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Multiple food safety management systems in food industry: A case study

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Abstract
When manufacturing organizations seek to enhance the safety of food products and to meet the requirements put forward by customers and markets they are compelled to adopt various Food Safety Management Systems (FSMS) that conform to global, international, national, private and proprietary standards. In this study 'Multiple Food Safety Management Systems' (MFSMS) describes the situation in which one organization has adopted and implemented more than one FSMS standard. The paper presents a case study of a seafood factory located in Maldives which has implemented FSMS, with the aim to analyse the motivations for the adoption of MFSMS and the consequences of that adoption in the management system and the organization. The study notes that the key motivations for implementing MFSMS were a management commitment to improve food quality and safety, compliance with regulations, market requirements, customer requirements, external funding, marketing tools, brand image, requirements of retailers and commercial pressure. The study also notes that the major consequences of MFSMS were a duplication and complexity in management document and record systems, a need for additional resources, a development of new departments to implement and maintain management systems, an inability to focus on the implemented standard, ineffective internal audits and management reviews, additional time needed for management system activities, increased man-days allocated to external audits and a higher cost of the certification process. The findings of the study highlights some important issues with implications for the policies of food processors, developers of standards, bench marking bodies and customers insisting on special stipulations.

Keywords: multiple food safety management systems; FSMS; seafood; standard; motivations; consequence

1. Introduction
Consumer interests towards food safety is increasing with an improving awareness of food borne illness (Henson & Caswell, 1999; Martinez *et al*. 2007; Trienekens & Zuurbier, 2008; Arpanutud *et al*., 2009; Gaaloul *et al*., 2011) [10, 26, 35, 11, 7] and a series of food scandals and incidents that are continuously happening without any sign of decrease (Sperber, 1998; Loader & Hobbs, 1999; Martin *et al*., 2003; Schillhorn van Veen, 2005; Loc, 2006; Taylor, 2011; Dora *et al*., 2013) [31, 21, 25, 29, 33]. Taylor (2011) [33] has pointed out that the percentage of the population suffering from food borne disease each year is up to 30 percent in developed countries. Increased demand for processed and packed food obviously increases the risk of food safety issues. As a result of this, customers look for quality and safety guarantees when visiting outlets for food purchases, and in turn there is a proliferation of food safety management system (FSMS) standards in the food industry (Kimura, 2010) [20]. Food producers have to implement and maintain different FSMS standards as per customer and market requirements to ensure the safety of the product to the level of expectation of their customers.

1.1 Food safety management system standards
The International Organization for Standardization (ISO) defined 'food safety' as the concept that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use (ISO, 2005a) [16]. A 'management system' is a set of interrelated or interacting elements to establish policy and objectives and to achieve those objectives (ISO, 2005b) [17]. A standard is "a document, established by consensus and approved by a recognized body that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context" (ISO, 2014) [18]. FSMS standards can be broadly classified as global, international, national, private and proprietary standards.

1.1.1 Global, international and national standards on food safety
On a global level, the Food and Agricultural Organisation (FAO), the World Health Organization (WHO) and the World Trade Organization (WTO) deal with food safety issues and these organizations bring food safety norms and standards under one roof. The General Agreement on Tariffs and Trade (GATT), concluded in 1947, included provisions for countries to apply measures necessary to protect human, animal or plant life or health. In 1994 the WTO enacted an Agreement on Sanitary and Phytosanitary (SPS) measures under which the WTO sets constraints on member-states' policies relating to food safety, animal and plant health (phytosanitation) with respect to imported pests and diseases. The Codex Alimentarius Commission (Codex) sets the food safety standards at a global level on which WTO members should

base their SPS methodologies. The Codex standard - General Principles of Food Hygiene -CAC/RCP 1-1969 details the Hazard Analysis Critical Control Point (HACCP) system and guidelines for its application. HACCP principles are integrated into the official regulations of many countries (Higuera-Ciapara & Noriega-Orozco, 2000; Vasconcellos, 2004), which is basically designed to assure food safety (Spiegel *et al*., 2003) [32]. The international standard ISO 22000 - 'Food Safety Management Systems- Requirements for any organization in the food chain' was introduced by the ISO in 2005 and specifies requirements for a FSMS where an organization in the food chain needs to demonstrate its ability to control food safety hazards in order to ensure that food is safe at the time of human consumption. The standard is applicable to all organizations, regardless of size, which are involved in any aspect of the food chain and which want to implement systems that consistently provide safe products (ISO, 2005a) [16]. National food safety standards set the standard setup in different countries to be followed by manufacturers and suppliers within the country and by foreign manufactures who supply to that country. These standards can be in the form of rules and regulations. EU and USFDA regulations are widely followed in the food industry, either because of supply chain requirements or to include these regulations to maintain its reputation.

1.1.2 Private and proprietary food safety management system standards

Private FSMS standards are the standards designed and owned by non-governmental entities, such as food industry stake holder groups (Manning *et al*., 2006) [24], individual retailers or retailing groups and industry associations. The major Private Standards followed in the food industry are British Retail Consortium (BRC) Food, FSSC 22000, IFS Food, Dutch HACCP and other proprietary retailer standards. The BRC Global Standard for Food Safety was originally developed and published in 1998 by BRC, a stakeholder group of British Retailers (Herzfeld *et al*., 2011) [12]. The Foundation for Food Safety Certification (FSSC), founded in 2004, developed FSSC 22000, which includes requirements of ISO 22000, ISO 22002-1 and other additional requirements (FSSC, 2014) [6]. IFS food standard is also a quality and food safety standard for retailer branded food products, which was developed by the collaboration of three retail federations from Germany, France and Italy (IFS, 2014). SCV, the Foundation for the Certification for the Food Safety Systems was founded in 2004 by the National Board of Experts HACCP – The Netherlands and the associated Certification Bodies (SCV, 2014) [30]. BRC Food, IFS Food and FSSC 22000 schemes are recognized and benchmarked by the Global Food Safety Initiative (GFSI), GFSI is a global business-driven initiative for the continuous improvement of FSMS (GFSI, 2014) [8]. The other key private standards are the Global Red Meat Standard, published by the Danish Agriculture & Food Council, Safe Quality Food (SQF) owned and managed by the Food Marketing Institute (FMI) based in Virginia, and the PrimusGFS food safety audit scheme, owned and managed by Azzule Systems, United States. Proprietary FSMS standards are owned by individual organizations such as a retail chains and are enforced in their supply chains. For example, TESCO food manufacturing standard and McDonald's supplier quality management system specifies that FSMS be followed by its suppliers.

1.2 Multiple food safety management systems and standards

When there are variety of FSMS standards available supported by different stakeholders the involvement of those stakeholders in a business organisation directly or indirectly enforces the organization to implement the management system desired by each stakeholder (Busch, 2011) [2], as when different retailers, wholesalers, retailer associations, supplier associations and industry groups are involved. There are many different food safety standards available to food manufacturers even within a single industry segment (Powell *et al*., 2013) [28]. The BRC Global Standard for Food Safety certification is demanded by customers in the UK, and IFS Food certification is generally demanded by customers in France, Italy and Germany. Specific retailers demand management system implementation and audits based on their own proprietary standards, such as McDonald's Supplier Quality Management System, Tesco Food Manufacturing Standard, M&S Code of Practice, etc. This study uses the term 'Multiple Food Safety Management Systems' for a situation in which one organization has adopted and implemented more than one FSMS standard. MFSMS in one organization leads to a condition where an organization has to adopt various management system strategies, and this raises several conflicts within approaches to the management system. The implied ideal scenario would be one internationally accepted and benchmarked standard rather than allowing private entities to come up with their own standards and verification mechanisms. The GATT SPS agreement calls on countries to 'further the use of harmonized measures….on the basis of international standards, guidelines and recommendations developed by the relevant international organization, including the Codex Alimentarius Commission'. Harmonization in this context is defined as 'the establishment, recognition and application of common sanitary and phytosanitary measures by different countries' (Motarjemi *et al*., 2001; Valdimarsson & Comier, 2004) [27, 36].

In short, with this case study, we are going to analyse the motivations for the adoption of MFSMS and its consequences in the management system and the organization.

2. Materials and Methods

2.1 Case study

A seafood factory located in the Maldives was selected for this case study. The Maldives is a South Asian country in the Indian Ocean, lying between latitudes 1ºS and 8ºN and longitudes 72º and 74ºE. There were13 seafood plants in the Maldives in the year 2015 which were approved for export to the European Union. The case study involved on-site data collection using both quantitative and qualitative methods (Hartley, 1997) [39]. The study was carried out from October 2015 to March 2016. The seafood factory selected for the study produced retail products such as canned tuna, tuna in retort pouches, cooked tuna loins, chilled fish loins, frozen fish loins and fish steaks exported to Switzerland, the United Kingdom, Germany, The Netherlands, Sri Lanka, Thailand,

China and France. The company was established in 2003 and the factory started its operation in 2007. There were 550 employees and the production capacity was 150 tonnes of raw tuna per shift of 8 hours. The top management was found to be highly committed to implementing measures for maintaining standards for food quality, food safety, the environment, and health and safety management systems within the organization. Management system standards such as ISO 9001:2008 (Quality Management Systems), ISO 14001:2004 (Environmental Management System), ISO 22000:2005 (FSMS) and BRC Global Standard for Food Safety were being implemented and certified by external certification bodies. IFS food was implemented in 2015 and waiting for the certification process. Furthermore, the organization was implementing FSMSs based on the proprietary standards of three retailers.

2.2 Data collection

The data collection was done through direct interviews with top management and senior managers in production, quality, food safety, engineering, purchase, sales, marketing, administration and human resource departments. A questionnaire was used to collect the information and FSMS related documents and records maintained by all the departments in the factory were reviewed. 12 visits were carried out to factory to verify the implementation, maintenance and constraints of different but similar FSMSs in day to day activities of the factory.

2.2.1 Questionnaire design

A questionnaire with 3 sections was developed specifically for this study. Section 1 included 10 questions related to the food business (the legal status of the plant, production capacity, product diversity, educational level of managers and management systems standards). Section 2 included fifteen questions regarding the motivation for the implementation of MFSMS. Section 3 included 10 questions on the consequences of implementing and maintaining MFSMS. All the questions were prepared in such a way as to support flexible discussion with top management and senior managers of the company.

3. Results

3.1 Food safety management systems implemented by the organization

Certain unique characteristics of the organization were identified in the study and are presented in the table 1. Table 2 details the quality, food safety, environmental, ethical and health and safety management systems adopted by the organization. The organization has defined the scope of FSMSs as the "processing and marketing of canned tuna, tuna pouch, cooked & frozen tuna loins, chilled & vacuum packed tuna loins and frozen tuna loins". The FSMSs implemented in the company were ISO 22000:2005, BRC Global Standards for Food Safety, HACCP based on CODEX requirements, IFS Food and three retailers' standards. Copies of these standards were retained by the company. The company followed a step by step process in the adoption and implementation of any FSMS and these are listed in Table 3. Figure 1 shows the complex nature of FSMSs adopted by the organization.

Table 1: Unique characteristics of the organization

1	All the raw materials (except raw tuna) and packing materials were imported from neighbouring countries
2	Total of 550 employees of 9 different nationalities
3	More than 200 fish suppliers (direct fishermen)
4	Very detailed hazard analysis containing 7 product categories
5	Well-equipped laboratory for biochemical, microbiological and physical evaluation of products
6	Separate facility for research and development activities
7	More than 50 % of the employees are residing in the factory compound
8	Diversity of products (such as canned tuna, retort pouch, cooked loins, chilled loins, raw frozen loins, fish meal and dried fish)

Table 2: Management Systems implemented by the organization

S. No.	Management Systems	Standards	The year of adoption of standard
1	Food Safety Management Systems	HACCP based on CODEX requirements	2007
		BRC Global Standards for Food Safety	2008
		ISO 22000:2005	2011
		Retailer's code of practice	2011
		Retailer's Food Manufacturing Standard	2011
		IFS Food (System implemented, but not yet certified)	2015
		Retailer's Code of Practice	2016
2	Quality Management Systems	ISO 9001:2015	2006
3	Environmental Management Systems	ISO 1400:2015	2007
4	Ethical & Health Safety Management Systems	SEDEX Member Ethical Trade Audit Requirements	2008
		Business Social Compliance initiative – Waiting for audit process	2016
5	Traceability Standards	Dolphin Safe	2007
		MSC Chain of Custody	2010
		Halal	2013
		Organic	2015
		Fair Trade	2016
6	Feed Safety Management System	GMP Plus	2015

7	Food Safety Regulations followed	Maldives Food and Drug Authority (MFDA) Regulations	2006
		EU Regulations	2007
		USFDA Regulations	2015
		South African Regulations	2015
		Chinese regulation	2015
		United Arab Emirates (UAE) regulations	2015

***Source*:** Primary surveys complied

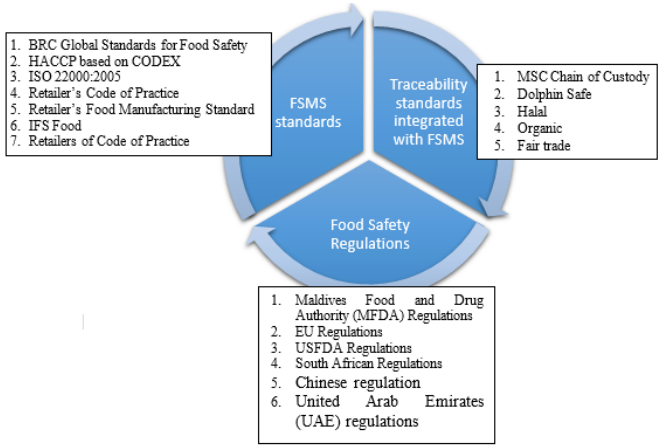

Fig 1: Complex nature of FSMSs adopted by the organization

Table 3: Steps in the implementation of any FSMS

Step 1 - Decision making and top management commitment
Step 2 - Gap assessment against new standard to be implemented
Step 3 - Resource allocation
Step 4 - Time bound action plan and completion of actions
Step 5 - Development of documents and records
Step 6 - Training of personnel
Step 7 - Internal audit
Step 8 - Management review
Step 9 - Conformity audit

Fig 2: Documentation hierarchy in FSMS

The structure of FSMS documentation is depicted in Figure 2. The documentation and recording system was found to be too detailed and complex to support all the FSMSs. There were three different manuals separately prepared for quality, food safety and environmental management systems. The food safety manual was the apex document for FSMSs, in which conformance with all the requirements of FSMS standards to be followed by the company was explained. The FSMS plan was the document at the second level, which detailed hazard analysis, the CCP (critical control points) plan, the OPRP (Operations pre-requisites) plan, control measures for hazards and PRPs (Pre-requisite programmes) for products such as canned tuna, tuna pouches, cooked & frozen tuna loins, chilled vacuum packed loins, whole frozen tuna and frozen tuna loins. There were 91 standard operating procedures, including mandatory system procedures required by various FSMS standards, descriptions of pre-requisite programmes and other procedures identified by the organization depending on the risk and significance of related processes. The work instructions gave guidelines for specific activities, such as the sanitation of processing equipment, precooking instructions and the operation of retorts. There was no clear segregation between SOPs and work instructions, though some are named as work instructions. Forms and records were at a lower level of system documentation, providing evidence for the performance of daily operations concerned with food safety and quality. 120 records were identified as part of FSMS documentation in various departments.

3.2 Motivations for the implementation of multiple food safety management systems

As listed in table 2, there were 7 different FSMS standards followed by the company. The organization was able to explain in detail the motivations for the implementation of each standard. The HACCP system for whole frozen tuna product was implemented in 2004, according to its own interest for organization as a measure to improve quality and food safety of the product which had been exported as raw material for canned tuna. The production of canned tuna, tuna pouches, cooked and frozen loins, chilled vacuum packed loins and frozen loins was started in 2007 and supplied to the domestic market. The HACCP system based on requirements of CODEX Alimentarius was implemented for all the products in 2007. As the main objective of the organization was to export to the European market, there was a need to get food safety and quality approval for the factory from the competent authority of the country approved by the European Union. For this reason, the organization upgraded the HACCP system in 2007 based on European Union requirements applicable to the seafood industry, which was followed by the approval of the factory by the competent authority, the Maldives Food and Drug Authority.

The necessary business assurance for potential customers in the United Kingdom was obtained subject to the implementation of the BRC Global Standard for Food Safety. This resulted in the implementation and certification of the

BRC Food standard in 2007. This was a requirement mandated by the sales agent to obtain the certification for BRC Food to supply selected British retailers. The organization received financial support from UNIDO (United Nations Industrial Development Organization) through the Government of Maldives in 2009, to implement FSMS based on ISO 22000:2005. Implementation of ISO 22000 began in 2010 and was completed in 2011 with certification from an external party. The organization decided to maintain the ISO 22000:2005 considering the requirements of different customers and it added an advantage in the international market as a brand image. Not all the customers from different markets were completely familiar with the BRC Food standard, so maintaining the ISO 22000 certification was to retain existing customers and to attract new ones.

FSMS is based on a proprietary standard; a retailer's code of practice was implemented in the year 2011 as a result of a business opportunity presented by a UK retail chain. The organization had to introduce many changes into the infrastructure and operational procedures to meet the specific requirements of the retailer, even though the organization was maintaining an 'A' grade in the BRC Food Certification, which is a GFSI (Global Food Safety Initiative) benchmarked standard. In the same year another business opportunity was identified with another supermarket chain in the UK and all the requirements of that retailer's food manufacturing standard was incorporated into the FSMS. The FSMS was upgraded to incorporate the requirements of IFS Food in 2015 as required by a potential customer in Belgium and commercial pressure from its sales representative. However it was found that the certification for IFS food was planned for 2016. FSMS was further upgraded in 2016 incorporating the requirements of third retailer's Code of Practice, following a new opportunity identified with a retail chain in UK and commercial pressure from its sales agent.

Key national food regulations followed by the company were the applicable quality and food safety regulation for seafood and canned products mandated by the European Union, USFDA, South Africa, China, UAE and the Maldives. The company was following all these regulations to ensure access to the markets mentioned above.

3.3 Consequences of Multiple Food Safety Management Systems

Results have shown that all the FSMS standards including retailer standards have similar consequences for the FSMS of the organization. One of the main consequences faced by the organisation identified in this study after implementing MFSMS was the complex nature of documents and records. The food safety manual, food safety plan, 91 different procedures and 120 records spread over various departments, all together created a major challenge for systematic updating, maintenance and integration. When considering the volume of work required, the organization had to create a specific department to handle management systems and its implementation and maintenance.

The duplication of documents and records was yet another consequence of implementing MFSMS. The organization had developed various documents such as process charts, an HACCP plan and process risk assessment sheets, where very similar requirements were addressed many times. The implementation of various FSMSs at different periods resulted in the repetition of documents and records. Different documents and records were developed to correct procedures identified as not conformant in second and third party audits. In such cases, a proper integration of documents and records was not done, for many procedures had to be reworked to make minor changes in a short period. The integration of the documentation system was found to be a major challenge to the organisation, and it would require additional resources, time and effort.

The third important consequence was that the organization had to conduct multiple internal audits to satisfy the requirements of different food safety standards. Integration of internal audits also diverted the focus from specific process areas, as more time was needed in each department or process to ensure compliance with all the standard requirements. Certain departments had to spend three or four days to complete one round of an internal audit. Similarly, conducting management reviews covering all the requirements of various standards was a time consuming process. According to the organization, there were many situations where certain processes and procedural requirements would meet the requirement of one FSMS standard, but would not be accepted by another standard. This was found even within GFSI benchmarked standards, which raised a conflicting situation between the FSMS standards during the implementation phase. The organization spent between 15 and18 man-days for food safety audits every year, apart from other regular quality, ethical and environmental audits. Since there were no third party certification bodies in Maldives the company had to use foreign certification bodies, which increased the cost. It was difficult to account for the exact cost of implementing and maintaining different management systems. It was a difficult task to segregate and calculate the exact time and effort utilized for the implementation and maintenance of FSMSs. Costs related to infrastructural changes can be accounted for up to certain level, but it was still difficult as various improvements and modifications were done at different periods and were based on different audit findings.

4. Discussion

Though there are many studies on motivations, costs and benefits and barriers to the implementation of FSMSs, the overall objective of those studies is to promote the implementation of FSMSs to improve quality and food safety of the products being produced. This case study is different and superior to those studies in that this study considers all the standards together in one organization as MFSMS standards in order to identify the motivations for their adoption, when there was already single standard being implemented. This study also identifies the consequences of MFSMS to the FSMS of the organization. This case study has revealed that there are different motivational factors for the adoption of MFSMS and there are many consequences when one FSMS is dependent on a variety of standards. The key motivational factors can be summarised as a management commitment to improve quality and food safety, to satisfy regulatory requirements, those of the regional markets and of particular customers and retailers, to secure external funding, and to acquire a marketing

advantage and a brand image, and to satisfy commercial pressure. The selected organization for the study, adopted and upgraded the FSMSs over a period of 12 years on the basis of seven FSMS standards. The first system, the HACCP based on the Codex requirements was adopted because the organization desired to improve quality and conform to FSMS requirements. ISO 22000:2005 was adopted as a consequence of obtaining external funding. All the other five standards were implemented as a consequence of external pressure on the organization, such as commercial pressure, market or regional requirements, customer requirements and regulatory requirements. In these circumstances, the organization was not willing to implement any additional FSMS into its own management plan. External factors forced the organization to implement the MFSMS. Commercial pressure forced the organization to implement additional FSMSs to obtain further business opportunities. In fact, the organisation may not have received any tangible benefits by adding this number of systems and standards instead of improving the effectiveness of an internationally accepted standard already implemented. The pressure may have come from an external marketing team or dealer, and the organization accepted the potential business opportunity and made plans to achieve the target. If the specified certification was the only pending requirement, the organization had to implement the same without looking into its advantages and disadvantages. The organization adopted the requirements of IFS Food because of pressure from a dealer. The root cause is the point that the end customer, one of the largest retailers in Europe, imposed the very specific condition of buying products only from factories already certified for IFS Food. Similarly, implementing the Code of Practice of one retailer was a mandatory requirement to get approval as its supplier to that particular retail chain. It was not enough to have ISO 2000:2005 and BRC Food A grade certification for approval, so the firm had to adopt and implement the Codes of Practice of two separate retailers. BRC Food certification was a requirement for supplying many UK retailers and gave added advantage to become included in the list of suppliers for many other retailers. The organization retained ISO 22000 to give it a better brand image, to retain existing customers and to use as a marketing tool to attract new customers. Similarly, standards adopted because of external pressure would help the organization gain a better brand image and could be used as a marketing tool.

A number of motivational factors for the implementation of a single FSMS and HACCP system have been reported by various authors. Some of these motivational factors such as opportunity for market access, regulatory requirements (Jayasinghe-Mudalige & Henson, 2007) [11], customer requirements, commercial pressure (Henson & Holt, 2000, Jayasinghe-Mudalige & Henson, 2007; Teixeira & Sampaio, 2013) [10, 11, 19], improvements in internal efficiency (Holleran *et al*., 1999; Henson & Holt, 2000; Fouayzi *et al*., 2006; Jayasinghe-Mudalige & Henson, 2007) [10, 11, 19, 15] and effect of official control bodies (Caswell & Hooker, 1996; Luning *et al*., 2008) [3, 25] are found to be also similar to the case of multiple FSMSs.

There were many consequences for the organization in implementing MFSMS. The important consequences identified were duplication of the management system for documents and records, complexity of documents and records, need of additional resources, development of new departments to implement and maintain management systems, inability to focus on the implemented standards, ineffective internal audits and management reviews, additional time needed for management system activities, more man-days allocated for external audits and increased cost of certification process. Duplication of management system documents and records was a key consequence observed during this study. There were three different management system manuals and 91 different procedures. Documents and records needed to be amended when a change in the relevant organization structure or system activities was required. There were three separate manuals, which raised concerns that many revisions were not recorded across all the documents and corresponding records. This complex nature of documents and records had evolved over a period of 12 years when different management system standards were being adopted at different times. Integrating all documents and records into one system was seen as an immensely difficult task by the organization. The complex nature of the systems forced the organization to create a separate department to manage and implement all the management system activities effectively. However, the complexity of systems continued to persist. The internal audit and management review process, the core activities in verification and improvement of FSMSs were found less effective as the organization found difficulty in satisfying the requirements of all standards in the internal audits and management reviews. Conducting an internal audit required a longer time, as much as 2 or 3 days to complete one department. Spending 2 or 3 days in every department was a difficult requirement for a fully operational company. There were more than 30 agendas for the management review process covering all the standards. This caused a management review to last more than a day, which again reduced the efficiency of the operation. The additional cost, time and effort were the other consequences of MFSMS. Infrastructural requirements to satisfy one standard did not satisfy another. For example, the organization has made many infrastructural modifications in the last 7 years to meet the requirements of BRC food standard. But the Codes of Practice of retailers mandated further infrastructural modifications which incurred extra cost.

5. Conclusions and implications

In this study 'Multiple Food Safety Management Systems' describes the situation in which an organization has adopted and implemented more than one FSMS standard. The organization in this case study adopted 7 FSMSs standards, such as HACCP based on CODEX requirements, ISO 22000, two retailers' Codes of Practice, one retailer's Food Manufacturing Standard, BRC Global Standard for Food Safety and IFS Food. The important motivational factors for the adoption of MFSMS are a management commitment to improve quality and food safety, to adhere to regulatory requirement, requirement of the market, customer requirement, to obtain external funding, to use as a tool for marketing and brand image, to satisfy the requirement of retailers, regional requirement and commercial pressure. The important consequences identified are a duplication in

management systems of documents and records, a complexity of documents and records, a need for additional resources, a development of new departments to implement and maintain management systems, an inability to focus on the implemented standards, making ineffective internal audits and management reviews, allowing additional time for management system activities, allocating more man-days for external audits and facing the increased cost of certification.

The findings of the study highlights some important issues with implications for the policies of food processors, those who develop standards, bench marking bodies and customers insisting on special stipulations. Though there are many studies on motivations, costs and benefits and barriers to the implementation of FSMSs, the overall objective of those studies is to promote the implementation of FSMSs to improve quality and food safety of the products involved. The results of this study demands a review of the process of developing food safety standards. An international standard should be formulated in such a way that it can be followed by any food industry and acceptable to all customers and markets. If a developed standard is comprehensive enough to satisfy all the stakeholders in food supply chain, there should be no need adopt MFSMS. Similarly, the findings of the study raise concerns on the effectiveness of the benchmarking process, the credibility of the benchmarked standards and the adequacy of communicating benchmarking activities to the food industry.

The results show that additional time was needed for management system activities, more man-days were allocated for external audits and an increased cost arose for the certification process as a consequences of MFSMS. One of the objectives of the GFSI is to reduce costs within the system by reducing the number of different audits required of a firm by their different customers; but on the contrary, this study shows that the objective of the GFSI is not being met in the organization sampled. This study has identified that the organised customers in the key markets pressurise processors to adopt standards for their own interest or dominant in their particular region, without considering if the processor has already adopted a benchmarked standard.

Another issue is that major retailers develop their own standards and force them on suppliers even if the organization has already adopted benchmarked standards. This undermines the effectiveness of implemented standards. Such proprietary standards developers need to consider when an FSMS in a processing firm becomes ineffective, when they find that a variety of standards including individual particular standards is being demanded. Processing firms also need to reconsider the policy of adopting FSMS in terms of the number and type of standards to be adopted and more effectively communicating the standards they implement to their stakeholders and to their customers. The effectiveness of an implemented standard is of concern to the processors when the consequences such as complex documentation, an inability to focus on the implemented standards and ineffective internal audits and management reviews weaken the purpose of FSMS. This study gives an opportunity for the management to understand the exact reasons for the adoption of various management system standards within their organization and to organize their approach to adopting and implementing them accordingly. This study also helps to identify non-beneficial motivation when adopting standards and segregating demands which are unrealistic. The consequences identified give a clear picture on how an organization is struggling to cope up with the requirements of customers in terms of FSMSs. Organizations can take proactive actions to mitigate the consequences identified in this case study so as to achieve the ideal scenario in which an organization adopts an FSMS based on one internationally accepted standard. Standard developers and benchmarking bodies also need to review the effectiveness of their processes in terms of the comprehensiveness of the standards they develop, and of satisfying stakeholders' requirements and an effective communication about benchmarked standards in the industry.

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