




International Food and Agribusiness Management Review
Vol 6 Iss 3 2003

Managing Perceived Risk as a Marketing Strategy for Beef in the UK Foodservice Industry

Susan A. Hornibrook ^a  and A. Fearne ^b

^a *Lecturer in Strategic Management, Canterbury Business School, University of Kent, Canterbury, Kent CT1, United Kingdom*

^b *Director, Centre For Food Chain Research, Imperial College London, Wye Campus, Imperial College at Wye, Wye, Ashford, Kent TN25 5AH, United Kingdom*

Abstract

Within the UK retail sector, relationships between retailers, processors and farmers have changed, as vertical co-ordination has emerged as a strategy to manage the perceived risks associated with the consumption of beef. However, little attention has been given to the examination of contractual relationships within the foodservice sector. This paper presents the results of a case study investigating the degree to which vertical co-ordination as a niche marketing strategy by one foodservice supplier has been successful in managing the perceived risk associated with fresh beef for their independent catering customers.

Corresponding author: Susan Hornibrook

Tel: + 44-01227-827731

Email: S.A.Hornibrook@Kent.ac.uk

Other contact information: Andrew Fearne: Tel: +44-207- 594-2862; Email: a.fearne@ic.ac.uk

Introduction

Over the past twenty years a series of crucial events have had a particularly negative effect on European consumers' confidence in the quality and safety of fresh beef, especially in the UK. Inconsistent eating quality, consumer health concerns associated with red meat consumption, animal welfare issues and food poisoning outbreaks, the infection of the UK cattle herd with *Bovine Spongiform Encephalopathy* (BSE), and the consequent link with *variant Creutzfeldt-Jacob Disease* (vCJD) in humans have particularly affected the market for UK beef.

Eating quality and food safety are product attributes that cannot be determined before purchase or consumption – the 'lemons' situation (Akerlof, 1970). As a result, the risks associated with producing, selling and consuming beef have serious consequences for all stakeholders [1]. However, public and industry reactions frequently demonstrate the difference between scientific, objective measures of risk and non-experts' perceptions of the concept (Adams, 1995; Craven and Stewart, 1997).

The perceptions of risk and the way they affect consumer behaviour have been the subject of several studies. Mitra, Reiss and Capella (1999) examined the link between attribute classification and perception of risk across a range of services; Van den Poel and Leunis (1996) examined the impact of perceived risk upon the choice of specialty stores and mail order buying for six non-food products. Other empirical work includes Dowling and Staelin (1992), who conducted an experiment using a sample of Australian women to examine the effect of perceived risk associated with choosing dresses, whereas Dunn, Murphy and Skelly (1986) surveyed consumers to examine the relevant perceived risk associated with branded versus generic grocery products.

Both theorists and practitioners using the perceived risk framework have called for marketing strategies to be adopted by industry which 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 (Yeung and Morris, 2001; Zwart and Mollenkopf, 2000) note that consumer risk reducing strategies both respond to and influence the strategies adopted at both firm and industry level, and that clearly a better understanding of consumers' risk perceptions are required. Even more importantly, they maintain that any risk analysis and management strategy associated with consumers' perceptions of risk must adopt a whole supply chain perspective.

However, until recently, little effort has been made to extend the concept to complete supply chains, including the effect of perceived risk on organisational

behaviour. High profile food safety incidents, notably E-Coli 0157, and BSE in cattle and the link between nvCJD in humans, has resulted in risk management becoming a major driver of contractual relationships in the food supply chain generally, and the UK beef chain specifically (Hornibrook and Fearne, 2001, 2002). The research that has been undertaken in this area thus far has focused almost exclusively on the retail sector, in which the perceived risks associated with the production, processing, distribution and consumption of fresh beef have been effectively managed through vertically coordinated supply chains. Through vertical coordination, buying goals are aligned, and perceived risks managed through the use of process controls such as HACCP, ISO 9000 and numerous assurance schemes. In recent years, similar attempts at supply chain co-ordination have emerged in the foodservice industry, in which the risks associated with food quality and safety are arguably much higher. Furthermore, the fragmented industry structure makes it more difficult for risk perceptions to be effectively managed through the alignment of buying goals between stakeholders. However, to our knowledge, there has been no research of this phenomenon thus far.

This paper attempts to address this issue by presenting the results of a case study survey investigating the degree to which vertical coordination by one foodservice supplier has been successful in managing the perceived risk associated with beef for their independent catering customers. The article is presented in five parts. The first section presents background information on the market for beef within the UK catering industry, and the second section explains the theoretical framework. The chosen research methodology is outlined in section three. The results of a survey are presented in section four, and the paper concludes with a discussion of the implications for industry and government, and possible areas for future research.

The Market for Beef in the UK Catering Industry

The popularity of 'eating out' in the UK has grown dramatically over the past ten years due to a number of socio-economic factors. In 1992, sales of food eaten outside the home accounted for about one-third of total food expenditure (Collins and Oddy, 1998). In 1995, the figure was 37 percent, and in 2000, increased to 47 percent (Policy Commission on the Future of Food and Farming, 2002).

The catering sector is served by four main distribution channels, known as the foodservice sector: delivered wholesalers; cash and carry operators; direct/contract distributors; retailers and others. The structure of the foodservice industry consists of a few large distributors and many small, independent operators serving a catering industry, which consists of a small number of very large hotel and catering groups and hotel/restaurant chains, and a very large number of small independent hotels, public houses [2], restaurants, guesthouses and cafes. Some of the largest hotel and catering groups are now pursuing the retail model of centralised procurement and integrated chain management, including using fewer, larger and

dedicated direct/contract suppliers. However, the predominant model is characterised by commodity products, fragmented markets, multiple movements of product and little co-ordination between firms.

The focus of this study is on one foodservice distribution channel, namely the Cash and Carry sector. Cash and Carry operators are wholesale distributors, mainly positioned in urban locations, serving both small, independent retailers and small, independent caterers, who personally visit the sites, purchase and take away products for use in their own businesses. From a supply chain perspective, cash and carry operators can be viewed as an intermediary positioned between the end customer, the caterer, and the producer of the product. The sector, worth an estimated £9.2bn [3] in 2000, has been the subject of consolidation, rationalisation and intense competition from other retailing formats and delivered foodservice (Keynote, 2001). As a strategic reaction, the main players in the market have adopted a strategy of cost reduction and increased service levels for their customers, investing in own-brand, added-value products.

Restaurants and caterers are the largest sector in the UK food industry, with over 380,000 premises employing two million people (FSA, 2001). Food sales through cash and carry operators destined for the catering sector were estimated to be £1.11 bn in 2000, thirteen percent of total sales to the catering industry (Foodservice Intelligence, 2000). The proportion of total beef sold through the foodservice sector to catering is estimated at 21 percent during 2000, with the remainder being sold at the retail level (MLC, 2001). In addition to safety and eating quality requirements, cash and carry operators who serve such a fragmented end market demand very different specifications for beef than those required by the major retailing multiples. Catering customers sell more steak cuts than retailers, require more marbling, consistent size, shape and thickness, tenderness, year round availability, with minimal price movements (IGD 1999). The sector is heavily led by imports, with industry sources estimating that of beef consumed in the foodservice industry, around 65 percent is imported from countries such as Australia, New Zealand, Argentina, Brazil, Botswana and Namibia.

Given the intensely competitive market conditions, cash and carry operators are seeking strategies to maintain and increase market share. One such strategy is to develop an own- brand range of fresh beef specifically for the catering market, rather than buying commodity beef on the spot market. The resultant need for control over the production process means more relational contractual arrangements, which has driven the development of one competitive tripartite supply chain, consisting of a cash and carry operator, a dedicated processor and group of farmers. This paper examines the purchasing behaviour of the end users (independent caterers) of a cash and carry branded fresh beef product with a view to establishing the extent to which the brand, and the supply chain co-ordination that supports it, is effective in managing caterers' risk perceptions.

Theoretical Framework

Product attributes that are not immediately obvious to both buyers and sellers, such as food safety and eating quality, are subject to imperfect information. The availability of information depends on the nature of product attributes. Beef attributes such as colour or type of cut are *search* attributes, and purchasers can establish the nature of such an attribute before purchase through examination or research. Taste is an *experience* attribute that can only be determined after purchase. However, *credence* attributes such as animal welfare or organic production cannot be determined even after purchase and consumption (Weiss, 1995; Roberts et al. 1996). Food safety can be classed as both an *experience* and a *credence* good or attribute, depending on the severity of the symptoms, and the time lag between consumption and the consequences. The provision of information has the potential to change some *experience* or *credence* goods into *search* goods.

Perceived Risk Theory was initially used by marketing researchers to understand the effect on consumer behaviour of making purchase decisions under such conditions of imperfect information (Bauer, 1967). Cox (1967) argued that in a buying decision, a consumer attempts to identify buying goals, or desired product attributes, with product or brand offerings. Cox (1967) and Cunningham (1967) first described perceived risk as comprising two components: uncertainty and adverse consequences. Consumers contemplating a specific purchase from a particular product category for an explicit use will think of perceived risk “in terms of the magnitude of consequences and the probabilities that these consequences may occur if the product is acquired” (Dowling and Staelin, 1994:120). Other researchers have developed perceived risk theory by describing overall perceived risk as composed of two classes of risk - alternatively described as inherent risk and handled risk (Bettman, 1973; Dunn, Murphy and Skelly, 1986) or product category risk and product-specific risk (Dowling and Staelin, 1994). Product category risk, or inherent risk, describes a person’s perception of risk associated with a particular category, whereas product specific risk, or handled risk, is specific to the item being considered. A different way of viewing the two classes of risk is to consider a product category as a pool of all possible attributes, whereas a specific product will consist only of a particular subset of those attributes. Total or overall perceived risk for a specific product is, therefore, a combination of the fixed component, product category risk (PCR), and the variable component, product specific risk (PSR) (Dowling and Staelin, 1994).

Different theoretical perspectives on the measurability of the risk phenomena exist. Bauer (1967) concludes that if an objective risk exists and the consumer does not perceive it, then he cannot be influenced in his behaviour or react to it, regardless of whether scientific information is available. Slovic (1992) maintains that objective risk does not exist, and argues that scientific measurement of the probabilities associated with a known hazard are based on theoretical models which are

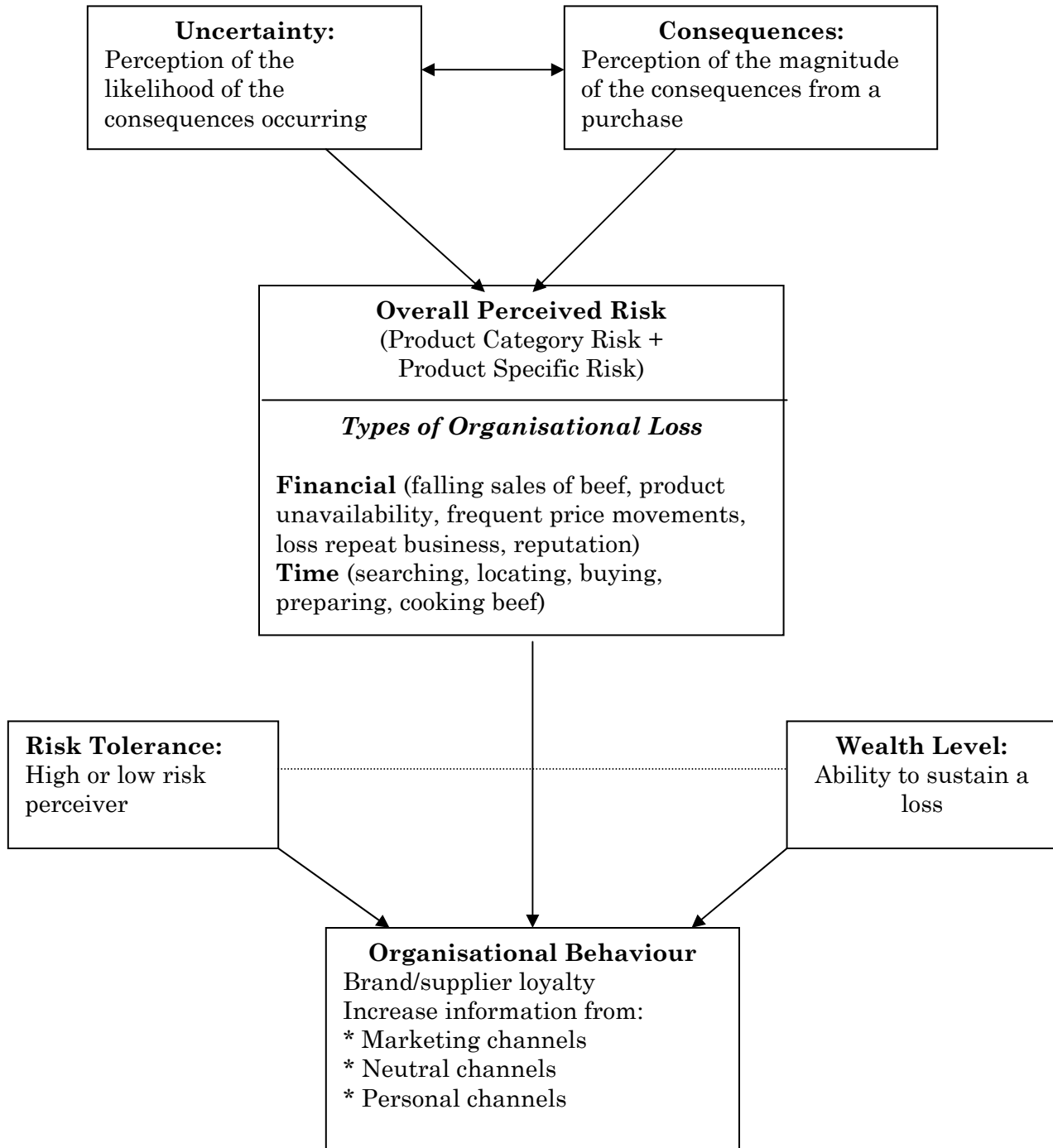
themselves based on assumptions and individual judgement. Risk is, therefore, a consumer's perception of both the uncertainty and the consequences of buying a product. Both the probability and outcome of each purchase event is uncertain, which is a different perspective from the economic view of risk, 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 (Slovic, Fischhoff and Lichtenstein, 1980; Mitchell, 1998; Diamond, 1988). Yeung and Morris (2001) explain that food safety risk is particularly associated with such phenomena, known as the 'dread' factor.

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 (financial, performance, time, physical and psychosocial). Perceived Risk Theory has also been used to examine the buying behaviour of organisations (Mitchell, 1998). Mawson (1996, p.54) identifies that consumer goals and organisational goals differ, in that organisational demand, although derived from consumer demand, is more driven by objective elements such as product quality specification and consistency, and financial risks are generally much higher than those faced by consumers. As well as possible financial consequences, Mitchell (1998b) identifies time loss as being appropriate when applying perceived risk theory to organisations, 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 and taking greater control over the supply chain.

Figure 1 is a schematic description of the process of perceived risk on organisational behaviour of catering firms. In a buying situation, a firm has buying goals and attempts to match them with a specific product. The resultant consequences of a purchase are not known in advance, and so the presence of uncertainty and possible adverse consequences result in a perception of risk. That risk is associated with the product category (for example, beef) and also with the particular product under consideration (for example, from a particular supplier). If perceived risk exceeds the tolerable level, as defined by risk tolerance (high risk or low risk perceivers) and wealth level (ability to sustain a loss), then this triggers the motivation for risk reducing behaviour, for example, increasing information and/or brand loyalty.

Caterers, in buying beef for consumption by their customers, will identify buying goals but will perceive risk due to incomplete information. This study is concerned with identifying and assessing the importance of individual buying goals or desired

Figure I: A Schema of Perceived Risk and Caterers' Organisational Behaviour



product attributes, the nature and importance of perceived risks, and the type of information considered as most useful in managing such risks.

Methodology

Following previous exploratory and explanatory research (Hornibrook and Fearne, 2001), a case study of a coordinated supply chain for beef in the catering industry was identified. The coordinated supply chain consisted of catering customers, a cash and carry operator (the company), the dedicated processor for the niche beef product (the product), and a regional farmer producer group. In 1997, following market research by the company, vertically coordinated relationships were established with a medium sized UK regional processor and a farmer producer group, and the specification for a premium regional branded beef product range was developed jointly. The beef producer group supplies beef that meet the specification exclusively to the dedicated processor, and in return are paid a premium price on a dead-weight basis. The relationship between the processor and the cash and carry operator is exclusive. There are no written contractual terms between the three parties, although a number of public and private regulatory instruments are utilised to increase information along the supply chain, for example, farm assurance, HACCP, HAS scores [4], third party accreditation, traceability systems, and audits. In addition, taste tests, personal visits and relationships between individuals are also viewed as essential (Hornibrook, 2002).

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, and when examining contemporary phenomena. Cases are not representative samples of a population, but have more in common with experiments, which are generalisable to theoretical propositions but not to populations or universes (Yin, 1989). Semi-structured interviews were used to examine the perceived risks, organisational goals and consequent behaviour of the three upstream stakeholders (the cash and carry operator, the processor and the producer group) (Hornibrook, 2002). At the customer level, a mail survey was carried out of catering customers, known to have purchased the specific branded fresh beef product, in order to test the positioning of the brand. This was accomplished by exploring the importance of buying goals, the perceived risk associated with beef, and the usefulness of different sources of information. The results of this survey are the focus for this paper.

Survey Instrument Design

Buying goals for beef can be viewed as desirable product attributes and may be classified as search, experience or credence attributes. Respondents were asked to indicate the importance of each attribute, namely those buying goals identified by the cash and carry retailer as being important to their catering customers.

Perceived risk of the beef category was measured using categories of loss. Caterers buying beef may perceive risk because of the possible financial consequences for their business if their own customers do not achieve their buying goals, together with the time associated with searching, locating, buying, preparing and cooking beef. Categories of loss were therefore identified as financial and time loss. Caterers were asked to indicate the importance of avoiding each loss, reflecting the views of Bettman (1973) and Peter and Ryan (1976), who argue that the measure is more relevant at the category risk level. The manner in which the constructs have been designed and used in measuring perceived risk have been subject to criticism (Gemunden, 1985, Dowling, 1986, Mitchell, 1999). Single measures developed by Peter and Tarpey (1975), and used extensively by other researchers (Dunn, Murphy and Skelly, 1986; Mitra, Reiss and Capella, 1999; Van den Poel and Leunis, 1996), are more susceptible to different interpretations because they do not identify, represent, or measure the unique adverse consequences associated with individual products or services. Given the above criticisms, and in order to increase reliability and validity, statements were developed from the literature, from secondary research and from the previous qualitative stages of the supply chain research (Hornibrook and Fearne, 2001).

Information sources may be classified as marketing, consumer, neutral (Cox, 1967), and in response to criticisms of the limited and dated range of information sources (Mitchell and McGoldrick, 1996), information sources identified by individual and supply chain members during previous stages of the case study research were used to define the construct. Respondents were asked to rate the usefulness of each source of information.

Multiple indicators were used to measure the constructs of buying goals, perceived risk and information sources, subdivided into classifications, using a recommended five-point Likert Scale (Oppenheim, 1997, Frankfort-Nachmias and Nachmias, 1992). Variables for which respondents indicated they had no opinion were treated as missing values for the remainder of the analysis. Reliability of the scales was measured using Cronbach's alpha, while validity was measured using correlation co-efficients.

Survey

The survey population was derived from a database of those catering customers identified by the cash and carry company as the target market for the branded beef product. In total, 4,476 pubs, hotels and guesthouses had bought the product since January 2000. Using proportionate sampling, a probability sample was selected using a computer-generated list of random numbers (Salant and Dillman, 1994). A large sample size of 3,000 was chosen in order to minimise sampling error, and to allow for non-response and incomplete questionnaires. The requirements of the Data Protection Act 1998 precluded any direct communication between the researcher and the customers of the company, and therefore the company agreed to

directly administer the survey. The potential for loss of control over the administration of the survey was outweighed by the benefits gained from the support and sponsorship of the company in terms of improving response rates. Other techniques used to increase the response rate included a personally addressed covering letter from the company; the questionnaire print format was to the company's corporate print standards; respondents were assured of confidentiality, were offered the opportunity to take part in a draw and return envelopes were provided.

Survey Results

From the 3,000 questionnaires posted to catering customers who had purchased the product, a total of 442 were returned. Of those returned, 105 stated they had not bought the product from the company, making them ineligible and reducing the effective sample size to 2,895. A further 33 questionnaires were considered unusable due to severe item non-response (9.5 per cent of total responses). The remaining 304 usable questionnaires resulted in a response rate of 10.2 percent, but the size of the sample was designed to take account of a low response rate. It is also likely that the effect of the Foot and Mouth [5] outbreak during the period had a negative effect on the response rate. Non-response bias was investigated using known variables of the sample, namely category classifications used by the company and geographical region. The spread of respondents reflected the trend for the sample, which was derived from the population using proportionate sampling. It can be concluded, therefore, that respondents are a good representation of the population, and that non-response bias is not a problem.

Given the supply chain focus of the research, the remainder of the analysis concentrated on those catering customers who have chosen the company and the product to reduce the perceived risk associated with the beef category. Those catering customers who may have chosen a different store or brand to reduce their perceived risk were eliminated. Thus, the original sample was further reduced to produce a homogeneous sample of 189 respondents, all of whom claimed to use the company for the majority of their food shopping and for the majority of their fresh beef shopping for their catering business. A one sample Pearson Chi-square test was undertaken on a number of categorical respondent characteristics; namely, customer category, gross turnover, type of business organisation, number of covers and frequency of serving beef. A binomial test was used for status of respondent. Further analysis regarding possible differences in the level of perceived risk of the beef category between the two groups of respondents was also carried out. No significant differences were found between the initial sample consisting of all respondents, and the main sample.

Buying Goals

The company identified their catering customers' buying goals as product quality and consistency and respondents were asked to indicate the importance of a series of attributes when buying the branded beef from the company. Reliability of the scale was tested using Cronbach's Alpha ($\alpha = .89$). Table 1 illustrates the mean ranking of each product attribute.

Table 1: Mean Ranking of Buying Goals *

VARIABLE	NUMBER	MODE	MEAN	STANDARD DEVIATION
"Taste and tenderness"	187	5	4.78	0.46
"Consistent eating quality"	185	5	4.72	0.47
"High food safety"	187	5	4.70	0.55
"Value for money"	183	5	4.61	0.56
"Genuine"	185	5	4.44	0.71
"Honest relationships"	185	5	4.44	0.74
"Animal history/origin"	182	5	4.32	0.78
"Animal welfare"	183	5	4.31	0.82
"Traditional production methods"	176	5	4.28	0.80
"Consideration for the environment"	183	5	4.27	0.78
"Low fat and lean"	186	5	4.27	0.75
"Consistent portion size"	180	5	4.26	0.78
"Colour"	186	4	4.19	0.71
"Convenience"	186	5	4.18	0.82
"High fat cover and marbling"	179	4	3.89	0.87

*Sample Number = 189.

1=no opinion; 2=not at all important; 3=quite important; 4=very important; 5=extremely important

All buying goals were very or extremely important to the respondents, with little disagreement among individual caterers. In particular "taste and tenderness", "consistent eating quality" and "high food safety" were ranked the highest, while "fat cover and marbling" was viewed the least important. The results give broad support for the company's interpretation of their customers' buying goals.

Differences in the importance of buying goals according to individual characteristics were tested. Consistent portion size was more important to catering businesses within the highest turnover category ($p < .01$). Larger catering businesses, who are likely to be less flexible than smaller businesses, need to decide and print menus some months in advance, and therefore place greater emphasis on product consistency. Sole traders viewed consideration for the environment as more important than either partnerships or limited companies ($p < .05$), and the result may indicate that sole traders have different considerations, such as owner lifestyle or a niche marketing strategy, than those goals pursued by larger businesses. Convenience was more important to hotels compared to guesthouses ($p < .05$) and this may be because guesthouses do not cater for large numbers of customers requiring beef, as hotels do, or because they have more time to invest in meal preparation. Hotels on the other hand may be under more time pressure, and therefore place greater value on prepared product.

Following established principles to establish the appropriateness of using factor analysis [5], exploratory Principal Components Factor Analysis using oblique rotation and list wise deletion of missing data was carried out in order to determine whether the theoretical constructs of credence, search and experience attributes could be identified as separate underlying dimensions. For a sample size of 150 cases, factor loadings in excess of .45 are considered significant at the 0.0005 level (Hair et al, 1998). All items loaded highly or moderately on one factor only. The theoretical classification of credence attributes, search attributes and experience attributes can clearly be identified and confirmed through factor analysis (Table II).

One item, “value for money” has a factor loading under .45, and cannot be considered statistically significant, but nonetheless, it does load onto the Search attribute factor. Additionally, the communalities for both “value for money” and “fat and marbling” were low, at .321 and .274 respectively, indicating that a substantial proportion of the variance in both variables was unaccounted for by the three factors.

The loading of “food safety” onto the experience rather than the credence attribute factor can be explained in terms of the nature of the consequences, given that the classification of attributes change as they move along the supply chain (Northen, 2000). Consumers, depending on the timing and severity of the symptoms can classify food safety as both an experience attribute and a credence attribute. The loading of “food safety” on to the experience factor is understandable if catering respondents are thinking of food safety in terms of the immediate symptoms suffered by consumers from food poisoning, the cause of which can easily be traced to beef served by the caterer to customers. Food safety, therefore, is an experience attribute for caterers, the nature of which can only be determined after purchase.

Table II: Principal Components Analysis: Buying Goals

VARIABLE	FACTOR ONE: CREDENCE ATTRIBUTES	FACTOR TWO: SEARCH ATTRIBUTES	FACTOR THREE: EXPERIENCE ATTRIBUTES
“Environment”	.915		
“Traditional Production Methods”	.871		
“Honest Relationships”	.871		
“Animal Origin”	.822		
“Animal Welfare”	.803		
“Genuine”	.612		
“Colour”		.798	
“Low fat and lean”		.791	
“Convenient”		.787	
“Consistent size”		.782	
“High Fat and marbling”		.478	
“Value for Money”		.357	
“Taste and Tenderness”			.937
“Consistent eating quality”			.693
“Food Safety”			.614

^a Extraction Method: Principal Component analysis, Rotation Method: Oblimin with Kaiser Normalization

Source: Survey data

Product Category Risk

In order to discover how customers of the company view the perceived risk associated with the beef category, respondents were asked to indicate the importance of avoiding a series of losses. Cronbach's alpha was employed to assess reliability of the Perceived Risk scale, resulting in a α score of 0.74. Respondents were generally in agreement that all the individual losses were important to avoid, but in particular, "food poisoning" and "losing customers because beef was disappointing in terms of taste, tenderness and size" were viewed as extremely important. From a theoretical perspective, this finding supports the link between buying goals and perceived risk. The two most important losses to avoid are the adverse consequences associated with those buying goals identified as being the most important for caterers when purchasing the product, namely "taste and tenderness", "consistent eating quality" and "high food safety". Opinion was more widely spread around those risks that were not considered quite as important to avoid, particularly "preparation time". However, as Table III shows, the mean ranking of each individual type of loss is relatively high.

Table III: Mean Ranking of losses associated with Perceived Risk for the Beef Category*

VARIABLE	NUMBER	MODE	MEAN	STANDARD DEVIATION
"Food poisoning"	169	5	4.85	.42
"Disappointing beef"	181	5	4.62	.71
"Price changes"	181	5	4.17	.83
"Unavailability"	176	5	4.15	.97
"Search time"	181	5	4.11	.91
"Falling sales - BSE"	172	5	4.10	.96
"History and origin"	174	5	4.03	.94
"Lower profits"	177	5	3.97	.99
"Preparation time"	178	2	3.46	1.20

* Sample number = 188, one respondent refused to answer this question.

(2 = not at all important, 3 = quite important, 4 = very important, 5 = extremely important)

Exploratory Principal Components Factor Analysis [6] was carried out in order to confirm the theoretical constructs of time risk and financial risk as separate underlying dimensions. The choice of the number of factors to use was determined by both theoretical considerations and the number of factors with eigenvalues in excess of one, and two factors that accounted for 52 percent of the variance were extracted. However, a third factor, with an eigenvalue of .990 was identified, the inclusion of which increased the total variance explained to 63 percent. All items loaded highly or moderately on one factor only with moderate inter-correlation between each factor (Table IV.).

One item that was designed to represent time risk actually loaded onto the financial risk factor, namely "Being unable to answer customers' questions regarding the history and origin of beef on the menu". Respondents therefore viewed this particular variable in a similar way as those contained in the first factor – that there were potential financial consequences associated with being unable to answer customers' queries regarding the history and origin of beef on the menu. Contrary to expectations, two factors representing financial risk emerged. Factor one is related to the perceived direct financial risk for caterers associated with the beef category, which may occur prior to consumption by customers. The second factor contains those items designed to represent time risk, whereas the third factor contains those variables that may have eventual financial consequences for caterers following actual consumption of beef by their customers.

According to the theory, if perceived risk is above the minimum tolerable level, risk can either be reduced through information handling and/or by reducing the consequences (Cox, 1967, Dowling and Staelin, 1994) and one way of reducing the consequences is to avoid the purchase. It would seem logical to propose that there would be a difference in the frequency of serving beef according to perceived risk of the beef category. In order to test the hypothesis, respondents were divided into two groups, namely lower and higher perceived risk. All respondents with a perceived risk mean score of < 4.00 (2 = not at all important, 3 = quite important) were categorised as lower perceived risk (Group 1). All respondents with a perceived risk mean score of > 4.00 (4 = very important, and 5 = extremely important) were categorised as higher perceived risk (Group 2). Frequency of serving was measured using a six point scale, ranging from less than once a month = 1, to every working day = 6.

The results were significant ($p < .01$), but contrary to expectations, revealed that those caterers within the higher perceived risk group served beef more frequently than those in the lower perceived risk group. This finding offers support for the effect of brand loyalty. Respondents may perceive high risk associated with the beef category as a whole, but are able to reduce overall perceived risk to a tolerable level through the purchase of the product from the company (Dunn, Murphy and Skelly, 1986), enabling them to serve beef more frequently.

Table IV: Principal Components^a Analysis: Perceived Category Risk

VARIABLE	FACTOR ONE: DIRECT FINANCIAL	FACTOR TWO: TIME	FACTOR THREE: INDIRECT FINANCIAL
“unavailability”	.855		
“falling sales:BSE”	.740		
“price changes”	.661		
“history and origin”	.612		
“lower profits”	.549		
“search time”		.877	
“preparation time”		.783	
“food poisoning”			.884
“disappointing beef”			.716

^a Extraction Method: Principal Component analysis, Rotation Method: Oblimin with Kaiser Normalization

Source: Survey data

The development of the niche beef product is an attempt by the company to recognise catering customers perceived risks associated with beef and to meet their buying goals (Zwart and Mollenkopf, 2000). Further analysis also revealed that those caterers within the higher perceived risk group view the majority (87 percent) of individual buying goals associated with the specific product as significantly more important than those caterers with lower perceived risk.

Information Sources

Perceived risk theory mandates that perceived risk can be reduced through a number of strategies, including seeking information. The company had identified that catering customers require more information regarding beef, and had attempted to meet those needs by sourcing through a vertically coordinated supply chain, and communicating the details to their customers. Respondents were asked to indicate how useful they found different sources for finding information regarding beef as a category. For those items marked “no experience” by over half of the respondents, the variables were deleted [7].

Table V illustrates the ranking of the remaining variables with regard to their usefulness. Most respondents were in agreement that all sources were viewed as very or extremely useful, but the most useful source of information was butchery staff.

Table V: Mean Ranking for Information Sources*

VARIABLE	VALID CASES	MODE	MEAN	STANDARD DEVIATION
Butchery Staff	188	5	4.79	.47
Past Experience	152	5	4.39	.66
On shelf labels	177	4	4.06	.75
Packaging	181	4	4.03	.82
Recommendations from within the trade	122	4	4.02	.78
Other staff	150	4	3.78	.95
In store leaflets	167	4	3.71	.82
Mail shots	158	4	3.59	.86
Newspapers/magazine articles	138	4	3.49	.93
Television cookery programmes	140	4	3.44	.91
Radio/television documentaries	120	4	3.38	.94

* Sample Number = 189

(2 = not at all useful, 3 = not very useful, 4 = quite useful, 5 = extremely useful)

Past research has demonstrated that on the whole, the higher the magnitude of perceived risk, the greater the importance of information search in general (Dowling and Staelin, 1994, Shiffman and Kanuk, 1994). The survey results confirm that caterers with higher perceived risk of the beef category view information sources in general as significantly more useful ($p = < 0.05$) than those caterers lower in perceived risk. In addition, caterers with higher perceived risk of the beef category also perceived marketing sources of information as more useful. The use of information as a risk reducing strategy does not only depend on the content of the information, but also on the level of trust associated with the source (Frewer, Howard et al, 1996). Given that the sample consists of caterers who are loyal to the company, the findings indicate that such a relationship may exist between the company and their catering customers. Mitchell and McGoldrick (1996) identify the importance of staff advice as an effective risk reducing strategy, particularly with regard to food. Such a strategy employs the advantages of personal sources of information, but is largely under the marketer's control. The research findings support this view, with butchery staff ranked the most useful by all respondents, and more useful according to the level of perceived risk.

Conclusions

The results of the survey of catering customers confirmed that the differentiated marketing strategy adopted by the company has been successful in meeting customers' buying goals. By adopting the perceived risk theoretical perspective, the research found that the company had also been successful in managing customers' perceived risk of the beef category, albeit unwittingly, by developing a specification based on customer requirements, communicating those needs and sourcing the product through a vertically coordinated supply chain. Additionally, the survey also revealed a number of issues for the supply chain with implications for an even more targeted marketing strategy. Environmental issues were significantly more important to sole traders than other classifications, which may have implications for the communications strategy of the company. The findings identified that there was an opportunity to develop more prepared, higher added value products within the range and to develop suggested recipes to meet the needs of larger catering businesses such as hotels.

Caterers viewed not being able to answer their customers' queries regarding the origin and history of beef as having financial consequences, and the research confirmed the importance of butchery staff in delivering information to and from catering customers. As a consequence, the company should consider developing this source of information still further, by organising regular visits for butchery staff to the supplier and producer group.

For the foodservice industry, the supply chain research findings offer support for adopting a more targeted differentiated marketing strategy. Specific catering

customer needs should be identified and met and beef products designed through closer, collaborative relationships, rather than the traditional arms' length trading relationships which still characterise the majority of beef transactions within the industry today.

From a theoretical perspective, it can be argued that the revised framework offers a more powerful model for viewing contractual relationships within a coordinated supply chain. If organisational behaviour is driven by perceived risk, then public policy should be focused on using limited resources to identify those firms producing commodity beef products who do not meet regulatory minimum standards, and increasing penalties for non-compliance. In addition, regulators should review the distribution of costs associated with public monitoring, given that the market offers greater incentives for organisations producing branded beef products to meet food safety and quality standards. The case study comprises the supply chain for a cash and carry operator and involves limited volumes of a niche product; therefore results cannot be generalised to other supply chains in the UK beef industry. However, the limitations to the current findings offer many opportunities for future research using and further developing the theoretical framework by applying it to different UK supply chains for beef, or investigating the different informational needs of consumers when eating away from home at catering outlets.

End Notes:

- [1] Consumers, caterers/retailers, suppliers, and farmers.
- [2] These are considered the most important outlet, and are estimated to be responsible for around 80 percent of food eaten outside the home.
- [3] The majority of Cash and Carry sales are in non-food, mainly alcohol, markets (Foodservice Intelligence 2000).
- [4] In the UK, the Meat Hygiene Service publishes the results of their mandatory inspections of abattoirs and packhouses. Premises are assessed against performance criteria covering all significant aspects of production, each weighted to their relative risk. The resultant Hygiene Assessment Scores (HAS) are published.
- [5] The effect of the Foot and Mouth outbreak on the UK tourism and hospitality sector has been well documented, with some hotels and pubs suffering from closure or severe loss of trade. One returned questionnaire stated that the business had been closed.
- [6] 96 percent of correlations were significant at .05 level; the Bartlett test of sphericity was significant at $p > 0.0005$; MSA resulted in a measure of .87; sample size 148 cases: 15 variables (Hair et al, 1998).
- [7] 79 per cent of correlations ($p > 0.05$); Bartlett test of sphericity ($p > 0.0005$), MSA = .72; listwise deletion of missing values, sample size 139:11 variables.
- [8] Cash and Carry internet website; Cash and Carry TV and print advertising; internet chat rooms/general catering web sites; trade shows and exhibitions; personal visits to beef suppliers and producers; local trading standards and environmental health departments; the Food Standards Agency; consumer organisation reports.

References

- Adams, J. 1995. *Risk*, UCL Press, London.
- Akerlof, G. A. 1970. "The Market For Lemons", *Quarterly Journal of Economics*, 84: 488-500.
- Bauer, R. A. 1967. "Consumer Behaviour as Risk Taking", pp 23-33, in D.F. Cox, ed, *Risk Taking and Information Handling in Consumer Behaviour*. Boston: Harvard University Graduate School of Business Administration.
- Bettman, J. R., 1973. "Information Integration in Consumer Risk Perceptions: A Comparison of Two Models of Component Conceptualisation", *Journal of Applied Psychology*, 60:381-385.
- Collins, E., and D. J. Oddy, 1998. "1899-1999 – Changing Issues in Food Safety Regulation and Nutrition", *British Food Journal*, 100: 436-550.
- Cox, D.F. 1967. *Risk Taking and Information Handling in Consumer Behaviour*, Boston: Harvard University Press.
- Craven, B. M. and G. T. Stewart, 1997. "Public Policy and Public Health: Coping with Potential Medical Disaster", in R. Bate, ed, *What Risk?*. Oxford: Butterworth Heinemann,.
- Cunningham, S.M. 1967. "The Major Dimensions of Perceived Risk", in Cox, D.F., ed, *Risk Taking and Information Handling in Consumer Behaviour*. Boston: Harvard University Press.
- Derbaix, C. 1983. "Perceived Risk and Risk Relievers: An Empirical Investigation". *Journal of Economic Psychology*, 3:19-38.
- 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: 280-283.
- Dowling, G. R., 1986. "Perceived Risk: The Concept and Its Measurement", *Psychology and Marketing*, 3:193-210.
- Dowling, G.R. and R. Staelin, 1994. "A Model of Perceived Risk and Intended Risk-Handling Activity", *Journal of Consumer Research*, 21:119-134.

Dunn, M.G., Murphy, P.E., and G.U. Skelly, 1986. "Research Note: The Influence of Perceived Risk on Brand Preference for Supermarket Products", *Journal of Retailing*, 62: 204-216.

Foodservice Intelligence. 2000. *Foodservice Forecasts 2001*. October.

Frankfort-Nachmias, C., and D. Nachmias. 1992. *Research Methods in the Social Sciences*. 4th Ed. London: Edward Arnold.

Germunden, H.G. 1985. "Perceived Risk and Information Search: A Systematic Meta Analysis of the Empirical Evidence", *International Journal of Research in Marketing*. 2: 79-100.

Hair, J.R. Jnr, Anderson, R.E., Tatham, R.L. and Black, W.C. 1998. *Multivariate Data Analysis with Readings*, 4th Edition, Englewood Hills: Prentice-Hall.

Hornibrook, S. A. *The Management of Perceived Risk in the UK Food Industry: A Case Study of the UK Beef Supply Chain*, unpublished PhD thesis, London: University of London, Imperial College.

Hornibrook, S. A., and A. Fearne, 2001. "Managing Perceived Risk: A Multi-tier Case Study of a UK Retail Beef Supply Chain", *Journal on Chain and Network Science*, 1:2: 87-100.

Hornibrook, S. A., and A. Fearne, 2002. "Vertical Co-ordination as a Risk Management Strategy: A Case Study of a Retail Supply Chain in the UK Beef Industry". *Farm Management*, 11:1-11.

Institute of Grocery Distribution, 1999. *Beef: Benefiting from Best Practice*, The Food Project.

Key Note Reports, 2001. *Cash and Carry Outlets*, June, London.

Mawson, E.M.H., 1996. *An Analysis of Organisational Buyer Behaviour in the UK Foodservice Industry: Case Studies in the Chain Restaurant Sector*, unpublished PhD thesis, Wye College, University of London.

Meat and Livestock Commission, 2001. *Meat Demand Trends*, Economics, Issue 01/1, March.

Mitchell, V.-W. 1992. "Understanding Consumers' Behaviour: Can Perceived Risk Theory Help? *Management Decision*, 30:26-31.

Mitchell, V.-W. 1998. "Defining and Measuring Perceived Risk", pp 380-385, *Annual Conference Proceedings of the UK Academy of Marketing*, Sheffield.

Mitchell, V.-W. 1998b). "Segmenting Purchasers of Organisational Professional Services: A Risk-Based Approach", *Journal of Services Marketing*, 12: 83-97.

Mitchell, V.-W. and P. J. McGoldrick. 1996. "Consumers' Risk-Reduction Strategies: A Review and Synthesis", *The International Review of Retail, Distribution and Consumer Research* 6: 1-33.

Mitchell, V.-W. 1999. "Consumer Perceived Risk: Conceptualisations and Models", *European Journal of Marketing*. 33: 163-195.

Mitra, K., Reiss, M.C., and L.M. Capella, 1999. "An Examination of Perceived Risk, Information Search and Behavioural Intentions in Search, Experience and Credence Services", *The Journal of Services Marketing*, 13: 208-228.

Murray, K.B., and J.L. Schlacter, 1990. "The Impact of Services versus Goods on Consumers' Assessment of Perceived Risk and Variability", *Journal of the Academy of Marketing Science*. 18: 51-65.

Oppenheim, A.N. 1997. *Questionnaire Design, Interviewing and Attitude Measurement*, London : Pinter Publishers.

Peter, J. P., and L. X Tarpey 1975. "A Comparative analysis of Three Consumer Decision Strategies, in *Journal of Consumer Research*, 2, June.

Peter, J. P., and M. J. Ryan, 1976. "An Investigation of Perceived Risk at the Brand Level", in *Journal of Marketing Research*, XIII:184-188.

Policy Commission on the Future of Farming and Food, 2002. *Farming and Food: A Sustainable Future*, January.

Roberts, T., Busby, J.C., and M. Ollinger. 1996. "Using Benefit and Cost Information to Evaluate a Food Safety Regulation: HACCP for Meat and Poultry", *American Journal of Agricultural Economics*, 78:1297-1301.

Slovic, P. 1992. "Perception of Risk: Reflections on the Psychometric Paradigm" S. Kimskey and D. Golding, eds, in *Social Theories of Risk*, Westport: Praeger.

Slovic, P., Fischhoff, B. and Lichtenstein, S. 1980. "Facts and Fears: Understanding Perceived Risks", pp 181-216 in Schwing, R. and Albers, W. Jr eds, *Societal Risk Assessment: How Safe is Safe enough?* New York: Plenum.

Sweeney, G.C., Soutar, G. N., and L.W. Johnson, 1999. "The Role of Perceived Risk in the Quality Value Relationship: A Study in a Retail Environment", *Journal of Retailing*, 75: 77-105.

Van den Poel, D., and J. Leunis, 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

Weiss, M. D. 1995. "Information Issues for Principals and Agents in the Market for Food Safety and Nutrition", pp 69-79 in J. A. Caswell, ed, *Valuing Food Safety and Nutrition*. Boulder: Westview Press.

Yeung, R.M.W., and J. Morris. 2001. "Food Safety Risk: Consumer Perception and Purchase Behaviour", *British Food Journal*, 103: 170-186.

Yin, R. K. 1989. *Case Study Research: Design and Methods*. Sage Publications, London.

Zwart, A.C., and D.A. Mollenkopf, 2000. "Consumers' Assessment of Risk in Food Consumption: Implications for Supply Chain Strategies", *4th International Conference on Chain Management in Agribusiness and the Food Industry*, Wageningen, The Netherlands, 25-26 May.