of which are characterised by imperfect information and information asymmetry. In the UK, consumers have become increasingly concerned about food safety and quality issues, particularly those risks that have potentially severe consequences and are little understood, such as Creutzfeldt-Jacob Disease (vCJD). Consumers are therefore faced with both adverse selection and moral hazard problems that involve, respectively, uncertainty about supplier characteristics and the inability to distinquish product quality, notably credence attributes. Food retailers signal quality through their investment in the retail brand, the costs of which are offset through encouraging repeat purchases. In order to meet the moral hazard problem, Mishra *et al,* (1998) argue that some quality conscious customers, acting as principals, are willing to offer incentives such as price premiums in order to ensure that quality is actually delivered. From the research findings, it was noted that both consumers and catering customers were loyal to the retail brand, with trust and belief in the retailer identified as being important determinants of product choice.

For both retailers, acting as agents to their customers, goals were expressed in terms of meeting the needs of their principals, and to meet their own organisational goals. Incentives to meet customer requirements were mainly expressed in terms of the market – penalties included the damage to the brand and reputation, whereas rewards were viewed in terms of market growth. For food retailers, the economic benefits derived from the success of own brand beef products is tempered by the increase in the possible penalties imposed by both consumers and regulators in the event of product failure. Regulatory approaches also depend upon the type of product attribute. Governments are not normally heavily involved in markets for products where search and experience attributes are important and repeat purchases make the market self-correcting, whereas intervention is heaviest in markets for credence attributes, such as food safety. Public regulation and inspection can generate reputation-based incentives to monitor quality, as the impact of adverse consequences are not just confined to the product category, but affects the retail brand, and consequent market share.

Similarly at the Tier 1 Supplier level, goals were also identified as meeting the requirements of their principal, the retailer, and meeting organisational goals. Incentives were seen as the financial penalties associated with the loss of customer, while rewards were associated with securing access to the market, gaining market knowledge, prompt payment, stable prices and long term growth. Personal incentives were also viewed as being important, such as gentlemanly conduct from the retailer, and enjoying work "we want to come to work, we enjoy it" (Supplier B). Both processors were given opportunities to develop new products under their own brand, test the market with them, and to manage the category at the retail level. If these are successful, the retailers may then translate them into the retail brand. Additionally, both retailers and processors have worked together to develop a number of products which add value to forequarter meat, traditionally a low value, by-product of prime hindquarter meat. With each processor and retailer investing collectively in exchange specific assets, resulting in reciprocal interdependency (Holcomb and Hitt, 2006) the threat of opportunism associated with using the large processors who serve the major supermarkets is reduced. In addition, both suppliers reduced the risks associated with business failure, given the current restructuring of the processing sector driven by consolidation at the retailing level. This provides support for Lazonik (1991) who theorised that asset specificity is an outcome of organisational success.

At the Tier 2 Supplier level, meeting the goals of their customer was important, as was the financial rewards in the form of stable prices and market knowledge. Traditionally, farmers choose amongst two main marketing channels, either through livestock markets, or direct to processors. Farmers' receive payment on the basis of an estimation of value of the carcass from a visual examination of the live animal through livestock markets. However, processors reward farmers on the basis of the real value of the carcass, paying a premium for actual quality achieved. Beef production can take up to three years, each carcass is heterogeneous and farmers are unable to manage supply in relation to demand. For farmers in the case study supply chain organisations, traditional fluctuations in prices were managed through a longer term, stable pricing arrangement with the processors, with prompt payment also considered an incentive. Farmers are also traditionally unable to directly access the final consumer because of the complexity and length of the conventional supply chain. However, by choosing to become a dedicated supplier in the supply chain organisation, farmers were able to gain direct market knowledge via their principal, the processor. The advantages of delivering market driven information to farmers is that they are able to produce to the required specification, and consequently are not penalised financially when the carcass is valued.

In summary, from a supply chain point of view, if contractual terms between a principal and agent recognise the goals at each point along the supply chain and offer incentives to meet those goals, then all parties will benefit. The findings show that contractual goals can be divided into two different categories, namely those of the final customer, which can be described as shared supply chain organisational goals, and those independent goals of each individual participant. Given information asymmetry and environmental uncertainty, the characteristics of the product are also of interest in examining the role of incentives in supply chain organisations, particularly credence attributes such as product safety. In addition, the independent goals of each participant are affected by the structure and nature of the industry – for instance, suppliers are remote from the final customer because of the long term nature of production, the length of the traditional food supply chain and the level of concentration at the retail level. Equally, at the supplier level, consolidation is also being driven by the volume requirements of the largest four supermarkets, leaving smaller supermarkets struggling to develop reliable supply arrangements for smaller volumes. Contractual terms that include asset specificity can be viewed as offering incentives as both retailers reduce the threat of opportunism associated with using processors who serve the larger supermarkets, and both processors reduce the risks associated with business failure, given the consolidation at the supplier level being driven by concentration at the retail level.

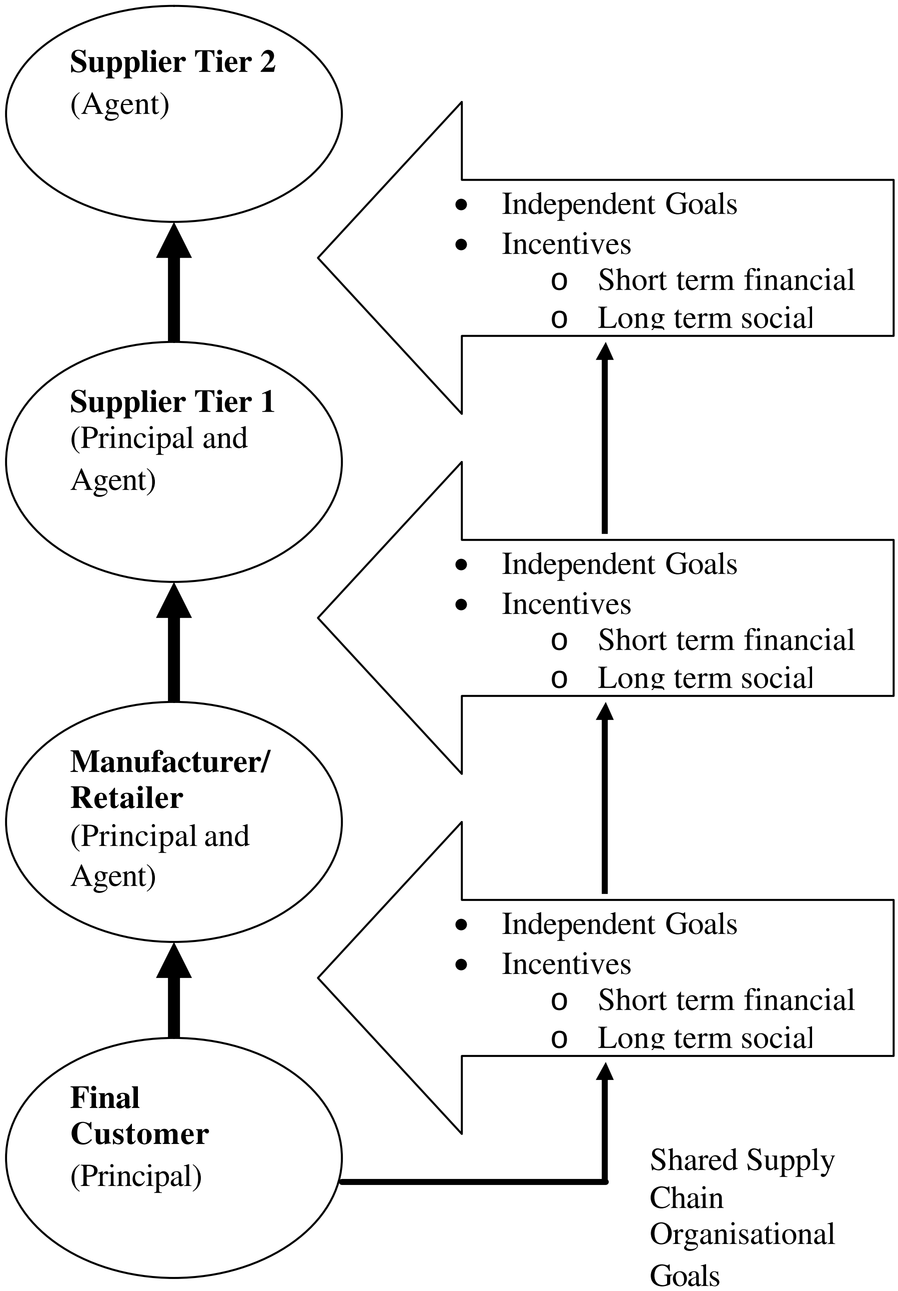
With regards to theoretical considerations, Agency theory only considers objective monitoring and not subjective monitoring of agent behaviour (Arrow, 1985) but the research findings identifies the role of personal relationships at each dyad along the supply chain organisation acting as incentives both to deter agent opportunism and to achieve individual goals. Agency theory has also been criticised because incentives are virtually always expressed in short term monetary rewards, with no consideration of socially mediated rewards, which will have economic consequences in the long term (Arrow, 1985; Shaw and Gibbs, 1995). However, the case studies identify both short term and long-term economic incentives, ranging from price premiums and stable pricing arrangements to market information and access.

Discussion and Conclusion

The objective of this research was to identify the role of incentives in minimising the risk of opportunism in supply chain organisations. An Agency theory perspective was adopted, and a three stage supply chain research plan employed. A case study methodology was used to examine two complete supply chain organisations, including final customers, within the UK agri-food sector, responding to calls by researchers to adopt a supply chain approach and to consider aspects of perishability and environmental concerns, both of which characterise the supply chains for fresh beef products. The research findings note that the goals of the final customer, in terms of desired product attributes, notably credence attributes such as food safety, animal welfare and origin were shared along the complete supply chain, and can be viewed as shared supply chain organisational goals. In addition, independent goals for each participant were impacted by both the nature and structure of the industry and by the supply chain. Incentives were not just financial rewards and penalties, but personal relationships were also viewed as incentives to manage the potential for opportunism. Following the research findings, a revised Agency theoretical model is proposed to examine contractual relationships along supply chain organisations (Figure 3).

"Take in Figure 3"

Figure 3: Principal Agent Relationships in Supply Chain Organisations.



The study also highlights an important issue for managers. The findings noted the role of organisational strategic goals in determining incentives for co-operation along the supply chain. For example, both retailers stated that a strategy of long term relationships with suppliers was determined both by the needs of their customers, and in order to deliver a difference from competitors. Organisations must therefore ensure that higher level goals drive behaviour, and that appropriate incentives for all departments and individuals are designed to deliver such behaviour. Buying departments are often judged on their ability to make short term cost savings; personal incentives for individual buyers also encourage behaviour that may have a detrimental effect on the long term dyadic relationship between principal and agent, for example, frequently moving buyers into different product areas. Communication of organisational goals throughout, and the design of appropriate incentives at both the departmental and individual level, will ensure that such goals are met.

The limitations of the study are acknowledged. The supply chain perspective and case study methodology mean that the research findings cannot be generalised to other supply chains. However, the advantages of using mixed methods such as interviews, focus groups and surveys improves the validity of the research and minimised problems associated with construct validity. A further limitation of the research is the use of different methods of data collection at the final customer point. This was a reflection of the conditions at the time, when an identical quantitative survey was designed for use by both the customers of the supermarket, and the catering customers of the cash and carry foodservice retailer. However, an outbreak of Foot and Mouth disease meant that the supermarket was concerned that product availability problems, together with the nature of the strategies adopted by the regulators to contain and eradicate the disease, would affect consumers' perceptions and willingness to co-operate in such a survey. It was decided that these exceptional circumstances offered a unique opportunity to collect in-depth information on retail customers' beliefs and behaviour, and therefore focus groups were considered to be a more appropriate instrument to collect such data.

In conclusion, this study represents empirical evidence of the goals and incentives used to minimise opportunism in two complete supply chains, including the final customer. The study suggests that Agency theory has the potential to offer greater insights into how, when and why supply chain organisations emerge, suggesting that the importance and nature of the product attributes will impact upon supply chain behaviour. This is in contrast to the traditional Transaction Cost Economics approach to supply chain management, in which the focus is on cost minimisation. Future researchers may consider supply chain organisations that have emerged in other industries with similar characteristics to the food industry, for example, pharmaceuticals, where safety is also an important credence attribute.

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