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Evaluating elements of national food control system: Indian context

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ABSTRACT

Food regulation in a country is established with the core objective to protect consumer health. Food and Agriculture Organization (FAO) has proposed the guideline on "Strengthening national food control systems (NFCS)" and developing capacity in the country to achieve food safety. The components suggested by FAO guideline is analyzed by obtaining opinion of stakeholders having significant role in NFCS such as government bodies, laboratories for official control and food business operator to determine their applicability in Indian context. The questionnaire based survey is conducted. The aim of this paper is threefold i) to identify the factors in Indian context which significantly impact NFCS using principal component analysis, ii) to analyze the expert opinion based on role of organization in food control system using hierarchical cluster analysis and iii) to identify the weak areas by proposing a knowledge deficit model. A total of six factors identified from this study which include Official Food Laboratories, Food Safety Inspection and Communication, Food Control System, Food Safety Database Management, Food Safety Legislation and Resource management. The comparative analysis of clusters provides diverse perception of experts based on their role and function in food control system at items of interest. This study provides the critical factors for NFCS and proposes deficit model with recommendations for future capacity building initiatives harmonized with the international requirements. A knowledge deficit model proposed in this paper identifies area of risk based approach, legislations for complete food chain, and information sharing and competent resources as essential. The research study provides a comprehensive recommendations for designing the future course of action for strengthening Indian food safety system.

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1. Introduction

The changing food safety standards, stricter global product norms trigger the necessity to improve legislative network of a country based on international standards. National food safety regulatory model is an important control mechanism to achieve food safety compliance in the country (FAO, 2003). Food and Agriculture Organization (FAO) (2006) provides guidelines on "Strengthening national food control systems". This guidance document endows with government agencies and food control authority a mechanism to do the self-assessment and capacity building. The FAO guideline proposes that strength of National food control system (NFCS) can be assessed on five essential components [food control management, food legislation, food inspection, official food control laboratories and food safety and quality information, education and communication]. The evaluation of Indian

NFCS and opinion of experts including regulators, ministries, laboratories and Food Business operator (FBO) involved in designing the system is important on above components. There are primarily three facets of the national food control system imports, exports and domestic. In India, domestic and import food trade is covered under Food Safety Standards Act (2008) and export trade is covered primarily under the Export (Quality Control and Inspection) Act (1963). There are several studies in the regulatory system of the country specially integrated food safety authority (Wu, Yea, Hua, Liu, & Cao, 2014, Sarter, Sarter, & Gilbert, 2010, Kandari & Jukes, 2011). Shukla, Shankar and Singh (2014) reviewed the food safety regulatory regime in India in respect of five components proposed by FAO. The aim of the study is to empirically validate the NFCS structure based on stakeholders' opinions and explore the possible areas of improvement. The test elements under the five components of NFCS are subjected to expert opinion in Indian context to develop the areas of importance and identify deficiencies for further improvement. The responses are classified for difference in opinion observed to be dependent on specific role of the expert organization in achieving food safety.

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2. Overview of national food control system

FAO (2006) defines NFC as an integration of regulatory regime to provide safe and wholesome food to all concerned. It provides comprehensive sets of procedures, guidance and enforcement system on food safety and quality which can be adopted by national governments. The overall objective of NFCS management in a country is to minimize the risk to public health, provision of safe and wholesome food to all and economic growth and development by ensuring fair trade practices at domestic and international level (FAO, 2003). The safe and wholesome food can be achieved based on principle of due diligence by all stakeholders of the food chain. The healthy NFCS can be achieved when all relevant stakeholders, ministries and enforcement agencies are collaborating to a common goal and regulatory regime. Shears, Zollers, and Hurd (2004) explained the aspect of white paper on the Food Standards Agency: a force of change in January 1998 in European Union and proposed the benefits of establishment of an integrated food safety authority. Several developing countries has implemented integrated agencies involved in food control such as Saudi Food and Drug Authority, Food Safety and Standards Authority India (FSSAI), UAE, Kuwait, Hongkong etc. (Mutairi, Connerton, & Dingwall, 2015; Shukla et al., 2014; Kandari & Jukes, 2011; Alomirah et al., 2010; Wu et al., 2014; Sarter, Sarter, & Gilbert, 2010). The attitude and beliefs of stakeholders in Cyprus is studied for exploring the opportunity for single authority structure (Hadjigeorgious et al., 2014).

Bagumire, Todd, Muyanja, and Nasinyama (2009) studied the fish supply chain in Uganda and proposed four components for NFC which include improved legislation, defined competent authority, enhanced laboratory system and robust inspection services based on international requirements. Liu, Kerr, and Hobbs (2012) has also conducted study of aquatic supply chain. Mensah et al. (2011) conducted study to understand the changing situation in international regulation especially in UK with respect to compliance in food safety sector. There is a need to design the system on the basis of risk to avoid crisis and losses. In last few decades, risk assessment, risk management and risk communication has been formally adopted by several developed and developing countries in their national food control system enabling the linkage of hazards directly to the human health (FAO, 2003). Hansen, Holm, Frewer, Robinson, and Sandøe (2003) conducted a study on elements of food safety risk, understanding of public and knowledge deficit model. Martinez, Fearn, Caswell, and Henson (2007) indicated in their study four key aspects of food regulations including standard setting, process implementation, enforcement and monitoring of compliance. They proposed the importance of co regulation as an alternative for effective food safety governance. Jeng and Fang (2003) has described the food safety controls systems adopted by Taiwan authorities with requirements of good hygiene practice and HACCP principles in line with Codex for lunch box meals and need for public and private collaboration. Neeliah and Goburdhun (2007) have conducted a review of NFCS to identify the deficiency implementation and duplication of work, poor application of management principle and weak food laws.

There has been extensive regulation due to the growing public concern in developed countries post WTO. It is indeed the need of the hour to evaluate whether these regulations are justifiable or they are the result of some incidents or food safety crisis. Mazzocchi, Ragona, and Zanoli. (2013) has conducted a regulatory impact assessment of European food regulations by developing a transparent qualitative and quantitative scoring methods utilizing fuzzy logic. Roberts et al. (2004) conducted an in depth analysis of Australian food safety legislation for service sector and suggested that there is need for enhanced support from government in terms of improved infrastructure, educational programs, quality

assurance setup for assessment and timely reporting. Erdem, Rigby, and Wossink (2012) has further supported the benefits of effective communications to avoid any perception barriers by considering meat supply chain with reference to notions of consumers and farmers. Beliefs and attitudes significantly impact the action. Food safety risk is important element of all components of NFC. Kirk, Greenwood, Cade, and Pearman (2002) has determined the dread and knowledge as two important components in strengthening the beliefs and perception around food safety risk. Wislon et al. (2015) has reported that communication system is very important for regulators which should be based on proactive approach instead of action for the food safety incident and develop understanding between consumers and regulators. There are available methodologies and certification system to evaluate the implementation of regulations related to food safety by Food Business Operator (FBO). There is lack of published study on the verification of the NFC system by a country.

In India, the Food Safety and Standards Act was published in year 2006 followed by formation of FSSAI in the year 2008 and recently Food Safety and Standards Rules (2011) has been enforced. Shukla et al. (2014) has examined the Indian food safety regulatory system under five components proposed by FAO and recommended action for improvement. Based on FAO (2006) components and Shukla et al. (2014) India's regulatory regime is discussed under five sections to design the study.

3. Background study design

The background study of all five components and their items was conducted with respect to Indian context to enhance the research design. Each component provides an overview of Indian situation and items which are important for the purpose of this study.

3.1. Food control management (FCM)

FCM is the process of overall management of food control system in a country which includes planning, defining, execution, coordination and monitoring the food safety system. In India, there was multiple Competent Authority (CA) structure till inception of FSSAI which has integrated more than 9 ministries and 25 Acts and Orders. India is a Federal Republic with division of powers among the Central and State Government as per article 1 of the constitution of India. The policies and programs are developed centrally at FSSAI for inspection and enforcement. These are implemented by states through the State Food and Drug Administration Department. Further, the Export Inspection Council (EIC) is the CA for notified food commodities for the purpose of export. EIC was established under the Export (Quality Control & Inspection) Act (1963) with the prime objective to ensure pre-shipment control and inspection of notified commodities for the purpose of export trade. In addition to the two main authorities, there are several other ministries and promotional boards performing the regulatory function for primary products, exported commodities and domestic produce. Ministry of Environment, Forest and Climate Changes are entrusted with the responsibility of approval and import of Genetically Modified foods, Ministry of Agriculture and Farmers Welfare (MoAFW) approves usage of plant protection products. MoAFW is responsible for animal disease controls and monitoring. In this study, the items such as identification of CA for the product commodity, clarity of role with regard to NFCS, multiple authority structure and procedures adopted for domestic and export system are included to evaluate FCM in India. The other important measures of FCM are coordination and execution of the planning with interaction among authorities, understanding on legislations, use of

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