



A review of Quality control in food safety for FMCG Products

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Abstract

For humans, food is essential to their well-being. A country's economy and long-term growth depend on the availability of nutritious food of high quality and safety. The quality and stability of the food supply has become a global issue due to the recent rise in food contamination occurrences and product recalls. Quality management measures in food supply are examined in this study, with an emphasis on McDonald's Hong Kong's use of these procedures to ensure the quality of their food supply. Everyday life revolves on food; thus, it is both practical and philosophically necessary to improve food safety risk governance. Using a reputation updating model, this study proposes a three-tier supply model that includes government regulatory agencies, food producers, and consumers. It also investigates the impact of product quality and sales price for food producers, as well as government testing accuracy and regulations' efficacy in ensuring product quality and safety. There is a negative relationship between pricing and government incentives or penalties, according to these findings. By improving accuracy of food sampling tests in addition to increasing rewards and increasing punishments for poor food quality, product quality can be effectively controlled, and prices can be balanced, resulting in increased profits for food producers. There are several insights about food safety risk management in this study, which may be gleaned from the various observations. The image of a firm suffers a catastrophic hit when problems with food quality and safety are made public, even though the process of changing product quality is relatively gradual for manufacturers.

Keywords: Quality Management, Food Supply, McDonald's Hong Kong, Case Study

Introduction

For humans, food is essential to their well-being. Many people's everyday routines depend on it. It provides humans with the energy and basic nutrients they need to thrive, as well as a natural protection against many ailments. In addition, food has a significant impact on a country's success. Many studies have shown that a country's economic and social progress is greatly influenced by its ability to provide an adequate food supply. Every day, the public's health is put at risk by food safety concerns, which elicit enormous societal worry and alarm. Governments have a critical role to play in protecting citizens from dangers and hazards, and food safety risk management relies heavily on governance mechanisms. Government agencies set



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food quality standards and conduct inspections of manufacturers' products in order to reduce the danger of food safety. The legal food manufacturers rigorously adhere to the food quality criteria given by government authorities while producing their goods. Some speculative manufacturers, on the other hand, adhere to laws while supplying markets with substandard goods. Unqualified items are found during inspection, yet a significant number of them are nevertheless produced and sold to customers. As with other administrative jobs, the amount of financial and human resources required to conduct an inspection is a major limiting factor in its efficiency. This work aims to propose a reputation-based food quality management mechanism and test its performance via a series of simulations, taking into account the challenges faced by food safety management in reality.

Because of this, we may imagine a three-tier supply chain: government regulatory authority (She), food producer (He), and consumer. A series of events is proposed as a means of implementing the proposed governance structure. First, the government conducts and publishes testing on food goods. The customer's views of food are dependent on the quality of the product and the price it is sold for. Product reputation is used to narrow down consumer impressions of a product in this study. The government's regulatory body awards or punishes a company for adhering to regulations guidelines based on test results. According to market demand and pricing strategies based on food quality reputation, a food manufacturer will choose the best-selling price for their product. Customers create a model for updating a product's reputation based on the actual quality and price of the goods sold at the conclusion of the trading session.

The following are some of the paper's contributions:

1. Reputation plays an important regulatory function for decision-makers in the food supply chain, and this article combines the prior government management system of food safety with the food manufacturers' own quality contracts to examine its role.
2. Product quality and pricing data are used to create a reputation-updating model that more correctly reflects the product's reputation over a period of time.
3. Food safety risk management may be improved by including the effect of product reputation elements, as shown by this paper's findings.

Many foods perish because of microbial development on their surfaces. Controlling unwanted bacteria during storage requires either applying antimicrobial compounds to the food surface or embedding these substances into the packaging materials. Using active packaging is a novel way to food preservation, boosting safety, ensuring product quality, and adding antimicrobial agents in polymer films may be utilized as active packaging. When it comes to food safety and freshness, antimicrobial packaging is one unorthodox packaging idea that may help keep food safe and fresh. The development of heat-resistant bacteria and spores may be prevented by using this procedure instead of non-thermal ones. Researchers are paying attention to film-based antimicrobial packaging because of its potential to deliver quality and safety advantages to consumers. Packing materials that include antimicrobial agents reduce the development of germs on the surface, which reduces the likelihood of contamination. With this method, food manufacturers may avoid having to use as many antimicrobials in the final product as they otherwise would.

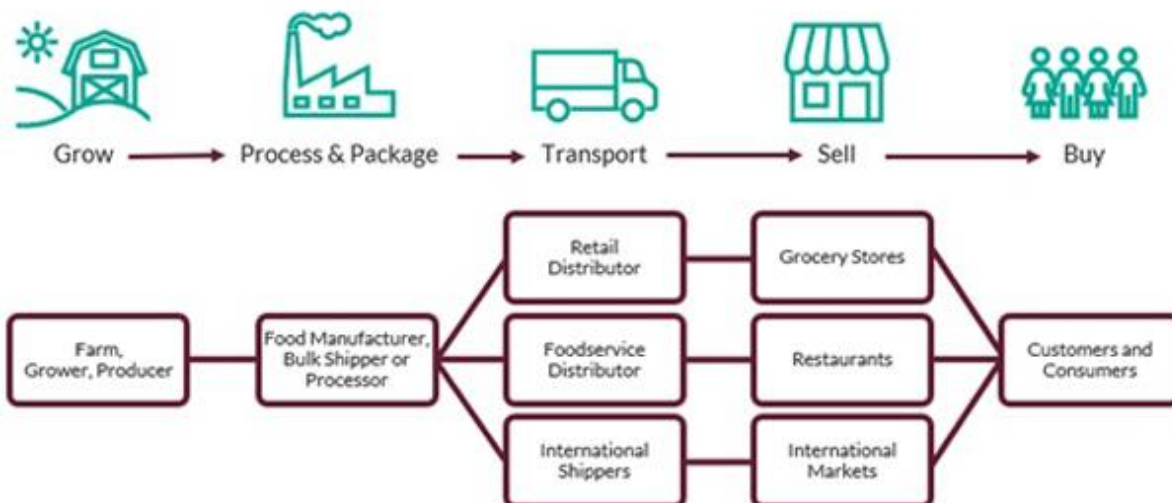
Food and food supply chain

A food is any material that is ingested by humans, whether it is raw, semi-processed, or processed, including dietary supplements and food additives. People's health depends heavily on what they eat.



For proper survival, it feeds the body with the vitamins, carbs, proteins, and lipids it needs. It contains all the nutrients and bioactive compounds that are needed to keep people healthy. Other fatty acids found in food include cholesterol esters and phospholipids as well as triglycerides. Food has a significant impact on a country's economy in addition to its role in the health of its citizens.

The Food Supply Chain



According to a nutritional viewpoint, people's bodies and machines are both powered by food, which in turn affects the economy's ability to function at its fullest potential. When it comes to agricultural economies, the food industry ranks as one of their fastest expanding areas. The food sector must provide a secure and efficient global food supply and distribution in light of the growing significance of food to people and governments. The chain of food production and distribution is the current focus of food safety considerations and assurances all over the world. The food supply chain is a logistics system for businesses that deal in food products. Pre-production and post-consumption activities are all part of the food supply chain, which begins with food production and ends with food consumption. To ensure that food products move smoothly through the supply chain, a group of interdependent businesses must work together. Farmers, manufacturers, warehouses, vendors, wholesalers, and retailers are just a few of the many people involved in a typical food supply chain. Agricultural commodity prices and consumer food prices may be affected by the amount of interaction and collaboration between different stakeholders in the food supply chain, which is critical to its success.

Objective:

To Review the Quality control in food safety for FMCG Products

Review of literature

(Huda, Muzaffar, and Ahmed 2009) studied “An enquiry into the perception on food quality among urban people” discovered that and the consumption of contaminated and unsanitary food in Bangladesh's metropolitan areas is a big concern. This is a severe issue for the health of city dwellers in general. In this study, urban educated people's food safety knowledge is studied. The attitudinal survey respondents showed a high level of awareness, according to the study's conclusions. Higher-



educated individuals are more aware of the importance of food safety and the processes used to produce it. The report also shows a lack of faith in the government's regulatory agency's ability to test food standards.

(Becker 2000) studied “Consumer perception of fresh meat quality: a framework for analysis” discovered and the development of a model for the study of food consumer behaviour is made. Food science's product characteristics method and consumer behaviour's product attribute approach are two distinct approaches to quality. This model aims to integrate these two approaches by including both approaches into a single framework. The consumer's ability to comprehend information is the primary concern. Cues the customer receives when buying or eating provide information about the product's quality. Extrinsic and intrinsic signals, as well as search, experience, and credence quality qualities, are all discussed in detail. Each credence quality feature falls into one of three distinct categories: food safety, health, or any other trait with a high credence quality. It has been shown that minimal criteria for food safety, health information and consumer education, and definitional standards for controlling other credential attributes should be used in public policy. Search quality does not need public action. Reputation is a tool for mitigating the quality degradation caused by experience quality characteristics. These options aren't available for goods that aren't provided in pre-packaged form at the store. To support private quality policy initiatives on labelling, public regulators could consider creating traceability mechanisms and clarifying the standards for particular label claims.

(Afolabi et al. 2021) studied “Evaluation of Storage Control Points and Implicated Pathogens on Fast Moving Consumer Goods Findings show that the effectiveness of a foodborne disease prevention system will be determined by the level of food safety management in place across the whole food chain. Food safety is influenced by several factors, including these phases of manufacturing. Strict hygiene controls should be implemented throughout the food supply chain, from manufacture and handling through storage and marketing. Five establishments in Lagos and Sango, Ogun State, Nigeria, gathered ninety samples, including fifteen Milo, fifteen golden Morn cereal, fifteen Maggi seasoning, fifteen Lucozade boost, fifteen Gala (Sausage), and fifteen (noodles). Pour plate and streak plate procedures were used to treat and cultivate samples. For the culture of the samples, the researchers used four different types of selective media: Mannitol Salt agar, as well as Salmonella Shigella, Eosin Methylene Blue (EMB), and Nutrient Agar (NA). The percentages of each of the isolates in the culture were 67.66 percent, 11.27 percent, 9.77 percent, 7.51 percent, and 3.75 percent. Samples from (Maggi) had the greatest colony count (140.6), while samples from (Milo) Sango had the lowest colony count (21.0). One million CFU/ml was the average for all the isolates. Codex Alimentarius Commission microbiological criteria, as specified by the Codex Alimentarius Commission, found that the aerobic colony count of the tested fast moving consumer items falls far below the upper threshold of microbial levels for class A products.

(Nyarugwe et al. 2016) studied Determinants for conducting food safety culture research and Background Foodborne outbreaks continue to occur despite current food safety procedures, highlighting the deficiencies of these methods to ensure food safety concluded that and background. This has led to the acknowledgment of food safety culture as a critical contributor to food outlets, food safety performance. Aims and methods using the systems approach, this study aims to identify factors that may be used to undertake food safety culture research, focusing on national, organizational, and safety culture literature in the context of food safety. Observations and conclusions that are most important Food safety is a multifaceted issue, with a number of interconnected elements at play. Food safety



culture research should take into account national cultural influences, specify hierarchical levels (strategic, tactical and operational), establish underlying mechanisms and consider company food risks and context characteristics, according to an analysis of culture literature. Food safety culture research should take these factors into account. Organizational and administrative characteristics (such as food safety vision, communication, commitment, leadership, and training) as well as technical facilities and resources (such as food hygiene and safety tools, equipment, and facilities) as well as employee characteristics (such as attitudes, knowledge, perceptions, and risk awareness) are all important considerations in food safety culture research. The systems approach, quantitative indicators, categorization systems for differentiated evaluation, and the use of numerous techniques to increase study validity are among the methodological needs for food safety culture research. A knowledge of food safety culture might begin with a grasp of the established food safety culture study factors”.

Conclusion

Fuel for the body, “such as fresh food and FMCG food, is crucial to people's health and well-being. People are more anxious than ever before about the quality and safety of the food they consume, especially in light of recent outbreaks of food contamination issues. Food supply chain quality control will be an essential area to ensure food quality. To put it simply, it's the chain of economic operations involved in bringing food from farm to table. In the food supply chain, vertical integration is a frequent method for ensuring a steady supply of high-quality food. In addition, food firms may use a variety of quality management tools to improve the overall quality and safety of the food they produce and distribute. Using RFID, HACCP, and KPI, a food product may be traced, and the food supply chain can be improved by a food product's efficient distribution. McDonald's Hong Kong has taken several steps to ensure that its meals and ingredients are safe and healthy. At several points in the food supply chain, McDonald's Hong Kong has implemented HACCP procedures. Food and food components are tested by SGS on a regular basis, as well as by HAVI Logistics to ensure that they are transported in a safe manner. To preserve food quality and improve food supply chains, McDonald's Hong Kong's case study shows that quality management methods are promising strategies. The present study is limited by the fact that it employs just one Hong Kong instance and relies on qualitative research. It is possible to do case studies of food enterprises in other nations in the future. It's possible that in the future, researchers may perform surveys with a big sample size so that the results can be generalized to all food firms. Despite its flaws, the present research is useful for food industry professionals who want to create quality management plans for their businesses. The results may also serve as a platform for future research on effective food supply chain management”.

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