



Implementation of non-regulatory food safety management schemes in New Zealand: A survey of the food and beverage industry



Encheng Chen ^{a,*,1}, Steve Flint ^a, Paul Perry ^b, Martin Perry ^c, Robert Lau ^d

^a Institute of Food, Nutrition and Human Health, Massey University, Palmerston North, New Zealand

^b School of People, Environment and Planning, Massey University, Palmerston North, New Zealand

^c School of Management, Massey University, Wellington, New Zealand

^d Institute of Food, Nutrition and Human Health, Massey University, Wellington, New Zealand

ARTICLE INFO

Article history:

Received 3 June 2014

Accepted 5 August 2014

Available online 14 August 2014

Keywords:

Non-regulatory scheme

Food safety management

Implementation

Food and beverage industry

New Zealand

ABSTRACT

Using a questionnaire survey, this paper examines the motivations, challenges, and impacts, and the role of third-party certification bodies' (CBs) in the implementation of non-regulatory food safety management schemes (FSMS) in the New Zealand food and beverage industry. The survey involved 115 manufacturing enterprises out of which 95.7% indicated that they had one or more FSMS in place, and 43.5% stated that they implemented one or more non-regulatory FSMS. Three main categories of non-regulatory FSMS have been implemented in New Zealand: public international standard schemes, public industry sector schemes and private individual firm schemes. The most important motivation for implementing non-regulatory FSMS is meeting the requirements of major customers. As a consequence of the implementation of non-regulatory FSMS, desirable changes have been experienced by the respondents, such as the improvement of product traceability, increasing food safety awareness of employees, satisfaction with the ability to maintain customers, decreasing the cost of wastage and reduced customer complaints. The results also indicated that the major challenges encountered during the implementation of non-regulatory FSMS were increased paper work, record keeping and documentation, and the cost of development and implementation. The costs of system design and development, and external audit fees are the major implementation costs of non-regulatory FSMS, while external surveillance audit fees and product testing are the significant operating costs of non-regulatory FSMS. The third-party CBs' service was rated by 66.0% of respondents as an important tool for them to continuously improve their food safety management.

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1. Introduction

The safety of food should be a non-negotiable priority for food and beverage manufacturers and food safety regulating authorities. Although thousands of people have been employed and engaged in food safety management around the world, with millions of dollars invested in food safety research and management and a myriad of inspections/audits and tests conducted by governmental agencies and non-governmental organizations (NGOs) at home and abroad,

food safety still remains an issue of paramount importance and public health priority (Yiannas, 2009).

In response to increasing concern about food safety in the past 20 years, international organizations, governments, non-government organizations, retailers, and producer associations have introduced a large number of food safety management regulations, guidelines, standards and specifications to regulate and assure food safety (Da Cruz, Cenci, & Maia, 2006; Henson, 2007; Luning, Marcelis, & Spiegel, 2006; Neeliah & Goburdhun, 2007; Trienekens & Zuurbier, 2008). Some of them are compulsory requirements for food companies (such as government regulations), while others are not. In this study, those schemes which are not mandatory requirements from governments are defined as non-regulatory schemes, whether they are owned by governmental agencies, non-government organizations or private sectors.

For food businesses, most non-regulatory food safety management schemes (FSMS) are voluntary; however, they often become

* Corresponding author. Institute of Food Nutrition and Human Health, Massey University, Private Bag 11 222, Palmerston North 4442, New Zealand. Tel.: +64 6 3569099; fax: +64 6 3505657.

E-mail address: e.chen1@massey.ac.nz (E. Chen).

¹ Present address: Institute of Food Nutrition and Human Health, Massey University, Riddet Building Reception, Riddet Road, Palmerston North 4442, New Zealand.

de facto mandatory in a business sense because they are adopted by dominant market players in the food supply chain (Henson, 2011). Food businesses are obliged to implement those schemes only if they want to supply product to those customers. For example, the British Retail Consortium (BRC) Global Standard for Food Safety was originally set by a trade entity in the UK and has been adopted by retailers there. Food enterprises have to implement the BRC Global Standard for Food Safety in order to keep or gain supply contracts with retailers in the UK. Non-regulatory FSMS, as a complement or alternative to mandatory regulation, have become a much more prevalent component of the food safety control system of the global food supply chain.

The food and beverage industry is the largest manufacturing sector in New Zealand (NZTE, n.d.), and is of paramount importance for the national economy. It consists of about 2000 enterprises and employs more than 80,000 people (MBIE, 2012). Exports of food and beverages account for more than 10 per cent of the GDP by expenditure and represent more than half of the value of all merchandise exports. The food and beverage industry is dominated by several main categories: dairy, meat, seafood, fruit and vegetables, wine, and specialty food industries.

The Ministry for Primary Industries (MPI) is the primary food safety regulating authority in New Zealand, and administers the four main Acts: the Food Act 1981, the Animal Product Act 1999, the Agricultural Compounds and Veterinary Medicines Act 1997, and the Wine Act 2003. As shown in Fig. 1, a risk-based approach has been adopted. The industry needs to implement risk-based management programs, such as Risk Management Programs (RMPs) and Food Safety Programs (FSPs), to meet the regulatory requirements. Those programs have to be independently audited by MPI approved verifiers which are accredited against ISO/IEC 17020 Conformity assessment—requirements for the operation of various types of bodies performing inspection. Besides the aforementioned regulatory requirements, food and beverage manufacturing

enterprises have to meet non-regulatory requirements whether they supply international or domestic markets.

A number of studies have investigated the incentives for, costs and benefits of, and challenges to food businesses to conform to food safety regulations in many countries. Some non-regulatory FSMS have been examined in the UK (Mensah & Julien, 2011), the USA (Fouayzi, Caswell, & Hooker, 2006), China (Zhou, Helen, & Liang, 2011) and other countries (Hassan, Green, & Herath, 2006; Karaman, Cobanoglu, Tunalioglu, & Ova, 2012; Tomašević et al., 2013). There are few reports on the implementation of non-regulatory FSMS in the context of the New Zealand food and beverage manufacturing industry. The objective of this study is to investigate the non-regulatory FSMSs implemented by New Zealand food and beverage manufacturing enterprises, and to find out the incentives for, challenges to, costs and benefits of, and the role of third-party certification bodies (CBs) in the implementation of these schemes.

2. Materials and methods

A postal questionnaire survey was conducted from August 2012 to October 2012. Tailored Design Method protocol (Dillman, Smyth, & Christian, 2009) was applied during the development and administration of the survey. Relevant literature was reviewed on both regulatory and non-regulatory food safety management. Based on the literature review, a questionnaire was developed. A list of 419 food or beverage manufacturers was compiled from the Food and Beverage Information Project administered by the Ministry of Business, Innovation & Employment, and the MPI register of RMP and FSP. A questionnaire of 33 items was posted to each of 419 food and beverage manufacturing enterprises. It covered issues in relation to the non-regulatory FSMS, such as the drivers, changes after implementation, costs, effectiveness, and the food safety culture. The general information about the enterprises was also included in this questionnaire, e.g. sub-sector, scale, target market etc. The questionnaire was reviewed by four researchers in food science and sociology and an expert on third-party food safety audits, and was piloted with a food quality assurance specialist. Two options were provided to the participants. Respondents could fill out the questionnaire and post it back, or alternatively fill it out online via Qualtrics Online Survey Software. The total number of responses was 115 (a response rate of 28.54%). The responses given in the survey were input into the IBM SPSS Statistics 20 to analyze the data.

3. Results and discussion

3.1. Profile of respondents

Based on the Small and Medium-sized Enterprise (SME) definition of the former New Zealand Centre for Research into Small and Medium-Sized Enterprises, approximately 78% of respondents belonged to the SMEs category (Table 1). Registered limited liability companies accounted for more than 83% of respondents. Respondents covered most sub-sectors of the food and beverage industry in New Zealand (Fig. 2). Note that one respondent may be in

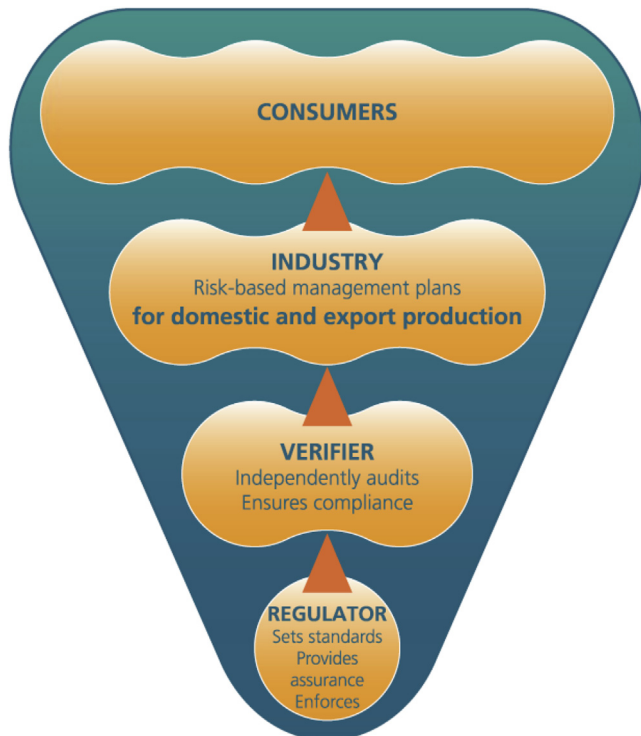


Fig. 1. New Zealand food safety regulatory model. Source: Adopted from NZFSA (2009).

Table 1
Size of food and beverage manufacturing enterprises.

	Micro	Small	Medium	Large
No. of full time employees (N)	$N \leq 5$	$5 < N < 50$	$50 \leq N < 100$	$N \geq 100$
Total no. of responses	13	64	12	25
% of respondents	11.4	56.1	10.5	21.9

Note: One respondent did not indicate its size in term of number of employees.

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