Review Article

Purchase Intention of Urban Consumers on Cloned Animal Food Products- An Overview

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Abstract

The use of new technologies in food production has potential benefits for both food manufactures and consumers and when the food industry is creating the new products and new ingredients. The question arises that whether the new emerging technologies in the food industries are cost effective and affordable and their potential acceptance by the consumers. Animal cloning provides nutritional security to the consumers, better price to the farmers and also great opportunity for saving different endangered species. This review focuses on different issues related to the cloned animal food products and the consumers concern. It covers all aspects of the consumer's behaviors such as attitudes, intention to purchase and willingness to pay for the cloned animal food products. Consumers are generally aware regarding the government agencies approval being trustworthy for purchasing the cloned food products. Nutritional labeling generally has a great impact on the consumers purchasing decision. Food control legalization measures should be dealt in a good way for ensuring the safety of foods. The persons associated with the food industries should undertake different awareness measures among the consumers for ensuring their understanding about the food control measures and also towards its application in daily life. As a whole, better public interface of the food industry will intricate and help to solve the problems the different stakeholders are facing.

Key words: Cloning, Consumers, Food, Labeling, Technologies

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Introduction

Population in the world is ever increasing with the acute need of food for everyone. Majority of the population in the developing countries are facing daily shortages of food due to political, economic and environmental instability as compared to the developed countries. Developing countries are focusing on for developing drought and pest resistant crops for maximizing their yield and meeting food shortages. Food

industries in the developed countries are driving by the consumer demands which is generally concerned with more nutritious and sustainable foods (Joseph and Morrison, 2006). Research has shown that labeling can be used to attract price premiums (Teisl *et al.*, 2002; Umberger, 2003; Louriero and Umberger, 2004; Mabiso, 2005; Onyango *et al.*, 2006). Teisl *et al.* (2002) reported a positive WTP for seafood if certified by an independent third party. In their study, Louriero and Umberger (2004) showed that age and gender (female=1) significantly influenced WTP for food safety. Moreover, Mabiso (2005) found that 80% of consumers were willing to pay a premium of $0.48 on average, for apples with CoOL labels. Also, the study by Onyango *et al.* (2006) suggests that there is a potential for labeled GM foods.

Innovations through food technologies are in trend in the food sector, but consumers do not accept all the technologies equally (Saeed *et al.*, 2015; Siegrist, 2008).Consumers are generally concerned and they have fear about different novel technologies like genetically modified (GM) foodstuffs, nanotechnology and animal cloning. They tend to reject those technologies (Bánáti, 2011) which will otherwise provide useful solutions that are in the consumer's interest. (Bánáti, 2011; Mandaci *et al.*, 2014; Ghazaei *et al.*, 2015). Nutrition information on food labels is regarded as a major means for encouraging consumers to make healthier choices when shopping for food (Baltas, 2001; Cheftel, 2005). In recent years, the traditional nutrition information in table or grid form, usually found on the back of the food package, has been supplemented by a variety of simplified nutrition labels that appear on the front of the pack, often called front-of-pack (FOP) signposting information.

Tolerance for animal cloning technologies generally varies across different countries. Europeans for instance have been generally noted to be more skeptical about cloning and cloned animal products. Flash Euro barometer survey (2008) says consumers in Europe are less willing to accept animal cloning for food production purposes, justification is rather ambiguous. American consumers are generally accepting the cloning technology more as compared to the European consumers (Torline, 2011). After the successful cloning of the sheep Dolly (1996), cloned animal products have gained possibility of entering in the market supply. FDA has announced the cloned products as safe to eat in the year 2008. Mandatory labelling was not required in the cloned animal food products as they are not different from the traditional animal food products (FDA). GM technologies are generally more popular in case of plant based food products and the consumer acceptance are also high (Mora *et al*., 2012; Nayga *et al.*, 2006). Animal cloning have some sort of similarities with the GM technology in terms of consumer awareness and acceptance (Rolling *et al.*, 2011). The findings from some studies indicated that 40-50 percent of consumers would not purchase the products derived from the cloned animals (International Food Information Council, 2008; The Gallup Organization, 2008; Aizaki *et al*., 2011; Brooks & Lusk, 2011). From some other studies we find that consumers have higher value for non-cloned products than cloned products (Butler *et al.*, 2008; Brooks & Lusk, 2010, 2012; Aizaki *et al.*, 2011). However the acceptance of cloned animal products are different in

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different countries. According to The Gallup Organization (2008).animal cloning comprises of different ethical issues related to animal welfare and animal health; consumers are also concerned about its safety and also different issues are taking place. Nutrient composition and its intake have radically changed with the changing climatic and economic scenario and it has certainly affected the food habits of people. Increasing people's interest in healthier food, there is an increasing interest in the nutrients that not only provides the body with necessary substances, but also improves the health and well-being.

Consumers Concern on Food Labels of Cloned Animal Food Products

Level of consumers understanding of the consumers regarding food labels is generally the degree of comprehensibility of consumers regarding food labels. Labeling is defined as the process through which comprehensive information of a product provided to the target consumer market besides ensuring safety standards of the regulatory body. Food labels serves as an important connecting link of communication between the manufacturer and packer of food on the one hand and distributor, seller and user or consumer on the other hand. By presenting the proper presentation of the labeling requirements, the manufacturer generally introduce of his product to his target consumer by providing all the information related to that product. As per the Food safety and Standards (Packaging and Labeling) Regulations 2011, different guidelines about the food labels like the name of the food, list of ingredients, declaration regarding food additives, net quantity, date of manufacturing or packing etc. should be included in the labels for adequate consumer benefit.

Lusk (2008) in a study conducted in USA focused on a mandatory labelling system for meat and milk from cloned animals. By studying three different samples, it is found that people were willing to pay up to 32% higher food prices to have a mandatory labelling policy on meat and milk from cloned animals and their offspring. Roe and Teisl (2007) noted in a study on consumer's reaction to different labelling approaches that respondents rated the FDA as the highest credible agency in terms of its messages about a 'GM' or 'No-GM' claim in food products. Roosen, Lusk and Fox (2003) reported that consumers placed greater importance on information about the origin of a product than on private brands. Roe and Teisl (2007) observed that consumers prefer more importance on GM labels than No -GM labels. Wills *et al.* (2009) reported about the usefulness of nutritional leveling among the consumers and also to determine its labeling pattern in the different food products according to the consumer needs. Roe and Teisl (2007) noted in a study on consumers' reaction to different labeling approaches that respondents rated the Food and Drug Administration (FDA) as the highest credible agency in terms of its messages about a 'GM' or 'No-GM' claim in food products. Brooks and Lusk (2011) reported in a study that less than 30 percent of the respondents had trust in U.S. federal agencies with regard to information about labelling requirements. Shepherd and Saghaian (2008) reported that hypothetical questions were generally asked to the respondents

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for finding out the trustworthy agencies about the food labelling. 47.8 percent of the respondents have agreed that they had complete trust in health authorities followed by 33 percent in university scientists. 37.5 percent of the respondents had regarded USDA as their trustworthy agency.

Assertiveness of Consumers towards Food Safety

Attitudes are generally the mental or emotional entity that inheres in or characterizes a person. It is degree of feeling or opinion towards food safety of the consumers. Attitude generally varies among the different consumers regarding food safety. Different studies have been conducted to measure the attitude of consumers towards in different perspectives. According to USDA (2008), in USA 600 animal clones were generally used for the breeding purposes. National academy of Sciences (NAS) and U.S. Food and Drug Administration (FDA) have conducted a survey to ensure the safety of milk and meat products from the cloned animals. USFDA (2010) concluded that products like meat and milk from the offspring of cloned animals were safe to eat. Zhang & Jargo (2008) reported that several food manufacturers and retailers including Kraft, Wal-Mart, and Tyson, have been reported to stop selling of meat and milk from cloned animals due to reactions to public and pressures of activist groups despite the FDA's conclusions that cloned foods are safe to eat.

After taking a potential step in 2008, the Food and Drug Administration (FDA, 2008) concluded that products from the offspring of cloned animals are similar to the products of traditional animals (FDA, 2008). Violet and Goddard (2012) note that general trust influences consumers' risk perceptions and risk attitudes. More generally, consumer trust in food safety could be engendered by the synergistic interplay of industry and public agencies tasked the responsibility of ensuring food safety. Ekici (2004) reported that consumers' recognition of food safety involves a number of systematic components that work in tandem. The study also acknowledged that it is possible for a single institution to bolster consumer confidence about safety in the whole food supply. Miljkovic, Nganje and Ndembe (2008) stated that in the face of positive information of food safety policies from various sources, the tendency is for consumers to exhibit an offsetting behavior which can alter their risk perception. Food contamination is increasing in alarming rate hampering the safety parameters. Huffman *et al.* (2004) reported about the trust issues of the consumers about the purchasing and intake of GM foods. It was seen that consumers have higher trust label on the different universities and the independent researchers who are indulged in the research of different aspects of food. The Food Safety and Standards Act of 2006, has become operational in the entire country, initiating a new era of food safety in India. The act is projected to ensure improved quality of food for the consumers by placing down science based standards for food items and to regulate their manufacture, storage, distribution, regulation and import to ensure availability of non-toxic and healthy food for human consumption. One interesting dimension about consumers' attitudes is the likelihood of over-confidence

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due to a positive implementation of food safety which could potentially lead to consumer laxity on safety precautions in the handling of food and thereby enhance risky behaviors.

Consumer's Intention of Purchasing Cloned Animal Food Products

Purchase intention is the act or instance of determining mentally upon some action which will take place in future. Purchase intention is a dependent variable which depends on several factors such as perceived risk, perceived quality, perceived packaging and perceived price. Studies and surveys conducted in this field generally indicates a definite section of consumers have disagreed for consuming products which are obtained from the cloned animals. However, some proportions of consumers have different responses based on the studies and consumers sampled. Mohamed *et al*. (2012) reported that health conscious lifestyle was found to be the foremost motivating factor of organic food purchase, as well as willingness to pay. Ozguven (2012) reported bout the different motivational factors associated with the consumers for buying the organic foods. Organic products are having high popularity among the consumers because of its nutritive value. Quality and price of ta food products are the most important factors which determines the popularization and high intake of the food item. International Food Information Council (IFIC, 2007) indicated that 49% of consumers had a likelihood of purchasing foods from the offspring of cloned animals if determined safe by the FDA. Nonis *et al.* (2010) investigated the FDA's conclusion on safety of cloned animal products on purchase intentions at three different price levels. University students were asked about their likelihood of purchasing superior quality beef from a cloned offspring at 20 percent more, 10 percent more and same price as prime quality conventional beef. Same question was asked for the second time after participants had been shown a video clip that had a FDA official assert the safety of cloned animal food. Results indicated that people were still confused about buying the products. Sosin and Richards (2005) reported that some consumers were willing to buy the products from the offspring of cloned animals, some need more information to consider it as a food product and some are not willing to buy it due to different reasons or belief systems. Consumers were also conscious about its positive welfare affects to the animal industry and its better nutritional qualities.

Consumers placed greater importance on information about the origin of a product, than on private brands (Roosen *et al*., 2003). However, expiry date was most commonly used information by the consumers (Tessier *et al*., 2000). Frequency and time of use of food label information generally varies among the consumers. However, more than half of consumers read the labels information on initial purchase (Mintel 2006). Utilization of food label information varies with the consumer's age, his residence, his purchasing pattern of food items. Consumers residing in non-metro areas were more likely to use nutritional information concerning ingredients, sodium, vitamins, minerals and fiber content on food packages than

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others in the sub-urban and urban areas. Presentation of different specific requirements of the consumers in the food labels will increase its utilization for the consumers.

Consumers' Willingness to Pay for Cloned Animal Food Products

It is the maximum amount of money of monetary value a person is willing to give to buy a product of his/her choice. It helps in predicting his/her future buying/consuming habits. Consumers' willingness to pay for regulation to ensure cloned products are labelled is influenced by gender, bid amount, level of education, and knowledge of cloning (Jones *et al*., 2010). The International Food Information Council (IFIC, 2006 & 2007), however, found that consumers' willingness to purchase meat, milk, or eggs from the offspring of cloned animals increased about 5 percent from 2006 to 2007. Van Loo *et al.* (2011) estimated consumers' WTP for organic chicken by using a choice experiment. Results indicated that consumers were willing to pay a higher premium for USDA organic label as compared to general organic label. Brooks and Lusk (2010) reported about the demand of the consumers regarding cloned and non-cloned animals. Serogaroli *et al.* (2003) found Italian consumers with higher information about GM food perceive GM food as a high risk and are willing to pay more for GM free products. Jones *et al.* (2010) determined how much the consumer is ready to pay for clone free labels.

The results of the experiment reported that more than half of the consumers were willing to pay for clone-free label products. Variables like gender and education have significant impacts of ensuring the food choices of the consumers. Female consumers are willing to pay more for a knowledgeable label in the food product about cloning. Consumers were very much aware about the aspects of animal welfare and better nutrition in the food products. Kerley *et al*. (2008) who examined the economic impacts of expiry dates on perishable goods by eliciting respondents' willingness to accept (WTA) milk of different ages. With increasing age of the product, price decrease and it compels the seller to get a negative price from the consumers. According to Carpio and Isengildina (2008) most important driver of willingness to pay of the consumers is income and the local attributes of the product. Piyasiri and Ariyawardana (2002) showed that an increase in income increases the probability of WTP for organically produced vegetables in Kandy. Consumers' willingness to pay for regulation to ensure cloned products are labelled is influenced by gender, bid amount, level of education, and knowledge of cloning (Jones *et al*., 2010). The International Food Information Council (IFIC, 2006 & 2007), however, found that consumers' willingness to purchase meat, milk, or eggs from the offspring of cloned animals increased about 5 percent from 2006-2007.

Based on a pilot survey, results suggest that consumer willingness to pay a premium for a clone-free label is influenced by the bid amount, educational level, gender and whether the respondent is both knowledgeable about cloning and also reads labels when shopping. The results suggest how pricing will be

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important if cloned meat had to be labeled. A higher premium will result in fewer consumers willing to pay for the label.

Conclusion

Food control concerns are presently being discussed at the national and global levels, regarding for example pathogenic microorganisms, allergens, genetically modified foods, contaminants (including pesticides), irradiation and nutrition labeling. Control measures at different stages of food production will implement a scientific solution to different alarming problems in the food industry. Consumers are generally aware about the different nutrient information used in the food labels. Majority of the consumers have a positive attitude regarding the issues towards food safety. Consumers have perceived quality and available information on the food as the most important parameters while judging food safety issues consumers are most important players of an industry and to protect their safety and ethical issues are the top most priorities. Consumers will play the most important role in ensuring and implementing different safety parameters and also to popularize different new food producing techniques. Different international bodies (Codex Alimentarius Commission) are working towards implementing different rational measures in the food supply chain. Different food control issues should be the basic resolution of the food industry to safeguard the interest of the consumers and also foe uninterrupted marketing of the food products.

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