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**Managing perceived risks through supply chain relationships: an empirical study of the UK beef sector**

Dr Susan Hornibrook ([s.a.hornibrook@kent.ac.uk](mailto:s.a.hornibrook@kent.ac.uk))

Dr Andrew Fearne ([a.fearne@kent.ac.uk](mailto:a.fearne@kent.ac.uk))

*Kent Business School, University of Kent, Canterbury,  
Kent CT2 7PE, UK,*



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## Managing Perceived Risks through Supply Chain Relationships: An Empirical Study of the UK Beef Sector

*Sue Hornibrook and Andrew Fearne*

*Kent Business School, University of Kent, Canterbury,*

*Kent CT2 7PE, UK,*

*s.a.hornibrook@kent.ac.uk, A.Fearne@Kent.ac.uk*

### Abstract

This study offers an alternative to the traditional Transaction Cost Economics view of the treatment of information by viewing co-ordinated supply chains as a series of Principal-Agent relationships, and draws on Perceived Risk Theory to explain both consumer and organisational behaviour. Using a supply chain methodology, empirical evidence is presented of the perceived risks, associated management strategies and benefits for all members, including consumers/customers, for two co-ordinated supply chains for own brand fresh beef products in the UK, one in the retail sector and one in the foodservice sector. The results conclude that the establishment of the two co-ordinated supply chains reduces perceived risk for consumers and each participating organisation by increasing information on members' goals and behaviour, recognising perceived risk at each point and offering both positive and negative incentives to meet contractual requirements.

**Key words:** *contractual relationships, perceived risk, agency theory*

### 1. Introduction

The drive for more consistent meat eating quality has become a competitive strategy amongst UK food retailers to gain market share through customer loyalty and has led to various attempts at marketing differentiated retail branded fresh meat products sourced through retailer-led co-ordinated supply chains.

The eating quality and safety of fresh meat are product attributes that cannot be determined before purchase and consumption – the 'lemons' situation (Akerlof 1970). As a result, the risks associated with producing, selling and consuming fresh meat have serious consequences for all stakeholders (consumers, caterers/retailers, suppliers and farmers). Perceptions of risk and the way they affect consumer behaviour have been the subject of several studies (Mitra, Reiss and Capella, 1999; Van den Poel and Leunis, 1996; Dowling and Staelin, 1992; Dunn, Murphy and Skelly, 1986).

Both theorists and practitioners have called for strategies to be adopted by industry that aim to reduce perceived risk (Murray and Schlacter, 1990; Sweeney, Soutar and Johnson, 1999; Mitchell, 1992). The importance of perceived risk, and the consequent influence on food retailing strategies, has recently been identified as an appropriate area for future empirical research (Mitchell, 1998). Other researchers (Zwart and Mollenkopf, 2000; New, 2004;

Lamming, Caldwell and Phillips, 2004) note the possible impact of consumer and organisations' perceived risk on supply chains, but no research has attempted to apply and extend the concept to complete supply chains.

This paper contributes to the supply chain literature in three ways. It offers an alternative approach to the traditional Transaction Cost Economics view of information asymmetry in supply chains; presents a supply chain research methodology, and submits empirical evidence of the perceived risks, associated management strategies and benefits for all members, including consumers and customers, of two co-ordinated supply chains for fresh beef - one in the retail sector, and one in the catering sector.

## **2. Theoretical framework**

Transaction Cost Economics (Williamson, 1989) theory has been used to examine the emergence of retailer-led vertically co-ordinated supply chains in the UK food industry (Hobbs, 1997, Henson and Northen, 1998). However, the theory has been criticised in a number of areas by various authors (Doel, 1999, Hobbs, 1997, Demsetz 1993, McDonald 1999, Lazonick 1991) who reject the notion that asset specificity is a cause of market failure and argue that it is an outcome of organisational success.

The emergence of more complex governance structures other than market, hybrid and hierarchy has generated particular criticism of the TCE analysis. The main criticism directed at the TCE framework, therefore, is that the empirical evidence fails to support the hypothesis that as environmental uncertainty increases, and asset specificity is high, it will be more efficient to internalise transactions in terms of minimising transaction costs. Further, TCE dismisses the effect of market power that is a characteristic of the UK food industry in general, and the beef industry in particular.

The focus of this research is to examine contractual relationships within the UK beef industry in general, and vertically co-ordinated supply chains in particular, which Williamson would describe as being of a hybrid nature. The literature on supply chains has traditionally applied the Transaction Cost Economics theoretical framework in order to describe supply chain behaviour in terms of minimising transaction costs, neglecting possible benefits. A different approach is proposed here that includes the effect of the environment on organisational behaviour, has a focus on the contract rather than the transaction, encompasses power and control relations and the impact of increased information and technology on contractual design.

### *Principal Agent Theory*

Principal Agent Theory is concerned with situations in which one party, the principal, requires a second party, the agent, to undertake an action on the principal's behalf (Jensen and Meckling, 1976 and Ross, 1973). In TCE, governance structures are designed in order to minimise the costs of transacting but the distinctive focus of Principal Agent Theory is on the specific role of contractual provisions in modifying behaviour (Thompson, 1988).

The risks associated with food quality and safety has increased for all stakeholders in the beef supply chain, and risk neutrality can no longer be assumed. Principal Agent theory assumes a choice between behaviour-based and outcome-based contracts. However, contractual provisions between principals and agent in the UK beef sector display elements of both outcome based (e.g. product quantity, deadweight grades, conformation and fat level) and behaviour-based contracts (e.g. personal relationships, audits, monitoring, third party accreditation), the relative importance of which have increased over time. Clearly, there is a need for a complementary perspective in order to expand Principal Agent theory in order to better accommodate and explain consumer and organisational behaviour.

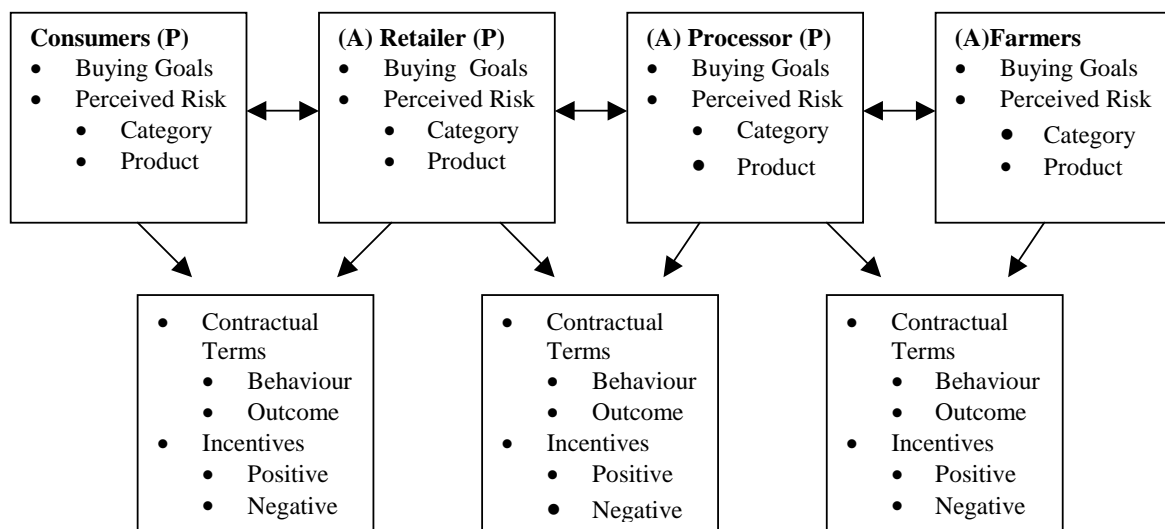
### *Perceived Risk Theory*

Cox (1967), and Cunningham (1967) first described perceived risk as comprising two components: uncertainty and adverse consequences. Both the probability and outcome of each purchase event is uncertain, which is a different perspective from the economic view of risk, which implies that a decision maker has *a priori* knowledge of both the consequences of alternatives and their probabilities of occurrence (Dowling, 1986). Other researchers note that risk perception is shaped more by the severity of the consequences than the probability of occurrence (Diamond, 1988; Mitchell, 1998 and Slovic *et al*, 1980).

In addition to the two principal determinants of perceived risk – uncertainty and adverse consequences – researchers have proposed that the consequences from a purchase can be divided into various types of loss: namely, performance, physical, financial, psychosocial, time etc (Mitchell, 1998). Other researchers have developed Perceived Risk Theory by describing overall perceived risk as product category risk and product specific risk (Dowling and Staelin, 1994). Product category risk (PCR) describes the perception of risk associated with a particular category. Product specific risk (PSR) is specific to the item being considered, with different products in a category associated with varying degrees of perceived risk. Total or overall perceived risk for a specific product is therefore a combination of PCR (the fixed component) and PSR (the variable component). If perceived risk exceeds the tolerable degree of the individual, then this triggers the motivation for risk-reducing behaviour. Perceived risk can be reduced through increasing certainty and/or reducing the consequences, and seeking information is one such strategy.

In addition to consumers, the impact of perceived risk on a purchase decision could also be extended to business-to-business purchase situations (Mitchell, 1998). As well as possible financial consequences, Mitchell identifies time loss as being appropriate when applying perceived risk theory to organisations rather than individuals, in particular the time required to investigate, recall and replace product in the event that organisational goals are not met. Therefore, the two risk components of uncertainty and adverse consequences are translated into two distinct types of organisational loss, namely financial and time. The resultant perception of risk will then stimulate risk reducing strategies, such as increasing information along the supply chain and/or reducing the consequences in the event that organisational buying goals are not met by, for example, including penalty clauses within contractual terms.

The theoretical framework proposed here (Figure 1) views the co-ordinated supply chain for own brand beef products as a series of principal-agent dyadic relationships, in which the goals of all members are translated into agreed contractual terms. Contractual terms are influenced not just by individual goals, but by the perception of risk associated with the beef product category and the specific ‘own brand’ product. In particular, it is proposed that it is the level of perceived risk, rather than objective risk, which will determine both the contractual terms and the nature of incentives designed to induce both parties to act co-operatively. Positive incentives can be viewed as the benefits accruing to all parties, whereas negative incentives are viewed as the adverse consequences associated with not meeting contractual requirements. Additionally, it is also proposed that co-ordinated supply chains manage not only consumers’ perceived risk, but also organisational perceived risk associated with beef product attributes.



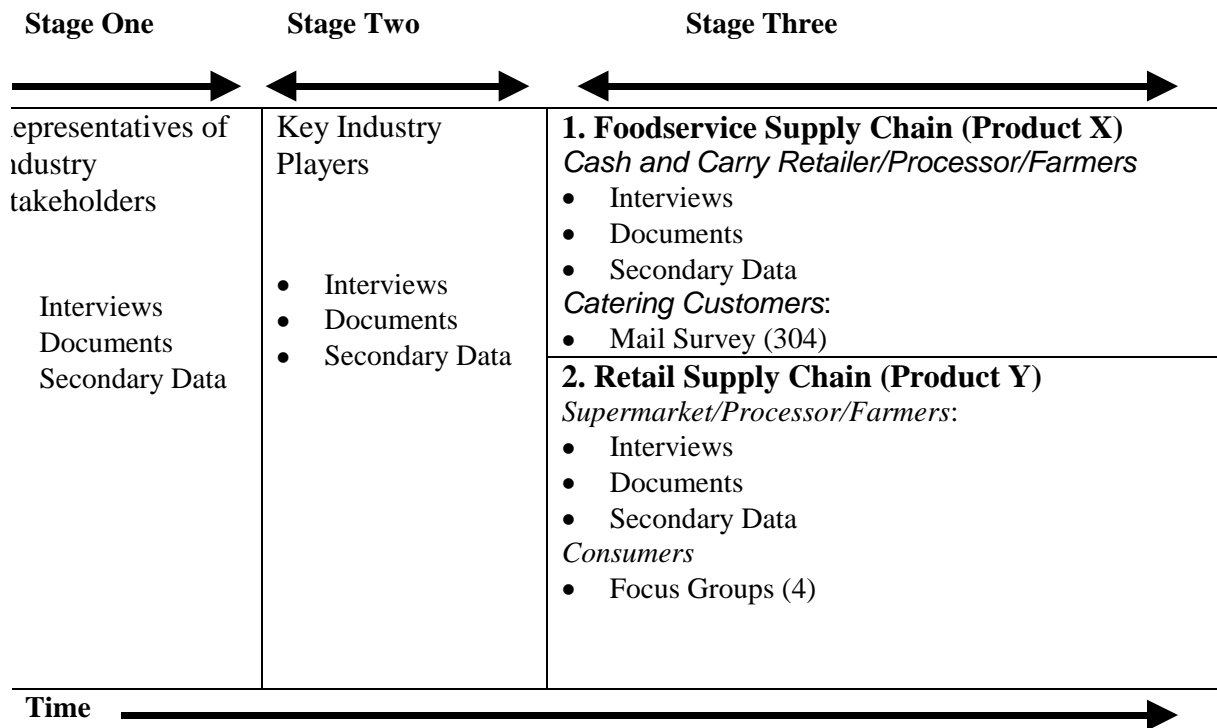
Key: (P) Principal, (A) Agent.

**Figure 1.** Co-ordinated Supply Chain for Retailer Own Brand Beef in the UK

#### 4. Methodology

Research into vertically co-ordinated supply chains poses particular challenges for researchers, particularly access to, and subsequent co-operation from, all participants within a particular supply chain. Additionally, the distinct nature and size of the population at various points along the supply chain demand that different research methods be designed and applied for each dyadic relationship. The case study research strategy is identified as being the most appropriate when examining ‘how’ or ‘why’ research questions; when the researcher has little control over events, when examining contemporary phenomena, and incorporating multiple data collection methods (Yin, 1989; Eisenhardt, 1989).

This research is concerned with examining how perceived risk is managed (the phenomena) within contractual relationships between principal and agent (the unit of analysis) in supply chains within the UK beef industry (the context). For the purpose of this study, a three-stage research plan was developed, involving both exploratory and explanatory research (see Figure 2).



**Figure 2.** Supply Chain Research Methodology

## 5. Case study results

During Stage Two of the research process, two retailers agreed to participate in the case study research. Following a request for anonymity by supply chain members, pseudonyms have been used to describe all participants throughout the research.

For both retailers, acting as agents, goals were expressed in terms of meeting the needs of their principals, and to meet their own organisational goals. Incentives to meet customer or consumer requirements were mainly expressed in terms of the market – negative incentives included loss of customer and reputation, whereas the positive incentive was market growth. Perceived risks were identified as inconsistent supply and the loss of customers. Risk reducing strategies included increasing information on the behaviour of agents and measurement of outcomes, and by using dedicated suppliers. Information was provided by a variety of sources, and included public monitoring (HAS scores), industry monitoring (third party accreditation) and from personal monitoring (personal relationships). One notable difference between the retailer and the cash and carry retailer was the recognition by the retailer that farmers bear the majority of long term production risks within the supply chain, and that they, as retailers, had a responsibility to bear some of that risk. For the cash and carry retailer, compensation for farmers was viewed solely as the responsibility of their supplier. In this case, production risks were located mainly upstream, and were not borne by the whole chain.

Similarly, at the supplier level, goals were also identified as meeting the requirements of their principal, the retailers, and meeting organisational goals. Incentives to meet the requirements of their principals were seen as the financial penalties associated with the potential loss of

customer, while positive incentives were associated with long-term growth and market knowledge. Perceived risks were viewed as the availability of cattle and price movements, which were managed through using dedicated suppliers, and increasing information on the behaviour of farmers and measurement of outcomes, by buying dead weight.

At the producer level, financial goals were particularly important, but security and meeting product specification were also identified as goals. Acting as agents, the negative incentives to meet the requirements of their principals were also viewed as the financial penalties associated with the potential loss of customer. Positive incentives were both personal and organisational, including relationships, stable pricing and market knowledge. Perceived risks included environmental risks from weather and disease, and financial risks, but these were managed through the dedicated supplier relationship.

The development of own brand beef products can be viewed as a strategic reaction by retailers to consumers' or catering customers' perceived risk associated with the beef category. Taking a 'demand-driven' perspective, organisational goals are derived from customer needs, and therefore the specification of the product and consequential contractual terms between retailer and processor, and processor and farmer, are designed to meet such goals and to reduce customers' perceived risk associated with beef. Contractual terms that include asset specificity can be viewed as offering incentives that reduce the perception of risk for both principal and agent, as evidenced from the above case studies. Both retailers reduce the threat of opportunism associated with using processors of beef who serve the larger multiple retailers. In addition, both suppliers reduce the risks associated with business failure, given the current climate of plant closure for medium sized abattoirs. This research provides support for Lazonik (1991) who theorised that asset specificity is an outcome of organisational success, but did not explore or define the link between asset specificity and success. The findings contribute towards theory by demonstrating that asset specificity manages risk rather than adding to the hazards of contracting, therefore contributing to market success for both parties. A follow up telephone call confirmed that the supplier in the cash and carry case study has subsequently expanded by building a 12,000 sq. ft processing plant (March 2002). Given the difficult market conditions for medium sized abattoirs in particular (rather than large or niche operations), such expansion can be viewed as an outcome of organisational success within a climate of plant closures.

## 6. Conclusions

According to Agency Theory, a risk averse principal would prefer an outcome-based contract in which agents are rewarded purely on achieving specified outcomes, assuming that such outcomes are easily observed and measured. However, the choice between outcome-based and behaviour-based contracts is based on an objective view of risk, which implies that a decision-maker has *a priori* knowledge of both the consequences of alternatives, and their probabilities of occurrence (Dowling, 1986). By including the effect of perceived risk, in which it is the size of the possible adverse consequences rather than the probability of the risk occurring that influence behaviour, the result is different. Assuming that contracts can be placed along a continuum from purely outcome-based to purely behaviour-based, a risk averse principal will



prefer a more behaviour-based contract because information will both increase certainty and reduce adverse consequences.

Agency theory only considers objective monitoring, and not subjective monitoring of agent behaviour. The research findings identify the importance of such subjective monitoring systems through personal relationships along the co-ordinated supply chain. From the consumer behaviour literature, past research has demonstrated that on the whole, the higher the magnitude of perceived risk, the greater the importance of information search (Dowling and Staelin, 1994) and in particular, personal sources of information in making the decision (Mitra, Reiss and Capella, 1999). The findings from the consumer focus groups underline the importance of personal relationships (butchery and counter staff) and the high degree of trust that consumers place in the retailer. This finding is supported by the survey results, as caterers also place great importance on their relationship with butchery staff. Moreover, the chain perspective of these case studies underline the importance of personal relationships in each dyad.

In contrast, the considerable investment in industry led risk reducing programmes, such as on-farm industry led and proprietary Quality Assurance schemes have clearly been effective in reducing risk from a retailer perspective, but far less so in the eyes of the consumer. This suggests that scope exists to improve and extend the benefits from such schemes – an important finding given the resistance to their implementation amongst beef producers. In addition, government attempts to increase information have been useful at the industry level, but such attempts are less successful at the consumer level, given the lack of trust in government sources.

The case studies identify both short and long-term economic and personal incentives to meet contractual obligations, which both satisfy organisational goals and reduce perceived risk at every point along the supply chain. From a supply chain perspective, if contractual terms between a principal and agent recognise the perceived risk at each point along the supply chain and offer incentives to overcome them and meet buying goals, then all parties will benefit. In particular, the additional monitoring and inspection costs associated with proprietary assurance schemes borne by the processor and farmers can be viewed as an investment, which is offset by the range of incentives offered from belonging to a co-ordinated supply chain.

Contrary to the TCE prediction that hierarchical arrangements would be most efficient, the existence of vertically co-ordinated supply chains fails to support the hypothesis that organisations seek to minimise transaction costs by internalising repeated specific transactions using idiosyncratic assets under conditions of extreme environmental uncertainty. From a theoretical perspective, it can be argued that the revised framework offers a more powerful model for viewing contractual relationships within a co-ordinated supply chain.

## 7. References

- Akerlof, G. A. (1970). The Market For Lemons. *Quarterly Journal of Economics*, 84, pp 488-500.
- Cox, D.F. (1967). *Risk Taking and Information Handling in Consumer Behaviour*. Harvard University Press, Boston, MA.
- Cunningham, S.M. (1967). The Major Dimensions of Perceived Risk. *Risk Taking and Information Handling in Consumer Behaviour*. Cox, D.F., (Editor), Harvard University Press, Boston, MA.
- Demsetz, H. (1993). The Theory of the Firm Revisited. *The Nature of the Firm, Origins, Evolutions and Development*. O. E. Williamson and S. G. Winter (Editors). Oxford University Press, New York, pp 159-178.
- Diamond, W. D. (1988). The Effect of Probability and Consequence Levels on the Focus of Consumer Judgements in Risky Situations. *Journal of Consumer Research*, 15, September, pp 280-283.
- Doel, C. (1999). Towards a Supply-Chain Community?, *Environment and Planning* 31(1), pp 69-85.
- Dowling, G. R. (1986). Perceived Risk: The Concept and Its Measurement. *Psychology and Marketing*, 3, pp 193-210.
- Dowling, G.R., Staelin, R. (1994). A Model of Perceived Risk and Intended Risk-Handling Activity. *Journal of Consumer Research*, 21, June, pp 119-134.
- Dunn, M.G., Murphy, P.E., Skelly, G.U. (1986). Research Note: The Influence of Perceived Risk on Brand Preference for Supermarket Products. *Journal of Retailing*, 62:2, Summer, pp 204-216.
- Eisenhardt, K. M. (1989). Agency Theory: An Assessment and Review. *Academy of Management Review*, 14(1), pp 57-74.
- Henson, S. and J. Northen. (1998). Economic Determinants of Food Safety Controls in the Supply of Own-Brand Products. *Agribusiness*, 14(2), pp 113-126.
- Hill, C. W. L., Jones T. M. (1992). Stakeholder-Agency Theory. *Journal of Management Studies*, 29 (2 March), pp 131-154.
- Hirsch, P., S. Michaels, Friedman, R. (1987). "Dirty Hands" versus "Clean Models" - Is Sociology in Danger of being Seduced by Economics? *Theory and Society*, 16, pp 317-336.
- Hobbs, J. E. (1997). Measuring The Importance of Transaction Costs in Cattle Marketing. *American Agricultural Economics Association*, November, pp 1083-1095.
- Jensen, M. C., Mecklin, W. H.. (1976). *Theory of the Firm: Managerial Behaviour, Agency Costs and Ownership Structure*. Organisational Economics. J. B. Barney and W. G. Ouchi (Editors). Jossey-Bass Publishers, London, pp 214-275.
- Lamming, R., Caldwell, N., Phillips, W. (2004). *Supply Chain Transparency. Supply Chains, Concepts, Critiques and Futures*. S. New and R. Westbrook, (Editors). Oxford University Press, Oxford, pp 130-150.
- Lazonick, W. (1991). *Business Organisation and the Myth of the Market Economy*. Cambridge University Press, Cambridge.
- McDonald, F. (1999). The Importance of Power in Partnership Relationships. *Journal of General Management*, 25(1), pp 43-59.

- Mitchell, V.-W. (1992). Understanding Consumers' Behaviour: Can Perceived Risk Theory Help? *Management Decision*, 30(3), pp 26-31.
- Mitchell, V.-W. (1998). Defining and Measuring Perceived Risk. Annual Conference Proceedings of the UK Academy of Marketing, Sheffield, pp 380-385.
- Mitra, K., Reiss, M.C., Capella, L.M. (1999). An Examination of Perceived Risk, Information Search and Behavioural Intentions in Search, Experience and Credence Services. *The Journal of Services Marketing*, 13(3), pp 208-228.
- Murray, K.B., Schlacter, J.L. (1990). The Impact of Services versus Goods on Consumers' Assessment of Perceived Risk and Variability. *Journal of the Academy of Marketing Science*. 18(1), pp 51-65.
- New, S. (2004). Supply Chains: Construction and Legitimation. *Supply Chains, Concepts, Critiques and Futures*, Eds. S. New and R. Westbrook, Oxford University Press, Oxford, pp 69-108.
- Ross, S. A. (1973). The Economic Theory of Agency: The Principal's Problem. *American Economic Review*, 63(2), pp 134-139.
- Slovic, P., Fischhoff, B., Lichtenstein, S. (1980). Facts and Fears: Understanding Perceived Risks. *Societal Risk Assessment: How Safe is Safe enough?* Schwing, R. and Albers, W. Jr (Editors), Plenum, New York, pp 181-216.
- Sweeney, J. C., G. N. Soutar, Johnson, L. W. (1999). The Role of Perceived Risk in the Quality Value Relationship: A Study in a Retail Environment. *Journal of Retailing*, 75(1), pp 77-105.
- Thompson, S. (1988). Agency Costs of Internal Organisation. *Internal Organisation, Efficiency and Profit*. S. Thompson and T. Wright (Editors). Philip Allain Publishers, pp 65-85.
- Van den Poel, D., Leunis, J. (1996). Perceived Risk and Risk Reduction Strategies in Mail Order versus Retail Store Buying. *The International Review of Retail, Distribution and Consumer Research*, 6(4).
- Williamson, O. E. (1989). Transaction Cost Economics. *Handbook of Industrial Organisation*. R. Schmalensee and R. D. Willig (Editors), Elsevier Science, pp 136-182.
- Yin, R. K. (1989). *Case Study Research: Design and Methods*. Sage Publications, London.
- Zwart, A.C., Mollenkopf, D.A. (2000). Consumers' Assessment of Risk in Food Consumption: Implications for Supply Chain Strategies. 4<sup>th</sup> International Conference on Chain Management in Agribusiness and the Food Industry, Wageningen, The Netherlands, 25-26 May.