

Development and Constraints of Food Industries in Indonesia

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Abstract

Despite the successful achievement of national development in the last 30 years (until July 1997), the Indonesian food industries are faced with several problems and constraints, particularly in the era of globalization, as follows: low efficiency and competitiveness of national food products, low expertise of human resources involved in the food industries, insufficient research and development activities in supporting technology innovation and transfer, and lack of infrastructure and institutional development relevant to the food industries.

For future development, the food industries must be backed up by strong commitment on the part of the government to select food industries as strategic industries. Strong backward linkages to the agricultural sector and forward linkages to meet the market and consumer demand must also support the food industries. A national program should be implemented to meet the opportunities and challenges of globalization, to promote the development of human resources, science and technology as well as the development of institutions and infrastructure.

Introduction

Food agroindustry is a subsystem in the national agricultural system, which is focused on activities relating to postharvest technologies, processing, distribution and marketing of food products. Therefore the development policies in the food agroindustry must have strong backward linkages to agricultural production systems and forward linkages with consumers.

The Indonesian government has always placed emphasis on food as one of the most important sectors in the series of 5-year development programs. The availability of food has been considered as an index or parameter of the stability and existence of the country. Such a policy has successfully converted Indonesia from a rice-importing country (1965-1978) to a self-sufficient country (1984). Food/agroindustrial sectors have significantly contributed to Indonesian export. The export value, for instance, increased from US \$ 9.72 billion in 1994 to US \$ 11.65 billion in 1996. At the time of the economic crisis like now, the policy is being concentrated mostly on the fulfillment of basic human needs.

The economic crisis in 1998 generally has placed the government and the country in a very difficult situation. Achievements made during the development programs of the last 30 years which were previously praised and led to the emergence of Indonesia as a new world market with an annual economic growth of more than 7%, are no longer present. By April 1998, Indonesian economic growth had decreased to -4% and now in August 1998 to -15%. Only agriculture shows a positive growth of 0.26%. It has been predicted that growth will further

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decline and that it will take at least 6 years to return to the 6% growth level. The impact of the economic crisis on the food industry has been significant, in terms of increase in the number of employees laid off and decrease of labor income. Fortunately, the food industry has been the least industry to lay-off labor (roughly 1%). The condition of the food industry at the time of the economic crisis in general could be reflected by the data utilization level of installed capacity as shown in Table 1.

The role of the food sector is now becoming increasingly important. Previously, Tim Peneliti (1996) reported that the food industry, –including food and beverage/drink manufacturing–, was the major contributor to the national gross domestic product in Indonesia. Food industry also provides the highest added value as compared to any other large- and medium-scale industries in Indonesia. Nonetheless, it was also found that the added value per input cost of the food industry is still low (only 0.46). The dependency on import in the Indonesian food industry is still high. On the other hand, the utilization of the potential of domestic researchers to strengthen the industry is also still limited.

The main problems for the Indonesian food industries can be classified into 3 categories, i.e. problems related to globalization, problems related to human resources development, problems related to science and technology and institutional development.

Table 1 Number of companies that operated at various levels

No.	Type of industry	Number of companies	Companies that operated at various levels			
			81~100%	51~80%	26~50%	0~25%
1	Fish canning	29	–	29	–	–
2	Tapioca flour	71	21	50	–	–
3	Cacao processing	36	–	–	36	–
4	Cashew nut	11	–	3	8	–
5	MSG	11	7	4	–	–
6	Palm oil	57	15	17	25	–
7	Coconut oil	114	11	29	74	–
8	Poultry feed	42	–	2	40	–
9	Coffee	65	–	2	40	23
10	Wheat flour	4	4	–	–	–
11	Cigarettes	82	4	50	28	–
12	Milk processing	10	4	3	2	1

Source : Directorate General of Agricultural and Forest Products Industry (1998).

Problems related to globalization

1 Competitiveness

In the GATT and WTO era, the Indonesian food industry must compete in an international free market, especially with the cooperation of multinational food industries such as Nestle, Philip Morris, etc. The product competitiveness of the Indonesian food industry is still low and

in general could be reflected by the data on product rejection from USA. Table 2 shows that products from small-scale food industries, particularly fishery and seafood products, chocolate, and cocoa products experienced the highest level of rejection.

In addition, the local food manufacturers are generally slow to respond to changing tastes and preferences of the overseas market and customers. They have also been slow to develop an international marketing network, which is essential to penetrate the world market.

Table 2 List of rejected export products USA in 1995

No.	Food commodities	Number of cases	Value (US \$)
1	Whole grains, milled products	1	1,780.00
2	Bakery products	2	2,180.00
3	Macaroni and noodle products	2	125,408.00
4	Snack food items	2	10,954.00
5	Fishery, seafood products	192	17,580,738.00
6	Fruits and fruit products	3	6,122.00
7	Nuts and edible seeds	1	2,047.00
8	Vegetables and vegetable products	8	308,996.00
9	Spices, flavors and salts	2	342,291.00
10	Coffee and tea	22	945,462.00
11	Candy W/O chocolate	2	30,308.00
12	Chocolate and cocoa products	514	86,642,747.00
13	Gelatin, rennet, pudding mixes	1	7,728.00
14	Multifood dinners	2	3,668.00
15	Soups	4	752.00
16	Miscellaneous food related items	5	9,616.00
Total		763	100,020,797.00

Source : Interdepartmental team BAPPENAS (1996).

2 Quality and safety aspects

Indonesia has just recently enacted the Food Act, known as Undang-Undang No.7, 1996 about foods. The act aimed at securing fair and responsible trade, the availability of safe and healthy foods and, to protect Indonesian society from hazardous foods and industrial malpractices. The act (3) was basically subdivided into three main topics, i.e. food safety and security, labeling and advertisement, and quality and nutrition.

Within the WTO context, it was agreed that the existence of SPSM (Sanitary and Phyto-Sanitary Measures) and TBT (Technical Barrier to Trade) should be referred to the Codex Alimentarius Commission. To meet the international trade requirements and standards, it is necessary for the Indonesian food industries to harmonize their standards, regulations and procedures. The aim is to minimize the number of rejected exported commodities. In terms of bilateral agreement between the country that is importing or exporting food products from and to Indonesia, a mutual recognition arrangement could be developed. The quality and safety

problems must be solved as soon as possible through the increase of the know-how and implementation of GMP and HACCP.

Problems related to human resources development

The condition of the food industry work force in Indonesia in general, could be reflected by the data of educational level, —which in part indicates the level of skills and knowledge—, of the Indonesian workforce. These data indirectly showed that there is a potential problem for the productivity of the food industries in Indonesia as a consequence of its workforce quality. The major problems in the Indonesian workforce range from the low educational level, the readiness of the university graduates to work in industries, low capability in personal communication, decision-making and analytical thinking, and leadership. In general, the skills and expertise profile of the workforce in the food industries in Indonesia were not impressive as shown in Table 3.

The low employment of university graduates in every group of industries also varies with the geographical location. Food industries that are located in Jakarta and its vicinity employed a larger number of graduates or food professionals. The further away the location of the industries from Jakarta, the lesser the use of university graduates. In other words, food industries in Jakarta and surrounding cities are larger, use a more sophisticated technology, are more aware of R&D and quality, etc.

Generally the Indonesian food industries have a career promotion system for their employees similar to that of other private industries, whereby promotion could be attained through work achievements that contributed directly to the company performance. There are still limited facilities and infrastructure at industries for training on human resources development. Only 7.58% of the personnel was engaged in training with focus on marketing and management, food technology, quality and safety. Twenty percent of the food industries allocate a budget for training (Rupiah 1 million to 1.5 billion per year). Furthermore food industries are mostly familiar with trading and are managed by traders. As traders are not familiar with industrial methods, it is necessary to change the behavior and attitude and to increase the awareness of time, competitiveness, environment and financial aspects.

Problems related to science and technology

In future, the problems related to science and technology development will be more important to meet the increasing demand of the consumers and higher standards and safety of global market. Since there has been rapid progress in food science, nutrition, health, biotechnology and agriculture, all the conflicts in international trade will be solved based on sound scientific facts.

1 Limited research activities on food safety and risk analysis

Fardiaz (1996) identified four main problems relating to food safety in Indonesia, (1) selling products that do not fulfill health prerequisites, (2) food-borne diseases and intoxication, (3) production facilities that do not fulfill requirements, especially small-scale industries and (4)

Table 3 Level of education of the workforce of the Indonesian food industries

Level of education	Field of expertise	Number	(%)
I. Permanent labor			
A. Postgraduate	Technology + others	22	0.04
B. Graduate			
	1. Food technology	211	0.38
	2. Microbiology	57	0.1
	3. Engineering	113	0.2
	4. Nutrition & public health	5	0.01
	5. Economy/management	566	1.01
	6. Statistics	4	0.01
	7. Others	540	0.96
	Total	1,496	2.66
C. Diploma/Academy			
	1. Engineering	42	0.07
	2. Food quality assurance	31	0.06
	3. Nutrition	3	0.005
	4. Chemical analysts	54	0.10
	5. Others	1,116	1.98
	Total	1,246	2.22
D. High school & below		42,801	76.10
Number of permanent employees		45,543	80.98
II. Non-permanent employees		10,697	19.02
Total		56,240	100

Source : Tim Peneliti (1996).

low knowledge of consumers about food safety. Lack of knowledge of food hygiene and adequate facilities to implement the code practices for food hygiene in food production is a common problem except in few large companies. Upgrading of skills of workers is essential in this sector. Furthermore, there is a lack of data on risk analysis relating to the conditions and profile of national food safety. Indonesia must be aware of new emerging pathogens such as *E. coli* O157-H7, *Listeria* and *Yersinia* as well as mad cow disease.

2 Limited activities in R&D and transfer of technology

Although Indonesia is rich in traditional foods, none of the large-scale food industries are producing traditional foods native to Indonesia. Most of the medium and large-scale food industries in Indonesia deal with import-based raw materials. Most of the food industries based on western technology have recorded a rapid development in almost all the big cities of Indonesia. Fast-food industry, high technology for extruded products, bakery, confectionery

and many other snack foods of western origin are also prominent in various locations as well as on special occasions, and in family parties. Companies such as Unilever, Nestle, or General Food use R & D facilities at their own mother companies abroad. National capability on R & D for the food industry is faced with the problem of intellectual property rights. In the current system, only the process or design can be patented, but not the products.

As a consequence, traditional foods mostly dominate the small-scale or food service industries, such as catering services and restaurants. Although most of the food industries in Indonesia are typically derived from small-scale businesses and/or family industry, the majority of the large-scale food industries are basically using imported raw materials. Many of them are also developing as side-investment activities of large non-food businesses. From the technological point of view, such a growing food industry is enriching indeed. Unfortunately, since it is not balanced with the capability of producing the raw materials, the fundamental structure of the Indonesian food industries remains weak. Therefore, it has been suggested recently that many of the large food industries may collapse due to the economic crisis resulting from the sharp depreciation of the dollar exchange rate.

Institutional problems

Institutional development efforts for Indonesian food industries have been supported by various acts and regulations such as FOOD LAW No.7, 1996, SMALL BUSINESS LAW No.9, 1994, INVESTMENT LAW and Draft of Government Regulations on Labeling and Advertisement, Food Safety, Food Quality and Nutrition. Food industries themselves must create conditions conducive to the improvement of the quality of national food products.

Agriculture and food processing are two closely related components in an overall economic development system. Both of them have their backward and forward linkages. Backward linkage implies that the food industries enhance institutional development at the farmer level, social economic institutions as farmers associations, cooperative and government institutions. Forward linkage implies that food industries enhance institutional development at the consumer level, as well as trade, quality and safety, health and social economic institutions in urban areas. As industries which require raw materials, they depend on the primary sector, for processing they depend on the industrial sector, as a supplier of consumer goods they depend on the consumer and market demand.

In formulating policies and strategies for food agroindustry development, a balance between these sectors needs to be maintained, in a set of dynamic and complex relationships. The interface between agroindustry and the productive sector of machinery equipment and other inputs, and the interfaces between each of these and the science and technology capabilities in the country need careful analysis. Then if only clear targets for the development of agroindustries can be identified, they will have an impact on the economic development of the country and increase of income of the rural populations, without undesirable negative effects. It is important to shift the food industry from an industry based on imported materials to an industry based on materials produced locally. The food products manufactured by the food industry must meet the national or local consumers' demand and culture, which then eventually will determine the orientation of national agricultural production.

Recommendations

Based on most of the studies, some policy reforms and programs should be implemented to solve the problems identified. A government policy is required to promote the development of a national strategy to forecast and create opportunities in the economic dynamics of globalization. To enhance the efficiency and competitiveness of food products, increase export of foods, internalize the threats and opportunities of globalization, appropriate programs need to be promoted and supported by all the institutions. The government has clearly spelled out agricultural and industrial policies, but there is a need to clearly define agroindustrial policies in a comprehensive manner.

A government policy is needed to promote the development of formal education that caters to the needs of the workforce for the food industries, especially to fulfill the needs of lower and medium levels of management workforce. Another government policy is also required to upgrade the education level of food and nutrition professionals to fulfill the needs of upper level management. With respect to the non-formal education policy of human resources development for the food industry, the government should promote further various in-house as well as off the job-training programs in the food industries. The topics of training mainly required by the food industries include quality system management (TQM, ISO 9000 series and 1400, etc), quality control, GMP, HACCP, processing technology, operation and control of equipment and processes.

A government policy is needed to promote science and technology achievements through research, education, and training to increase the competitiveness of the national food industry and human resources development to produce excellent products. Such a policy can be fulfilled through the following programs: (1) enhancement of research and development of food industries, (2) development of human resources in science and technology for food industries and facilities, (3) accelerated program for technology transfer, (4) development and social consciousness of intellectual property rights system and (5) incentives for research institutions to conduct research and development. Technology for increasing productivity and expanding market opportunities must continue to be accessed, adapted and/or developed. To be effective, technology for agri-based industries must be market-oriented. Technologists must also take into account comprehensive by-product utilization and control environmental pollution.

To eliminate the constraints related to institutional development, the government must have the political will and commitment to position food industries as superior strategic industries. The following programs must be implemented: (1) inter-sector cooperation in developing an integrated policy for food industries, (2) development of partnership, (3) development of comprehensive human resources and science and technology institutions since high school, including diploma, undergraduate and graduate levels, (4) establishment of food industry park at universities, (5) development of food safety institutions, (6) selection of excellent commodities based on accurate market information, (7) programs and institutions to increase the efficiency and competitiveness of small and medium business, (8) enhancement of regional food industries, (9) implementation of Food Law No.7, 1996 and Government Regulations, (10) development of small-scale industries and street food, (11) development of Antimonopoly Act and (12) development of banking system, credit scheme as well as investment procedures which

are conducive to both farmers and investors.

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