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Identifying Constraints, Mechanisms, and Resources in Harmonized International Food Safety System between the Asia Pacific Region and U.S

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Abstract

Globalization and free trade have opened up world food market among countries at different stages of development. A harmonized international food safety system is very important for countries to build capacity and address food safety problems from a global perspective. This paper has developed a fundamental understanding of the key constraints to a harmonized food system, the mechanisms used to solve food safety problems, and the resources available based on Asia Pacific region and U.S comparison from such views as food safety culture and demographics, food safety research, food safety system and international trade, food safety outreach, education and training. A roadmap is proposed to develop and institute harmonized international food safety mechanism among developed and developing countries. Findings from this paper will assist in developing public policy; identify quality control issues, developing training needs and program implementation for government, firms and consumers.
Key words: harmonized international food safety system; food safety mechanism; Economic globalization

1. Introduction

With continuously expanding food industry system, food recalls and the discovery of emerging food borne pathogens are becoming more frequent occurrences and the question of food safety comes to the forefront of foreign trade and public health. There are emerging food safety concerns such as genetically engineered food products from biotechnology, animal feed, pesticide residue, Mad Cow Disease, Avian flu and bioterrorism. Food safety issues create an enormous social and economic burden on countries and health systems. The World Health Organization (WHO) concluded that: illness due to contamination food is perhaps the most widespread health problem in the contemporary world and an important cause of reduced economic productivity. Agriculture Organization of the United Nations (FAO) defines food security as “a state of affairs when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (Imai, 2004).A food system is defined as an array of activities, interrelated components, working together towards producing and distributing food (Staatz, 2000). Today food production, distribution and transportation have become international in scope and more complex. As a result, harmonizing international foods standards and regulations makes possible a synchronization of systems which are free to interact and operate together. Many countries around the world are facing difficulty in meeting international food safety, quality standards and fair practices in the food trade. There is a need for regions to develop the capacity to address food safety issues in the local and international community. This has created a growing need for regulators and food

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safety experts from all areas of the world to cooperate in developing food standards and harmonization of food laws. When both developed and developing countries work together, each benefit from a shared knowledge base to develop safe, effective food control systems.

The United States and the nations of the Asia Pacific region are important trading partners in agricultural products. The goal of this paper is to identify a list of the key constraints to a harmonized food safety system, mechanisms used to solve food safety issues and resources available in the Asia Pacific region and the United States. This study seeks to enable interaction among key international policy makers, regulators, consumers, scientists, university professors and other food safety experts.

2. Harmonizing food safety systems: concept from global sight

A network of international standard-setting organizations has been formed to provide an immensely important source of help to deal with harmonizing food safety systems. International organizations such as the United Nations and the World Trade Organization (WTO), governments, industries and businesses have established fair market-oriented trading protocols in which safe food products are expected (WTO, 2002). Food safety systems are made up of individual parts that include science-based research, culture, international trade agreement, food laws and industry standards. These parts operate together as a mechanism to hold together food safety frameworks. Any constraint to this system such as resources, technical skill, government support, food laws, may hinder food safety and restrict trade.

The United Nations Food and Agricultural Organization (FAO) and World Health Organization (WHO) through the Codex Alimentarius Commission have developed an international approach to safe food. There is a coordinated effort to attain harmonized food safety standards for international trade regulations by using science-based standards for food production, processing, and transport. For international food safety systems to work fairly, it is necessary to have a consistent use and application of science-based principles, accessible to anyone (Starr, 2003). Further, there is a need to build an interchange of biological risk assessment data and to develop an international surveillance system for food borne illness. Multilateral coordination and harmonization within food inspection systems and standard setting bodies transcend national boundaries and facilitate trade (Unnevehr, 2003).

Cultural information from different parts of the world related to food hazards, local customs and agricultural practices is needed to establish international food safety standards. The framework of the Codex Alimentarius Commission takes into account all available data throughout the food chain, including the food related traditions and practices of developed and developing countries (Traill et al, 2002). The functions of international food laws are to protect the public health, inform consumers, assure fair trade practices and protect the environment (Hegarty, 2003). Countries need to understand international food laws and regulations so they may meet the legal requirements and expand economically. Many developing countries are currently in the process of modifying or implementing food safety guidelines and regulations to meet international and industry requirements. In order for developing countries to remain competitive in the global market place they need to establish and implement food safety laws and regulations. However, limited resources are causing governments to weigh decisions that financial costs to impose food regulations and have access to the foreign market. In addition to international trade agreements, industry is increasing food standard beyond international regulations. Multinational food producers and supermarket chains have implemented private standard and quality assurance programs aimed to improve food supply and customer base, whether domestic or foreign.

3. Food safety in the United States: mechanisms, constraints and resources

The United States is a melting pot of people who bring a variety of food and culture with them. Newly migrated families have continuously added diversity to America's favorite food choices. The U.S spends a tremendous amount of resources on food safety, food processing, new technology, and protecting food supplies (Gerald & Perkin, 2003).

(1).Science-based food safety research

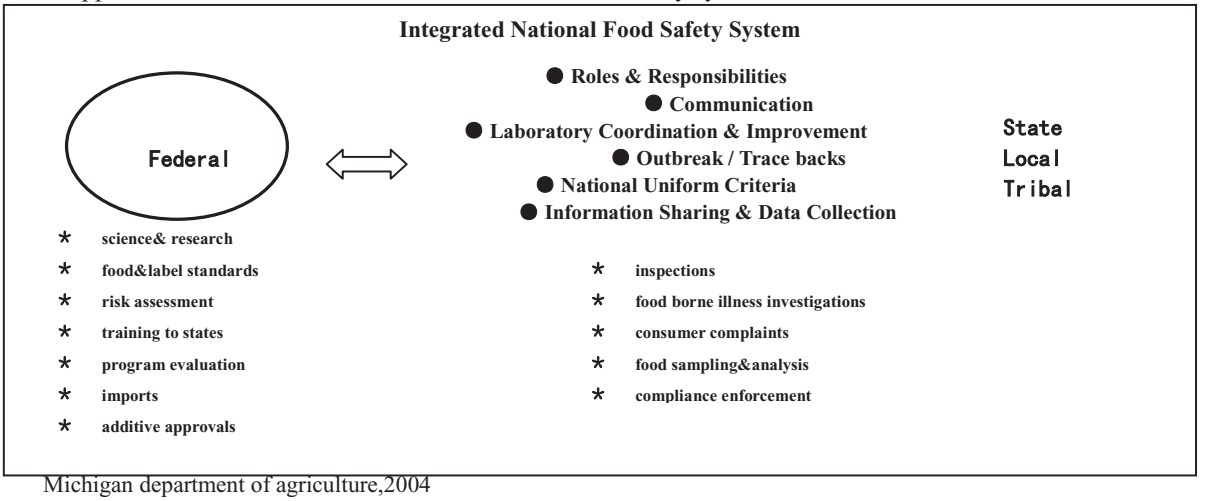
Risk analysis weighs relevant risk factors, using science-based practices. For international food safety systems to work fairly, it is necessary to have consistent application, using science-based principles and transparency of the results. Hazards and conditions that contaminate food are classified as: chemical (cleaning agents, toxins, allergens),

biological (bacteria, viruses, parasites), and physical (bone, glass, metal) (Fox & Hackney, 2003). Because not all food hazards can be completely removed from food, scientific research (risk assessment) establishes maximum limits (ML) and regulating agencies (risk managers) monitor the industry (Byrd& Cothern, 2002).

(2). U.S food safety systems and international trade

In the U.S, more than 12 federal agencies are given resources and legislative authority to ensure safe food. Armed with over 100 years of food laws this integrated mechanism of national food safety systems in the U.S include agencies such as the Food and Drug Administration (FDA), the United States Department of Agriculture(USDA) and the Environmental Protection Agency (EPA). Figure 1 shows the arrangement of connected parts. While national polices are rapidly changing to meet the demands of science, there is still a lack of available means for many countries to meet food safety standards within US acceptable levels of risks (Burfisher&Zahniser, 2003).

A separate agreement on basic rules for food safety and animal and plant health standard is called the Sanitary and Phytosanitary Measures Agreement (SPS) in WTO. An important aspect of the SPS agreement is the right of all WTO member countries to establish their own sanitary measures for the protection of health and life of their human, animal and plant populations. International trade and food standard setting may constrict trade because food regulations differ among countries (Sen, 2004； Yuen, 2004). Food safety outbreaks and the presence of contamination or adulterated food affect people everywhere. Because of these serious economic consequences, the US supports the idea of an international harmonized food safety system.



Michigan department of agriculture,2004

(2) Industry, HACCP, and Private Grades

Hazard Analysis and Critical Control Points (HACCP) is a preventative science-based system developed by industry to assure safe food production. Its purpose is to prevent, reduce or minimize risks associated with foods and provide a legal framework to produce food safely. The HACCP system is an example of regulators and industry working together to reduce food borne illness by applying science-based measures (Hulebak & Schlosser, 2002). In the US, regulations state that juice, meat and poultry, and seafood industries are required to follow HACCP principles. HACCP principles are recognized world-wide for preventing food safety problems. In practice, this system identifies all possible hazardous or contamination points and then applies appropriate controls. To be an effective mechanism for safe food, industry must provide detailed documentation to identify the corrective actions, original source of product, and verify that the controls are working. With improved surveillance activities, all foreign and domestic food facilities require a mechanism for traceability, prior notification of imported food shipments and extensive record keeping to trace back original source of food (Meadows, 2004).

(3) Food safety outreach, education and training in the United States

In the US, public health campaign by the regulatory agencies (FDA, USDA, EPA, etc.) encourages proper food handling, sanitation and storage and other related food safety messages. By law, federal agencies that regulate food are responsible for communication strategies that are effective in reducing food borne risks. The regulations made by these agencies have a tremendous impact on an individual's health, industries and economy. As a result, the US seeks to include the public's help in the rule-making process.

There are several US food safety linkages, various institutions and food safety experts that develop training, education programs and outreach activates. Communicating food safety messages are designed to heighten public

awareness and motivate people to take action. To be the most effective, food safety messages must consider culture-specific concepts when communicating their message. More research is needed to identify what is important within cultural groups and their understanding of food safety messages and to create action strategies that empower individuals to reduce food borne risks.

4. Food safety in the Asia Pacific: mechanisms, constraints and resources

The Asia Pacific region includes almost half the people of the world, and over 10 percent in the middle-to-upper-income group. The per capita income and living standards of this region ranges from amongst the highest in the world, to some of the lowest. As a result of its growing population and rising upper-income consumers, food safety issues are a growing concern (Coyle et al, 2004). Eating pattern have changed in the Asia Pacific region with less focus on traditional foodstuffs and more on processed goods. By establishing quality agricultural practices and increased yearly production economical development in this region is possible.

(1). Science-based food safety research

Food safety risks in the Asia Pacific region vary from the US due to differences in technology, access to refrigeration, food production practices, cultural differences, and climatic differences. International cooperation is necessary to share risk analysis, microbial data and other food related information during disease outbreaks. More research is needed in this region to help identify food safety issues and specific value systems and cultural practices. Surveillance information and data collection is necessary to identify the food safety needs and to set priority in this complex setting. Without systematic food borne surveillance activities, including epidemiological studies, it is difficult to improve the safety of the food supply and reduce food borne diseases. The World Health Organization (WHO) has been working to provide support and resources for the improvement of food safety in this region. As a result there is a published report listing this region's key constraints to improved food safety systems. (Figure 2)

World Health Organization's list of Key Constraints to Safe Food in the Asia Pacific Region

- Lack of laws that address food safety
- Lack of one authority with responsibility to food safety
- Lack of technical expertise to articulate written policy on food safety
- Lack of government and consumer awareness to national food safety problems
- Lack of food control systems such as inspection methods and Hazard Analysis Critical Control Point (HACCP) plans
- Lack of consumer education
- Lack of resources, e.g., trained experts, laboratories, sufficient data related to food borne diseases, trends, microbiological, etc

(2) Asia Pacific Safety System and International Trade

For the most part the Asia Pacific region's food systems, controls and polices are not yet fully developed and are unable to address rapidly expanding markets, technologies, and emerging pathogens. Developed and developing countries are not at the same economic and technical level. When WHO identified key constraints of the Asia Pacific in achieving a safe food supply they stated that "above all, there is a tremendous need for food safety laws and regulations to build a solid framework in this region. Generally this region has under-staffed food inspection units and under-resourced food safety laboratory facilities and limited food regulation or integration of HACCP systems. The region has shown advances overall, however, governments still lack an understanding of what competitiveness means and how food safety fits in the development process.

(3) Industry, HACCP, and private grades

For some countries of the region, WTO agreements such as the Sanitary and Phytosanitary (SPS) measures and intellectual property protection measures do not adequately reflect their interests. (Sen., 2004). There are complaints that specifications include only developed countries' practices and not ethnic foods and cultural practice in developing countries. Yet, private sector links between developing country suppliers and buyers are increasingly the driving force in quality standards. ASEAN initiative is aimed at establishing linkages with American businesses, and to help countries in the region meet US food safety and other private standards (Zoellich, 2004). International, regional and national resources are being poured into this area to address food safety and agricultural trade and develop competitive market place standards.

(4) Food safety training and education in Asia Pacific Region

For Asia Pacific region to benefit from global markets in food and to represent their interest in international organizations, they must build capacity in science-based food safety systems (Zoellick, 2004). The Codex

Alimentarius Commission has made available funds to strengthen food safety capacity building efforts. By providing financial assistance, Codex envisions a structured, efficient, regional food safety systems that in able to meet international standards. These steps in training and education are aimed at increasing input from consumers in developing countries and to remove constraints to traditional production methods.

The Asia Pacific region and the United States share many interests in food safety. By working together through multilateral trade agreements such as the Asia Pacific Economic Cooperation (APEC), harmonized food safety systems, policy development, risk analysis and program implementation are possible (APEC, 2003). This type of collaborative education and training effort is currently shaping the development of a global food borne disease surveillance network, Global Salm-Surv. Because developing countries have faced problems in exporting food products and have difficulty meeting the standards of importing countries, the World Bank supports education and training initiatives.

(5) Agricultural biotechnology technology exemplifies the need to harmonize

There has been extensive media reporting about the potential risks of biotechnology and genetically modified food (GMs). Some public opinion expresses fear of future health hazards claiming a lack of scientific evidence. Most frequently, this new technology has become an integral part of multilateral trade disputes. Applications of agricultural biotechnology in the US have been very successful. The US experience offers other countries an alternative to solving some of their agricultural problems. International regulatory problems, food safety/biosafety concerns, have slowed down cultivation of genetically modified foods, affected consumer acceptance and limited government approval. At this point developing countries are challenged to build regulatory capacity and public awareness that is essential to GM approval (Quemada&Frederick,2003). Many countries are moving forward and participating in international discussions to harmonize technology and promote science-based food safety/biosafety protocols. The US government has a policy to aid developing countries with agricultural biotechnology as a part of the solution to feed expanding population. Most of the Asia Pacific region supports agricultural biotechnology products and has begun to build capacity in biosafety and food safety. For example, in the Peoples Republic of China, approximately 50 genetically modified plant varieties have been approved for environmental release, or small-scale field testing.

5. Harmonizing international food safety: implication from the Asia Pacific Region and U.S

More and more food products are being exchanged across borders without food safety systems in place. Countries are at different stages of developing food safety systems for the Asia Pacific region and United States. Without the benefit of a harmonized food safety system between these countries safe food supplier are in question. We need to identify and list key constraints to a harmonized food safety system, the mechanisms used to solve food safety problems, and resources available in the Asia Pacific region and the United States.

Published literature addresses constraints to harmonized food safety systems on a global scale. The key constrains include: inadequate knowledge of food safety in developing countries; difficulty in understanding and complying with international food safety standards; differences in culture, including food habits, agricultural practices; political and economic concerns before public health; difference in type of business-mechanized vs. small operations; the US has a highly sophisticated infrastructure, therefore, difficult for many countries in the Asia Pacific region to meet US requirements.

Developing and instituting mechanisms required to solve food safety problems in both developed and developing countries include: 1.risk analysis training is needed to ensure a systematic approach to science-based decision making, 2. review and adjust inspection systems, based on science, using methods that are consistent to the international community; 3. involve stakeholder participation, include building partnerships; 4.validated risk communication research is needed; 5. utilize relevant expertise from universities, professional groups, trade groups, and food safety writers when developing food safety systems; 6. when developing food safety policy, risk assessments are followed by risk management actions, and 7.there is a need to educate all stakeholders in a clear and consistent manner.

There is an increasing appreciation of the importance of involving interested parties in the decision making process. More opportunities for participation and more research to understand how to obtain good stakeholder participation should be introduced.

In addition, 3 major categories resources were identified to address food safety in the Asia Pacific region and the United States. 1. Electronic: websites, food safety forums, publications, committee reports, research reports,

newspapers, and magazines. 2. Government and regulatory: national legislation and standards, inspection reports, Codex standard, government publications. 3. Training: materials, workshops, experiences, consultants, NGOs, consultants, universities, international organizations training materials, and hands-on experience. Of all the identified resources, training / workshops as being the most important resource to address food safety. Training is able to link food safety experts with those individuals and countries as a means of addressing constraints and establishing mechanisms for solving food safety problems in both the Asia Pacific region and the United States.

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