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Willingness To Buy Gm Food Products: The Role Of Uncertainty Orientation, Consumer Risk Perceptions And Information Search In Consumers From Australia.

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Abstract

Genetically modified (GM) food products are the source of much controversy and in the context of consumer behaviour, the way in which consumers perceive such food products is of paramount importance both theoretically and practically. Despite this, relatively little research has focused on GM food products from a consumer perspective, and as such, this study seeks to better understand what effects consumer willingness to buy GM food products in Australian consumers.

INTRODUCTION

Historically, agriculture has been vital to the success of the Australian economy. Today, agriculture remains an important industry for Australia, valued at A\$32 billion in 2002. Of this, nearly two thirds is from agricultural food-related exports, such as fruits and vegetables, meats, wine, seafood, and dairy products (DFAT, 2004), suggesting Australian agricultural food products not only play an important role domestically but are also in high demand on the international food trade market.

An important issue confronting Australian (and many other countries) agriculture today is agricultural biotechnology. In terms of food products, agricultural biotechnology includes transgenic crops and plants, genetically modified organisms (GMO’s), and genetically modified (GM) food products. All of these terms describe organisms that are modified or altered by modern gene technology. In essence, genetic modification involves the human manipulation and transference of deoxyribonucleic acid, or DNA, from one organism to another. The underlying purpose of genetic modification is to develop a superior organism, when compared to a ‘conventional’, or non-GM organism. In fact, the genetic modification of food products claims many potential consumer benefits such as improved food quality, flavour and safety (Hindmarsh, Lawrence and Norton, 1998; Uzogara, 2000). A report by the OECD (2000) suggests that GM food products may also provide reduced prices and increased consumer health benefits as biotechnological capabilities increase. Also, recent developments include the possibility of vitamin and nutrient enriched crop varieties (CGIAR, 2000), and oral vaccines via vegetables and fruits (Mercenier, Wiedermann and Breiteneder (2001), implying that current developments in agricultural biotechnology may have far reaching consumer applications worldwide.

The Australian Government supports research and development in GM technology due to the desire to improve global marketplace competitiveness. The Australian Federal and State Governments, farming groups and food companies have endorsed agricultural biotechnology as a means for increasing productivity, profit enhancement and also as a national priority for investment attraction efforts (Ernst and Young, 2001). The Australian National Farmers’ Federation (1993), argue that current trends in agricultural production suggest that future differences between the output of developed and developing countries will be largely based on their respective level of biotechnology use (cited in Ernst and Young, 2001). As such, it appears that agricultural biotechnology is positioned to play a vital role in Australia’s future competitiveness and sustainability in agricultural production.

Yet despite the optimism of the Australian government in supporting such technologies, there are many people opposed to agricultural biotechnology and its brainchild, GM food products. For instance, critics claim that GM technologies are unnatural and as such would be less likely to purchase GM food products (Frewer, Howard and Shepherd, 1997) and also that GM technologies interfere with nature. Such critics fear genetic diversity may be sacrificed, in that genetic transfer with natural and/or wild varieties of plants and animals may occur. Other criticisms include the concern that nutritional characteristics of GM food products may be altered and even that they may cause antibiotic resistance and illness in some people. This being the case, and given the arguments presented, the importance of consumer research in GM food products cannot be overstated. As such, this study examines consumer perceptions of GM food products from the perspective of consumers in Australia. As Australia is a significant producer of GM crops, it is important to determine how Australian consumers may react to the introduction of GM foods to their food supply. Consumer reaction may be driven by many psychological characteristics such as values, past experiences, learning and personality. The focus here is on personality traits, risk and search activity.

THEORETICAL BASIS OF CB AND GM FOOD

That consumers' personality traits can effect their behaviour has been well documented (Schaninger and Sciglimpaglia; 1981), in that personality traits consumers possess, account for different consumption decision outcomes. An important personality dimension of consumers that has direct relevance to GM foods and consumer behaviour in general is uncertainty orientation. Uncertainty orientation is a personality trait developed and extensively examined in the social psychology literature. Focusing on an individual's tolerance for uncertainty and uncertain situations, uncertainty orientation relates to information seeking and distinguishes between people who actively seek information to resolve uncertainty and those who do not (Sorrentino and Roney, 1986). In other words, uncertainty orientation "*reflects an individual's cognitive response to uncertainty*" (Smith and Bristor, 1994, p591).

Uncertainty oriented people are described as those who are cognitively motivated to resolve uncertain situations, have developed schemas to resolve uncertainty, are effectively charged to do so and actively seek information about themselves and their environment (Sorrentino, Short and Raynor, 1984; Sorrentino, Bobocel, Gitta, Olson and Hewitt, 1988; Smith and Bristor, 1994). Given this, uncertainty oriented people are assumed to have been rewarded (in the past) for autonomous exploratory behaviour (Sorrentino et al, 1988) and as such, are characterised as possessing discovery-oriented cognitive styles (Hodson and Sorrentino, 1999). Unlike uncertainty oriented people, certainty oriented people do not deal well with uncertainty and are described as having developed mental schemas that are attuned to and more capable of handling familiar and safe situations (Smith and Bristor, 1994). As certainty oriented people are not cognitively motivated to resolve uncertainty, they do not seek information about new situations but rather prefer to maintain the "status quo" (Sorrentino et al, 1988).

Of direct relevance to consumer behaviour is the notion that for example, in the context of durable and non-durable goods uncertainty orientation is a predictor of external information search for consumers (Smith and Bristor, 1994). External information search refers to "*the seeking of information from the environment that has not previously been acquired or is unable to be recalled from the memory*" (Schmidt and Spreng, 1996). Therefore, in the context of GM food products, it is suggested that uncertainty orientation may also predict

external information search, in that, uncertainty oriented consumers will be more likely to conduct external information search on GM food products than certainty oriented consumers. Thus,

H1: Uncertainty oriented consumers will engage in greater external information search for GM food products than certainty oriented consumers.

Along with psychological characteristics in the personality domain, consumer risk perceptions are widely understood to be an integral factor that influences consumers (Oglethorpe and Monroe, 1994). Importantly, uncertainty orientation has also been linked to consumer risk perceptions. Defined as “*a consumer’s subjective feeling that there is some probability that a choice may lead to an undesirable outcome*” (Cunningham, 1967, p37), consumer risk perceptions have been shown to include time (Roselius, 1971), financial, performance, physical, psychological and social risk types (Jacoby and Kaplan, 1972), that may act alone or in combination to represent a consumer’s overall risk perception. Examined across many product and service categories (see: Chaudhuri, 2000; Srinivasan and Ratchford, 1991) findings suggest great variation in risk dimensions across different contexts, implying that consumer risk perceptions appear to be context specific (Rindfleisch and Crockett, 1999).

It is suggested that uncertainty orientation may be antecedent to consumer risk perceptions, because those who are more uncertainty oriented will hold in general, greater or stronger risk associations with consumer activity. For example, Smith and Bristor (1994) found that uncertainty oriented people see higher risk in some products than certainty oriented consumers. Such findings may indicate that, by their very nature, uncertainty oriented people are out there trying to resolve and overcome uncertainty (and reduce risk) and unfamiliar situations, and do so by seeking phenomena related information. Therefore, in a consumer context it appears likely that uncertainty oriented people may be more risk averse to products with which they are unfamiliar than certainty oriented people. Indeed, as uncertainty is an element of risk, people who see uncertain situations and actively attempt to resolve them, must also see greater risk associated with the object or situation. Therefore, in terms of GM food products, as uncertainty oriented consumers are aroused and motivated by uncertain situations, while certainty oriented consumers are not, it is argued that uncertainty oriented consumers perceive higher risk in GM food products than certainty oriented consumers, who avoid situations involving uncertainty. Thus,

H2: Uncertainty oriented consumers will have higher risk perceptions of GM food products than certainty oriented consumers.

The relationship between consumer risk perceptions and information search has received much attention over many years. Generally, it is understood that when a consumer perceives greater risk associated with a decision they engage in a greater amount of search for information associated with the object (Chaudhuri, 2000). In terms of GM food products, it appears likely that consumer risk perceptions are an important variable that may have the potential to influence consumers (see Frewer, Scholderer and Bredahl, 2003; Frewer, Shepherd and Sparks, 1994). For instance, as noted by Yeung and Morris (2001), issues surrounding GM food products have served to increase consumer perceptions of food related risk. In light of such views, it would appear that as risk increases, so does the propensity to search for information about the object or situation. Thus,

H3: Consumer risk perceptions of GM food products will positively effect external information search for GM food products.

Also, consumer risk perceptions have been shown to be a critical determinant of a consumer's willingness to buy a new product (Klein, Ettenson and Morris, 1998; Shimp and Bearden, 1982). According to Fitzmaurice (2005), the extant literature generally sees intentions, or willingness to buy, as either the likelihood a consumer will perform a particular behaviour, or as an estimate of performing that behaviour in the future. As such, willingness to buy is often used as a surrogate for actual purchase behaviour. Therefore, it appears likely that consumer risk perceptions of GM food products may also effect consumer willingness to buy (WTB) such products. As such, what one would expect is that those who see greater risk in GM food products will be less willing to buy such food products. Thus,

H4: Consumer risk perceptions of GM food products will negatively effect willingness to buy GM food products.

RESEARCH METHOD

The study was based on the development and administration of a survey to tap the focal constructs of uncertainty orientation, consumer risk perceptions, external information search and willingness to buy GM foods. The 7-item Uncertainty Orientation Scale was adopted from Smith and Bristor (1994) and included items such as *I enjoy thinking about ideas that challenge my views of the world*. The Consumer Risk Perceptions of GM Food Products Scale was developed via a focus group using the multidimensional approach adopted from Roselius (1971) and Jacoby and Kaplan (1972). The 15 item scale included items such as *I am concerned about the risks associated with GM food products*. The External Information Search for GM Food Products Scale was adopted from Chaudhuri (2000). The four item scale included items such as *I would shop around before buying GM food products*. The four item Willingness to Buy GM Food Products Scale was adopted from Klein, Ettenson and Morris (1998) and included items such as *Whenever possible, I avoid buying GM food products*.

All items were anchored by a 7-point Likert scale, and scale response wording of *Strongly Disagree* to *Strongly Agree* was selected due to usage in similar food related consumer behaviour studies (see: Subrahmanyam and Cheng, 2000; Bredahl, 2001). A convenience sample was used to administer the survey via a mall intercept in a large city in Australia. Overall, 201 completed, useable questionnaires were collected.

RESULTS

Prior to the main analysis, the data was subjected to preliminary analysis to assess the psychometric properties and internal consistency of the scales. Regression Analysis was then used to test the study's four hypotheses, the results of which are shown in Table 1. In order to test H1 and H3, a simultaneous regression was conducted and as expected both hypotheses were supported, showing that uncertainty orientation and consumer risk perceptions both effect external information search. The remaining two hypotheses (H2, H4) were regressed individually with the results supporting H2, showing uncertainty orientation positively effects consumer risk perceptions of GM food products, and H4, showing that consumer risk perceptions negatively effecting willingness to buy.

Table 1: Results of Hypothesis Testing via Regression Analysis

Hyp	Independent Variable	Dependent Variable	R	Beta	T-Value	Sig.
H1	UO	Info Search	.19	.281	6.28	.001
H3	Risk			.300	6.70	.001
H2	UO	Risk	.03	.182	2.60	.01

H4	WTB	Risk	.38	-.616	-11.05	.001
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DISCUSSION & CONCLUSION

This study found that uncertainty orientation is antecedent to both consumer risk perceptions and external information search, with uncertainty oriented consumers having higher risk perceptions and engaging in greater external information search than certainty oriented consumers. As such, uncertainty oriented consumers appear to be better able to identify potential or perceived risks in the marketplace, particularly when concerned with new or different products, like GM foods, than certainty oriented consumers. This finding supports the views of Sorrentino et al (1988) who suggest that unlike the uncertainty oriented, certainty oriented people prefer to maintain the “status quo”, and tend to avoid the unknown. The findings of this study also support earlier work by Smith and Bristor (1994), who found that uncertainty orientation effects external information search. Also, the finding that when compared to those who are certainty oriented, uncertainty oriented consumers are more likely to conduct external information search on GM food products, adds support to Sorrentino et al’s, (1988) assertion that certainty oriented people do not seek information about new situations. As such, this study contributes to the limited body of consumer research that has examined uncertainty orientation, with the results indicating that uncertainty orientation may play an important role in consumer behaviour. The findings also indicate that consumer risk perceptions act as an antecedent to external information search and willingness to buy. Therefore, the more a consumer sees risk in GM food the more likely they are to search for information. However, risk also acts to diminish the willingness of consumers to buy GM food. These findings support earlier studies in the literature on risk and information search and purchase intention.

In terms of GM food products, these findings have a number of practical implications including the need for marketers of GM food products to provide Australian consumers better access to GM food product information. Specifically, this information needs to be presented in such a way as to address or alleviate current consumer risk perceptions. Without this, it appears likely that the current negative consumer sentiment may result in the failure of the future commercialisation of GM food products in Australia. Whilst the findings of this study are important, as a non-probability sample was used, caution should be taken when projecting this study’s results to the Australian marketplace. That being said, this study has identified consumer risk perceptions as an important concern for Australian consumers in the context of GM food products. Importantly this implies that marketers of GM food products in Australia will need to better address the needs and concerns of the Australian food consumer population.

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