Benchmarking Research Project on the Food-Manufacturing Sector in Asia

ASIAN PRODUCTIVITY ORGANIZATION

First published in Japan
by the Asian Productivity Organization
Leaf Square Hongo Building, 2F
1-24-1 Hongo, Bunkyo-ku
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Website: www.apo-tokyo.org

CONTENTS

ACKNOWLEDGMENTS

The APO is grateful to George Wong, Chief Expert, APO Benchmarking Research Project Team, Managing Director, and Principal Consultant for Hoclink Systems & Services Pte Ltd Singapore, who was responsible for this report.

ABSTRACT

Following the first *APO Benchmarking Research Project on Retail and Food Services Sectors in Asia*, this second research project has two aims: to provide insight into how SMEs in the food-manufacturing sector operate, and to support the food services and food retail value chain.

Significant effort and time have been invested by the research team to collectively design, develop, and implement a structured benchmarking approach for both this research project, and for follow-up studies in the various food-manufacturing subsectors.

National experts from the Republic of China (ROC), Republic of Korea (ROK), Japan, Malaysia, Singapore, and Thailand, together with the Chief Expert of the APO Benchmarking Research Project Team, have followed the research process according to a rigorous seven-step benchmarking methodology with a comprehensive performance-metric table and set of survey questionnaires, which was uniquely developed for the food-manufacturing sector.

Respondents from small and medium enterprises (SMEs) have been extensively surveyed to facilitate analysis, findings, and conclusions based on the data collected in the areas of financial, customer, operational, and human resource performances. Best practices have been observed and recommended for future implementation by SMEs who wish to improve and transform their existing business systems and practices, as well as their business models.

Using the insights and experiences gleaned from this Benchmarking Research Project, the hope is that follow-on project teams will be able to leverage the key learning points and developmental work for use in their particular field. SMEs in the food-manufacturing sectors could also consider the adoption and implementation of the highlighted recommendations to enhance their productivity and competitiveness on their journey towards business excellence.

INTRODUCTION

George Wong
APO Chief Expert

BACKGROUND

In Asia, SMEs in the food-manufacturing sector continue to contribute significantly to their economies, alongside the rapidly growing services sector. These SMEs are a core engine of national growth, supporting the food services and food retail sectors, while creating further value for their respective economies.

In order to enhance the effectiveness of the entire value chain, it is crucial for food-manufacturing SMEs to collectively share and compare their business performance with each other in order to identify common gaps and improvement points in their organizational systems and processes. Besides continuous improvement, the use of comparative and benchmark data helps SMEs to achieve breakthrough improvements. Benchmarking is a strategic process that will enable SMEs to establish and stretch goals and develop action plans to enhance their competitiveness.

It is a pleasure to note that this year, two additional countries participated alongside the initial four to share their practices and results in the food-manufacturing sector.

OBJECTIVES

The two objectives of this second Benchmarking Research Project are as follows:

1. To collect data and information for a cross-country productivity and performance assessment of SMEs in the food-manufacturing sector.

2. To document best practices and insights for food-manufacturing SMEs.

SCOPE

The scope of this research project includes:

1. Benchmarking KPIs for productivity monitoring in the food-manufacturing sector.

2. Data collection based on the survey questionnaires and KPIs covering the four perspectives of financial, customer, operational, and human resources for

comparative and benchmarking analyses. The data and best practice information will be useful for improving the productivity and performance of SMEs in the food-manufacturing sector.

PARTICIPANTS

A study meeting was held from 24 to 26 June 2014 in Singapore to bring various National Experts (NE) from the participating countries together to plan the research project. The following are the NE involved in this benchmarking research project:

1. Chief Expert: **George Wong (Singapore)**
   Managing Director and Principal Consultant
   Hoclink Systems and Services Pte Ltd

2. National Experts: **Dr. Shin-Horng Chen (Republic of China)**
   Research Fellow, Director International Division
   Chung-Hua Institution for Economic Research

   Atsushi Miyasaka (Japan)
   Producer, Management Consulting Department
   Japan Productivity Center

   Sangmi Cha (Republic of Korea)
   Researcher, Productivity Research Institute
   Korea Productivity Center

   Mazlina binti Shafi'i (Malaysia)
   Senior Consultant, Malaysia Productivity Corporation

   Lim Jiaxuan Gillian (Singapore)
   Manager, Singapore Innovation and Productivity
   Institute Pte. Ltd

   Janna Sanguanroongvong (Thailand)
   GMP/HACCP/ISO9000/ISO22000/KM Consultant
   Thailand Productivity Institute

Mr. George Wong, Chief Expert for the project (center) and Dr. Jose Elvinia (second from left), Program Officer, Research and Planning Department (APO), facilitated the study meeting.

METHODOLOGY

During the study meeting, the teams developed an overall research approach and designed a food-manufacturing targeted questionnaire as part of their adoption of a seven-step benchmarking framework methodology. The team's activities are further detailed below.

Step 1: Scope Project Topic (Planning, Preparation, and Formulation of the Key Performance Indicators for the Food-Manufacturing Sector)

At the start of the study meeting, the research team members were introduced to the approach, concept, and methodology to be adopted for this project. Project goals and milestones were developed for the Benchmarking Research Project and endorsed by the project team during the planning phase.

The NE Team adopted the seven-step benchmarking methodology as shown in Figure 1. This seven-step benchmarking methodology framework provides a systematic and continuous process for the SMEs to share and adapt learning/insights from the best business performers to enable continuous and breakthrough improvements in their companies.

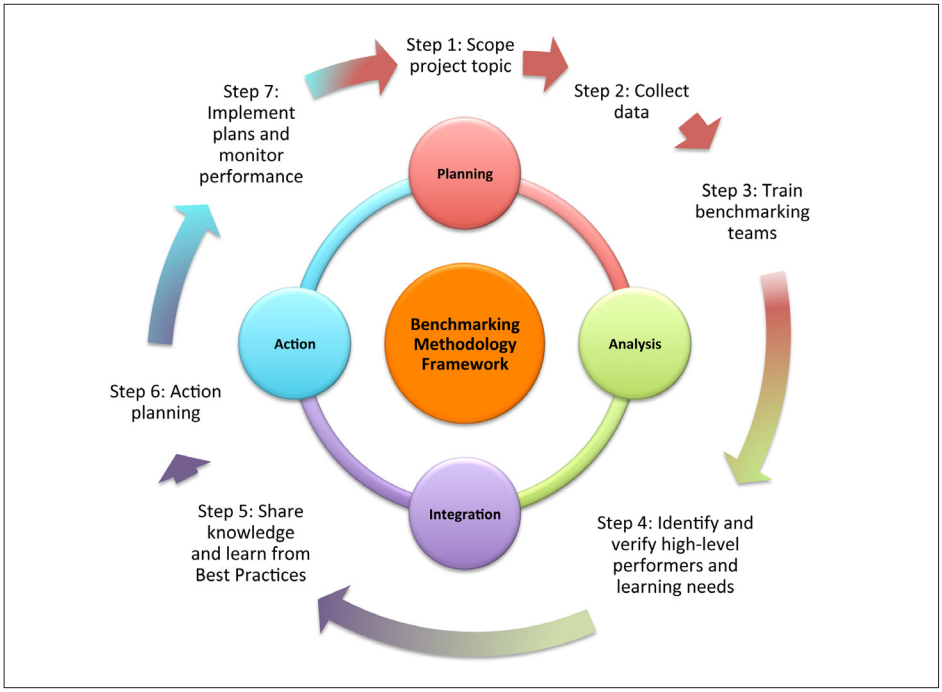

Figure 1: The seven-step benchmarking methodology.

Futhermore, the NE Team developed and adopted a comprehensive scorecard, which comprised the performance metrics for the four perspectives of financial, customer, operational, and human resources. The NE agreed that the scorecard provided a holistic and useful reference for SMEs, rather than only a few key indicators. Despite foreseen challenges and difficulties in gathering the data to satisfy each of the perspectives, the NEs highlighted that sector-level national statistics and information in each country could be gathered in the event that the participating SMEs did not provide the necessary data.

Financial Perspective

A set of KPIs was formulated to measure SME financial performance and health, such as value added (VA), revenue per employee, profitability ratio, etc. The established list of financial perspective ratios, together with their corresponding definitions and formulae, are shown in Table 1:

Table 1. Key performance indicators from a financial perspective

No.	Key Performance Indicators	What it measures	Formula
1	Value added	Wealth generated/created by the company	Profit after tax + Labor cost + Interest on borrowings + Depreciation + Taxes

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No.	Key Performance Indicators	What it measures	Formula
2	Value added-to-sales ratio	Proportion of sales created by the organization over and above purchased materials and services	Value added ÷ Sales
3	Labor cost competitiveness	Efficiency and effectiveness of the organization in terms of its labor cost	Value added ÷ Labor cost
4	Working capital ratio	Operating liquidity and short-term financial health	Sales ÷ (Current asset – Current liabilities)
5	Profit margin	Proportion of sales left to the organization after deducting all costs	EBITDA ÷ Sales
6	Sales growth	The potential of the company to grow in sales	$(Sales_t – Sales_{t-1}) ÷ Sales_{t-1}$
7	Export ratio	The capacity of the company to diversify the market	Export ÷ Sales

Notes: EBITDA, Earnings before interest, taxes, depreciation, and amortization; t, time.

Customer Perspective

A set of KPIs were formulated to measure service performance and customer satisfaction in each of the customer segments. The established list of customer-perspective ratios, together with their corresponding definitions and formulae are shown in Table 2:

Table 2. Key performance indicators from a customer perspective

No.	Key Performance Indicators	What it measures	Formula
1	Compliments to complaint ratio	The customer service level that will enhance customer retention and customer loyalty	Compliments ÷ Complaints
2	Customer rejection/ Return (%)	The quality of product that does not meet the customer's requirements	Orders rejected (cost) ÷ Total orders (cost)
3	Sales per Employee (FTE)	Efficiency and effectiveness of marketing strategy	Sales ÷ Number of employees (FTE)
4	On-time delivery to commit	The number of deliveries that meet the customer deadlines	Number of deliveries on time ÷ Total number of deliveries
5	Number of new products per year	Development of new products, inclusive of new flavors, volume, or packaging type	Number of new products

Notes: FTE, full-time equivalent; No., number.

Operational Perspective

A set of KPIs was formulated to measure the operational performance of the SMEs, such as service-delivery response, utilization of facilities and assets, etc. The established list of operational perspective ratios, together with their corresponding definitions and formulae, is shown in Table 3:

Table 3. Key performance indicators from an operational perspective

No.	Key Performance Indicators	What it measures	Formula
1	Labor productivity	Efficiency and effectiveness of employees in generating value added	Value added (currency) ÷ No. of staff (FTE)
2	Annual inventory turns (number of turns per year)	Effectiveness in inventory management for the materials used, e.g. efficient buying practices, inventory cost, and quality (obsolescence level)	Cost of goods sold ÷ Average inventory
3	Labor cost to sales ratio (%)	Efficiency and effectiveness of the operational strategy and management of staff	Labor cost ÷ Sales
4	Sales per fixed assets (cost of capital)	Efficiency and effectiveness of fixed assets in the generation of sales	Sales ÷ Fixed assets
5	Capital intensity	To measure the usage of fixed assets by employees or to measure whether the company is capital intensive or labor intensive	Fixed assets ÷ Number of staff (FTE)
6	R&D investment ratio	The ability of the company to invest in R&D and to innovate	R&D expenditure ÷ Sales

Note: FTE, full-time equivalent.

Human Resource Perspective

A set of KPIs was formulated to measure staff development, engagement, and morale to support business operations such as training hours per employee, having an employee satisfaction index, etc. The established list of human resource perspectives, ratios, together with their corresponding definitions and formulae, is shown in Table 4:

Table 4: Key performance indicators from a human resource perspective

No.	Key Performance Indicators	What it measures	Formula
1	Training hours per staff	Learning and development with a focus on enhancing staff competencies	Training hours ÷ Number of staff (FTE)
2	Training expenditures per staff	Learning and development with a focus on enhancing staff competencies	Training cost ÷ Number of staff (FTE)
3	Full-time staff turnover rate	The retention rate of full-time staff and the overall full-time staff satisfaction level	No. of full-time staff resigned ÷ Total number of full-time staff
4	Part-time staff turnover rate	The retention rate of part-time staff and the overall part-time staff satisfaction level	No. of part-time staff resigned ÷ Total number of part-time staff

Note: FTE, full-time equivalent.

In order to ensure uniform interpretation and understanding of the various performance indicators, definitions and formulae were established for each. The Performance Metrics Table (KPIs) for the food-manufacturing sector can be found in Appendix A.

Step 2: Collect Data (Development of Research Survey Questionnaires for Data Collection)

A comprehensive set of survey questionnaires was developed for use during the information-gathering stage, based on the following four types of questions (note that the Benchmarking Research questionnaires can be found in Appendix B):

1. Open-ended questions;
2. Multiple-choice questions;
3. Scaled-choice questions; and
4. Forced-choice questions.

Step 3: Train Benchmarking Teams

The NEs established guidelines to facilitate easier data collection processes for their respective teams. Furthermore, participating SMEs were briefed on the objectives and the approach of the research project prior to the execution of the survey questionnaires. These briefing sessions provided a better understanding of the objectives and importance of this research project.

Step 4: Identify and Verify High-Level Performers and Learning Needs

Data and information gathered from the research study were analyzed and tabulated according to the KPI template. Findings and conclusions based on the data collected were formulated for each of the selected subsectors in the food-manufacturing sector. High-level performers were identified, as well as common gaps and learning points in the food-manufacturing sector.

Step 5: Share Knowledge and Learn from Best Practices

The survey results and national statistics' data revealed several interesting conclusions and insights (performance results and best practices) for the food-manufacturing sector. This facilitated follow-on organizational reviews by the SMEs and their implementation to enhance productivity levels and growth rates.

Step 6: Action Planning

The various key findings and conclusions, together with recommendations, were then summarized for reference and implementation by SMEs in the food-manufacturing sector into a final report. This report includes recommendations for the sector based on the learning points discovered during this project.

Step 7: Implement Plans and Monitor Performance

Moving forward, each participating nation's teams should develop and adopt plans from the report's conclusions and continue to monitor the performance of their respective food-manufacturing sectors.

OVERVIEW OF REPORT

The report comprises ten chapters and two appendices as follows:

1. Introduction
2. Key Findings on the Food-Manufacturing Sector in the Republic of China
3. Key Findings on the Food-Manufacturing Sector in Japan
4. Key Findings on the Food-Manufacturing Sector in the Republic of Korea
5. Key Findings on the Food-Manufacturing Sector in Malaysia
6. Key Findings on the Food-Manufacturing Sector in Singapore
7. Key Findings on the Food-Manufacturing Sector in Thailand
8. Best Practices
9. Recommendations
10. Conclusion

Appendices

1. Appendix A: Table of Performance Metrics
2. Appendix B: Benchmarking Research Questionnaires

KEY FINDINGS ON THE FOOD-MANUFACTURING SECTOR IN THE REPUBLIC OF CHINA

Dr. Shin-Horng Chen

INTRODUCTION TO AND OVERVIEW OF THE FOOD-MANUFACTURING SECTOR IN THE REPUBLIC OF CHINA

The food-manufacturing sector in the Republic of China (ROC) comprises 28,890 firms, which are mainly micro-enterprises and small and medium enterprises (SMEs). They are supported by some 185,000 firms operating as food channels and retailers, and more than 282,000 restaurants and street vendors. The majority of these enterprises are also SMEs and micro-enterprises, with only 20 listed on the stock market. Figure 1 presents a profile of the ROC's food sector.

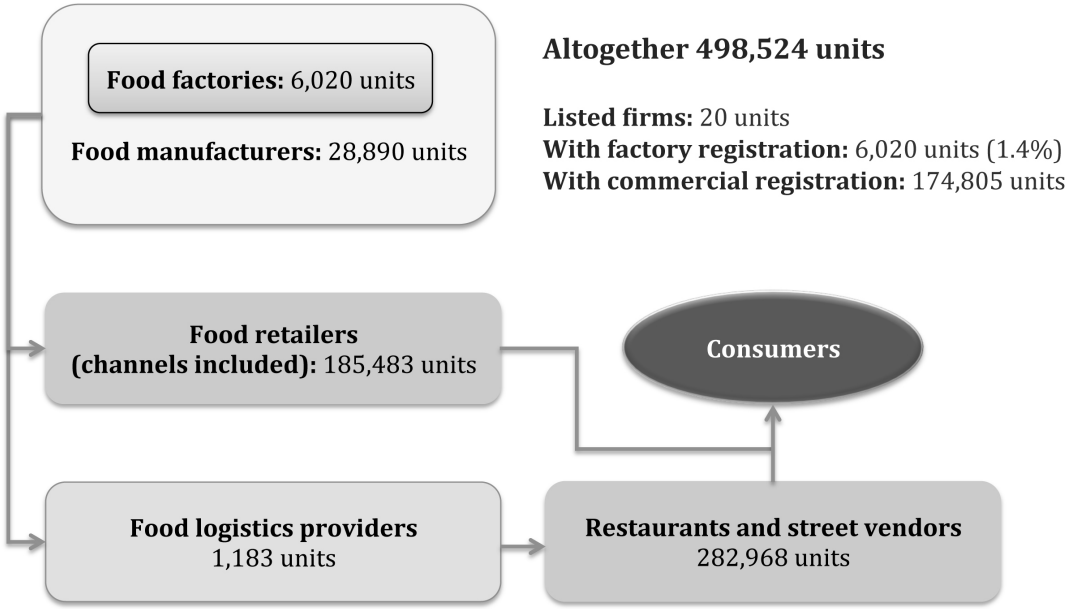
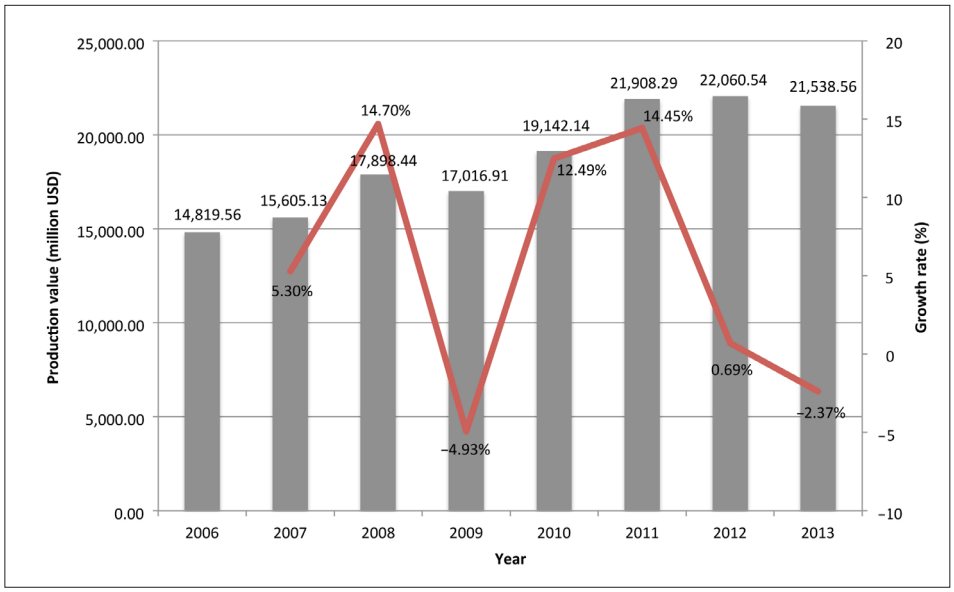
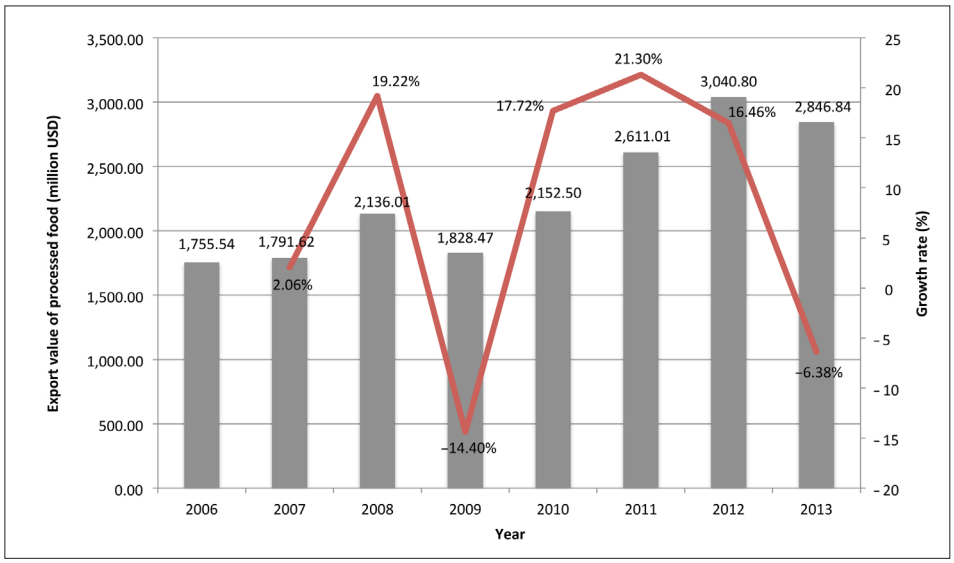


Figure 1. Profile of the food sector in the Republic of China.

Source: Board of Science and Technology, Government of the Republic of China (2014), Strengthening Food Security Governance Mechanism [1].

During the period 2006–13, the food-manufacturing sector experienced healthy growth. Figure 2 shows statistics relating to the ROC's food-manufacturing sector in terms of the value of production, exports, and imports.





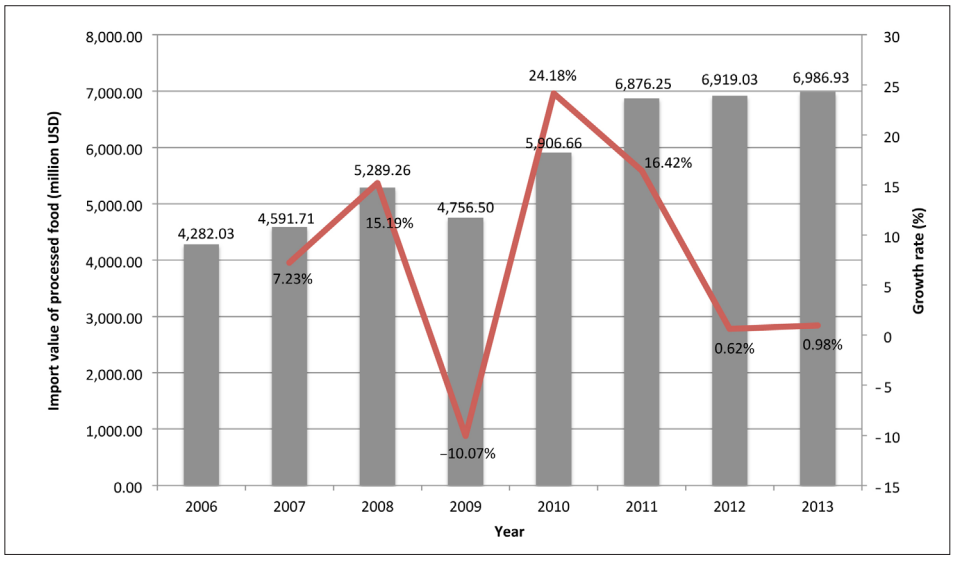


Figure 2. Statistics relating to the Republic of China's food-manufacturing sector.

Source: Compiled by the author.

For the period 2010–12, the export of processed food products ranged from 16% to 21%, mainly to the major markets of Japan, PR China, and the USA. This is illustrated in Figure 3 below. Food safety became a major consideration from 2013 due to several food-safety incidents.

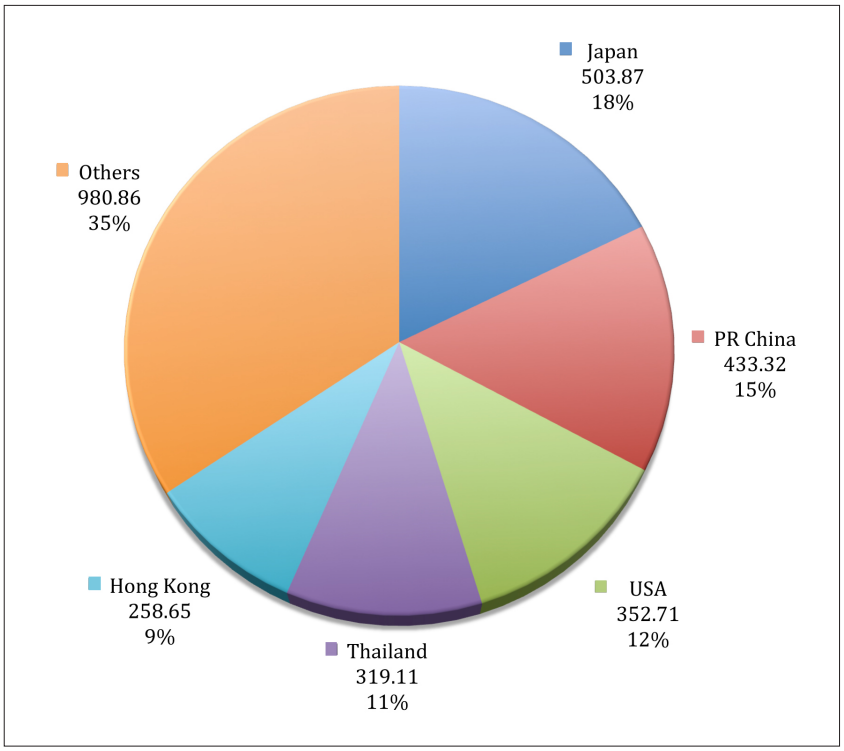


Figure 3. Major export markets of the food-manufacturing sector of the Republic of China (unit: million USD)

Source: Compiled by the author based on data from the Ministry of Economic Affairs, Government of the Republic of China [2].

A comprehensive food-quality assurance system is now in place, which includes several guidelines and standards: the good hygienic practice (GHP), good manufacturing practice (GMP), hazard analysis critical control point (HACCP), and certified agricultural standards (CAS) under which food-safety responsibilities are shared by the Council of Agriculture (COA), the Ministry of Economic Affairs (MOEA), and the Ministry of Health and Welfare (MOHW). According to the Act Governing Food Safety and Sanitation, GHP is a comprehensive and basic requirement, while GMP, HACCP, and CAS make up the higher standards in the ROC's quality assurance system. However, the coverage of the quality-assurance system remains limited (especially for advanced certification and labeling) due to the dominance of small, medium, and micro-enterprises. The food-quality assurance system in the ROC is shown in Figure 4:

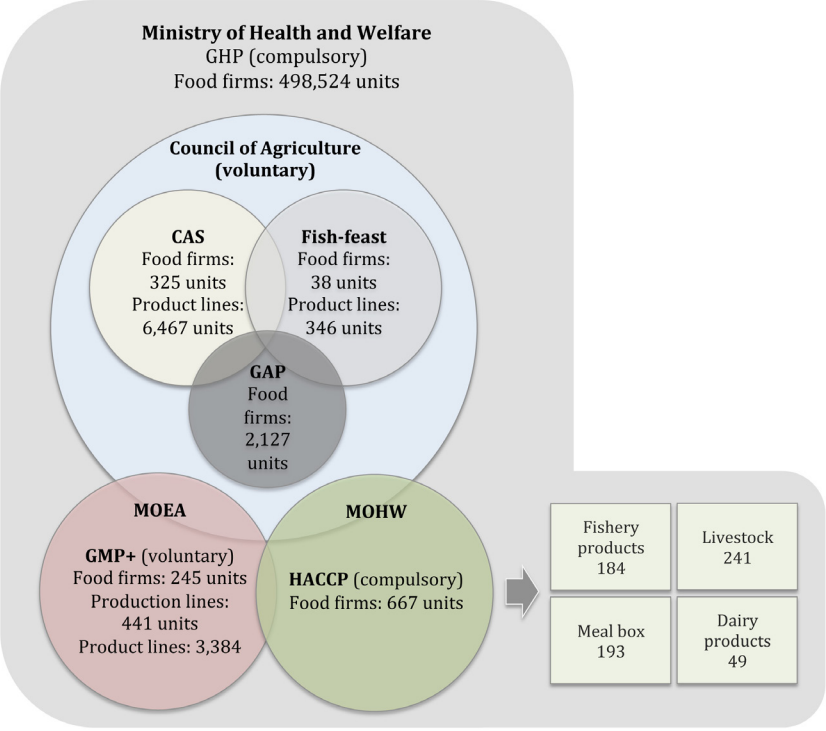


Figure 4: A snapshot of the food-quality assurance system in the Republic of China. CAS, certified agricultural standards; GAP, good agricultural practices; GHP, good hygiene practice; GMP, good manufacturing practice; HACCP, hazard analysis critical control point; MOHW, Ministry of Health and Welfare.

Source: Compiled by the author based on data from the Board of Science and Technology, Government of the Republic of China (2014) [1].

The occurrence of unfavorable food-safety incidents in recent years has given rise to commendable attention by the government. The concerted efforts of all private- and public-sector stakeholders are needed in order to effectively resolve this important issue.

Agriculture and food contribute significantly to the economic and social development of a country. They are increasingly related to people's lifestyles, enhancing tourism, and serving as a revenue source for SMEs (in terms of goods and services exports, as well as those for domestic consumption), thus evolving to be a "soft power" for economic growth. Against this backdrop, the ROC has been promoting the Boutique Agriculture and Health Excellence Plan since 2009 to enhance the tourism sector. The COA has introduced measures in the following three aspects (refer to Figure 5) to promote quality agriculture and food products:

1. *Healthy agriculture*: To promote organic farming, distribution (from farm to table), good agricultural practice (GAP) and CAS quality agricultural products.

2. *Excellent agriculture*: To develop the biotechnology, orchid, grouper, ornamental fish, plant nursery, and animal husbandry industries.

3. *"Healthy and Efficient" (LOHAS) agriculture*: To develop in-depth agricultural tourism, special thematic tourism, and boutique products.

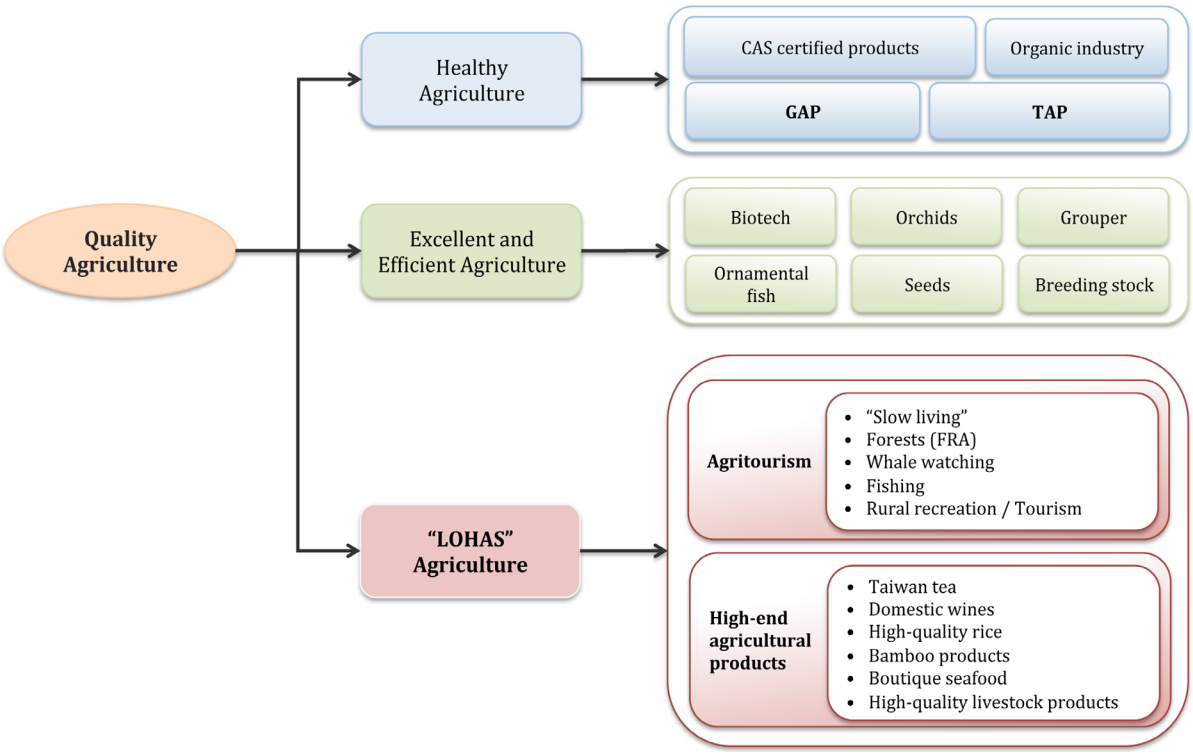


Figure 5: Cultural Measures taken by the Council of Agriculture as part of the Republic of China's quality agriculture program concerning tourism; Biotech, biotechnology; CAS, certified agricultural standards; FRA, National Forest Recreation Areas; GAP, good agricultural practices; LOHAS, lifestyles of health and sustainability; TAP, traceability agricultural product.

Source: Republic of China Tourism Bureau [3].

To promote tourism, LOHAS Agriculture aims to offer themed travel packages for health, families, education, gourmet foods, and stress relief. These developments have motivated many food manufacturers to set up "tourism factories" throughout the country, and efforts to develop emerging overseas markets by offering "Airport + Farm" quick tour packages and "order in Taiwan, pickup in China" services for tourists from PR China. In addition, the ROC is promoting international outreach through its retail and food-service sectors, especially chain stores. The government has mobilized several research institutes, such as the Commerce Development Research Institute (CDRI), Food Industry Research and Development Institute (FIRDI), and Innovative DigiTech-Enabled Application and Service Institute (IDEAS) under the Institute for Information Industry (III) to facilitate this development.

In summary, food-sector exports (in both the food-manufacturing and food-services subsectors) and food safety have become key policy issues in the ROC.

PROFILES OF THE PARTICIPATING FOOD-MANUFACTURING COMPANIES

For this benchmarking practice, the ROC team conducted a survey using the designed questionnaire. Due credit must be given to the China Productivity Center for its help in implementing the surveys from August to September 2014. A total of 24 survey responses were received; four responses each for the six subsectors of:

1. Processing and preserving of meat and meat products;
2. Processing and preserving of fishes and seaweeds;
3. Processing and preserving of fruit and vegetables;
4. Manufacture of bakery products;
5. Manufacture of dairy products; and
6. Manufacture of seasonings.

As the respondents did not answer all the individual questions, the number of observations used in the following analyses vary across the research themes. For some survey questions, the authors did not obtain any quality answers from the respondents, making it difficult for them to present the results by subsector. In particular, the respondents were cautious about releasing their financial and operational information. To deal with this issue, the authors provided, where possible, relevant official data as supplementary information. It should be noted that even though the survey was meant to target SMEs in the food-manufacturing sector, responses from the processing and preserving of fishes and edible seaweeds and processing and preserving of fruit and vegetables subsectors were mainly from larger enterprises (refer to Table 1). In contrast, the sample firms in the manufacture of bakery products subsector were generally smaller in terms of the number of full-time employees.

Table 1. Profile of sample firms: average number of full-time employees

Subsector	Number of samples	Average number of full-time employees		
		2011	2012	2013
Processing and preserving of fishes and seaweeds	4	7,067	7,067	7,067
Processing and preserving of meat and meat products	4	190	191	308
Processing and preserving of fruit and vegetables	3	1,443	1,558	1,498
Manufacture of bakery products	4	13	12	22
Manufacture of dairy products	4	128	186	208
Manufacture of seasonings	1	120	150	152

Table 2 presents an overview on the firms surveyed in terms of business type. Most firms (10 out of the 24 respondents) were run by sole proprietors, especially in the manufacture of bakery products and manufacture of dairy products subsectors. In contrast, three of the firms in the manufacture of seasonings subsector were private limited (four respondents) and one was public listed.

In terms of food-manufacturer type, the majority (18) of the respondents were own-product manufacturers and not contract manufacturers, except for the processing and preserving of fishes and seaweeds and processing and preserving of meat and meat product subsectors (refer to Table 3).

Table 2: Profile of sample firms: business type

Subsector	Number of samples	Sole proprietor	Partnership	Private limited	Public listed
Processing and preserving of fishes and seaweeds	4	1	0	2	0
Processing and preserving of meat and meat products	4	1	0	0	3
Processing and preserving of fruit and vegetables	4	0	0	2	2
Manufacture of bakery products	4	4	0	0	0
Manufacture of dairy products	4	4	0	0	0
Manufacture of seasonings	4	0	0	3	1

Table 3. Profile of sample firms: manufacturer type

Subsector	Number of samples	Type of manufacturer		
		Contract manufacturer	Own-product manufacturer	Both
Processing and preserving of fishes and seaweeds	4	3	1	0
Processing and preserving of meat and meat products	4	1	3	0
Processing and preserving of fruit and vegetables	4	0	2	2
Manufacture of bakery products	4	0	4	0
Manufacture of dairy products	4	0	4	0
Manufacture of seasonings	4	0	4	0

KEY PERFORMANCE OF PARTICIPATING COMPANIES IN THE REPUBLIC OF CHINA

Financial Perspective

As the respondents were generally concerned about the confidentiality of their financial information, we could not obtain comprehensive responses for the financial perspective. To partly offset this problem, we compiled the financial information required from a few SME food manufacturers listed on the ROC capital market, including the over-the-counter (OTC) stock market. It is generally accepted that this group of firms is subject to a higher standard of financial scrutiny and have better corporate governance. Hence, data on their financial perspective should provide good-quality supplementary information for benchmarking.

Tables 4 to 6 present the financial statistical summaries for selected SME food manufacturers listed on the capital market in 2012 and 2013, namely for the processing and preserving of meat and meat products, processing and preserving of fishes and seaweeds, manufacture of bakery products, and manufacture of seasonings subsectors. Referring to the percentage of total sales/turnover generated in the ROC, most of the manufacturers mainly served the domestic market, except for company TF, which is in the manufacture of seasonings subsector and company LI, which is in the manufacture of bakery products subsector. In particular, company TF generated 53% of its revenue from overseas markets. Five of the eight companies, companies EC, DM, TF, LI, and TU showed significant growth in revenue between the years 2011 and 2013.

Based on the figures in Tables 4–6, the financial parameters of the respective firms were calculated. Tables 7–9 illustrate the financial parameters for processing and preserving of meat and meat products, processing and preserving of fishes and seaweeds, manufacture of bakery products, and manufacture of seasonings.

Revenue/No. of employees: Among the selected firms, this indicator varied to a large degree, ranging from NTD4.14 million to NTD143.20 million. Two firms (companies TF and TU) in the manufacture of seasonings subsector and company NT in the processing and preserving of fishes and seaweeds subsector were larger in terms of average revenues per employee. For these two firms in the manufacture of seasonings subsector, this may have had something to do with the fact that they were relatively more capital-intensive, as shown below.

Total labor cost/No. of employees: For 2013, this indicator ranged from NTD640,000 (company VK) to NTD2.5 million (company TU). For most of the selected firms, their average labor cost per employee was more than NTD1 million.

Depreciation/Number of employees: This indicator and the following (depreciation/total labor costs) were meant to measure capital intensity. Three firms in the manufacture of seasonings subsector and company EC in the processing and preserving of meat and meat products subsector were more capital intensive, especially company TU in the manufacture of seasonings subsector.

Depreciation/Total labor costs: This indicator demonstrated results consistent with those of the former indicator (depreciation/number of employees).

Operating profit after tax/Revenue: This indicator and the following (earnings before interest, taxes, depreciation, and aamortization [EBITDA] after tax/Revenue) were meant to measure operational performance. For 2013, company TT in the manufacturing of seasonings subsector, company NT in the processing and preserving of fishes and seaweeds subsector, and company EC in the processing and preserving of meat and meat products subsector generated better operational performances. In particular, the profit rate of company TT, measured by operating profit after tax per NTD of revenue, was as high as 58.4%, compared to 3.4% for company TU in the manufacture of seasonings subsector.

EBITDA after tax/Revenue: This indicator demonstrated results consistent with those by the former indicator.

R&D expenditure/Revenue: This indicator is commonly used to measure R&D intensity for firms. In general, these firms were lower in R&D intensity, except for company DM in the manufacture of bakery products subsector, which registered an R&D intensity of 1.2% in 2013.

Table 4. Basic financial statistics for SME food manufacturers listed on the capital market: processing and preserving of meat and meat products and processing and preserving of fishes and seaweeds

Subsector	**Meat and meat products**			**Fishes and seaweeds**		
Company	**EC**			**NT**		
Number of employees	**160**			**40**		
KPI/Year	**2011**	**2012**	**2013**	**2011**	**2012**	**2013**
Annual sales turnover (revenue) (NTD'000)	1,268,676	1,174,959	1,650,272	1,891,361	1,996,333	1,677,791
Percentage of total sales /turnover generated out of own country	NA	NA	NA	9%	8%	0.43%
Value of goods sold (NTD'000)	1,848,758	2,578,158	2,493,155	1,847,169	2,021,587	1,842,565
Total labor cost (NTD'000)	201,037	220,352	222,714	72,738	68,980	42,092
Fixed assets at net book value (NTD'000)	1,416,825	1,385,094	1,438,014	431,782	491,781	319,190
Operating profit/loss after tax (NTD'000)	68,903	292,796	386,571	190,165	165,019	437,391
Depreciation from buildings, equipment and machinery, etc. (NTD'000)	NA	59,843	56,107	NA	6,615	10,595
EBITDA (NTD'000)	200,421	429,882	525,051	222,508	191,767	413,833
Current assets (NTD'000)	4,861,424	4,712,953	6,080,045	1,409,938	1,453,523	1,034,782
Current liabilities (NTD'000)	3,147,281	2,835,019	4,047,446	594,070	1,185,352	157,735
R&D expenditure (NTD'000)	NA	NA	NA	NA	NA	NA

Notes: EBITDA, earnings before interest, taxes, depreciation, and amortization; KPI, key performance indicators; NA, not applicable; SME, small and medium enterprise.

Table 5. Basic financial statistics for SME food manufacturers listed on the capital market: manufacture of bakery products

Subsector	Bakery products								
Company	DM			VK			LI		
Number of employees	200			300			300		
KPI/Year	2011	2012	2013	2011	2012	2013	2011	2012	2013
Annual sales turnover (revenue) (NTD'000)	1,581,393	1,863,324	2,031,464	700,660	1,307,577	1,241,493	531,295	1,008,189	1,153,700
Percentage of total sales/turnover generated out of country	10%	13%	14%	NA	7%	7%	NA	32%	30%
Value of goods sold (NTD'000)	1,292,513	1,544,836	1,666,236	643,450	1,200,634	1,025,547	446,761	847,586	957,237
Total labor cost (NTD'000)	182,669	232,302	243,025	118,972	186,579	192,060	86,731	174,819	219,490
Fixed assets at net book value (NTD'000)	180,860	228,991	380,999	486,440	567,196	663,334	182,716	187,019	273,386
Operating profit/loss after tax (NTD'000)	223,994	239,035	288,297	45,974	91,487	179,767	56,313	124,089	126,546
Depreciation from buildings, equipment and machinery, etc. (NTD'000)	5,062	8,904	11,509	NA	34,646	28,857	15,211	32,105	42,757
EBITDA (NTD'000)	287,266	332,967	388,526	74,397	150,615	255,992	89,171	197,798	235,169
Current assets (NTD'000)	844,544	986,419	1,509,207	612,566	1,055,521	1,204,429	383,161	578,217	779,122
Current liabilities (NTD'000)	320,638	226,599	244,652	414,948	191,697	188,428	249,157	207,079	294,396
R&D expenditure (NTD'000)	21,539	24,585	24,533	NA	19	2,519	2,153	8,478	10,807

Notes: EBITDA, Earnings before interest, taxes, depreciation, and amortization; KPI, key performance indicators; NA, not applicable; SME, small and medium enterprises.

Table 6. Basic financial statistics for SME food manufacturers listed on the capital market: manufacture of seasonings

Subsector	Seasonings								
Company	TT			TF			TU		
Number of employees	160			150			140		
KPI/Year	2011	2012	2013	2011	2012	2013	2011	2012	2013
Annual sales turnover (revenue) (NTD'000)	1,579,141	2,130,312	1,774,665	3,139,163	3,687,420	3,716,679	17,653,241	19,035,621	20,047,360
Percentage of total sales /turnover generated out of own country	11%	12%	16%	48%	53%	53%	3%	3%	4%
Value of goods sold (NTD'000)	1,908,885	1,984,572	1,575,555	2,981,344	3,392,768	3,429,792	17,460,254	18,412,735	19,288,038
Total labor cost (NTD'000)	262,235	277,298	346,768	178,230	108,840	109,250	314,957	292,302	347,153
Fixed assets at net book value (NTD'000)	15,533,336	19,387,090	19,120,754	1,851,764	2,039,915	2,219,071	860,939	746,746	639,940
Operating profit/loss after tax (NTD'000)	210,344	849,576	1,037,052	66,494	287,872	253,883	591,477	505,625	687,420
Depreciation from buildings, equipment and machinery, etc. (NTD'000)	57,721	57,300	57,034	97,271	107,055	112,198	NA	703,343	595,736
EBITDA (NTD'000)	326,641	962,206	1,198,348	213,756	467,227	472,176	935,705	755,843	1,018,662
Current assets (NTD'000)	18,696,526	22,522,777	22,183,138	3,846,467	4,018,011	4,129,784	3,881,655	4,427,130	4,211,949
Current liabilities (NTD'000)	7,654,092	9,691,190	7,417,795	1,938,863	1,812,886	1,651,913	902,251	1,473,494	1,025,069
R&D expenditure (NTD'000)	5,581	7,193	11,824	2,922	4,615	7,994	3,438	3,322	3,666

Notes: EBITDA, Earnings before interest, taxes, depreciation, and amortization; KPI, key performance indicators; NA, not applicable; SME, small and medium enterprises.

Table 7. Financial parameters for SME food manufacturers listed on the capital market: processing and preserving of meat and meat products and processing and preserving of fishes and seaweeds

Subsector	**Meat and meat products**			**Fishes and seaweeds**		
Company	**EC**			**NT**		
Number of employees	**160**			**40**		
KPI/Year	**2011**	**2012**	**2013**	**2011**	**2012**	**2013**
Revenue/Number of employees (NTD'000)	7,929	7,343	10,314	47,284	49,908	41,945
Total labor cost/Number of employees (NTD'000)	1,256	1,377	1,392	1,818	1,725	1,052
Depreciation/Number of employees (NTD'000)	NA	374	351	NA	165	265
Depreciation/Total labor cost	NA	27.2%	25.2%	NA	9.6%	25.2%
Operating profit after tax/Revenue	5.4%	24.9%	23.4%	10.1%	8.3%	26.1%
EBITDA after tax/Revenue	NA	36.6%	31.8%	NA	9.6%	24.7%
R&D expenditure/Revenue	NA	NA	NA	NA	NA	NA

Notes: EBITDA, Earnings before interest, taxes, depreciation, and amortization; KPI, key performance indicators; NA, not applicable.

Table 8: Financial parameters for SME food manufacturers listed in the capital market: manufacture of bakery products

Subsector	**Bakery products**								
Company	**DM**			**VK**			**LI**		
Number of employees	**200**			**300**			**300**		
KPI/Year	**2011**	**2012**	**2013**	**2011**	**2012**	**2013**	**2011**	**2012**	**2013**
Revenue/Number of employees (NTD'000)	7,907	9,317	10,157	2,336	4,359	4,138	1,771	3,361	3,846
Total labor cost/Number of employees (NTD'000)	913	1,162	1,215	397	622	640	289	583	732
Depreciation/Number of employees (NTD'000)	25	45	58	NA	115	96	51	107	143
Depreciation/Total labor cost	2.8%	3.8%	4.7%	NA	18.6%	15%	17.5%	18.4%	19.5%
Operating profit after tax/Revenue	14.2%	12.8%	14.2%	6.6%	7%	14.5%	10.6%	12.3%	11%
EBITDA after tax/Revenue	18.2%	17.9%	19.1%	NA	11.5%	20.6%	16.8%	19.6%	20.4%
R&D expenditure/Revenue	1.4%	1.3%	1.2%	NA	0%	0.2%	0.4%	0.8%	0.9%

Notes: EBITDA, earnings before interest, taxes, depreciation, and amortization; KPI, key performance indicators; NA, not applicable.

Table 9: Financial parameters for SME food manufacturers listed in the capital market: manufacture of seasonings

Subsector	**Seasoning**								
Company	**TT**			**TF**			**TU**		
Number of employees	**160**			**150**			**140**		
KPI/Year	**2011**	**2012**	**2013**	**2011**	**2012**	**2013**	**2011**	**2012**	**2013**
Revenue/Number of employees (NTD'000)	9,870	13,314	11,092	20,928	24,581	24,778	126,095	135,969	143,195
Total labor cost/Number of employees (NTD'000)	1,639	1,733	2,167	1,188	726	728	2,250	2,088	2,480
Depreciation/Number of employees (NTD'000)	361	358	356	648	714	748	NA	5,024	4,255
Depreciation/Total labor cost	22%	20.7%	16.5%	54.6%	98.4%	102.7%	NA	240.6%	171.6%
Operating profit after tax/Revenue	13.3%	39.9%	58.4%	2.1%	7.8%	6.8%	3.4%	2.7%	3.4%
EBITDA after tax/Revenue	20.7%	45.2%	67.5%	6.8%	12.7%	12.7%	5.3%	4%	5.1%

Notes: EBITDA, earnings before interest, taxes, depreciation, and amortization; KPI, key performance indicators; NA, not applicable.

Customer Perspective

There were several methods used to collect customer feedback in each subsector as shown in Table 10 below. With the exception of the manufacture of bakery products subsector, telephone and e-mail were the methods universally adopted by all sampled companies. In contrast, traditional methods for gathering feedback, such as through letters or asking in person, were not universally adopted by all subsectors.

Table 10. Methods to gather feedback from customers

How do you gather feedback from your customers?						
Subsector	**Number of samples**	**Telephone**	**Letters**	**E-mail**	**Website's feedback page**	**In person**
Processing and preserving of fishes and seaweeds	4	100%	25%	100%	100%	75%
Processing and preserving of meat and meat products	4	100%	0%	100%	50%	25%
Processing and preserving of fruit and vegetables	3	100%	100%	100%	33%	0%
Manufacture of bakery products	4	50%	50%	50%	50%	100%
Manufacture of dairy products	4	100%	100%	100%	100%	100%
Manufacture of seasonings	4	100%	0%	100%	100%	0%

Table 11 presents the results on the customer-complaint collection and recording methods utilized by the food subsectors between the years 2011–13. The processing and preserving of meat and meat products and the manufacture of dairy products subsectors received the most customer complaints in the year 2011, with both subsectors receiving more than 80 complaints in that year. Over a period of three years, the processing and preserving of meat and meat products subsector managed to reduce the number of customer complaints by half, from 86 complaints in 2011 to 43 complaints in 2013, while the number of complaints in the manufacture of dairy products subsector stayed above 80 complaints. The processing and preserving of fishes and seaweeds subsector received the fewest complaints, averaging 4.1 complaints per year.

Table 11. Collection and recording of customer complaints

Subsector	Number of samples	Percentage of collected and recorded customer complaints	Average number of customer complaints received		
			2011	2012	2013
Processing and preserving of fishes and seaweeds	4	100%	4.5	4.3	3.5
Processing and preserving of meat and meat products	1	100%	86	50	43
Processing and preserving of fruit and vegetables	0	NA	NA	NA	NA
Manufacture of bakery products	2	100%	12.5	27	14.5
Manufacture of dairy products	4	100%	91.5	64.5	83
Manufacture of seasonings	0	NA	NA	NA	NA

Note: NA, not applicable.

Operational Perspective

The key success factors for business in each food subsector are shown in Table 12. "Good/quality products according to customers' requirements" was the most important factor for all of the subsectors, with the exception of the processing and preserving of meat and meat products subsector. "Value for money" was another major factor for business success, which was valued by all of the sample companies in the processing and preserving of fishes and seaweeds and manufacture of seasonings subsectors. In contrast, "strong reputation/brand name," "low operating cost," and "good customer service" were not regarded as key factors for business success in the manufacture of bakery products, manufacture of dairy products or manufacture of seasonings subsectors. At least for the bakery products subsector, this may have had something to do with some of the best practices widely adopted in the sector, as discussed in Table 12.

Table 12. Key success factors for business

Subsector	Number of samples	Value for money	Product satisfies customers' requirements	Strong reputation/ brand name	Low operating cost	Good customer service
Processing and preserving of fishes and seaweeds	4	100%	100%	25%	75%	100%
Processing and preserving of meat and meat products	4	50%	25%	75%	50%	25%
Processing an preserving of fruit and vegetables	0	NA	NA	NA	NA	NA
Manufacture of bakery products	4	0%	100%	0%	0%	0%
Manufacture of seasonings	4	100%	100%	0%	0%	0%

Note: NA, not applicable.

Table 13 presents the adoption rate of technological advancements for operational use by companies in each subsector of the food-manufacturing sector. Among the sample firms, only companies from the processing and preserving of fishes and seaweeds and processing and preserving of meat and meat products subsectors adopted technological advancements in their operations. The processing and preserving of fishes and seaweeds subsector had the highest adoption rate, with a 100% adoption rate in the key technologies (automation and IT systems) to improve productivity such as purchasing/requisition systems and financial management systems.

Table 13. Technology adoption for operational use

Subsector	Fishes and seaweeds	Meat and meat products	Fruit and vegetables	Bakery products	Dairy products	Seasonings
Number of samples	4	4	0	4	4	0
Manufacturing methodology to improve productivity	25%	0%	NA	0%	0%	NA
Technology (automation, IT systems) to increase productivity	50%	100%	NA	0%	0%	NA

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Subsector	Fishes and seaweeds	Meat and meat products	Fruit and vegetables	Bakery products	Dairy products	Seasonings
Human resource management system	75%	0%	0%	0%	0%	NA
E-commerce as a channel for business	50%	50%	NA	0%	0%	NA
Inventory management system	75%	75%	NA	0%	0%	NA
Enterprise resource planning system	75%	50%	NA	0%	0%	NA
Customer relationship management system	50%	50%	NA	0%	0%	NA
Purchasing/ requisition system	100%	50%	NA	0%	0%	NA
Financial management system	100%	25%	NA	0%	0%	NA

Note: NA, not applicable.

Human Resource Perspective

The survey findings show the full-time employee working hours in each subsector in the years 2011–13 (Table 14). In 2011, full-time employees in the manufacture of bakery products subsector had about half the number of working hours per week compared to the other subsectors. However, in 2012 the number of working hours per week for full-time employees in the manufacture of bakery products subsector doubled to 45. In 2013, nearly all subsectors had 40 working hours per week, with the exception of the processing and preserving of fishes and seaweeds subsector, which had higher working hours of 43 working hours per week.

Table 14: Working hours of full-time employees

Subsector	Number of samples	Full-time employee work hours/week		
		2011	2012	2013
Processing and preserving of fishes and seaweeds	4	43	43	43
Processing and preserving of meat and meat products	4	40	40	40
Processing and preserving of fruit and vegetables	0	NA	NA	NA
Manufacture of bakery products	4	20	45	40
Manufacture of dairy products	4	40	50	40
Manufacture of seasonings	0	NA	NA	NA

Note: NA, not applicable.

Table 15 presents the results concerning the working hours of part-time employees in each subsector in the years 2011–13. Of the subsectors surveyed, only the processing and preserving of fishes and seaweeds subsector had a significant number of part-time employees in those years. The number of working hours per week in this subsector remained constant at 29 hours in those years.

Table 15. Working hours of part-time employees

Subsector	Number of samples	Percentage of part-time employees	Average number of part-time employees			Part-time employee work hours/week		
			2011	2012	2013	2011	2012	2013
Processing and preserving of fishes and seaweeds	4	100%	569.5	567.8	572.3	29	29	29
Processing and preserving of meat and meat products	4	50%	NA	NA	NA	NA	NA	NA
Processing and preserving of fruit and vegetables	1	100%	NA	NA	NA	NA	NA	NA
Manufacture of bakery products	4	75%	0	2	2	0	40	40
Manufacture of dairy products	4	100%	0	2	2	0	40	40
Manufacture of seasonings	4	100%	NA	NA	NA	NA	NA	NA

Note: NA, not applicable.

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[3] Republic of China Tourism Bureau. Ministry of Transportation and Communications, Government of the Republic of China. Upgrading Tourism through Quality Agriculture, Health Care, and Cultural and Creative Industries. Presentation at the 29th Science and Technology Advisory Group (STAG) Board Meeting, Taipei, Republic of China, 4 November 2009.

KEY FINDINGS ON THE FOOD-MANUFACTURING SECTOR IN JAPAN

Atsushi Miyasaka

INTRODUCTION AND OVERVIEW OF THE FOOD-MANUFACTURING SECTOR IN JAPAN

This chapter will provide an interim analysis report on the results of a cross-country productivity assessment of Japanese SMEs in the food sector. The food sector plays a very important role in providing stable food supplies and rich diets to Japan's population. However, the domestic food-production sector has been on a downward trend from the late 1990s due to the decrease in food prices. In recent years, it has remained at about JPY80 trillion (refer to Figure 1). The domestic food-production sector decreased by 1% in 2010 (JPY0.7 trillion) from JPY79.2 trillion in the previous year, and accounted for 9% of the gross domestic output (GDO) for all industries (JPY906 trillion) (refer to Figure 2). In 2010 the output from the food-manufacturing sector was JPY33.9 trillion, or approximately 43% of the total food sector and accounted for about 4% of total domestic production.

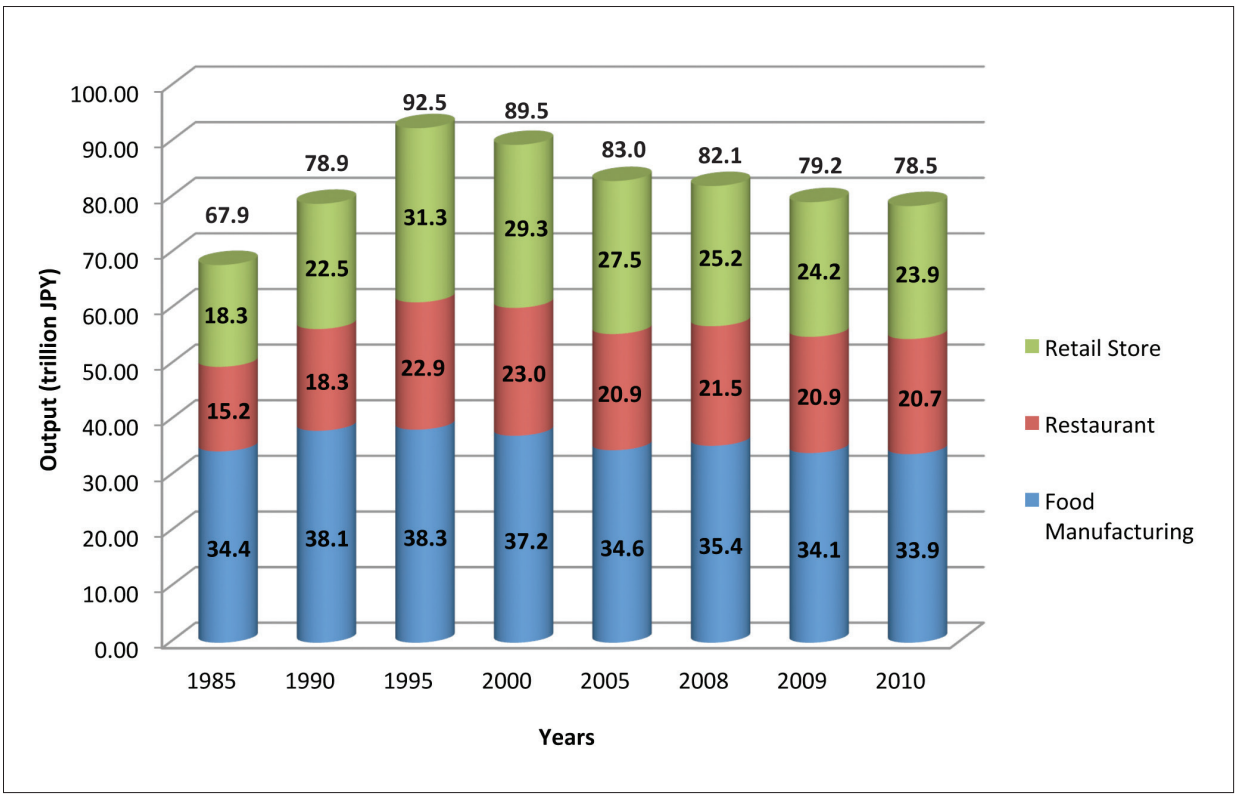

Figure 1. Gross domestic output of food sector (unit: trillion JPY).

Source: Ministry of Agriculture, Forestry, and Fisheries, Government of Japan GDP statistics [1].

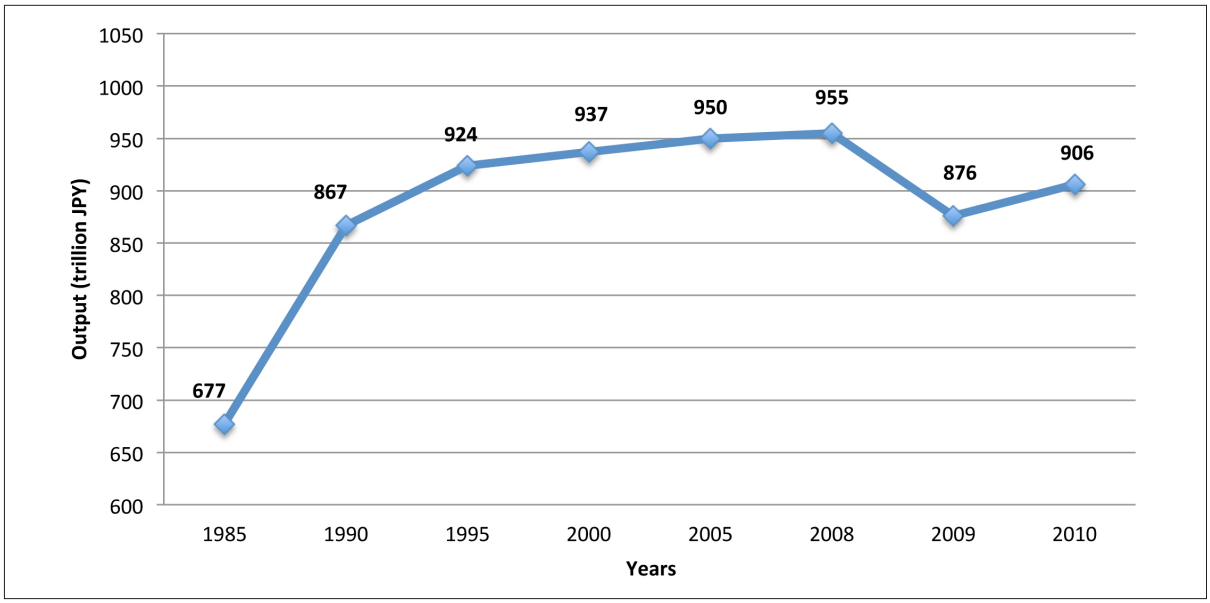

Figure 2: Gross domestic output of all sectors (unit: trillion JPY).

Source: Ministry of Agriculture, Forestry and Fisheries, Government of Japan [1].

Food manufacturers produce a wide variety of foods through processing agricultural, forestry, and fishery products and ensure a stable supply to consumers. In addition, food manufacturers play an important role as a major demand creator for the agriculture, forestry, and fisheries sectors.

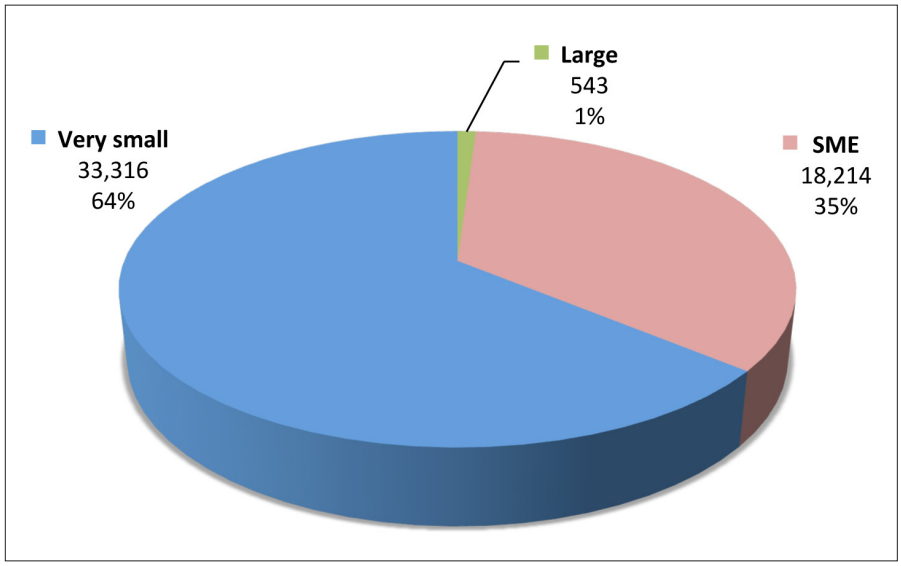

Figure 3: Size of food manufacturers in Japan.

Source: Ministry of Economy, Trade and Industry, Government of Japan [2].

The number of food-manufacturing establishments in Japan is about 50,000 (refer to Figure 4). More than 99% of these food manufacturers are small and medium enterprises (SMEs), defined as companies with fewer than 299 employees or companies with capital under JPY300 million. Only 36% of the companies have more than 10 employees.

Out of the total manufacturing sector, food manufacturing has the largest number of establishments (refer to Figure 4). The food-manufacturing sector ranks third out of the other manufacturing sectors in terms of the value of its product shipments (refer to Figure 5) and value-added (VA) (refer to Figure 6). From these results, it is apparent that food manufacturers play a very essential role in Japan. These data are based on establishments that employ more than 10 people.

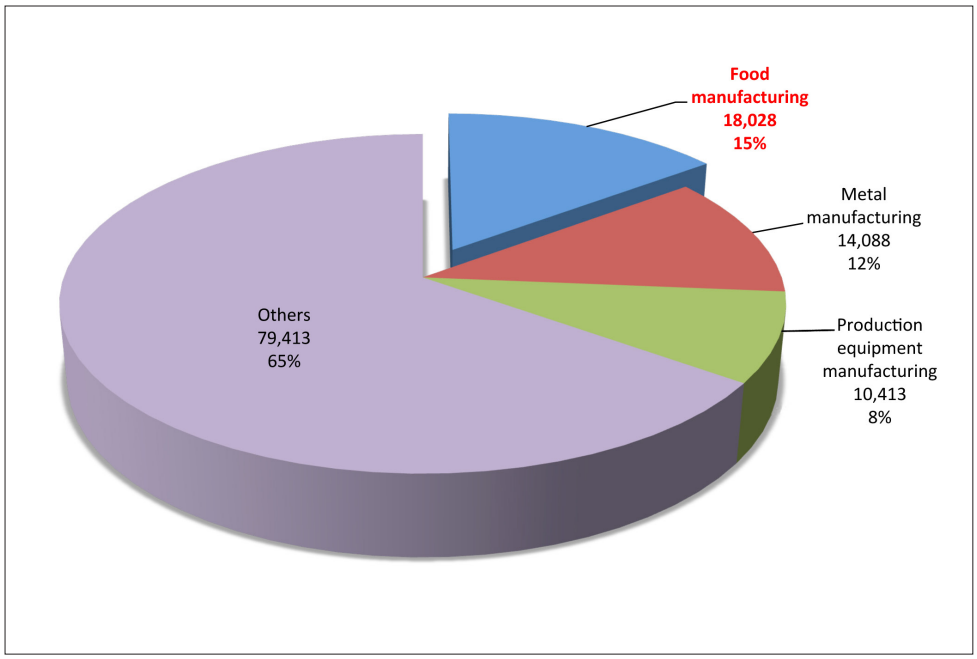

Figure 4: Number of establishments.

Source: Ministry of Economy, Trade, and Industry, Government of Japan [2].

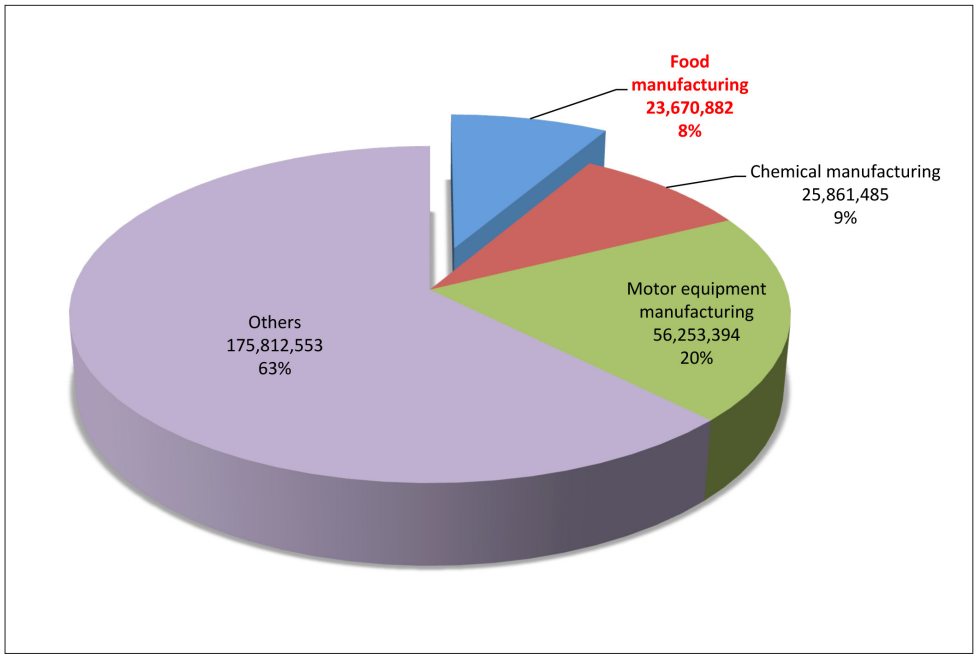

Figure 5: Product shipment (JPY).

Source: Ministry of Economy, Trade and Industry, Government of Japan [2].

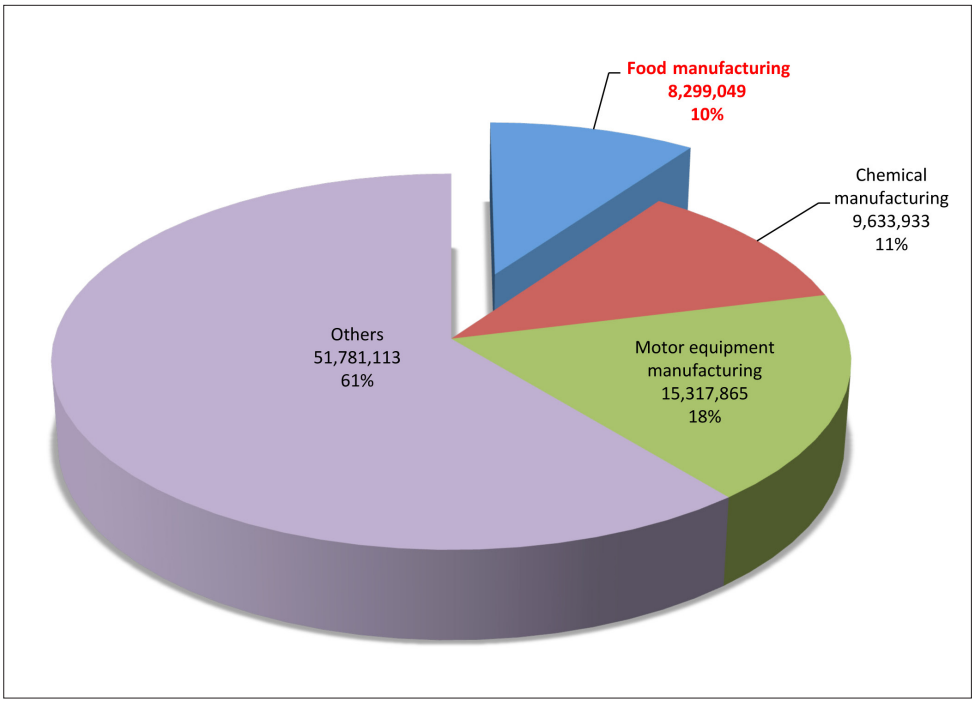

Figure 6: Product shipment (JPY)

Source: Ministry of Economy, Trade and Industry, Government of Japan [2]. Source: Census of manufacturers by METI (2012).

PROFILES OF THE PARTICIPATING FOOD-MANUFACTURING COMPANIES

The survey questionnaires were originally created at the study meeting held in Singapore. The Japan Productivity Center (JPC) did its best to obtain as many replies as possible through telephone calls, letters, e-mails, and visits, after the questionnaires were translated in August. However, only four replies were received and some questions were not answered. Note that companies were very cautious about disclosing their financial and company information and, in Japan, strong incentives would be required to execute a long questionnaire of this nature that would require such confidential information. This is a good learning point for future surveys. The survey questionnaires developed during the study meeting were translated and sent to the companies. The four participating SMEs were from the following three subsectors:

1. Processing and preservation of fishes and seaweeds;
2. Manufacture of bakery products; and
3. Manufacture of seasonings.

The following tables contain the basic information collected and analyzed from these participating companies.

- Table 1 shows the number of employees. Two of the companies had approximately 200 employees and the other two had about 300. All the companies are categorized as SMEs based on Japan's definition of SMEs.

- Table 2 shows business types; all four companies are private limited.

- Table 3 indicates manufacturer types; all four companies have their own food-product brands.

Table 1: Average number of full-time employees

Average number of full-time employees					Average
Company	**Subsector**	**2011**	**2012**	**2013**	
A	Processing and preserving of fishes and seaweeds	196	190	186	191
B	Manufacture of bakery products	191	191	198	193
C	Manufacture of seasonings	348	350	358	352
D	Manufacture of seasonings	NA	NA	300	300

Note: NA, not applicable.

Table 2: Business types

Type of business					
Company	**Subsector**	**Sole proprietor**	**Partnership**	**Private limited**	**Public listed**
A	Processing and preserving of fishes and seaweeds			✓	
B	Manufacture of bakery products			✓	
C	Manufacture of seasonings			✓	
D	Manufacture of seasonings			✓	

Table 3: Manufacturer types

Type of business				
Company	**Subsector**	**Contract manufacturer**	**Own-product manufacturer**	**Both**
A	Processing and preserving of fishes and seaweeds		✓	
B	Manufacture of bakery products		✓	
C	Manufacture of seasonings		✓	
D	Manufacture of seasonings		✓	

KEY PERFORMANCE OF PARTICIPATING COMPANIES IN JAPAN

Introduction – TKC Corporation Data

To support unavailable data and enhance the credibility of this report, data from the TKC Corporation were used. TKC data are derived from an analysis of the operating results and financial condition of SME companies involved. TKC's analysis is based on accounting books from cyclic audits, monthly closings that are carried out every month, and from recorded data results in financial statements (i.e., the balance sheet and income statement). It is highly praised for its accuracy and is used by tax authorities, banks, and many other organizations.

Profile of Participating SMEs on TKC

This research focused on the following food-manufacturing subsectors:

1. Processing and preserving of fishes and seaweeds;
2. Processing and preserving of meat and meat products;
3. Processing and preserving of fruit and vegetables;
4. Manufacture of bakery products;
5. Manufacture of dairy products; and
6. Manufacture of seasonings.

Tables 4 and 5 show the TKC data that were used. Table 4 shows the total numbers from the total food-manufacturing sector against the numbers for the six subsectors for comparison (data include information from more than 1,300 food manufacturing companies). Within each subsector, the number of companies ranged from 22 (dairy products) to 196 (bakery products) over a two-year period. The average sales of all food manufacturers were JPY461 million. On the other hand, the average sales for these six subsectors were from JPY507 million to JPY679 million. This means that these six subsectors' sales values were collectively larger than those of average food manufacturers.

Table 5 further breaks down the data for each category in the processing and preserving of fishes and seaweeds, manufacture of bakery products, and manufacture of dairy products subsectors. The unit used was JPY100, a convenient rate as the exchange rate between the USD and JPY was approximately USD1 = JPY100 at the beginning of 2014. Due to a sudden change, the exchange rate at the end of November 2014 was USD1=JPY119 [3].

Table 4. Basic information from TKC data by subsector (unit of sales and EBITDA: JPY100)

Sector	**Food manufacturing (total)**		
Year	**2011**	**2012**	**Average**
Number of companies	1327	1399	1363
Average number of employees	41.6	41.1	41.4
Sales	4,643,960	4,585,340	4,614,650
EBITDA	365,640	372,370	246,003

Subsector	**Fishes and seaweeds**		
Year	**2011**	**2012**	**Average**
Number of companies	67	78	73
Average number of employees	16.1	13.3	14.7
Sales	8,839,157	3,840,415	6,339,786
EBITDA	492,724	302,039	397,382

Subsector	**Meat and meat products**		
Year	**2011**	**2012**	**Average**
Number of companies	21	26	24
Average number of employees	46.6	52.3	49.5
Sales	6,090,720	7,497,500	6,794,110
EBITDA	456,350	421,590	438,970

Subsector	**Fruit and vegetables**		
Year	**2011**	**2012**	**Average**
Number of companies	28	26	27
Average number of employees	34.0	31.9	33.0
Sales	4,919,020	5,226,700	5,072,860
EBITDA	408,970	448,310	428,640

Subsector	**Bakery products**		
Year	**2011**	**2012**	**Average**
Number of companies	186	205	196
Average number of employees	18.5	16.1	17.3
Sales	5,784,872	4,934,130	5,359,501
EBITDA	403,201	438,507	420,754

Subsector	**Seasonings**		
Year	**2011**	**2012**	**Average**
Number of companies	33	36	35
Average number of employees	31.6	37.7	34.7
Sales	5,899,210	6,991,430	6,445,320
EBITDA	449,580	492,740	471,160

Source: TKC Corporation [4].
Note. EBITDA, earnings before interest, taxes, depreciation, and amortization.

Table 5: Breakdown of basic information from TKC data by subsector (unit of sales and EBITDA: JPY100)

Processing and preserving of fishes and seaweeds												
	Canned or bottled seafood and seaweed			Seaweed products, except canned or bottled			Fish paste products			Fishes and seaweed (total)		
Year	2011	2012	Average	2011	2012	Average	2011	2012	Average	2011	2012	Average
No. of companies	8	6	7	27	24	26	32	48	40	67	78	73
Ave. no. of employees	84.4	77.7	81.3	32.3	30.3	31.3	52.8	40.2	46.5	16.1	13.3	14.7
Sales	19,847,830	17,200,960	18,524,395	7,187,850	7,174,410	7,181,130	7,480,280	503,350	3,991,815	8,839,157	3,840,415	6,339,786
EBITDA	1,498,640	334,951	916,796	276,340	288,790	282,565	423,820	304,500	364,185	492,724	302,039	397,382

Manufacture of bakery products												
Subsector	Bread			Pastries and cakes			Biscuits, crackers, and other dry bakery products			Bakery products (total)		
Year	2011	2012	Average	2011	2012	Average	2011	2012	Average	2011	2012	Average
No. of companies	44	42	43	127	147	137	15	16	16	186	205	196
Ave. no. of employees	52.2	39.1	45.7	56.7	50.6	53.7	54.5	53	53.8	18.5	16.1	17.3
Sales	5,374,130	3,241,970	4,308,050	5,753,950	5,170,920	5,462,435	7,251,520	7,200,540	7,226,030	5,784,872	4,934,130	5,359,501
EBITDA	307,050	217,390	262,220	419,030	491,170	455,100	548,740	535,100	541,920	403,001	438,507	420,754

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Manufacture of dairy products									
Subsector	**Processed milk and milk beverage products**			**Dairy products, except processed milk and milk beverage products**			**Dairy products (total)**		
Year	**2011**	**2012**	**Average**	**2011**	**2012**	**Average**	**2011**	**2012**	**Average**
No. of companies	8	7	8	16	12	14	24	19	22
Ave. no. of employees	64	75.7	69.9	64.3	82.3	73.3	32.1	39.9	36.0
Sales	21,697,690	24,113,290	22,905,490	25,024,890	29,255,740	27,140,315	23,915,823	27,361,153	25,638,488
EBITDA	680,640	686,610	683,625	1,338,990	1,176,410	838,467	1,119,540	995,957	1,057,749

Source: TKC Corporation [4].
Notes: Ave, average; EBITDA, earnings before interest, taxes, depreciation, and amortization; No., number.

Financial Perspective

Tables 6-1, 6-2, 7-1, and 7-2 show the various metrics that were agreed upon by the National Expert (NE) Team for use in the financial perspective. TKC data were also used, as they were reliable due to the number of companies involved.

a. *Value added (two-year average)*
   - Food-manufacturing sector total: JPY220 million
   - The six subsectors: Ranged from JPY217 million (bakery) to JPY872 million (dairy)
   - The manufacture of bakery products subsector's value added (VA) (JPY217 million) was the lowest of all food-manufacturing companies. This may be due to the size of the bakery companies. The VA for the dairy subsector (JPY872 million) far exceeded the others, as its sales value was far higher. The other four subsectors (processing and preserving of fishes and seaweeds, processing and preserving of meat and meat products, processing and preserving of fruit and vegetables, and manufacture of seasonings) were very close, each ranging from JPY240 million to JPY326 million.

b. *Value added-to-sales ratio (two-year average)*
   - Food-manufacturing sector total: 48%
   - The six subsectors: Ranged from 34% (manufacture of dairy products) to 53% (processing and preserving of fishes and seaweeds)
   - Dairy was the largest VA-valued subsector with the lowest ratio of 34%, showing that efficiency may need improvement. Manufacture of bakery products was 39%, which was about 10% lower than the total food-manufacturing sector.

c. *Labor cost competitiveness (two-year average)*
   - Food-manufacturing sector total: 2
   - The six subsectors: From 1.3 (bakery products) to 3.3 (dairy products)
   - These ratios were calculated by dividing VA by labor cost. A higher figure means higher productivity. Although the VA-sales ratio for the manufacture of dairy products subsector was very low, its labor efficiency was very high.

d. *Working capital ratio (two-year average)*
   - Food-manufacturing sector total: 2.5

- The six subsectors: Ranged from 2.1 (manufacture of bakery products) to 6.7 (manufacture of dairy products)

- For this ratio, higher percentage shows better capital performance. The total food-manufacturing sector, including the four subsectors (processing and preserving of fishes and seaweeds, processing and preserving of fruit and vegetables, manufacture of bakery products, and manufacture of seasonings) were in the 2.0 range. Processing and preserving of meat and meat products was 4.8 and manufacture of dairy products was 6.7. Their capital performance was better than others.

e. *Profit margin (two-year average)*
   - Food-manufacturing sector total: 8%

   - The six subsectors: Ranged from 4% (manufacture of dairy products) to 8% (processing and preserving of fruit and vegetables, and manufacture of bakery products)

   - Except for the manufacture of dairy products subsector, the other five subsectors and the total food-manufacturing sector had profit margins of between 7% and 8%. Only the manufacture of dairy products subsector was 4%, having relatively lower profitability than the others.

f. *Sales growth (2011–12)*
   - Food-manufacturing sector total: –1%

   - The six subsectors: Ranged from –57% (processing and preserving of fishes and seaweeds subsector) to 23% (processing and preserving of meat and meat products subsector)

   - This figure varies from subsector to subsector. On average, sales growth in the total food-manufacturing sector was –1%, where it mostly remained for two years. Processing and preserving of fishes and seaweeds and the bakery products subsectors also experienced negative growth. The other four subsectors recorded higher sales growth compared to the previous year.

Table 6-1: Financial perspective metrics by subsector (unit of value added: JPY100)

Subsector		**Food manufacturing (total)**			**Fishes and seaweeds**			**Meat and meat products**			**Fruit and vegetables**		
Year		**2011**	**2012**	**Average**	**2011**	**2012**	**Average**	**2011**	**2012**	**Average**	**2011**	**2012**	**Average**
No. of companies		1,327	1,399	1,363	67	78	72.5	21	26	23.5	28	26	27
Ave. no. of employees		41.6	41.1	41.4	16.1	13.3	14.7	46.6	52.3	49.5	34	31.9	33
Financial perspective													
KPI	**Formula**												
Value added (VA)	Profit after tax + Labor cost + Interest on borrowings + Depreciation + Taxes	2,317,180	2,091,210	2,204,195	3,878,567	2,390,174	3,134,370	3,439,650	3,078,160	3,258,905	2,325,080	2,484,900	2,404,99050
VA-to-sales ratio	VA ÷ Sales	50%	46%	48%	44%	62%	53%	56%	41%	49%	47%	48%	47%
Labor cost competitiveness	VA ÷ Labor cost	2	1.9	2	2.3	1.9	2.1	2.1	1.9	2	2.2	2.4	2.9
Working capital ratio	Sales ÷ (Current asset – Current liability)	2.5	2.5	2.5	3	1.9	2.4	3.8	5.8	4.8	2.8	2.9	2.9
Profit margin	EBITDA ÷ Sales	8%	8%	8%	6%	8%	7%	7%	6%	7%	8%	9%	8%
Sales growth	$(Sales_t - Sales_{t-1}) \div Sales_{t-1}$		–1%	–1%		–57%	–57%		23%	23%		6%	6%
Export ratio	Export ÷ Sales	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes: Ave., average; EBITDA, earnings before interest, taxes, depreciation, and amortization; NA, not applicable; VA, value added; No., number.

Table 6.2: Financial perspective metrics by subsector (unit of value added: JPY100)

Subsector		**Food manufacturing (total)**			**Bakery products**			**Dairy products**			**Seasonings**		
Year		**2011**	**2012**	**Average**	**2011**	**2012**	**Average**	**2011**	**2012**	**Average**	**2011**	**2012**	**Average**
No. of companies		1,327	1,399	1,363	186	205	196	24	19	14	33	36	35
Ave. no. of employees		41.6	41.1	41.4	18.5	16.1	17.3	32.1	39.9	36.0	31.6	37.7	34.7
Financial perspective													
KPI	**Formula**												
Value added (VA)	Profit after tax + Labor cost + Interest on borrowings + Depreciation + Taxes	2,317,180	2,091,210	2,204,195	3,418,103	914,994	2,166,548	7,780,513	9,673,784	8,727,149	3,045,110	3,466,950	3,256,030
VA-to-sales ratio	VA ÷ Sales	50%	46%	48%	59%	19%	39%	33%	35%	34%	52%	50%	51%
Labor cost competitiveness	VA ÷ Labor cost	2	1.9	2	2	0.6	1.3	3.2	3.4	3.3	2.2	2	2.1
Working capital ratio	Sales ÷ (Current asset – Current liability)	2.5	2.5	2.5	2.9	2	2.4	6.7	6.7	6.7	2	2.1	2.1
Profit margin	EBITDA ÷ Sales	8%	8%	8%	7%	9%	8%	5%	4%	4%	8%	7%	7%
Sales growth	$(Sales_t - Sales_{t-1}) \div Sales_{t-1}$		–1%	–1%		–15%	–15%		14%	14%		19%	19%
Export ratio	Export ÷ Sales	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes: Ave., average; EBITDA, earnings before interest, taxes, depreciation, and amortization; NA, not applicable; VA, value added; No., number.

Table 7-1. Financial perspective metrics by subsector (unit: JPY100, except for number of companies and employees)

Subsector	Food manufacturing (total)			Fishes and seaweeds			Meat and meat products			Fruit and vegetables		
Year	2011	2012	Average	2011	2012	Average	2011	2012	Average	2011	2012	Average
No. of companies	1,327	1,399	1,363	67	78	72.5	21	26	23.5	28	26	27
Ave. no. of employees	41.6	41.1	41.4	16.1	13.3	14.7	46.6	52.3	49.5	34	31.9	33
Sales	4,643,960	4,585,340	4,614,650	8,839,157	3,840,415	6,339,786	6,090,720	7,497,500	6,794,110	4,919,020	5,226,700	5,072,860
Labor cost	1,139,140	1,115,290	1,127,215	1,691,746	1,291,822	1,491,784	1,672,300	1,656,860	1,664,580	1,059,670	1,044,890	1,052,280
Fixed assets	2,086,020	2,013,210	2,049,615	2,287,468	2,003,196	2,145,332	2,072,990	1,964,470	2,018,730	1,892,280	2,157,130	2,024,705
Current assets	4,594,260	4,487,040	4,450,650	8,146,002	5,597,145	6,871,573	4,168,760	4,500,300	4,334,530	5,100,310	5,477,720	5,289,015
Current liabilities	2,717,840	2,615,690	2,666,765	5,198,266	3,557,576	4,377,921	2,581,700	3,200,780	2,891,240	3,370,260	3,663,910	3,517,085
EBITDA	365,640	372,370	369,005	492,724	302,039	397,382	456,350	421,590	438,970	408,970	448,310	428,640
Cost of goods sold	3,669,440	3,630,010	3,649,725	6,387,089	4,479,062	5,433,075	4,145,560	6,136,990	5,141,275	3,846,070	4,023,330	3,934,700

Notes: Ave., average; EBITDA, earnings before interest, taxes, depreciation, and amortization; No., number.

Table 7-2. Financial perspective metrics by subsector (unit: JPY100 except for number of companies and employees)

Subsector	Food manufacturing (total)			Bakery products			Dairy products			Seasonings		
Year	2011	2012	Average	2011	2012	Average	2011	2012	Average	2011	2012	Average
No. of companies	1,327	1,399	1,363	186	205	196	24	19	14	33	36	35
Ave. no. of employees	41.6	41.1	41.4	18.5	16.1	17.3	32.1	39.9	36.0	31.6	37.7	34.7
Sales	4,643,960	4,585,340	4,614,650	1,708,026	1,497,085	1,602,555	2,403,920	2,863,263	2,633,591	1,408,350	1,706,160	1,557,255
Labor cost	1,139,140	1,115,290	1,127,215	2,900,705	2,818,892	2,859,798	5,078,080	6,256,313	5,667,196	2,487,750	3,313,750	2,900,750
Fixed assets	2,086,020	2,013,210	2,049,615	4,892,104	4,682,483	4,787,294	10,329,650	12,005,877	11,167,763	5,712,120	6,765,180	6,238,650
Current assets	4,594,260	4,487,040	4,450,650	1,984,858	2,530,265	2,257,562	3,556,523	4,117,141	3,836,832	2,930,610	3,323,600	3,127,105
Current liabilities	2,717,840	2,615,690	2,666,765	2,907,245	2,152,218	2,529,732	6,773,127	7,888,736	7,330,931	2,781,510	3,441,580	3,111,545
EBITDA	365,640	372,370	369,005	403,001	438,507	420,754	1,119,540	995,957	1,057,749	449,580	492,740	471,160
Cost of goods sold	3,669,440	3,630,010	3,649,725	3,829,091	1,410,930	2,620,011	20,770,107	23,285,184	22,027,645	4,194,610	5,096,000	4,645,305

Notes: Ave., average; EBITDA, earnings before interest, taxes, depreciation, and amortization; No., number.

Customer Perspective

Methods of gathering feedback from customers

Table 8 shows the methods that the companies used to gather feedback from their customers. All four participating companies used more than three methods. The most common methods used to gather information from customers were telephone calls and through the feedback pages on the respective official websites.

Table 8. Methods to gather feedback from customers

Company	Subsector	Telephone	Letter	Email	Website feedback page	In person
A	Processing and preserving of fishes and seaweeds	✓	✓		✓	
B	Manufacture of bakery products	✓		✓	✓	✓
C	Manufacture of Seasonings	✓	✓	✓	✓	✓
D	Manufacture of Seasonings	✓			✓	
Total		**4**	**2**	**2**	**4**	**2**

Collection and recording of customer complaints

Table 9 shows whether the participating companies collected information on customer complaints, and the number of complaints received. All four participating companies recorded the number of customer complaints. The number of customer complaints varied from company to company. Only company A had a decreasing number of complaints.

Table 9: Collection and recording of customer complaints

Collection and recording of customer complaints			Number of customer complaints received			
Company	Subsector	Do you collect and record customer complaints?	2011	2012	2013	Average
A	Processing and preserving of fishes and seaweeds	Yes	5,600	4,400	4,300	4,767
B	Manufacture of bakery products	Yes	127	159	134	140
C	Manufacture of seasonings	Yes	320	328	373	340
D	Manufacture of seasonings	Yes	50	50	50	50

Table 10 shows the agreed key metrics for the customer perspective. However, only the sales per employee (full-time equivalent [FTE]) figures were available from TKC.

- Sales per employee (FTE) (two-year average)
- Food-manufacturing sector total: JPY11 million
- The six subsectors: Ranged from JPY13.7 million (meat and meat products) to JPY71.5 million (dairy products)
- All six subsectors exceeded the results of the total food-manufacturing sector. The FTE ratio for the manufacture of dairy products subsector (with high sales) was JPY71.5 million, followed by the processing and preserving of fishes and seaweeds subsector (JPY41.8 million) and the manufacture of bakery products subsector (JPY30.9 million).

Table 10: Customer perspective metrics by subsector (TKC)

Subsector		**Food manufacturing (total)**			**Fishes and seaweeds**			**Meat and meat products**			**Fruit and vegetables**		
Year		**2011**	**2012**	**Average**	**2011**	**2012**	**Average**	**2011**	**2012**	**Average**	**2011**	**2012**	**Average**
No. of companies		1,327	1,399	1,363	67	78	72.5	21	26	23.5	28	26	27
Ave. no. of employees		41.6	41.1	41.4	16.1	13.3	14.7	46.6	52.3	49.5	34	31.9	33
Customer perspective													
KPI	**Formula**												
Compliments to complaints ratio	Compliments ÷ complaints	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Customer reject to return ratio (%)	Orders rejected (JPY) ÷ Total orders (JPY)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sales per employee (FTE)	Sales ÷ No. of employees (FTE)	111,634	111,565	111,600	548,338	287,754	130,292	130,702	143,356	6,327	144,677	163,846	9,585
On-time delivery to commit	No. of deliveries on time ÷ Total no. of deliveries	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
No. of new products per year	No. of new products	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Source: TKC Corporation [4].
Notes: Ave., average; FTE, full-time equivalent; KPI, key performance indicators; NA, not applicable; No., number; TKC, The Kuskokwim Corporation; No., number.

Operational Perspective

Key success factors for business

Table 11 shows the key success factors for the food-manufacturing sector, with three out of four participating companies, citing "good-quality products according to customer requirements" as the key success factor. The other key success factors highlighted were "good customer service" and "the organization's capability to offer valuable propositions to customers."

Table 11. Key success factors for business

Company	Subsector	Value for money	Product satisfies customers' requirements	Strong reputation / brand name	Low operating cost	Good customer service
A	Processing and preserving of fishes and seaweeds					✓
B	Manufacture of bakery products		✓			
C	Manufacture of seasonings	✓	✓			
D	Manufacture of seasonings		✓			
Total		**1**	**3**	**0**	**0**	**1**

Overall results

Tables 12-1 and 12-2 show the agreed metrics for the operational perspective. Other than annual inventory turns and R&D expenditure, all of the metrics were taken from TKC data.

a. *Labor productivity (two-year average)*
- Food-manufacturing sector total: JPY5.3 million
- The six subsectors: Ranged from JPY6.6 million (processing and preserving of meat and meat products) to JPY24.2 million (manufacture of dairy products)
- This value was calculated by dividing VA by staff number and measures employee performance. Although the result of all food manufacturers was JPY5.3 million, the results from the six subsectors ranged from JPY6.6 million (processing and preserving

of meat and meat products subsector) to JPY24.2 million (manufacture of dairy products subsector). This means that the labor productivity for all six subsectors was above average for food manufacturers.

b. *Labor cost to sales ratio (two-year average)*
   - Food-manufacturing sector total: 24%
   - The six subsectors: Ranged from 10% (manufacture of dairy products) to 26% (processing and preserving of fishes and seaweed)
   - The ratio for the total food-manufacturing sector was 24% and the ratios of the four subsectors (processing and preserving of fishes and seaweeds, processing and preserving of meat and meat products, processing and preserving of fruit and vegetables, and manufacture of seasonings) were between 21% and 26%, which was similar to the total food-manufacturing sector. The manufacture of bakery products subsector's ratio was 30% higher than that of the other subsectors. On the other hand, manufacturing of dairy product's labor cost was 10%, far lower than the other subsectors, which show that its use of labor was more efficient.

c. *Sales per fixed assets (JPY capital) (two-year average)*
   - Food-manufacturing sector total: JPY2.25
   - The six subsectors: Ranged from JPY1.87 (manufacture of bakery products) to JPY4.54 (manufacture of dairy products)
   - This ratio shows how effectively fixed assets were utilized. The ratio for all food manufacturers was JPY2.25, while the bakery products subsector had the lowest ratio of JPY1.87. On the other hand, the processing and preserving of meat and meat products subsector ratio was JPY3.38, while the manufacture of dairy products subsector was JPY4.54, which exceeded the total food-manufacturing sector by more than 100%.
   - Sales per fixed assets (JPY capital) (two-year average)
   - Food-manufacturing sector total: 225%
   - The six subsector ranged from 187% (manufacture of bakery products) to 454% (manufacture of dairy products)

Table12-1: Operational perspective metrics by subsector

Subsector		**Food manufacturing (total)**			**Fishes and seaweeds**			**Meat and meat products**			**Fruit and vegetables**		
Year		**2011**	**2012**	**Average**	**2011**	**2012**	**Average**	**2011**	**2012**	**Average**	**2011**	**2012**	**Average**
No. of companies		1,327	1,399	1,363	67	78	72.5	21	26	23.5	28	26	27
Ave. no. of employees		41.6	41.1	41.4	16.1	13.3	14.7	46.6	52.3	49.5	34	31.9	33
Operational perspective													
KPI	**Formula**												
Labor productivity	VA (JPY) ÷ No. of staff (FTE)	55,701	50,881	53,291	240,607	179,091	209,849	73,812	58,856	66,334	68,385	77,897	73,141
Annual inventory turns	Cost of goods sold ÷ Average inventory	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Labor cost to sales ratio (%)	Labor cost ÷ Sales	25%	24%	24%	19%	34%	26%	27%	22%	25%	22%	20%	21%
Sales per fixed assets (capital in JPY)	Sales ÷ Fixed assets	2.23	2.28	2.25	3.86	1.92	2.89	2.94	3.82	3.38	2.60	2.42	2.51
Capital intensity	Fixed assets ÷ No. of staff (FTE)	50,145	48,983	49,564	141,903	150,095	145,999	44,485	37,562	41,023	55,655	67,622	61,638
R&D investment ratio	R&D expenditure ÷ Sales	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes: Ave., average; FTE, full-time equivalent; No., number; VA, value added.

Table 12-2. Operational perspective metrics by subsector

Subsector		Food manufacturing (total)			Bakery products			Dairy products			Seasonings		
Year		2011	2012	Average	2011	2012	Average	2011	2012	Average	2011	2012	Average
No. of companies		1,327	1,399	1,363	186	205	196	24	19	14	33	36	35
Ave. no. of employees		41.6	41.1	41.4	18.5	16.1	17.3	32.1	39.9	36.0	31.6	37.7	34.7
Operational perspective													
KPI	Formula												
Labor productivity	VA (JPY) ÷ No. of staff (FTE)	55,701	50,881	53,291	184,902	56,678	120,790	242,384	242,243	242,313	96,364	91,962	94,163
Annual inventory turns	Cost of goods sold ÷ Average inventory	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Labor cost to sales ratio (%)	Labor cost ÷ Sales	25%	24%	24%	30%	30%	30%	10%	10%	10%	24%	24%	24%
Sales per fixed assets (capital in JPY)	Sales ÷ Fixed assets	2.23	2.28	2.25	1.99	1.75	1.87	4.71	4.37	4.54	2.37	2.11	2.24
Capital intensity	Fixed assets ÷ No. of staff (FTE)	50,145	48,983	49,564	156,913	174,612	165,763	158,196	156,665	157,431	78,726	87,898	83,312
R&D investment ratio	R&D expenditure ÷ Sales	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes: Ave., average; FTE, full-time equivalent; VA, value added; No., number.

Human Resource Perspective

Table 13 shows the responses given regarding the working hours of both full-time and part-time employees from the participating companies. From the survey, it was found that the regular working hours for employees were 40 hours per week.

Table 13: Working hours of full-time and part-time employees

Working hours of full-time employees per week					
Company	**Subsector**	**2011**	**2012**	**2013**	**Average**
A	Processing and preserving of fishes and seaweeds	NA	NA	NA	NA
B	Manufacture of bakery products	45	47	45	46
C	Manufacture of seasonings	38	38	38	38
D	Manufacture of seasonings	NA	NA	NA	NA

Working hours of part-time employees per week					
Company	**Subsector**	**2011**	**2012**	**2013**	**Average**
A	Processing and preserving of fishes and seaweeds	NA	NA	NA	NA
B	Manufacture of bakery products	36	34	29	33
C	Manufacture of seasonings	37	37	37	37
D	Manufacture of seasonings	NA	NA	NA	NA

Note: NA, not applicable.

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KEY FINDINGS ON THE FOOD-MANUFACTURING SECTOR IN THE REPUBLIC OF KOREA

Sangmi Cha

INTRODUCTION AND OVERVIEW OF THE FOOD-MANUFACTURING SECTOR IN THE REPUBLIC OF KOREA

In the Republic of Korea (ROK), the food-manufacturing sector is classified into eight subsectors according to the Korean Standard Industrial Code (KSIC) as shown in Table 1.

Table 1. Food-manufacturing sector classifications

KSIC		Sector
2-digit	3-digit	
10		**Food-product manufacturing**
	101*	Processing and preserving of meat
	102*	Processing and preserving of fish, crustaceans, and mollusks
	103*	Processing and preserving of fruit and vegetables
	104	Manufacture of vegetable and animal oils and fats
	105	Manufacture of dairy products
	106	Manufacture of grain mill products, starches, and starch products
	107	Manufacture of other food products
	1071*	Manufacture of bakery products
	108	Manufacture of prepared animal feeds

Source: Statistics Korea, Korean Standard Industrial Classification (version 9) [1].
Notes:
*This report will focus on four subsectors (101, 102, 103, and 1071). Subsector 101 will be referred to as processing and preserving of meat and meat products and 102 and processing and preserving of fishes and seaweeds. KSIC, Korean Standard Industrial Classification.

At the project coordination meeting, four subsectors were targeted for study, as shown in the following list (note that in the ROK, processing and preserving of meat and meat products is called processing and preserving of meat, and processing and preserving of fishes and seaweeds is called processing and preserving of fish, crustaceans, and mollusks).

- Processing and preserving of meat and meat products;
- Processing and preserving of fishes and seaweeds;
- Processing and preserving of fruit and vegetables; and
- Manufacture of bakery products.

Table 2 shows the size of the food-manufacturing sector in the ROK by number of establishments:

Table 2. Food-manufacturing sector establishments in 2012

Industry (Sector)	Number of establishments (%)		
	Total	SMEs	
		10–99 employees	100–200 employees
Manufacturing sector	63,907 (100)	59,846 (93.6)	2,695 (4.2)
Manufacture of food products	4,173 (6.5)	3,860 (92.5)	218 (5.2)
Processing and preserving of meat	702 (16.8)	639 (91.0)	43 (6.1)
Processing and preserving of fish, crustaceans, and mollusks	815 (19.5)	775 (95.1)	33 (4.0)
Processing and preserving of fruit and vegetables	436 (10.4)	419 (96.1)	11 (2.5)
Manufacture of vegetable and animal oils and fats	57 (1.4)	54 (94.7)	2 (3.5)
Manufacture of dairy products	107 (2.6)	75 (70.1)	16 (15.0)
Manufacture of grain mill products, starches, and starch products	261 (6.3)	242 (92.7)	18 (6.9)
Manufacture of other food products	1,555 (37.3)	1,424 (91.6)	88 (5.7)
Manufacture of bakery products	455 (10.9)	414 (91.0)	27 (5.9)
Manufacture of other animal feeds	240 (5.8)	232 (96.7)	7 (2.9)

Source: Compiled with information from the Korean Statistical Information Service [2].

The share of food-manufacturing establishments in the total manufacturing sector was only 6.5%. In the other food-manufacturing sector, the food-product manufacturing subsector is the largest, while the vegetable and animal oil-manufacturing subsector is the smallest. The fishes and seaweeds subsector is the second largest, as the country is located on a peninsula that is surrounded by the sea on three sides.

In terms of classifying establishments by number of employees, 92.5% of food-manufacturing establishments have fewer than 100 employees (with the exception of the manufacture of dairy products subsector). The subsector with the largest number of establishments with fewer than 100 employees is manufacture of livestock feeds and prepared animal feeds. The low number of employees-per-establishment implied that the food-manufacturing sector may experience difficulties in enjoying economies of scale.

Figure 1 below shows the growth trend of ROK establishments in the targeted subsectors. The figure shows the manufacture of non-bakery related food products. The black line is the regression result for the growth rate of food-manufacturing establishments and shows that growth is slowing. During the period 2001–12, it was found that the processing and preserving of fishes and seaweeds subsector had the lowest growth rate of 9.2% in 2004, while slaughtering of livestock, processing and preserving of meat and meat products had the highest at 13.2%.

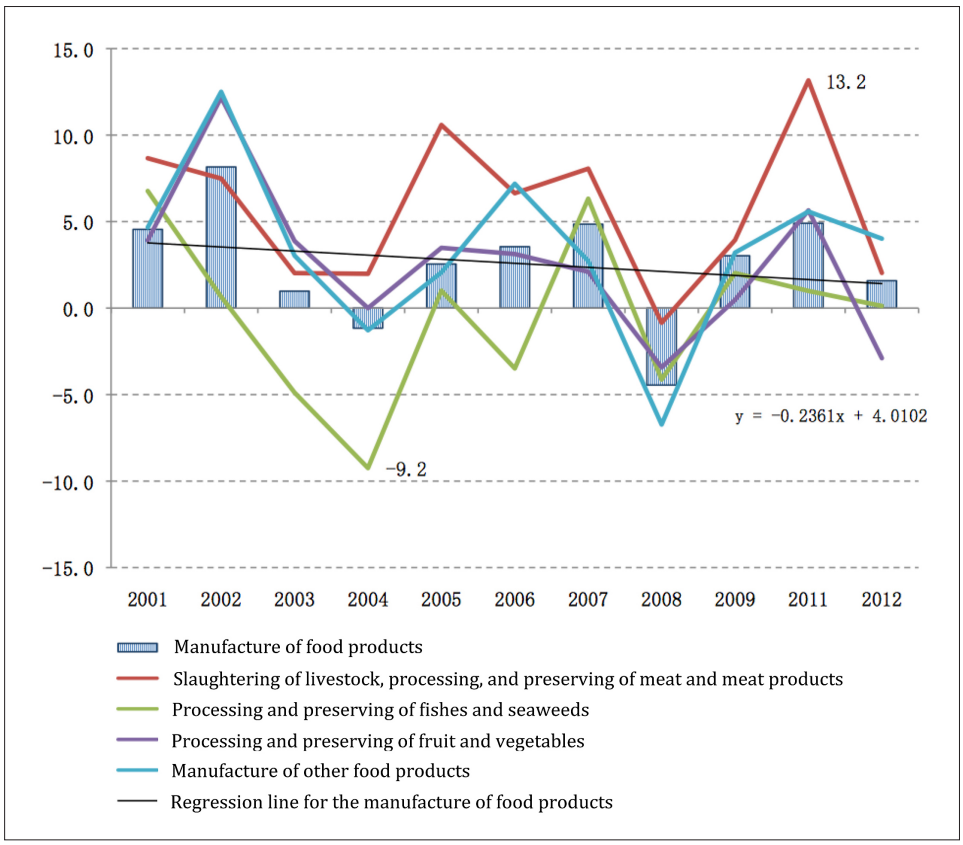

Figure 1. Growth in food-manufacturing sector (%).

Source: Compiled by the author with information from the Korean Statistical Information Service [2].

The average growth rates of SME-value-added (VA) employment and labor productivity in the food-manufacturing sector from 1992 to 2012 are shown in Table 3 below. The food-manufacturing sector's productivity growth trend gradually decreased due to the slowdown in VA growth rates. During the mid-1990s, the food-manufacturing sector was

rather promising due to fast-growing VA and labor productivity (8% and 7% annually). However, this growth rate has not been sustained recently. This challenging situation calls for countermeasures to sustain the food-manufacturing sector's growth rate, which is why the focus should be on high-performing SMEs in the targeted subsectors.

Table 3. Average growth rate in the labor productivity of food manufacturing SMEs (%)

Period	Value added (real)	Employment	Labor productivity
1992–1997	8.0	1.0	7.0
1998–2007	3.7	1.4	2.3
2008–2012	0.0	1.9	–1.9

Source: Korea Productivity Center [3].
Note: Establishments with fewer than 300 employees are classified as SMEs in the Republic of Korea.

PROFILES OF THE PARTICIPATING FOOD-MANUFACTURING COMPANIES FROM THE REPUBLIC OF KOREA

A total of 30 SMEs from the following four subsectors were analyzed:

- Processing and preserving of meat and meat products (9 SMEs);
- Processing and preserving of fishes and seaweeds (6 SMEs);
- Processing and preserving of fruit and vegetables (6 SMEs); and
- Manufacture of bakery products (9 SMEs).

Target SMEs were selected from the list of externally audited companies, according to the following criteria:

- Financial statements from the past three years were collectible; and
- Labor productivity was ranked among the highest in its sector.

Only two SMEs completed the whole questionnaire and for the other 28 SMEs, only financial data were available (purchased from a third-party agency). Due to the very low response rate, some parts of the analysis (e.g., customer and human resources perspectives) have been omitted.

Subsector 1: Processing and Preserving of Meat and Meat Products

Out of the total food-manufacturing sector, the processing and preserving of meat and meat products subsector comprised 16.8% of establishments and 13.6% of VA share (refer to Table 4). This subsector includes the slaughtering of livestock (KSIC 10110), processing and preserving of poultry (KSIC 10121), and processing and preserving of other meat and meat products (KSIC 10129).

Table 4. Comparison of the number of establishments and value-added in 2012 (%)

Subsectors	Establishments	Value added
Food-manufacturing sector (total)	100.0	100.0
Processing and preserving of meat and meat products	16.8	13.6
Processing and preserving of fishes and seaweeds	19.5	7.8
Processing and preserving of fruit and vegetables	10.4	4.6
Manufacture of bakery products	10.9	13.7

Source: Compiled with information from the Korean Statistical Information Service [2].

Nine SMEs were selected in this subsector, of which five had fewer than 100 employees and the remaining four had more than 100 but fewer than 200 employees. The date of incorporation and number of employees for each SME are shown in Table 5.

Table 5. Overview of participating SMEs in the processing and preserving of meat and meat products subsector (2013)

SME	Date of incorporation	Number of employees	Products
A1	10 December 1992	99	Meat and meat products
A2	1 October 1993	89	Meat products
A3	15 February 2001	66	Korean beef products
A4	22 June 2000	102	Slaughtered pigs and chickens
A5	1 July 1999	29	Pork products
A6	20 October 1997	196	Slaughtered livestock products
A7	4 November 1997	102	Meat products
A8	1 August 2000	100	Poultry products
A9	1 September 1995	69	Chicken, pork, and beef products

Note: SME, small and medium enterprise.

Subsector 2: Processing and Preserving of Fishes and Seaweeds

This subsector had the largest share of establishments (19.5%) among the four targeted subsectors, but in terms of VA, it only had a 7.8% share. Six SMEs in this subsector were selected, of which four had fewer than 100 employees and the remaining two had more than 100, but fewer than 200 employees. The date of incorporation and number of employees for each SME are shown in Table 6.

Table 6. Overview of the participating SMEs in the processing and preserving of fishes and seaweeds subsector (2013)

SME	Date of incorporation	Number of employees	Products
B1	14 August 2003	54	Processing of marine products (e.g. prawns)
B2	1 January 2003	73	Frozen marine products
B3	6 July 1987	90	Canned oyster products
B4	10 June 1993	30	Frozen marine products (e.g., cuttlefish, sea bream)
B5	16 November 1996	111	Processing of marine products (e.g. ark-shell, sea eel)
B6	13 July 1965	124	Canned food products

Note: SME, small and medium enterprise.

Subsector 3: Processing and Preserving of Fruit and Vegetables

This subsector had the smallest share of both establishments (10.4%) and VA (4.6%) among the four targeted subsectors. Six SMEs were selected in this subsector, of which one SME had more than 100 employees (151) and the remaining six had fewer than 100 employees. The date of incorporation and number of employees for each SME are specified in Table 7 below.

Table 7. Overview of participating SMEs in the processing and preserving of fruit and vegetables subsector (2013)

SME	Date of incorporation	Number of employees	Products
C1	25 April 1990	21	Dried fruit and nut products
C2	1 July 1996	57	Fruit jam and fruit-flavored tea
C3	12 July 1989	49	Concentrated fruit juice

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SME	Date of incorporation	Number of employees	Products
C4	1 October 2001	27	Concentrated tangerine juice
C5	14 November 1990	77	Fruit processing
C6	22 August 2001	151	Pickled radish and cucumbers

Notes: No., number; SME, small and medium enterprise.

Subsector 4: Manufacture of Bakery Products

The sector for the manufacture of bakery products had the largest VA share (13.7%) among the four targeted subsectors. It accounted for only 10.9% of establishments in the total food-manufacturing sector.

A total of nine SMEs were selected in the manufacture of bakery products subsector. Four of them had fewer than 100 employees and the other five had more than 100 but fewer than 200 employees. The date of incorporation and number of employees for each SME are specified in Table 8.

Table 8. Overview of participating SMEs in the manufacture of bakery products subsector (2013)

SME	Date of Incorporation	Number of employees	Products
D1	3 January 1994	47	Biscuit and bread products
D2	3 January 1996	17	Hardtack and hamburger buns
D3	1 April 1989	38	Snack foods
D4	1 June 2007	80	Rice cakes
D5	24 November 1989	130	Chocolate biscuits, candies, and gums
D6	8 July 1993	119	Cocoa, chocolate, jam, and jelly products
D7	23 December 1992	100	Chewing gum products
D8	11 December 1965	179	Bread and snack products
D9	9 August 1983	165	Chocolate, snacks, and bread products

Note: SME, small and medium enterprise.

KEY PERFORMANCE OF PARTICIPATING COMPANIES FROM THE REPUBLIC OF KOREA

Financial Perspective

Subsector 1: Processing and Preserving of Meat and Meat Products

The average financial performance of the nine participating SMEs in this subsector is summarized in Table 9. The average VA was stated as being around USD6 million from 2011 to 2013 and the VA-to-sales ratio was under 10%.

Table 9. Financial perspective results

No.	Key Performance Indicators	2011	2012	2013
1	Value added (USD)	6,346,034	6,159,062	5,976,919
2	Value added-to-sales ratio (%)	9.8	9.9	9.2
3	Labor cost competitiveness	3.4	2.6	3.1
4	Working capital ratio	4.5	12.5	5.2
5	Profit margin (%)	4.7	3.7	3.2
6	Sales growth (%)	–	–3.6	–1.8

Note: No., number.

- The VA of participating SMEs in this subsector was decreasing, showing a negative growth rate of –2.9% and –3.0% in 2012 and 2013 respectively.
- The VA-to-sales ratio increased from 9.8% in 2011 to 9.9% in 2012. It decreased by 0.7% in 2013.
- Labor cost competitiveness, measured by the ratio of VA to labor cost, fluctuated between 2.6 and 3.4.
- Working capital ratio increased sharply by 176.9% in 2012, but decreased more than half in 2013.
- The profit margin dropped in two consecutive years from 4.7% to 3.2%.
- Sales continued decreasing over the three years, but this decrease narrowed in 2013, compared to 2012.

Subsector 2: Processing and Preserving of Fishes and Seaweeds

Table 10 shows the average financial performance of the participating SMEs in this subsector.

Table 10. Financial perspective results

No.	Key Performance Indicators	2011	2012	2013
1	Value added (USD)	4,035,013	4,150,249	3,679,382
2	Value added-to-sales ratio (%)	14.3	17.0	12.8
3	Labor cost competitiveness	1.5	1.7	2.4
4	Working capital ratio	6.0	2.1	3.4
5	Profit margin (%)	3.3	5.0	5.5
6	Sales growth (%)	–	–14.5	7.9

Note: No., number.

- The VA of participating SMEs on average was stated as being around USD4 million. It increased by 2.9% in 2012 but decreased sharply by 11.3% in 2013.
- The VA-to-sales ratio increased by 2.7% in 2012 but decreased by 4.3% in 2013.
- Labor cost competitiveness increased over the three years, from 1.5 to 2.4. This was mainly due to the sharp drop in labor cost (–10% in 2012 and –35.4% in 2013).
- The average working capital ratio first decreased by half in 2012, and then recovered slightly to 3.4 in 2013.
- The profit margin increased in 2012 by 1.7% due to increased earnings before interest, taxes, depreciation, and amortization (EBITDA) (76%) and reduced sales (–15.8%). It continued to increase in 2013 by 0.4% with the EBITDA increase (30.3%) being larger than the sales increase (9.8%).
- Sales growth on average was –14.5% in 2012 but it rebounded in 2013 to 7.9%.

Subsector 3: Processing and Preserving of Fruit and Vegetables

Table 11 shows the average financial performance of the participating SMEs in this subsector.

Table 11. Financial perspective results

No.	Key Performance Indicators	2011	2012	2013
1	Value added (USD)	3,339,117	4,181,143	3,421,990
2	Value added-to-sales ratio (%)	15.1	17.7	13.5
3	Labor cost competitiveness	2.4	2.3	1.7
4	Working capital ratio	–12.4	17.4	10.6
5	Profit margin (%)	5.6	4.6	–1.7
6	Sales growth (%)	–	11.7	–4.6

Note: No., number.

- The VA of the six leading SMEs on average was more than USD3.3 million in 2011. It increased sharply by 25.2% in 2012 but decreased by 18.2% in 2013.

- The VA-to-sales ratio has changed as per the VA figure. The VA-to-sales ratio was 15.1 in 2011 and increased by 2.7% in 2012. In 2013, it decreased by 4.2% to a level below the 2011 figure.

- Labor cost competitiveness decreased continuously from 2.4 in 2011 to 1.7 in 2013. This was due to increasing labor costs and decreasing VA in 2013.

- The average working capital ratio was –12.4 in 2011 and this increased to 17.4 in 2012. In 2013 it decreased by 39.4% to 10.6.

- The profit margin decreased continuously from 5.6% to –1.7% over the three-year period.

- Sales growth slowed down from 11.69% in 2012 to –4.62% in 2013.

Subsector 4: Manufacture of Bakery Products

Table 12 shows the average financial results in this subsector.

Table 12. Financial perspective results

No.	Key Performance Indicators	2011	2012	2013
1	Value added (USD)	4,263,886	4,615,777	4,755,689
2	Value added-to-sales ratio (%)	24.0	26.5	27.4
3	Labor cost competitiveness	3.0	2.6	3.4
4	Working capital ratio	1.1	1.6	1.3
5	Profit margin (%)	7.6	9.4	8.7
6	Sales growth (%)	–	–2.3	–4.8

Note: No., number.

- The average VA of the nine participating SMEs in this subsector was over USD4.26 million in 2011 and increased by 8.3% in 2012 and 3.0% in 2013.

- The VA-to-sales ratio change was similar to the VA result. It increased from 2011 to 2013; by 2.6% in 2012 and by 0.9% in 2013.

- Labor cost competitiveness was 3.0 in 2011 and decreased to 2.6 (by 12.9%) in 2012. In 2013 it rebounded by 28.9% to 3.4.

- Working capital ratio increased sharply by 47.8% in 2012, but it decreased by 17.6% in 2013

- The average profit margin was 7.6% in 2011 and it increased by 1.8% in 2012. In 2013, it decreased by 0.7%.

- The average sales growth was in the negative range in both 2012 and 2013. This was related to the fact that many SMEs experienced decreasing sales during that period.

Operational Perspective

Subsector 1: Processing and Preservation of Meat and Meat Products

Table 13 shows the average operational results for this subsector:

Table 13. Operational perspective results

No.	Key Performance Indicators	2011	2012	2013
1	Labor productivity (USD)	109,969	78,229	67,562
2	Annual inventory turns (no. of turns per year)	–	17.6	20.2
3	Labor cost to sales ratio (%)	4.0	4.8	4.1
4	Sales per fixed asset (USD)	24.29	16.19	14.54
5	Capital intensity (USD)	104,284	159,754	167,994
6	R&D investment ratio (%)	0.00	0.01	–

Note: No., number.

- The average labor productivity of the nine participating SMEs decreased over the three years, from USD109,969 to USD67,562. The labor productivity growth rate was –28.9% in 2012 and –13.6% in 2013.

- Annual inventory turns, measured by the cost of goods sold over the average inventory, were 17.6 in 2012 but increased to 20.2 in 2013.

- The labor cost to sales ratio increased in 2012 from 4.0% to 4.8% but decreased in 2013, close to its 2011 level.

- Sales per fixed asset decreased continuously from 2011 to 2013, going from USD24.29 in 2011 to USD14.54 in 2013. This meant that the participating SMEs became less efficient in using their fixed assets.

- Capital intensity, on the other hand, increased sharply by 53.2% in 2012 and by 5.2% in 2013.

- Even though the participating SMEs were leading companies in the subsector, their R&D investments were minimal. Only two companies (A2 and A9) invested in R&D.

Among the nine participating SMEs in this subsector, company A1 achieved the highest productivity gain, VA-to-sales ratio, and profit margin in 2013. The company's sales revenue dropped slightly by 0.4% in 2012, but increased by 5.7% in 2013. However, company A1's labor cost competitiveness was USD3.09 and its labor cost to sales ratio, at 5.7%, was not the best. This implied that the company had been maintaining somewhat high compensation levels compared to other companies in its subsector.

Subsector 2: Processing and Preserving of Fishes and Seaweeds

Table 14 shows the average operational results for this subsector:

Table 14. Operational perspective results

No.	Key Performance Indicators	2011	2012	2013
1	Labor productivity (USD)	51,725	49,977	48,250
2	Annual inventory turns (no. of turns per year)	–	6.0	6.7
3	Labor cost to sales ratio (%)	10.2	10.7	6.3
4	Sales per fixed asset (USD)	7.27	5.88	6.05
5	Capital intensity (USD)	88,197	87,171	93,084
6	R&D investment ratio (%)	0.3	0.4	0.4

Note: No., number.

- The average labor productivity of the six participating SMEs was USD51,725 in 2011 but this decreased by 3.4% in 2012 and by 3.5% in 2013.
- The annual inventory turns were 6.0 in 2012 and this increased by 12% in 2013.
- The average labor cost to sales ratio was over 10% in 2011 and 2012, but decreased sharply in 2013 to 6.3%. This was caused by the contraction of labor cost (–35.4%) and the expansion of sales (9.8%).
- The level of sales was USD7.27 per fixed assets, on an average in 2011 but this decreased by 19.1% in 2012. In 2013, it rebounded by 2.8%, attaining a level of USD6.05.
- The average capital intensity of the fishes and seaweeds processing sector was around USD90,000. This decreased slightly in 2012 but increased by 6.8% in 2013.
- Average R&D investment increased from 0.3% to 0.4% from 2011 to 2013. Among the six participating companies, only two of the companies (B4 and B6) invested in R&D activities.

Subsector 3: Processing and Preserving of Fruit and Vegetables

Table 15 shows the average operational results for this subsector:

Table 15. Operational perspective results

No.	Key Performance Indicators	2011	2012	2013
1	Labor productivity (USD)	73,604	108,403	68,728
2	Annual inventory turns (no. of turns per year)	–	10.5	17.7
3	Labor cost to sales ratio (%)	7.8	9.0	10.8
4	Sales per fixed asset (USD)	3.16	3.69	3.62
5	Capital intensity (USD)	240,946	243,922	229,429
6	R&D investment ratio (%)	0.3	0.4	1.8

Note: No., number.

- Labor productivity increased rapidly by 47.3% in 2012, but then decreased in 2013 by more than the increment.
- Annual inventory turns were 10.5 in 2012 and increased by 67.8% to 17.7 in 2013.
- The labor cost to sales ratio increased continuously over the three years from 7.8% to 10.8%. This was because the labor cost continued to increase while sales fluctuated.
- Sales per fixed asset was USD3.16 in 2011 and increased by 17% in 2012. It decreased slightly to USD3.62 in 2013.
- Capital intensity increased slightly by 1.2%, in 2012, and then decreased by 5.9% in 2013.
- The R&D investment ratio increased from 0.3 to 0.4 in 2012, and then increased sharply by 1.49% the following year. Half of the participating SMEs (C1, C4, C5) in the fruit and vegetables processing sector invested in R&D.

Subsector 4: Manufacture of Bakery Products

Table 16 shows the average operational results for this subsector:

Table 16. Operational perspective results

No.	Key Performance Indicators	2011	2012	2013
1	Labor productivity (USD)	47,696	52,234	57,889
2	Annual inventory turns (no. of turns per year)	–	13.0	14.2
3	Labor cost to sales ratio (%)	10.9	12.8	10.6
4	Sales-per-fixed-asset (USD)	1.93	1.73	1.51
5	Capital intensity (USD)	272,513	326,241	364,696
6	R&D investment ratio (%)	0.6	0.8	0.8

Note: No., number.

- Average labor productivity for the nine participating SMEs in the manufacturing of bakery products subsector over the three years increased from USD47,696 to USD57,889, with an annual average growth rate of 10.2%.

- Annual inventory turns also increased from 13.0 in 2012 to 14.2 in 2013.

- The labor cost to sales ratio was 10.9% in 2011 and this increased by 1.9% in 2012. However, it decreased to 10.6% in 2013.

- Sales-per-fixed-asset decreased steadily from USD1.93 in 2011, to USD1.73 in 2012, and to USD1.51 in 2013. This resulted from the increasing amount of fixed assets during the period.

- Due to the increased amount of fixed assets, capital intensity also increased accordingly.

- The R&D investment ratio was 0.6 in 2011 and increased by 0.2 in 2012. However, it decreased slightly, by 0.01, in 2013. Among the nine participating SMEs, four companies (D2, D4, D5 and D7) appeared to have invested in R&D.

OVERALL SUMMARY AND CONCLUSION ON THE FOOD-MANUFACTURING SECTOR IN THE REPUBLIC OF KOREA

- Among the four subsectors in the food-manufacturing sector, the highest average labor productivity was found in the processing and preserving of meat and meat products subsector.

- The manufacturing of bakery products subsector appeared to be the most capital-intensive sector on average, but this was mainly because of an outlier (D3).

- All the participating SMEs in the manufacturing of bakery products subsector demonstrated a high level of value added-to-sales ratios, ranging from 18.1% to 42.0% in 2013.

- SMEs in the processing and preserving of meat and meat products subsector seem to have hardly invested in R&D. In 2013, no SME in the subsector had invested in R&D. SMEs in this sector may have a chance to increase productivity by spending more on R&D, just like the SMEs in the processing and preserving of fruit and vegetables subsector and the manufacturing of bakery products subsector.

- SMEs in the processing and preserving of fishes and seaweeds showed the lowest average capital intensity and annual inventory turns among the four sectors. Each SME in this sector may need to raise its effectiveness in inventory management.

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KEY FINDINGS ON THE FOOD-MANUFACTURING SECTOR IN MALAYSIA

Mazlina binti Shafi'i

INTRODUCTION AND OVERVIEW ON THE FOOD-MANUFACTURING SECTOR IN MALAYSIA

The food-processing sector accounts for about 10% of Malaysia's manufacturing output. Processed foods are exported to more than 200 countries, at an annual export value of more than MYR11 billion, which amounts to two-thirds of the total food exports (MYR18 billion). Although the export performance of this sector has doubled over the last 10 years, Malaysia continues to be a net importer of food products with annual imports of more than MYR30 billion.

Malaysia's food sector, as diverse as its multi-cultural society, offers a wide range of processed food for Asian tastes, and is predominantly Malaysian-owned. It is estimated that the present global retail sales value of food products is around USD3.5 trillion and is expected to grow at an annual rate of 4.8% to USD6.4 trillion by 2020. The Malaysia Standard Industrial Classification (MSIC) for the manufacture of food products is illustrated in Table 1.

Table 1. The Malaysia Standard Industrial Classification

MSIC Code		**Subsector/industry**
2-digit	**3-digit**	
10		**Manufacture of food products**
	101*	Processing and preserving of meat
	102*	Processing and preserving of fish, crustaceans, and mollusks
	103*	Processing and preserving of fruit and vegetables
	104	Manufacture of vegetable and animal oils and fats
	105	Manufacture of dairy products
	106	Manufacture of grain mill products, starches, and starch products
	107	Manufacture of other food products
	1071*	Manufacture of bakery products
	10793*	Manufacture of sauces and condiments
	108	Manufacture of livestock feeds and prepared animal feeds

Source: Standards Malaysia (2008) [1].
Notes:
*This report will focus on four subsectors (101, 102, 103, 1071, and 10793).

Small and medium-sized enterprises (SMEs) dominate the Malaysian food industry, of which the major subsectors are:

- Processing and preserving of meat and meat products;
- Processing and preserving of fish, crustaceans, and mollusks; and
- Manufacture of vegetable and animal oils and fats.

During the project coordination meeting, four subsectors were targeted for study (as shown in Table 1). Note that in Malaysia, the processing and preserving of fishes and seaweeds subsector is called processing and preserving of fish, crustaceans, and mollusks. Instead of manufacture of seasonings, this chapter will focus on the manufacture of sauces and condiments subsector. The processing and preserving of fishes and seaweeds subsector in Malaysia includes processed seafood products such as frozen and canned fish, crustaceans and mollusks, surimi (mock crab meat), and surimi products. This subsector is export oriented and remains the main contributor to the export of processed food.

Malaysia is the third largest producer of poultry meat in the Asia-Pacific region. The country is self-sufficient in poultry, pork, and eggs, but imports about 80% of its beef requirements. Among the dairy products produced are milk powder, sweetened condensed milk, pasteurized or sterilized liquid milk, ice cream, yoghurt, and other fermented milk [1].

In 2013, the value added (VA) of the food-manufacturing sector was MYR12,277 million, or, 4.1% of the total VA of the overall manufacturing sector, which employed 220,101 workers in 2013. The export of food products made up MYR22.1 billion, while imports amounted to MYR38.9 billion.

In terms of productivity performance, the food-manufacturing sector registered a VA per employee of MYR55,780 in 2013, which decreased by 1.7% from 2012. However, its labor cost per employee increased from MYR20,818 in 2012 to MYR21,839 in 2013. The food-manufacturing sector‘s capital intensity declined from MYR40,732 in 2012 to MYR40,398 in 2013 (refer to Table 2).

Table 2. Productivity performance indicators for the food-manufacturing sector

Productivity indicators (MYR)	2011	2012	2013
Value added per employee	57,763	56,765	55,780
Labor cost per employee	20,283	20,818	21,839
Capital intensity	41,826	40,732	40,398

Source: Malaysia Productivity Corporation Productivity Report 2013/2014 [2].

The productivity performance of the food-manufacturing subsectors in 2010 is shown in Table 3 below. In terms of VA per employee, the manufacture of vegetable and animal oils and fats subsector registered the highest level of MYR164,148, despite being more capital intensive compared with the others. The high capital intensity in this sector is mainly due to the inclusion of the refined palm oil industry.

Table 3. Productivity performance indicators by subsector category (2010)

Subsector category	Added value per employee	Labor cost per employee	Capital intensity (MYR)
Processing and preserving of meat	45,075	22,440	63,781
Processing and preserving of fish, crustaceans, and mollusks	35,949	13,984	41,541
Processing and preservation of fruit and vegetables	31,671	16,083	38,311
Vegetable and animal oils and fats	183,267	21,221	194,300
Manufacture of dairy products	75,110	31,395	109,622
Manufacture of grain mill products, starches, and starch products	55,640	18,770	100,890
Manufacture of other food products	57,745	18,183	76,953

Source: Department of Statistics Malaysia, Economic Census of the Manufacturing Sector, 2011 [3].

PROFILES OF PARTICIPATING FOOD MANUFACTURING COMPANIES FROM MALAYSIA

Twenty-four SME companies participated in this research and all of them were in the private limited category. Most of the respondents' factories were located in the Klang Valley (Selangor and Kuala Lumpur). The companies' ages ranged from seven to 43 years. All of them operated on a single shift, with average operating hours of 40.5 per week. The survey covered selected food-manufacturing SMEs that employed between five and 200 employees.

The 24 SMEs that participated in this benchmarking research project were from the following subsectors:

- Processing and preserving of meat and meat products (6 SMEs);
- Processing and preserving of fishes and seaweeds (4 SMEs);
- Processing and preserving of fruit and vegetables (3 SMEs);

- Manufacture of bakery products (6 SMEs); and
- Manufacture of seasonings (5 SMEs).

The key performance of the participating companies was divided into four perspectives: financial, customer, operational, and human resources. Three years of data and information (2011–13) were collected through questionnaires. Company visits were also carried out to observe the best practices adopted by those companies.

Subsector 1: Processing and Preserving of Meat and Meat Products

The processing and preserving of meat and meat products subsector covers three main categories:

1. Processing and preserving of meat and production of meat products;
2. Processing and preserving of poultry and poultry products; and
3. Production of hides and skins.

There were 114 establishments, of which 52 were involved in the processing and preserving of meat and meat products, 56 in the processing and preserving of poultry and poultry products, and the remainder in the production of hides and skins [3].

In 2010, this subsector generated MYR373.5 million VA and employed 8,286 employees. In terms of labor productivity, labor cost per employee and capital intensity, this sector registered MYR45,075, MYR22,440, and MYR63,781 respectively. Most of the participating companies produced a wide range of mixed frozen products such as chicken nuggets, chicken patties, breaded chicken, chicken and beef frankfurters, and minced meats to cater to fast-paced lifestyles. One of the companies focused on barbequed grilled meat (both chicken and beef) and chicken floss. All products were halal and obtained halal certification from the Islamic Development Department of Malaysia (JAKIM).

Subsector 2: Processing and Preserving of Fishes and Seaweeds

The processing and preserving of fishes and seaweeds subsector covers four main categories:

1. Canning of fish, crustaceans, and mollusks;
2. Processing, curing, and preserving of fish, crustaceans, and mollusks;
3. Production of fish for human consumption or animal feed; and
4. Production of *keropok* (deep-fried seafood crackers), including *keropok lekor* (deep-fried fish sausage) and seaweed processing.

Based on the 2011 economic census for the manufacturing sector, there were 516 establishments in this subsector. Establishments that produced *keropok* (including *keropok lekor*) and seaweed processing made up 45.9% of the subsector, while 35.1% were from processing, curing, and preserving of fish, crustaceans, and mollusks.

This industry generated a VA of MYR573.3 million and employed 15,949 people. In terms of labor productivity, labor cost per employee and capital intensity in this subsector registered MYR35,949, MYR13,984, and MYR41,541 respectively. The processing, curing, and preservation of fish, crustaceans, and mollusks category recorded the highest labor productivity with MYR41,062, which was above the total subsector's average of MYR35,949.

All the participating companies were from the processing, curing, and preservation of fish, crustaceans, and mollusks category. These companies produced frozen seafood and frozen processed seafood such as molded products, seafood balls, smoked seafood, and marinated seafood. Besides being halal certified, the United Stated Food and Drug Administration (USFDA) has also registered one of the respondents as "safe."

Subsector 3: Processing and Preserving of Fruit and Vegetables

The processing and preservation of fruit and vegetables subsector covers six main categories:

1. Manufacture of fruit and vegetable food products;
2. Manufacture of fruit and vegetable juices;
3. Pineapple canning;
4. Manufacture of jams, marmalades, and table jellies;
5. Manufacture of nuts and nut products; and
6. Manufacture of bean curd products.

Out of 242 establishments, 105 or 43.4% were from the bean curd manufacturing category, 32.2% were from fruit and vegetable manufacturers, 13.6% from nut and nut product manufacturers, and 6.2% from fruit and vegetable juice manufacturers [3].

In 2010, this subsector generated a VA of MYR134.6 million and employed 4,251 people. In terms of labor productivity, labor cost per employee, and capital intensity, the subsector registered MYR31,671, MYR16,083, and MYR38,311 respectively. Among the other categories, manufacturers of nuts and nut products recorded the highest labor productivity, with MYR40,3445.

There were three participating companies in this subsector; all of them were categorized under manufacture of fruit and vegetable juices. The participating companies produced a

wide range of fruit juices such as dragon fruit, guava, apple, orange, mangosteen, and herbal drinks. All products were halal and had obtained halal certification from JAKIM. In addition, one of the respondents was ISO 22000:2005 certified and another was Hazard Analysis & Critical Control Point (HACCP) certified by SGS International Certification Services Singapore Pte Ltd.

Subsector 4: Manufacture of Bakery Products

The manufacture of bakery products in Malaysia covers four main categories, namely:

1. Manufacture of biscuits and cookies;
2. Manufacture of bread, cakes, and other bakery products;
3. Manufacture of snack products; and
4. Frozen bakery products.

There were 2,232 establishments in this subsector, which represented 37.6% of the total food-manufacturing sector. Out of this, 72.6% of the establishments were from the bread, cakes, and other bakery products categories. In 2010, this subsector generated a VA of MYR1,529 million and employed 39,090 people. In terms of labor productivity, labor cost per employee, and capital intensity, this subsector registered MYR39,111, MYR15,263, and MYR3,652 respectively. The frozen bakery category recorded the highest labor productivity with MYR123,135, which was above the sector's average, while bread, cakes, and other bakery products recorded the lowest productivity with MYR35,967.

The participating companies covered all four categories of bakery products. Two of the respondents represented the manufacture of bread, cakes, and other bakery products, as well as manufacture of biscuits and cookies, while other categories were each represented by one respondent. All products were halal certified and they had obtained the halal certificates from JAKIM to cater to domestic and international markets.

Subsector 5: Other Food Products – Manufacture of Sauces and Condiments

The manufacturers of sauce and condiments were categorized under the "other food products" subsector, which include:

1. Manufacture of mayonnaise, mustard flour and meal, prepared mustard, and flavoring extracts;
2. Manufacture of sauces, including flavoring extracts such as monosodium glutamate; and
3. Manufacture of other sauces and condiments, not classified elsewhere.

According to the Malaysian Economic Census of Manufacturing 2011, there were 310 establishments under this subsector [3]. This subsector generated a VA of MYR336.0 million from 6,358 employees and paid MYR142.8 million in wages. In terms of labor productivity, labor cost per employee, and capital intensity, this subsector registered MYR52,854, MYR22,469, and MYR84,020 respectively.

There were five participating companies in this subsector. Four of the participating companies produced a wide range of sauces such as chili, tomato, soy sauce, and BBQ sauces. The fifth company produced mayonnaise, salad dressing, seasonings, as well as flavor solutions including stocks, gravies, soups, marinade seasoning, and dessert mixes. All the products had obtained the halal certificate from JAKIM, while four of them were accredited to Hazard Analysis & Critical Control Point (HACCP) standards.

KEY PERFORMANCE OF PARTICIPATING COMPANIES FROM MALAYSIA

Financial Perspective

Subsector 1: Processing and Preserving of Meat and Meat Products

Financial performance represents the long-term strategic objectives of the organization in terms of productivity and growth. Several key performance indicators (KPIs) were highlighted in the financial perspective and details of their performance are tabulated in the Table 4.

Table 4. Financial perspective results

No.	Indicators	2011	2012	2013
1	Value added (MYR'000)	4,994	6,028	6,583
2	Value added-to-sales ratio (%)	22	24	21
3	Labor cost competitiveness	1.7	2.0	2.1
4	Working capital turnover	1.1	4.7	3.5
5	Profit margin (%)	13	14	19
6	Sales growth (%)	–	2	16
7	Export ratio (%)	–	–	–

Note: No., number.

- The average VA created by the companies was MYR4.9 million in 2011, which increased to MYR6 million and MYR6.6 million in 2012 and 2013 respectively.

- VA generated by the participating companies ranged from about 21% to 24%, indicating that this industry consumed high bought-in material and services (around 76% to 79%).

- The average labor cost competitiveness ratio increased from 1.7 in 2011 to 2.1 in 2013. The increased ratio reflected the efficiency and effectiveness of the companies in relation to labor cost. A rewards and salary adjustment system based on productivity was adopted, contributing to the higher ratio.

- The working capital turnover of the respondents was positive at 1.1 (2011), 4.7 (2012), and 3.5 (2013). The higher working-capital turnover was better because the companies were generating higher sales compared to the investment they used to support the sales.

- The average profit margin of the participating companies increased from 13% in 2011 to 19% in 2013. This showed that the profits generated by these companies had increased over the years.

- Sales growth showed the ability of these industries to grow in the future. The growth of 2% in 2012 and 16% in 2013 showed that these subsectors were growing at a faster rate.

Subsector 2: Processing and Preserving of Fishes and Seaweeds

Table 5 below shows the average results obtained from the SMEs for the financial perspective:

Table 5. Financial perspective results

No.	Indicators	2011	2012	2013
1	Value added (MYR'000)	2,058	2,162	2,800
2	Value added-to-sales ratio (%)	21	20	20
3	Labor cost competitiveness	1.9	2.1	1.7
4	Working capital turnover	2.0	2.1	2.8
5	Profit margin (%)	48	32	24

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No.	Indicators	2011	2012	2013
6	Sales growth (%)	NA	17	28
7	Export ratio (%)	–	–	–

Note: No., number.

- The average VA created by the respondent companies was MYR2.1 million in 2011, which increased to MYR2.2 million and MYR2.8 million in 2012 and 2013 respectively.

- The value added-to-sales ratio generated by the participating companies ranged from 20% to 21%, indicating that this subsector consumed high bought-in material and services of around 79% to 80%.

- The average labor cost competitiveness ratio was 1.9 in 2011, increased to 2.1 in 2012, but decreased to 1.7 in 2013.

- The working capital turnover of the respondents was at 2.0 in 2011, and grew to 2.1 in 2012. In 2013, the working-capital turnover continued to increase to 2.8. Continued increases in working-capital turnover showed that sales of participating companies continued to increase due to the injection of capital.

- The average profit margin of the participating companies decreased from 48% in 2011 to 32% and 24% in 2012 and 2013 respectively.

- Sales growth increased to 17% in 2012 and continued to increase by 28% due to strong market demand and consistency in working capital.

- Not all participating firms exported their products. Fifty percent of respondents produced products solely for local consumption, while the other half exported their products mostly to Asian markets. Other export market destinations included Europe, the Middle East, USA, Australia, and South Africa.

Subsector 3: Processing and Preserving of Fruit and Vegetables

Table 6 shows the average financial perspective results for this subsector:

Table 6. Financial perspective results

No.	Indicators	2011	2012	2013
1	Value added (MYR'000)	3,193	3,426	4,286
2	Value added-to-sales ratio (%)	5	5	20
3	Labor-cost competitiveness	1.9	1.5	1.8
4	Working capital turnover	–2.4	–0.9	1.3
5	Profit margin (%)	2	2	1
6	Sales growth (%)	–	5	110
7	Export ratio (%)	30		

Note: No., number.

- In 2013, the average VA created by the respondent companies was MYR4.3 million.
- The ratio of VA to sales was at 0.05 in 2011 and 2012. However the ratio increased by four times in 2013 to 0.20. High VA was created in 2013.
- The average labor cost competitiveness ratio was at 1.8 in 2013.
- The average working capital turnover of the respondents was negative in 2011 and 2012 but improved to 1.3 in 2013. The positive working-capital turnover in 2013 showed that these sales were a result of healthy short-term liquidity.
- The average profit margin of participating companies started to improve by 10% in 2013.
- Sales growth increased tremendously to 110% in 2013 due to strong demand from both domestic and international markets.
- The average export ratio for the three years was 30%. Most of the products were exported to ASEAN markets. Other export destinations were Japan and France.

Subsector 4: Manufacture of Bakery Products

Table 7 below shows the average financial perspective results for this subsector:

Table 7. Financial perspective results

No.	Indicators	2011	2012	2013
1	Value added (MYR'000)	3,138	4,415	4,773
2	Value added-to-sales ratio (%)	24	16	25
3	Labor cost competitiveness	1.8	1.5	1.6
4	Working capital turnover	13.4	–1.1	–25.4
5	Profit margin (%)	34	18	18
6	Sales growth (%)	NA	103	–5
7	Export ratio (%)	NA	NA	NA

Note: No., number.

- The average VA created by the companies was MYR3.1 million in 2011 and this increased to MYR4.4 million and MYR4.8 million in 2012 and 2013 respectively.

- The VA generated by the participating companies was about 16% to 25%, which indicated that this industry consumed high bought-in material and services (around 75% to 84%).

- The average labor cost competitiveness ratio was at 1.8 in 2011 to 1.6 in 2013.

- The working capital turnover of the respondents was positive, at 13.4, in 2011 before worsening at –1.1 (2012) and –25.4 (2013). The negative working capital turnover reflected the participating companies' inability in this subsector to generate enough sales as compared to the investment they used to fund the sales. Out of six respondents, only two had positive working-capital turnover.

- The average profit margin of participating companies decreased from 34% in 2011 to 18% in 2012 and 2013.

- Sales growth declined to 5.0% in 2013, which was pulled down by the sharp decline in two of the respondents. However, the sales growth of other respondents ranged from 10% to 25%. There is a large opportunity for this industry to grow in the future by increasing consumer demand.

- Most bakery products were produced for the local market, except for frozen bakery product and cookies manufacturers, which catered to both the local market (60%–70%) and the export market (30%–40%).

Subsector 5: Other Food Products – Manufacture of Sauces and Condiments

Table 8 below shows the average financial perspective results for this subsector:

Table 8. Financial perspective results

No.	Indicators	2011	2012	2013
1	Value added (MYR'000)	4,698	5,620	6,388
2	Value added-to-sales ratio (%)	19	30	44
3	Labor cost competitiveness	1.7	2.4	1.7
4	Working capital turnover	–2.8	8.7	–3.2
5	Profit margin	16	22	26
6	Sales growth (%)	NA	7	–5
7	Export ratio (%)	NA	NA	NA

Note: No., number.

- The average VA created by the companies was MYR4.7 million in 2011, increased to MYR5.6 million and MYR6.4 million in 2012 and 2013 respectively. In 2013, the highest VA was MYR13.3 million and the lowest was MYR102,000.

- The VA created by the participating companies was about 19% in 2011, but increased to 30% in 2012. The percentage again increased to 44% in 2013, showing that the participating companies were able to reduce their bought-in material and services costs.

- The average labor-cost competitiveness ratio was 1.7 in 2011, increasing to 2.4 in 2012. However, the ratio decreased to 1.7 in 2013, reflecting the improved labor-cost competitiveness of participating companies.

- The working capital turnover of the respondents was negative at –3.2 in 2013. Negative working capital turnover is a sign of managerial efficiency in a business with low inventory and account receivable.

- The average profit margin of the participating companies increased from 16% in 2011 to 26% in 2013.

- Average sales dropped by 5% in 2013. Out of five companies, only two posted sales drops, while the other three had favorable sales growth ranging from 6% to 18%.

- Most of the participating companies exported their products to ASEAN markets. Half of them were able to penetrate European markets as well as Canada and USA by following the strict food standard requirements that are imposed by those countries. HACCP compliance and accreditation enabled the companies to access major markets worldwide.

Customer Perspective

Subsector 1: Processing and Preserving of Meat and Meat Products

In the customer perspective, we investigated the communication channels used between companies and customers to observe how companies manage feedback and complaints. All participating companies had their own mechanisms to gather customer feedback (complaints and/or compliments). All of the participating companies used telephones or toll-free lines as a channel of communication. Five out of six companies also obtained feedback through their official websites, and only four respondents had Facebook pages. The average customer perspective results are shown in Table 9 below.

Table 9. Customer perspective results

No.	Indicators	2011	2012	2013
1.	Compliments to complaint ratio	1.3	1.4	1.4
2.	Customer reject/ return (%)	1	1	1
3.	Sales-per-employee (MYR)	291,843	306,381	294,657
4.	On-time delivery to commit	–	–	–
5.	No. of new products per year	5	4	4

Note: No., number.

- The compliments to complaint ratio showed that the participating companies received more compliments than complaints, which reflected that satisfactory products were produced to meet customer expectations.

- A minimal average reject rate of 1% was achieved. Due to the shortened product shelf-life periods, product quality was the main focus to please customers.

- Sales per employee stood at MYR294,657 in 2013. The highest sale per employee was MYR886,966 and the lowest was MYR33,730. The participating companies' high sales performance was a result of both marketing and operational strategies. They focused on product production and expanded their operational efforts into marketing and distribution areas by introducing kiosks, marts, and franchise programs to interested parties.

- Processing and preserving of meat and meat product manufacturers operate in a very competitive subsector. It was found that rigorous efforts to produce several product varieties were necessary to ensure stability in the market. The average number of new products introduced to the market per year was between four and five products. Besides introducing more product varieties, the companies also had to focus on packaging and finding the correct preparation time for their products.

Subsector 2: Processing and Preserving of Fishes and Seaweeds

Table 10 below shows the average customer perspective results for this subsector.

Table 10. Customer perspective results

No.	Indicators	2011	2012	2013
1	Compliments to complaint ratio	1.4	1.2	1.3
2	Customer reject/ return (%)	0.01	0.01	0.01
3	Sales-per-employee (MYR)	313,010	325,267	361,521
4	On-time delivery to commit	–	–	–
5	No. of new products per year	2	2	2

Note: No., number.

- The compliments to complaint ratio showed that the participating companies received more compliments than complaints, which reflected that satisfactory products were produced to meet customer expectations.

- The average rejection rate of 0.01% was minimal. To ensure a consistent quality standard, the companies carried out stringent quality control from beginning to end, starting with raw material control, production process control and finished with overall product inspection. The adoption of the HACCP system, ISO 9000 system and the implementation of Total Quality Management (TQM) showed the respondents' serious commitment to quality.

- Sales per employee increased from MYR313,010 in 2011 to MYR361,521 in 2013, which resulted from the marketing strategies adopted by the companies. One of the marketing strategies implemented by one of the participating companies was utilizing online stores. Besides broadening market outreach, the online stores provided alternative shopping options to cater to the new lifestyle of the modern generation.

- An average of two new products were introduced in the market per year. The companies were committed to producing new products and invested continuous efforts to maintain the quality of their innovative products.

Subsector 3: Processing and Preserving of Fruit and Vegetables

Table 11 below shows the average customer perspective results for this subsector.

Table 11. Customer perspective results

No.	Indicators	2011	2012	2013
1	Compliments to complaint ratio	–	–	–
2	Customer reject/ return (%)	0.02	0.01	0.01
3	Sales per employee (MYR)	347,333	310,808	319,737
4	On-time delivery to commit	–	–	–
5	No. of new products per year	0	2	0

Note: No., number.

- The compliments to complaint ratio showed that the participating companies received more compliments than complaints, which reflected that satisfactory products were produced to meet customer expectations.

- A minimal average rejection rate of 0.01% was reported in both 2012 and 2013, which showed that the quality of the products and processes had undergone strict quality tests with fully equipped laboratories.

- The average sales per employee was MYR319,737 in 2013. The sales per employee ranged from MYR201,624 to MYR531,797 in 2013.

- Participating companies focused on product safety analyses to improve their product quality and meet international food safety standards.

- At least two new products were introduced every two years to diversify the product range and meet customers' expectations and preferences.

Subsector 4: Manufacture of Bakery Products

All participating companies had their own channels to gather customer feedback (complaints or compliments). Instead of telephones or toll-free lines as the main communication channels, all the respondents used their own official websites as their main channel for information communication.

Table 12 below shows the average customer perspective results for this subsector.

Table 12. Customer perspective results

No.	Indicators	2011	2012	2013
1	Compliments to complaint ratio	1.3	1.4	1.4
2	Customer reject/ return (%)	0.5	0.5	0.5
3	Sales per employee (MYR)	186,482	465,287	515,819
4	On-time delivery to commit	–	–	–
5	No. of new products per year	4	4	6

Note: No., number.

- The compliments to complaint ratio showed that the participating companies received more compliments than complaints, which reflected that satisfactory products were produced to meet customer expectations.

- A minimal average reject rate of 0.5% was achieved. Due to shortened product shelf-life periods, companies focused on product quality as a main focus to please customers.

- Sales per employee increased tremendously from MYR186,482 in 2011 to MYR515,819 in 2013 due to the good reputation of products. Sales per employee ranged from MYR75,950 to MYR2,551,112 in 2013. The highest sales per employee were observed in the bread, cakes, and other bakery products category.

- Manufacturers made rigorous efforts to produce a greater variety of products to ensure stability in the market. The average number of new products introduced to

the market per year was four to six. The new products comprised new flavors, fillings, packaging, and others.

Subsector 5: Other Food Products – Manufacture of Sauces and Condiments

Table 13 below shows the average customer perspective results in this subsector.

Table 13. Customer perspective results

No.	Indicators	2011	2012	2013
1	Compliments to complaint ratio	–	–	–
2	Customer reject/ return (%)	–	–	–
3	Sales per employee (MYR)	287,477	315,413	344,710
4	On-time delivery to commit	Just-in-time (JIT)		
5	No. of new products per year	1	1	2

Note: No., number.

- Compliments and complaints were received through various channels such as Facebook, e-mail, telephone, and electronic commerce platforms. The majority of participating companies received more compliments than complaints. Most complaints were related to product taste, which was not meeting customer expectations as claimed in the products' labels. However, consumer tastes are varied and very subjective.

- The average sales per employee was MYR344,710 in 2013, an increase of 9.3% from MYR315,413 in 2012. Sales per employee ranged from MYR201,624 to MYR531,797 in 2013. In 2013, the highest sales per employee figure was MYR853,482 while the lowest was MYR90,380. An interesting finding is that the highest-performing company only sold its products domestically.

- Most of the companies applied the just-in-time (JIT) delivery system and responded that they achieved 100% on-time deliveries to their customers.

- An average of one new product per year was noted to be adequate for these companies to sustain their existence in the market. Some of the companies were keen to expand their production facilities to produce a wider range of products to cater to the market's needs. One of the companies focused on a very selective range of products in order to sustain its originality.

Operational Perspective

Subsector 1: Processing and Preserving of Meat and Meat Products

Table 14 below shows the average operational perspective results for this subsector.

Table 14. Operational perspective results

No.	Indicators	2011	2012	2013
1	Labor productivity (MYR)	44,679	48,606	47,090
2	Annual inventory turns ratio (no. of turns per year)	5.8	6.4	7.1
3	Labor cost to sales ratio (%)	18	17	11
4	Sales per fixed assets ratio	5.1	5.3	6.8
5	Capital intensity (MYR)	70,071	75,126	59,944
6	R&D investment ratio (%)	1.5	1.2	1.3

Note: No., number.

- Average labor productivity for 2013 was MYR47,090 compared to MYR48,606 in 2012. Among the SMEs, highest labor productivity was MYR116,178 while the lowest was MYR12,770.

- Annual inventory turns showed an increasing trend from 5.8 in 2011 to 7.1 in 2013. This showed that the demand for the product increased over the years and the industry experienced rapidly rising prices.

- The labor cost per sales ratio decreased from 18% (2011) to 11% (2013), showing increasing productivity for the participating companies.

- Sales per fixed assets measures a company's ability to generate net sales from fixed-asset investments. The increasing ratio of sales per fixed assets indicated that the firms were effectively using fixed-asset investments to generate revenue.

- The average capital intensity ratios of the participating firms in 2013 (MYR59,944) was above the total food manufacturing sector's average (MYR40,398). The ratios of the participating firms ranged from MYR5,308 to MYR223,154.

- Most of the participating firms invested an average of 1.2% to 1.5% on R&D investment.

Subsector 2: Processing and Preserving of Fishes and Seaweeds

Table 15 below shows the average operational perspective results for this subsector.

Table 15. Operational perspective results

No.	Indicators	2011	2012	2013
1	Labor productivity (MYR)	63,557	65,030	73,685
2	Annual inventory turns ratio (no. of turns per year)	7.5	9.6	18.2
3	Labor cost to sales ratio (%)	11	10	12
4	Sales per fixed assets ratio	3.2	3.6	5.0
5	Capital intensity (MYR)	149,829	141,703	130,743
6	R&D investment ratio (%)	–	–	–

Note: No., number.

- The average labor productivity for 2013 was MYR73,685, which was an increase of 13.3% compared to MYR65,030 in 2012. The highest labor productivity was registered at MYR98,102 due to the ability of the company concerned to produce high-VA seafood products in a niche market. Both the average and highest labor productivity level surpassed the total food manufacturing sector's average of MYR55,780.

- Annual inventory increased by 90% from 9.6 to 18.2 from 2012 to 2013. This was due to strong sales and improved liquidity. However, keeping annual inventory turns too high could lead to losses due to inefficient inventory management.

- The labor cost per sales ratio increase (from 10% in 2012 to 12% in 2013) showed that the ratio of labor cost to sales increased as a result of the implementation of a minimum wage policy throughout the industries.

- The sales per fixed assets showed an increasing trend from 2011 to 2013, which indicated that fixed assets were effectively used to generate sales.

- The capital intensity for the participating firms continued to decrease. In 2013, the highest capital intensity was MYR223,483 while the lowest was MYR53,714. One of the companies, which produced seafood products using traditional methods, was very labor intensive.

Subsector 3: Processing and Preserving of Fruit and Vegetables

Table 16 below shows the average operational perspective results for this subsector.

Table 16. Operational perspective results

No.	Indicators	2011	2012	2013
1	Labor productivity (MYR)	53,410	40,547	55,148
2	Annual inventory turns ratio (no. of turns per year)	22.8	26.3	27.2
3	Labor cost to sales ratio (%)	30	30	10
4	Sales per fixed assets ratio	5.7	5.7	4.2
5	Capital intensity (MYR)	182,766	224,708	182,329
6	R&D investment ratio (%)	–	–	–

Note: No., number.

- The average labor productivity for 2013 was MYR55,148 which was below the average for the total food-manufacturing sector.

- The high annual inventory turns that were recorded by the participating companies represented losses due to inefficient inventory management.

- The labor cost per sales ratio decreased from 30% (2012) to 10% (2013) which showed that these companies were cost competitive.

- The sales per-fixed assets decreased by 25.8% (from 5.7 in 2012 to 4.2 in 2013), which might be due to the additional investment of fixed assets in 2013, which had yet to generate sales.

- The capital intensity for these participating firms started to decrease in 2013. The highest capital intensity was MYR358,539, while the lowest was MYR50,570. Companies with high capital intensity showed that their processes were moving towards highly automated production lines that only require a small number of operators.

Subsector 4: Manufacture of Bakery Products

Table 17 shows the average operational perspective results for this subsector.

Table 17. Operational perspective results

No.	Indicators	2011	2012	2013
1	Labor productivity (MYR)	50,186	72,822	67,235
2	Annual inventory turns ratio (no. of turns per year)	9.5	12.0	10.2
3	Labor cost to sales ratio (%)	15	14	18
4	Sales per fixed assets ratio	2.87	3.05	3.61
5	Capital intensity (MYR)	123,187	156,969	182,278
6	R&D investment ratio (%)	4	5	5

Note: No., number.

- The average labor productivity for 2013 was MYR67,235. The highest labor productivity was MYR261,205 (bread, cakes, and other bakery products). The lowest was MYR21,445 (biscuits and cookies).

- Annual inventory turns were stable at between 9.5 and 12.0. This showed that demand was consistent and that the companies were able to efficiently manage their inventory.

- Labor cost per sales ratio increased from 15% in 2011 to 18% in 2013 as a result of the imposition of a minimum wage policy throughout all sectors in Malaysia.

- Sales per fixed assets showed an increasing trend from 2011 to 2013, which indicated that fixed assets were effectively used to generate sales.

- The capital intensity for the participating firms increased from 2011 to 2013, which reflected that the firms were undertaking capital investment, using state-of-the-art machines and ICT in operations.

- The participating firms invested in R&D for new products that focused on enhancing nutrition and maintaining product quality.

Subsector 5: Other Food Products – Manufacture of Sauces and Condiments

Table 18 shows the average operational perspective results for this subsector.

Table 18. Operational perspective results

No.	Indicators	2011	2012	2013
1	Labor productivity (MYR)	62,223	93,803	119,481
2	Annual inventory turns ratio (no. of turns per year)	29.6	37.3	34.6
3	Labor cost to sales ratio (%)	12	12	34
4	Sales per fixed assets ratio	5.7	3.4	7.7
5	Capital intensity (MYR)	185,987	234,622	185,215
6	R&D investment ratio (%)	2.8	2.1	1.6

Note: No., number.

- The average labor productivity for 2013 was MYR119,481 which showed an 27.4% increase as compared to MYR93,809 in 2012. The highest labor productivity was MYR231,557 due to the ability of that company to create high VA by minimizing the cost of operations through economies of scale. The usage of fully automated machines also contributed to this good performance.

- These companies were able to decrease their annual inventory turns from 37.3 to 34.6, which reflected improvements in their inventory management systems.

- The labor cost per sales ratio increased from 12% (2012) to 34% (2013), which showed that labor cost was increasing as a result of high training costs. The training was necessary to ensure that their employees were fully knowledgeable in quality assurance and control.

- Sales per fixed assets showed an increasing trend from 2011 to 2013, which indicated that fixed assets were effectively used to generate sales. The fully automated machines used, such as hygienic automated cooking equipment, and fully automated filling and packaging machines, generated increased production outputs and accelerated sales.

- The average capital intensity ratio in the participating firms for the three years ranged from MYR8,418 to MYR558,232. This showed that the companies were varied in terms of capital application in their labor-intensive operations. Some of the companies were very capital intensive and invested in fully automated machines.

- The average of R&D investment ratio was 1.6% in 2013, a decrease from 2.1% in 2012. The R&D carried out was mainly focused on product development.

Human Resource Perspective

Subsector 1: Processing and Preserving of Meat and Meat Products

Most of the respondents employed full-time employees as the nature of the business required more specialized skills and knowledge. In addition, employee loyalty was found to be one of the most important factors to ensure a sustainable business. As a result, most respondents offered various incentives to their employees (both financial and non-financial). Among the financial incentives noted during the survey were performance bonuses and salary adjustment systems based on performance and attendance allowances.

Table 19 below shows the average human resource perspective results for this subsector.

Table 19. Human resource perspective results

No.	Indicators	2011	2012	2013
1	Training hours per staff member (hours/year)	30	30	30
2	Training expenditure per staff member (MYR)	NA	NA	NA
3	Full-time staff turnover rate (%)	2	3	3
4	Part-time staff turnover rate (%)	NA	NA	NA
5	Absenteeism rate	NA	NA	NA

Notes: NA, not applicable; No., number.

- The average training hours per employee observed was 30 hours a year. Participating companies operated both internal and external training. Among the training programs offered to employees were quality training programs closely related to production activities such as ISO, Lean Management, 5S Housekeeping, and food safety programs.

- The full-time staff turnover rate was minimal, ranging from 2% to 3% per year.

- Most of the companies employed full-time staff to ensure product consistency. They only employed part-time staff as and when needed. Normally, the part-time staff members were unskilled and were involved in packaging activities.

- Absenteeism was recorded and treated individually. However, non-attendance was observed in this industry.

Subsector 2: Processing and Preserving of Fishes and Seaweeds

Table 20 below shows the average human perspective results in this subsector.

Table 20. Human resource perspective results

No.	Indicators	2011	2012	2013
1	Training hours per staff member (hours/year)	30	30	30
2	Training expenditure per staff member (MYR)	1,248	2,110	2,001
3	Full-time staff turnover rate (%)	NA	NA	NA
4	Part-time staff turnover rate (%)	NA	NA	NA
5	Absenteeism rate	NA	NA	NA

Notes: NA, not applicable; No., number.

- The training hours allocated to staff was 30 hours per year. Among the training programs offered to employees were quality, skill upgrading, and maintenance programs.

- Most of the workers were trained in the areas of food safety, quality, and related job specializations through programs that were organized both in-house and externally. The average training expenditure was MYR1,786 per staff.

Subsector 3: Processing and Preserving of Fruit and Vegetables

Table 21 below shows the average human resources results for this subsector.

Table 21. Human resource perspective results

No.	Indicators	2011	2012	2013
1	Training hours per staff member (hours/year)	28	28	28
2	Training expenditure per staff member (MYR)	NA	NA	NA
3	Full-time staff turnover rate (%)	10%	5%	5%
4	Part-time staff turnover rate (%)	NA	NA	NA
5	Absenteeism rate	NA	NA	NA

Notes: NA, not applicable; No., number.

- The training hours allocated to staff was 28 hours a year. Among the training programs offered to employees were quality, skill upgrading and maintenance programs.

- Most of the workers were trained in the areas of food safety, quality, and related job specializations from programs which were organized both in-house and externally.

- As this subsector required less labor, staff turnover was not very critical. The respondents managed to minimize the rate of staff turnover by providing incentives and competitive remuneration.

Subsector 4: Manufacture of Bakery Products

Most of the respondents employed full-time employees, as the nature of the business requires more specialized skills and knowledge.

Table 22 shows the average human resource perspective results for this subsector.

Table 22. Human resource perspective results

No.	Indicators	2011	2012	2013
1	Training hours per staff member (hours/year)	57.2	57.2	57.2
2	Training expenditure per staff member (MYR)	NA	NA	NA
3	Full-time staff turnover rate (%)	NA	NA	NA
4	Part-time staff turnover rate (%)	NA	NA	NA
5	Absenteeism rate	NA	NA	NA

Notes: NA, not applicable; No., number.

- The training hours allocated to staff members were 57 hours a year. Among the training programs offered to employees were quality, skill upgrading, and maintenance.

- Most employees, especially in bread, cakes, and other bakery products subsector, were skilled.

Subsector 5: Other Food Products: Manufacture of Sauces and Condiments

Table 23 shows the average human resource perspective results for this subsector.

Table 23. Human resource perspective results

No.	Indicators	2011	2012	2013
1	Training hours per staff member (hours/year)	45	45	45
2	Training expenditure per staff member (MYR)	NA	NA	NA
3	Full-time staff turnover rate (%)	2.5%	7.2%	8.6%
4	Part-time staff turnover rate (%)	NA	NA	NA
5	Absenteeism rate	NA	NA	NA

Notes: NA, not applicable; No., number.

- Training hours allocated to staff members were 40 hours a year. Most of the workers were trained in food safety, which was organized both in-house and externally.

- The average employee turnover rate increased over the observation years. In 2012 and 2013 turnover rates for full-time staff were high at 7.2% and 8.6%.

OVERALL SUMMARY AND CONCLUSION OF THE FOOD-MANUFACTURING SECTOR IN MALAYSIA

Respondents highlighted three main success factors that were considered essential for continued competitiveness in the market:

1. Quality products that met customer requirements (83%);
2. Value for money (75%); and
3. Strong reputation/brand name (75%).

In order to improve productivity and quality, various management systems had been implemented by respondents such as HACCP, Good Manufacturing Practices (GMP), ISO 9001/21000, halal certification, and MeSTI (health certification accredited by the Ministry of Health, Malaysia). Besides food-safety assurance, these systems also promoted consistency in product quality, process quality, and efficiency throughout the manufacturing processes. They also provided the systems to help these companies manage their businesses effectively and put in place best practice methodologies. Out of 24 respondents, nearly 75% had at least one of the above quality management systems. All the respondents obtained halal certification from JAKIM. The HACCP and halal certifications enabled these companies to be competitive in the global market.

As a global halal hub, the Malaysian food sector is ahead of other countries in the region in potentially tapping the international halal food market. The experience of Malaysian companies in the sector offers them the opportunity to provide the highest quality, hygienic, and contamination-free food products across the supply chain process (from slaughtering to food preparation and ending with consumers) [5]. This new and contemporary approach to the global market resulted from Malaysia's growing Muslim population and has influenced other countries, including non-Muslim countries, to develop more halal producers [6] for the lucrative halal market

Nearly half of the respondents (42%) were moving towards high capital-intensive operations, where capital intensity was above the industry average of MYR143,531. The use of fully automated machines and modern advanced machinery in the production process provided long-term benefits and profitability to the companies.

Talent Management is a set of integrated organizational HR processes designed to attract, develop, motivate, and retain productive, engaged employees. The goal of talent management is to create a high-performance, sustainable organization that meets its strategic and operational goals and objectives. Keeping employees happy and motivated to work are the key ingredients for a company's success.

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KEY FINDINGS ON THE FOOD-MANUFACTURING SECTOR IN SINGAPORE

Lim Jiaxuan Gillian

INTRODUCTION AND OVERVIEW ON THE FOOD-MANUFACTURING SECTOR IN SINGAPORE

In Singapore, the food-manufacturing sector is often combined with the beverages and tobacco subsectors for statistical presentation and comparison. In totality, its contribution to GDP hovers around 0.6%–0.7%. With a total of 858 establishments, the combined sector formed 9% of the total number of establishments in the entire manufacturing sector.

For the past five years, the sector on saw an average increase of 1.64% per annum in the size of the workforce (in terms of both employee numbers and output), with a total output and value added (VA) of almost three times that value (4.57%–4.76%).

However, it is necessary to include a special note on the VA parameter. In Table 1, the VA per worker for food manufacturing, beverages, and tobacco is shown to have a compounded increase of almost 3% each year. However, while Table 1 shows that VA per worker hovered around SGD70,000 in 2010, the actual VA excluding tobacco was found to be SGD62,000. In addition, based on aggregated data from the previous benchmarking study, VA per worker was recorded at SGD51,700. This insight offers a reminder that the consolidated statistics include the beverages and tobacco subsectors.

To compensate for the lack of quantitative data, credible productivity statistics from government agencies and a commissioned benchmarking study were used in this paper (refer to Table 2).

The food-manufacturing sector is classified into eight subcategories (refer to Table 3).

Table 1. General statistics for food manufacturing

Food, beverages, and tobacco sector						
Indicators	**2009**	**2010**	**2011**	**2012**	**2013**	**CAGR**
No. of establishments	845	832	813	858	858 (est)	–
No. of workers	25,984	25,601	26,653	27,717	28,181	1.6%
Total output (SGD million)	6,793	7,351	8,433	8,501	8,492	4.6%
Value added (SGD million)	1,823	1,864	2,153	2,341	2,300	4.8%
Value added per worker (SGD'000)	70.2	72.8	80.8	84	81	2.9%
Remuneration (SGD million)	790.8	799.7	852.7	889.7	947.4	3.7%
GDP Contribution (%)	0.7	0.6	0.7	0.7	0.7	–

Source: SPRING Singapore [1].
Notes: CAGR, compounded annual growth rate; est, estimated; No., number.

Table 2. Productivity indicators and statistics for food manufacturing

SSIC 2010 (included as part of study)	2010–12
Subsector	Food, beverages, and tobacco
Labor productivity	SGD70,172.11
Output per employee	SGD235,991.26
Value added to output ratio	30%
Profit margin	13.8%
Profit to value added ratio	47%
Labor cost competitiveness	2.3
Labor cost per employee	SGD30,432.73
Output per SGD of capital	3.85
Capital intensity	SGD61,239.65
Capital productivity	1.2

Source: Economic Development Board [2].
Note: SSIC, Singapore Standard Industrial Classification.

Table 3. Singapore food-manufacturing sector classifications

SSIC Code	Description
101*	Processing and preserving of meat and meat products
102*	Processing and preserving of fish, crustaceans, and mollusks
103*	Processing and preserving of fruit and vegetables
104	Manufacture of vegetable and animal oils and fats
105	Manufacture of dairy products
106	Manufacture of grain mill products, starches, and starch products
107*	Manufacture of other food products: bakery products, sugar, cacao, chocolate, sugar confectionery, macaroni, vermicelli, noodle products, frozen dinners, coffee, tea, sauces, tidbits, etc.
108	Manufacture of prepared animal feeds

Source: Department of Statistics Singapore [3].
Notes: SSIC, Singapore Standard Industrial Classification.
*This report will focus on five subsectors that fall under these SSIC codes (101, 102, 103, and 107). Subsector 102 will be referred to as processing and preserving of fishes and seaweeds, while manufacture of bakery products, and manufacture of seasonings and others fall under 107.

PROFILES OF THE PARTICIPATING FOOD-MANUFACTURING COMPANIES FROM SINGAPORE

A total of 16 small and medium enterprises (SMEs) participated in this benchmarking research project. They were from the following subsectors:

1. Processing and preserving of meat and meat products (6 SMEs);
2. Processing and preserving of fishes and seaweeds (3 SMEs);
3. Processing and preserving of fruit and vegetables (0 SMEs);
4. Manufacture of bakery products (4 SMEs); and
5. Manufacture of seasoning and others (3 SMEs).

Data from two other non-participating companies were used for reference to compensate for lack of data. One was a producer of fresh meat, while the other was in the processing and preserving of fish and other seafood products subsector. The companies' initials were provided instead of the full company name to comply with non-disclosure agreements. Interviews were conducted through face-to-face visits to each company's factory sites. Only two of the companies submitted the self-completed forms by e-mail.

On average, the interviewed companies had been in operation for about 15 years.

Subsector 1: Processing and Preserving Meat and Meat Products

For this subsector, the sub-categories are:

1. Slaughtering of livestock;
2. Slaughtering of poultry;
3. Manufacture of sausages;
4. Preparing, canning, and preserving of livestock and livestock products (including lard and other edible animal fats);
5. Preparing, canning, and preserving of poultry and poultry products; and
6. Processing and preserving of meat and meat products.

It was estimated that there were about 100 companies in the subcategories, many of which had been operating for about 20 years. This subsector was considered highly competitive and maturely developed, which was also evident from the staff remuneration arrangements, which will be covered in the later sections.

The financial data shown in Table 4 represent the average figures submitted to the Accounting and Corporate Regulatory Authority of Singapore (ACRA). However, an important point to note is that about 50% of the average revenues and almost 75% of the profits after tax were attributed to the slaughtering of livestock/poultry.

Table 4. Average of companies from this subsector that filed financial data with ACRA (in SGD)

Processing and preservation of meat and meat products	2011	2012	2013
Company revenue	5,910,002	7,754,306	7,920,849
Profit before tax	1,834,145	1,757,785	1,919,436
Profit after tax	1,535,878	1,460,812	1,619,251

Note: ACRA, Accounting and Corporate Regulatory Authority of Singapore.

- TFBC Pte Ltd was established almost 20 years ago. The company produces chicken parts for food stalls and restaurants. Its business model has evolved over time and it now also supplies to two restaurants and hawker stalls on a royalty-free franchising model. The company thrives on product quality and has a brand name that is famous with its direct consumers.

- HKFF Pte Ltd was formed in 2011, and competes based on price to enhance its competitiveness. It supplies frozen and fresh meat products to three main customer segments (wet markets, food stalls, and hotels).

- CSFI Pte Ltd is an ISO 9000-certified manufacturer of meat kebabs and supplies to its own food stalls, retail stores, and hawker centers. It has almost 20 years of history, and has evolved to include e-commerce and direct sales channels to end consumers through its retail stores.

- SLHFM LLP is a small family business that produces meat kebabs. This long-time business experimented with automation but, surprisingly, reverted to manual processes after automation produced more hassle than convenience. The business focuses on original equipment manufacturer (OEM) orders and also supplies to direct consumers.

- MAFI Pte Ltd is a halal producer of meat and meat products and supplies local supermarkets and wet markets.

- KBP Pte Ltd is a poultry slaughterhouse and fresh meat producer that supplies supermarkets, restaurants, and food-catering businesses.

None of the interviewed companies gave financial data; hence to complete this section on financial perspective, only a single company's data will be used.

Subsector 2: Processing and Preserving of Fishes and Seaweeds

Singapore's version of the subsector "processing and preserving of fishes and seaweeds" is named "processing and preserving of fish, crustaceans and mollusks." In this subsector, there were two groups:

1. Canning of fish and other seafood
2. Processing, curing, and preserving (other than canning) of fish and other seafood

There were slightly more than 70 companies in this subsector, with 18% being involved in fish and other seafood canning and the remaining 82% involved in processing, curing, and preservation of fish and seafood.

Based on the figures submitted to the Accounting and Corporate Regulatory Authority of Singapore (ACRA), the companies that process, cure, and preserve fish and other seafood achieved company revenues that ranged from SGD0.4 million to SGD79 million in 2012, with an average of SGD17.8 million. Profit before tax ranged from SGD68,000 to SGD2.2 million, with an average of SGD0.5 million; profit after tax ranging from SGD49,000 to SGD2.3 million, with an average of SGD0.5 million. The gross profit margin ranged from 0.5% to 5%, with an average of 2%. However, to better compute the averages for revenue and profit, the companies that provided information for 2011 and 2012 were used for the data shown in Table 5.

Table 5. Average of companies from this subsector that filed financial data with ACRA (in SGD)

Processing, curing and preserving (other than canning) of fish and other seafood	**2011**	**2012**
Company revenue	49,264,563	29,612,520
Profit before tax	1,195,039	863,890
Profit after tax	848,438	688,928

Note: ACRA, Accounting and Corporate Regulatory Authority of Singapore.

A total of three companies from the subsector were interviewed. As no company shared its financial data, there is no financial ratio table presented in this section. One company completed the entire questionnaire and that data will be utilized for the customer and human resource perspectives.

1. GO Pte Ltd was established in 2001 as a producer of fish, seafood, and related products. The company has more than 150 stock-keeping units (SKUs), and operates only a single shift. Though it only boasts a small complement of six staff, management frequently conducted or sent staff for training.

2. EHTS Pte Ltd was incorporated in 1999 and is a small-scale business with six staff. The administrative processes were very manual.

3. JHFM Pte Ltd was established in 2007 as a producer of fish-related products such as fish balls and yong tau foo (a local tofu dish) and has 17 staff.

Subsector 3: Processing and Preserving of Fruit and Vegetables

This subsector is one of the smallest groups in the food-manufacturing sector with about 30 companies only.

The groups within the subsector are:

1. Manufacture of jams (including fruit jelly);
2. Other canning and preserving of fruit and fruit juices; and
3. Other canning and preserving of vegetables and vegetable juices (including pickles).

Manufacturing of jams (including fruit jelly) contributed 25% of the subsector, canning and preserving of fruit and fruit juices contributed 45% and canning and preserving of vegetables and vegetable juices (including pickles) contributed 30%.

From the few companies that filed their financial data with ACRA, companies that process/preserve fruit and vegetables had company revenues ranging from SGD0.3 million to SGD18.8 million in 2011, with an average of SGD6.9 million. In 2012, there was a decline, to an average of SGD6.7 million. As there were no data for 2013, there will not be any comparison tables for revenue and profits.

Subsector 4: Manufacture of Bakery Products

The groups within this subsector are:

1. Manufacture of biscuits (including wafers and cones);
2. Manufacture of bread, cakes, and confectionery; and
3. Manufacture of bakery products.

It is estimated that there are about 400 companies inclusive of large local corporations, multinational corporations, local SME factories, and bakery stalls. The manufacture of biscuits made up about 2.8% of the companies, while manufacture of bread, cakes, and confectionery comprised 78.6% of the subsector, and the general manufacture of bakery products comprised about 18.6%. Many companies had been in operation for more than 20 years, and a handful had more than 50 years of history. Though this industry was considered maturely developed, about 150 companies had operated for four years or less.

From the companies that filed their financial data with ACRA, companies manufacturing biscuits (including wafers and cones) had revenues that ranged from SGD1.5 million to SGD22 million in 2012; profit before tax ranged from SGD60,000 to SGD1.5 million; profit after tax ranged from SGD50,000 to SGD1.2 million. The average gross profit margin for this group of companies was about 2.9%.

The averages of those in the manufacture of bread, cakes, and confectionery, excluding the few major brands, are shown in Table 6:

Table 6. Estimated financial data from companies that filed financial statements with ACRA (in SGD)

Manufacturing of bread, cakes, and confectionery (excludes established brands)	**2011**	**2012**	**2013**
Company revenue	816,653	1,096,885	1,265,602
Profit before tax	61,450	65,718	195,785
Profit after tax	56,746	62,692	177,505

Note: ACRA, Accounting and Corporate Regulatory Authority of Singapore.

This broad subsector also includes supplying to end consumers through retail outlets and supermarkets.

A total of four companies participated in the survey. However, only one company shared quantitative data. Hence this company's data will be shared.

1. PD Pte Ltd has more than 20 years of history. This well-established brand produces bread and cake snacks from Singapore and the rest of Asia and distributes them to numerous neighborhood retail outlets. Additionally, the company has its own central kitchen.

2. JBC Pte Ltd has more than 15 years of history as a bakery. The company has changed ownership in recent years and its new leadership brought in new ideas and talent to introduce productivity improvement and management.

3. TCKF Pte Ltd is a small family business specializing in traditional Chinese cakes. It does not include delivery in their business model; and its customers collect the goods themselves.

4. TSP Pte Ltd has eight years of history in baking pies; it sells a single product. The company opened a retail store for its products but it was not successful. They decided to return to bakery operations in their central kitchen.

Subsector 5: Manufacture of Seasonings and Others

In Singapore, the manufacture of seasonings subsector is called manufacture of sauces including soya bean sauce. This subsector comprises only 30 companies.

The write-up for this subsector includes one company that only produces seasonings and two others that produce seasonings as their non-core products.

A total of three companies participated in the survey:

1. HS Pte Ltd, a 30-year-old sauces and seasonings specialist manufacturer that rebranded and restructured in the 2–3 years preceding this report. The company has focused on fulfilling OEM orders and regional expansion. It is now headed by second-generation management. This company has also made use of government funding, and utilized two funding grants in the two years preceding this report.

2. VF Pte Ltd is an established company that does not have any specialization in its product portfolio. Apart from Asian pastes and sauces, it also manufactures dim sum (snacks), *satay* (meat skewers), *otak* (grilled fish cake), ready-to-eat desserts, and ingredients.

3. JJFI Pte Ltd is a relatively new manufacturer of rice-related products and sauces. It moved into a multi-storied factory in September 2014. Though the space is small, the machines are highly automated. Nevertheless, there were still many workers seen crowded around small workstations.

KEY PERFORMANCE OF PARTICIPATING COMPANIES FROM SINGAPORE

Financial Perspective

Subsector 1: Processing and Preserving of Meat and Meat Products

In 2013, the total VA for this subsector declined to SGD11.6 million after a surge to SGD12.7 million in 2012. It is surprising that there was a decline in 2013, but as this result came from a single company's data, it is not possible to confirm that this was the trend for all other meat and meat product companies in Singapore. The financial results for this subsector are shown in Table 7 below.

Table 7. Financial perspective results

KBP Pte Ltd	2011	2012	2013	Average
Value added (SGD million)	11.1	12.7	11.6	11.8
Value added-to-sales ratio (%)	26%	26%	24%	25%
Labor cost competitiveness	2	2.2	1.8	2
Working capital ratio	–	–	–	–
Profit margin (%)	10.1%	12%	8%	10%
Sales growth (%)	–	14%	–8%	–
Export ratio	–	–	–	–

Subsector 2: Processing and Preserving of Fishes and Seaweeds

No companies shared financial data, hence no ratio table could be compiled.

Subsector 3: Processing and Preserving of Fruit and Vegetables

No companies shared financial data, hence no ratio table could be compiled.

Subsector 4: Manufacture of Bakery Products

Table 8 shows the average financial results for this subsector.

Table 8. Financial perspective results

TFBC Pte Ltd	2011	2012	2013	Average
Value added (SGD million)	6.6	7.5	7.4	7.2
Value added-to-sales ratio (%)	39%	38%	39%	39%
Labor cost competitiveness	1.0	1.1	1.0	1.0
Working capital ratio	15.3	11.1	10.4	12.3
Profit margin (%)	1%	2%	1%	1%
Sales growth (%)	–	19	–6	6.5
Export ratio	13%	26%	20%	19%

According to this single company's data, sales growth jumped by 19% in 2012 and VA improved. The export ratio also increased from 13% in 2011 to 26% in 2012. However, in 2013, performance declined, affecting its VA and profit margin.

Subsector 5: Manufacture of Seasoning and Others

No companies shared financial data, hence no ratio table could be compiled.

Customer Perspective

Subsector 1: Processing and Preserving of Meat and Meat Products

The customer perspective results for this subsector are shown in Table 9 below.

Table 9. Customer perspective results

	2011	2012	2013	Average
Compliments to complaint ratio	2.3	2.3	2.3	2.3
Customer reject/return (%)	1.8	1.8	1.8	1.8
Sales per employee (SGD)	–	–	–	–
On-time delivery to commit (%)	99.8	99.8	99.8	99.8
No. of new products per year	0.4	0.4	0.4	0.4

- Based on the responses from the five interviewed companies, most do not have a systematic approach for gathering feedback and collecting customer data. However, the companies easily recalled a rough gauge of their complaints or compliments. When asked the reason for the lack of a formalized feedback system, they expressed no real need for such a system as their customers were forthcoming and shared verbal/e-mail/in-person compliments and complaints. Additionally, their feedback generally did not influence their buying decisions. Only the ISO-certified company reported that it tracked complaints and has these systems in place because of ISO system requirements.

- All five companies indicated that they used telephone calls to gather feedback. Four out of five companies indicated the use of e-mail to gather feedback.

- As for customer rejects or returns, most companies also stated that they hardly kept archives of rejection rates and cases. However the ISO certified company maintained these records. Nevertheless, it shared that customer rejects/returns ranged from 2% to 6% and on-time delivery was estimated at 99% to 100%.

- Out of the five companies, only two stated that they introduced new products every year at an average of two to ten Stock Keeping Units (SKUs). They were mainly innovative variations of their core products to meet their customers' needs and interests.

Subsector 2: Processing and Preserving of Fishes and Seaweeds

Table 10. Customer perspective results

	2011	2012	2013	Average
Compliments to complaint ratio	1.5	2.0	1.9	1.8
Customer reject/return (%)	2	5	3	3.3
Sales per employee (SGD)	–	–	–	–
On-time delivery to commit (%)	0	0	0	0
No. of new products per year	2	4	6	4

Note: Table only shows a single company's data.

- All three companies indicated "telephone" as the main channel for retrieving feedback. The other popular choice was "in-person."

- Two of the companies indicated that they recorded the numbers of complaints and compliments; however their approaches were not formalized. When asked specifically about the responses to complaints, the companies replied that investigations were immediately completed and that customers were contacted to reach satisfactory agreement or reconciliation. However if the customers' complaints were not related to product quality (freshness), but instead related to incorrect specifications or requirements, then an immediate exchange was completed.

- The average number of new products year was about three per company.

- The average customer rejects/return rate averaged about 4%.

Subsector 3: Processing and Preserving of Fruit and Vegetables

No data were available for this subsector.

Subsector 4: Manufacture of Bakery Products

Table 11 shows the average customer perspective results for this subsector.

Table 11. Customer perspective results

	2011	2012	2013	Average
Compliments to complaint ratio	0.06	0.08	0.06	0.07
Customer reject/return (%)	2	2	2	2
Sales per employee (SGD)	6,881.46	8,220.49	7,316.03	7,472.66
On-time delivery to commit (%)	100	100	100	100
No. of new products per year	10	10	11	10

- As a well-established bakery, one company was able to consistently introduce 10 new products per year, while the remaining companies were only able to introduce about 1–4 new products per year.

- Only one out of the four companies in this subsector had a formalized system and approach to collecting and managing feedback. Once a complaint was lodged, an e-mail would be sent to all respective personnel for investigation and responding actions (actions were recorded in a official log). Another company had just started to look into this in December 2014 and planned to roll out a formal feedback collection and management system in 2015.

- Though three out of four participating companies did not have a formalized system in place to measure feedback, company representatives were able to share swiftly the compliments-to-complaint ratio (ranging 2:1 or 1:1). The vast difference in the ratio was due to the precise measurement and management of feedback (complaints/compliments) from the company's retail outlets and direct consumers.

- All companies indicated that they had no problems with on-time delivery issues.

- E-mails were sent to relevant personnel for checking, and these personnel responded with the corrective and preventive actions to be taken. The transactions were then recorded in the official log.

Subsector 5: Manufacture of Seasonings and Others

- All companies indicated "telephone" as the main channel for gathering feedback. However, the largest company of the three, HS Pte Ltd, indicated other channels such as e-mails and "in-person."

- Only the largest company had a systematic approach for gathering feedback, including the ratio of compliments to complaints. When it received complaints, on-site investigations were conducted. In the event of product leakages, the company issued immediate refunds. Its compliment-to-complaint ratio was 10:1. The medium size company's ratio was 1:1.

- The average order rejects/return rate was about 2.5% for the sole large- and medium-sized company.

- R&D activities increased in 2013 and 2014. One company introduced five new products in 2013, and the larger company developed two main product series in 2014 (i.e. 5–10 new products).

Operational Perspective

Subsector 1: Processing and Preserving of Meat and Meat Products

Table 12 shows the average operational perspective results for this subsector.

Table 12. Operational perspective results

	2011	2012	2013	Average
Labor productivity (SGD)	65,484.22	73,036.10	64,152.96	67,574.43
Annual inventory turns (number of turns per year)	–	–	–	–
Labor cost to sales ratio	13%	12%	13%	13%
Sales per fixed assets (dollar of capital)	13.7	19.5	14.0	15.8
Capital intensity (SGD)	18,478.68	19,877.54	19,429.83	19,262.02
R&D investment ratio (%)	–	–	–	–

- Based on the single company's data, labor productivity averaged about SGD68,000 a year for the three years. However, it is important to note that the company belongs to the upstream category (slaughtering of poultry and raw meat production) in the value chain, therefore it is important to note that the figures above may be skewed towards the more profitable scenarios for the processing and preserving of meat and meat products subsector.

- Most of the companies interviewed indicated that they did not use a manufacturing/production methodology such as Lean or Six Sigma.

- As for technology, four out of five companies used minimal automation for their core processes. Regarding ICT, most companies indicated that the three common systems they used were financial management systems, purchasing/requisition systems, inventory management systems, and enterprise resource planning (ERP) systems.

- The most-selected "key success factor" for the companies was "high-quality products according to customers' requirements."

- While most companies did not reveal their capital expenditure on IT and machinery for the three years, one of the companies mentioned that 2014 was a better year for investment, and that they had spent about SGD50,000 on machinery, equipment and a similar sum on IT systems.

Subsector 2: Processing and Preserving of Fishes and Seaweeds

- One of the companies used supplier-management strategies to bring costs down, and enhance its competitiveness. For example, certain processes that took more

time in Singapore were streamlined as the company used their overseas supply and production lines to provide more VA operations and services. As a result, when the product reached Singapore, the company spent minimal effort on packaging before shipping out to customers. Though the cost was higher, product turnover was faster – key for volume business, as is evident from the subsector's low gross-profit margins.

- Surprisingly, all three companies differed in terms of key success factors for their businesses. Several factors such as "good customer service," "high-quality products," and "value for money" were individually indicated by different companies. Moreover, one claimed "traditional taste" and "one-stop solutions" as additional key success factors.

- All companies indicated that they did not have any manufacturing methodology such as Lean or Six Sigma, but did focus on food safety and quality. However, in the course of conversation, one company revealed that they had a minimal visual system in place and tried to avoid overproduction. This may be equivalent to the concept of the "pull system."

- All companies indicated that they had a financial management system in place.

Subsector 3: Processing and Preserving of Fruit and Vegetables

No data were available for this subsector.

Subsector 4: Manufacture of Bakery Products

Table 13 below shows the average operational perspective results for this subsector.

Table 13. Operational perspective results

	2011	2012	2013	Average
Labor productivity (SGD)	2,712.95	3,091.04	2,876.33	2,893.44
Annual inventory turns (number of turns per year)	9.4	12.0	13.8	–
Labor cost to sales ratio (%)	38%	36%	39%	38%
Sales per fixed assets (SGD of capital)	2.3	2.1	1.8	2.1

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	2011	2012	2013	Average
Capital intensity (SGD)	2,974.51	3,888.24	4,004.56	3,622.43
R&D investment ratio (%)	0	0	0	–

- The most common key success factor indicated by the three companies was "high-quality products." One company indicated "niche product" as a key success factor, that is, not met with strong competition.

- All companies, except for the traditional cake manufacturer, used some form of automation technology and systems.

- The most commonly used system was a financial management system. Some companies used the point of sale (POS) system for their retail stores as well. The larger company also had ERP, inventory management, purchasing and requisition systems, as well as an e-commerce system for their business operations.

- Three out of the four companies indicated no specific manufacturing methodology. However, one mid-sized company shared that it was learning and applying elements of the Toyota Production system, in particular the cellular layout, for each staff's workplace with readily available tools and materials to improve productivity. They were also looking towards implementing the 5S methodology to improve productivity further.

Subsector 5: Manufacture of Seasonings and Others

- All companies indicated that their main success factor was "high-quality products." The larger company also indicated good customer service, as well as their strong focus on fulfilling OEM orders.

- None of the companies indicated the presence of manufacturing methodology such as Lean or Six Sigma.

- All companies used technology and automation in their processes. In particular, one company had a human resource (HR) management system, ERP system, and additional mobile solutions to facilitate "sales taking" by the sales representatives. Each of the staff used a Samsung Galaxy Tablet to take orders, and these were integrated with the ERP system, which increased overall productivity. The company also utilized government

funds on technology and systems upgrading, with an estimated expenditure of SGD800,000 over the past four years.

Human Resource Perspective

Subsector 1: Processing and Preserving Meat and Meat Products

- On average, full-time employees worked at least 48 hours a week.

- Two out of the five interviewed companies indicated that they do not provide training for their employees, while the rest of the companies provided necessary courses such as food handling and hygiene, hazard analysis and critical control points (HACCP), and forklift safety. Of the companies that did not provide training, one was a family business with family members making up at least 50% of the staff (with no part-time staff), while the other was a small company with a large number of foreign workers with 40% part-time staff.

- Three of the companies spend 1–2 days on training per year, with an estimated training expenditure of SGD1,000–SGD2,000. Most companies had informal on-the-job training (OJT).

- The companies provided several financial incentives, including salary and performance bonuses based on a profit-sharing basis. The profit-sharing benefit was especially utilized by companies in the fresh/frozen meat subsector, and clearly reflects the competitiveness in that subsector. For example, a company mentioned that their production supervisor could easily earn 2–3 times his salary under the profit-sharing model. This was a win–win initiative.

- Most companies commented that absenteeism was not a problem, and hence did not provide any percentages for absenteeism rate.

Subsector 2: Processing and Preserving of Fishes and Seaweeds

Table 14 shows the average human resource perspective results for this subsector.

Table 14. Human resource perspective results

	2011	2012	2013	Average	Average of companies with training
Training hours per staff member	5.6	4.3	5.6	5.2	10
Training expenditures per staff member (SGD/year)	–	–	–	–	–
Full-time staff turnover rate (%)	–	–	–	–	–
Part-time staff turnover rate (%)	–	–	–	–	–
Absenteeism rate (%)	–	–	–	–	–

- On average, full-time employees worked about 60 hours a week.
- All three companies indicated that they did not track the staff turnover rate, as they did not have problems with high staff turnover.
- Two companies indicated that they provided OJT. The average of the two companies was about 10 hours a year. Specifically, the management of one company conducted their own in-house training after work (afternoons) for their staff. The training was conducted at the factory premises.

Subsector 3: Processing and Preserving of Fruit and Vegetables

No data were available for this subsector.

Subsector 4: Manufacture of Bakery Products

Table 15 below shows the average human resource perspective results for this subsector.

Table 15. Human resource perspective results

	2011	2012	2013	Average
Training hours per staff member	11.9	9.4	8.3	9.9
Training expenditures per staff member (SGD/year)	–	–	–	–
Full-time staff turnover rate (%)	0	0	0	0
Part-time staff turnover rate (%)	0	0	0	0
Absenteeism rate (%)	0	0	0	0

- Excluding the larger company, three companies had three to 25 full-time employees, and seven to 10 part-time employees. Though not all four companies tracked their staff-turnaround rate, they expressed that they had no issue with staff turnover or absenteeism.

- All companies provided informal OJT for their new staff.

- Surprisingly, excluding the larger company, two other companies did not have financial-related incentives such as bonuses to motivate staff performance.

- For the larger company, various formal training programmes included food hygiene courses, good-manufacturing practices (GMP), occupational first aid, halal foundation programs, etc.

Subsector 5: Manufacture of Seasonings and Others

- The three companies interviewed had about 10, 30, and 40 employees respectively. Though they indicated that they tracked the staff-turnover rate, they responded that staff turnover was not a problem.

- All companies indicated that they provided training to staff, with programs such as food hygiene, food handling or computer skills for production staff, as well as communication and sales courses for sales staff.

CONCLUSION

Due to the lack of quantitative data, the report findings presented here are limited to qualitative data and on-site observations. Though the food-manufacturing sector in Singapore has already been working together to jointly benefit from overseas export opportunities through the "Working-in-Partnership" and "Tasty Singapore" programs, there are still opportunities for further collaboration to streamline products and encourage innovation. From the surveys and general observations, it can be concluded that SMEs require more help to set up fundamental performance-measurement systems for productivity. However, the issues of setting up bandwidth, monitoring, and manage KPIs within the companies would remain.

Currently, SMEs are extremely lean in their operations and do not have the extra headcount needed to drive certain productivity improvements. It was also not possible to involve the

staff in productivity awareness and improvement programs or projects. As such, there are two suggestions for them, i.e. to adopt technology and systems in both operational and corporate processes.

However, these solutions require steep investments. A better alternative could be using shared services or resources to serve the food-manufacturing sector. For instance, companies could recruit reliable food-sector-specific part-time employees who are equipped with multi-skill capabilities. A pool of professionals could also manage logistics and other processes.

Areas for Improvement in the Food-Manufacturing Sector

The following are areas for improvement in Singapore's food-manufacturing sector:

- Skills matrix development and deployment for business continuity;
- Deeper engagement with staff in terms of human-resource management, without reliance on closed-circuit televisions (CCTVs) to monitor staff performance;
- Development and identification of niche/competitive advantages (e.g., product types and niche markets), so that competition is no longer based on cut-throat price or ontime delivery within the same subsector;
- Product portfolio rationalization/proliferation;
- Strengthen sales channels and branding for in-house brands;
- Include key deliverables in the following managing processes: efficiency and manpower utilization (including basic programs such as 5S housekeeping), work standardization, overall equipment efficiency (OEE) programs; and
- More visual systems, with workplace demarcation.

Key Strengths

The key strengths of food manufacturers in Singapore are found in:

1. High product quality (including hygiene), value, and reliability; and
2. Credibility of Singapore's overall food-manufacturing sector due to strict regulations from the Agri-food and Veterinary Authority (AVA) Singapore.

Opportunities

There are several opportunities for food manufacturers in Singapore, namely:

1. Collaboration opportunities across subsectors of food manufacturing;

2. To leverage Singapore's brand as a gateway between East and West to increase export opportunities to non-Asian markets; and

3. Singapore's position as a gateway may also be used to enhance VA products by introducing international foods, ingredients, and flavors.

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KEY FINDINGS ON THE FOOD-MANUFACTURING SECTOR IN THAILAND

Janna Sanguanroongvong

INTRODUCTION AND OVERVIEW OF THE FOOD-MANUFACTURING SECTOR IN THAILAND

In Thailand, many small and medium enterprises (SMEs) are in the manufacturing, trading, and service sectors. According to data from the Office of Statistics, the Social Security Office, and the Department of Business Development in Thailand, a total of 2,763,997 SMEs made up 97.2% of total enterprises in 2013. Most SMEs were in the wholesale, retail, and automation services sectors (1,201,070, or 42.2%), service sector (1,080,944, or 38%) and manufacturing sector (481,983, or 16.9 %). SMEs play significant roles in contributing to the economy and employment rate in Thailand. Figure 1 shows the breakdown of Thailand's food-manufacturing sector by enterprise type. Table 1 shows the number of enterprises by size, while Table 2 shows the average labor productivity of the total food sector in 2012 (THB771,735.50 per worker, contributing THB666,271.7 million to the nation's GDP).

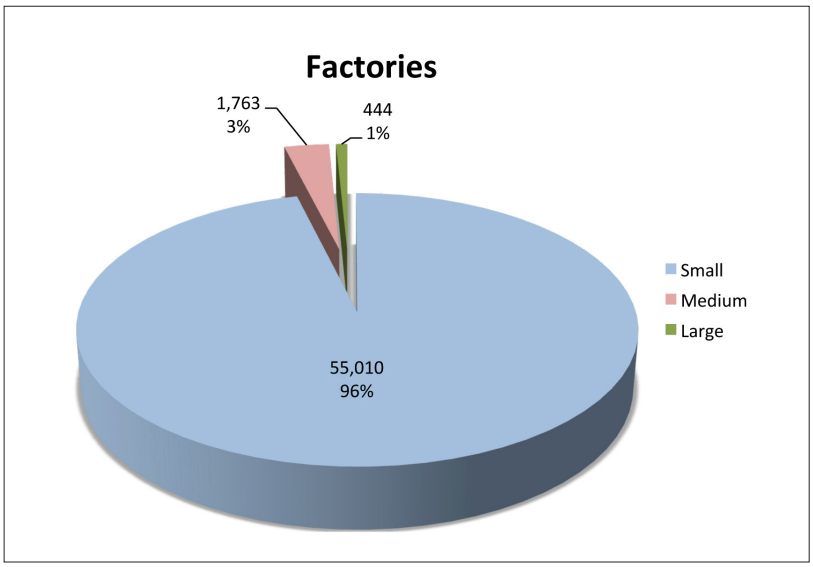

Figure 1. Food-manufacturing sector in Thailand.

Source: The National Food Institute, Thailand (2013) [1].

Table 1. Number of enterprises by size

Type	SE	ME	SME	LE	NA	Total
Agriculture, forestry, and hunting animals	3,365	180	3,545	73	30,662	34,280
Mining and quarrying	2,595	119	2,714	47	74	2,835
Manufacturing	466,341	4,316	470,657	2,484	34,341	507,482
Electricity, gas, steam, and air conditioning supply	2,265	153	2,418	213	4	2,635

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Type	SE	ME	SME	LE	NA	Total
Water supply, wastewater management (and related activities)	2,576	73	2,649	31	81	2,761
Construction	114,549	508	115,057	157	54	115,268
Wholesale and retail trade / Repair of motor vehicles and motorcycles	1,198,062	3,008	1,201,070	2,060	3,367	1,206,497
Transport and warehouse	71,721	604	72,325	291	29	72,645
Hotel and food services	282,007	933	282,940	392	152	283,484
Information and communication	30,954	118	31,072	77	8	31,157
Financial and insurance activities	10,227	317	10,544	276	2,772	13,592
Real estate activities	149,102	1,923	151,025	678	11	151,714
Professional, scientific, and academic activities	64,939	226	65,165	138	14	65,317
Administrative and support services	74,132	301	74,433	138	198	74,769
Education	4,125	74	4,199	28	32	4,259
Health and social work	3,094	141	3,235	162	32	3,429
Arts, entertainment, and recreation	55,313	188	55,501	93	249	55,843
Other service activities	215,383	65	215,448	11	635	216,094
Others	–	–	–	–	696	696
Total	**2,750,750**	**13,247**	**2,763,997**	**7,349**	**73,411**	**2,844,757**

Source: The Office of Small and Medium Enterprises (2013) [2].
Notes: LE, large enterprise; ME, medium enterprise; NA, not applicable; SE, small enterprise; SME, small and medium enterprise.

Table 2. Average food sector labor productivity – small enterprises

Enterprise type	Food and drink sector		
	Employment (people)	GDP (THB mil)	Labor productivity (THB / person / year)
Small enterprises	494,253	94,117	190,422
Medium enterprises	114,464	127,232	1,111,548
Small and medium enterprises	608,717	221,349	363,632
Large enterprises	253,312	444,923	1,756,422

Source: The Office of Small and Medium Enterprises (2013) [2].

Thailand is one of the few countries that produces large amounts of high-quality rice. Thai sugar and tapioca starch are known for their quality and sell at competitive prices. Leading manufacturers are continuing to expand their production facilities, develop new products, and invest in marketing activities.

Today, Thai agriculture has successfully diversified into high-value products such as livestock and rice. Thailand is among the world's top food exporters of milled rice, sugar, tapioca, and canned pineapples. The country is also ranked among the world's top 10 exporters of seafood, canned tuna, frozen shrimp, and frozen chicken. Thai food exports (Figure 2) exceed imports by a broad margin. In 2013, Thailand made USD26.8 billion from its food exports, mainly to Association of Southeast Asian Nations (ASEAN) countries, USA, Japan, PR China, Russia, and the European Union.

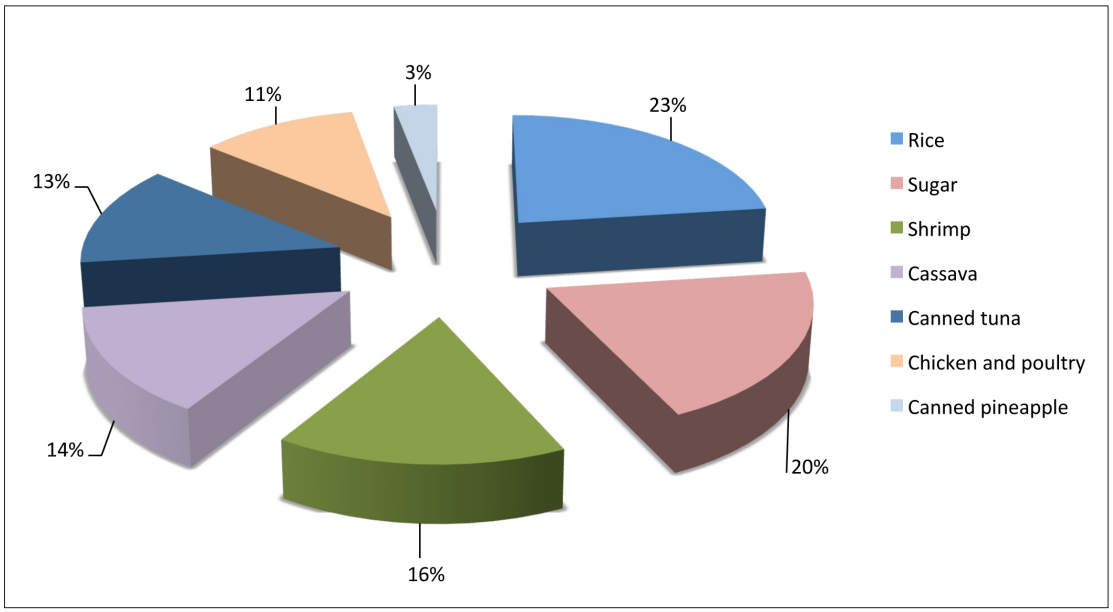

Figure 2: Thailand's main food export. NFL, National Food Institute.

Source: National Food Institute, Royal Thai Government (March 2013) [1].

The Ministry of Industry is boosting the country's food sector under the Master Plan for the Food Industry (2010–2014). The government is also looking to increase the value of Thailand's food exports annually by 10% [3].

The government is also placing greater emphasis on health foods. Demand for healthy foods will increase over the next few years, along with rising health awareness. More research on food nutrition will be undertaken, and campaigns will be launched to promote Thai food as healthy food.

Table 3 shows the classifications used for the food-manufacturing sector in Thailand.

Table 3. Thailand's food-manufacturing classifications

TSIC Code		Sector
2-digit	**3-digit**	
10		Manufacture of food products
	101*	Slaughtering of livestock, processing, preserving of meat and meat products
	102	Processing and preserving of fish, crustaceans, and mollusks
	103*	Processing and preserving of fruit and vegetables
	104	Manufacture of vegetable and animal oils and fats
	105	Manufacture of dairy products and edible ice cakes
	106	Manufacture of grain mill products, starches, and starch products
	107	Manufacture of other food products
	1071*	Manufacture of rice cakes, fresh or frozen bakery products, dry bakery products
	108	Manufacture of livestock feeds and prepared animal feeds
11*		Manufacture of beverages
	1104	Manufacture of soft drinks, production of mineral water, and other bottled waters

Notes:
*This report will focus on four subsectors (101, 103, 1071, and 11). Subsector 101 will be referred to as processing and preserving of meat and meat products, subsetor 103 as processing and preserving of fishes and seaweeds, and 1071 as manufacture of bakery products for consistency with this report. TSIC, Thailand Standard Industrial Classification.

In 2013, the Office of Small and Medium Enterprises Promotion (OSMEP) developed four strategic goals to improve and leverage on SME competencies and production standards in the food sector to achieve sustainable competitiveness:

1. Consult SMEs that have implemented production standards and traceability systems that consistently meet customer expectations;

2. Promote productivity and increase the value added (VA) for food products;

3. Promote the image and brand of the food sector, and develop marketing channels and promotion; and

4. Create a productive environment and establish internal and external networks by improving regulations, laws, and a one-stop-service through integrated systems. Training, marketing, auditing, and traceability systems projects were also designed.

Training on key performance indicators (KPIs) was conducted to encourage SMEs to have a better understanding of measuring KPIs and its benefits. KPI data were collected through questionnaires, in-depth interviews, calls, and site visits.

PROFILES OF THE PARTICIPATING FOOD-MANUFACTURING COMPANIES FROM THAILAND

A total of 24 SMEs from the following four subsectors participated in this research project:

1. Processing and preserving of meat and meat products (6 SMEs);
2. Processing and preserving of fruit and vegetables (6 SMEs);
3. Manufacture of bakery products (6 SMEs); and
4. Manufacture of beverages (e.g., fruit drinks) (6 SMES).

Subsector 1: Processing and Preserving of Meat and Meat Products

In 2013, Thailand exported 497,040 metric tons of meat and meat products valued at THB67,645.209 million. This figure decreased by 6.9% compared to the previous year (531,244 metric tons). Overall, Thailand's exports decreased with each of its trade partners as a result of the decelerating global economy and the resulting decreased purchasing power of its major trade partners.

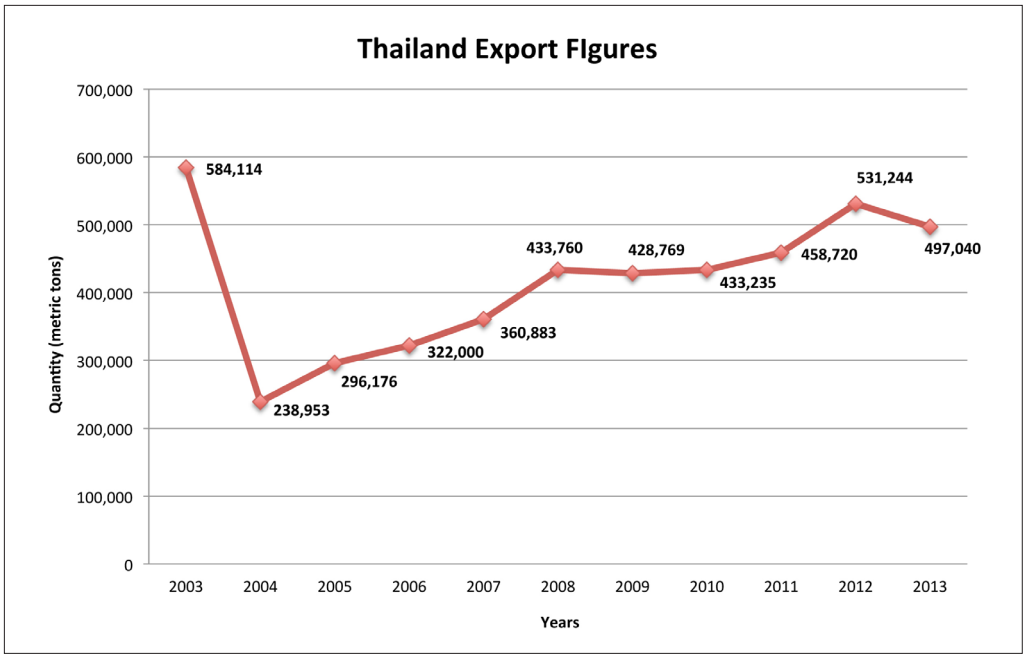

Figure 3. Thailand export figures.

Source: Planning Division, Department of Livestock Development [4].

Six SMEs from this subsector participated, five were private limited companies and one was a partnership enterprise. The breakdown of the companies is shown in Table 4.

Table 4. Breakdown of participating small and medium enterprises

Type of business	Mode of factory operation	Type of food manufacturer	Business type
3 private limited companies	2 shifts	Contract manufacturer, own-product manufacturer	Processing of meat and meat products
2 private limited companies	1 shift	Contract manufacturer	Preservation of meat and meat products
1 partnership	1 shift	Own-product manufacturer	Processing of meat and meat products

Subsector 2: Processing and Preserving of Fruit and Vegetables

The high growth of the fruit and vegetables subsector in Thailand enabled SMEs in this subsector to increase their contribution to the national income. The more competitive they became, the more new products they were able to launch, which contributed to higher economic growth as Thailand became a major exporter of fruits. The country exported USD393.22 million or 156,000 metric tons in 2012. Thailand's exports grew by 54% from 2008 to 2012, while the world market expanded by 23%. This shows that Thailand is gaining greater market share in the world market.

Six SMEs participated in the research study. Five are private limited companies and one SME is a partnership. The breakdown of the companies is shown in Table 5. Table 6 shows the largest importers of fruits from Thailand (in USD value) in 2012

Table 5. Breakdown of participating small and medium enterprises

Type of business	Mode of factory operation	Type of food manufacturer	Business type
3 private limited companies	2 shifts	Contract manufacturer, own-product manufacturer	Process fruit, dried fruit and vegetables
1 private limited company	1 shift	Contract manufacturer, own-product manufacturer	Process fruit and dried fruit
2 private limited companies	1 shift	Contract manufacturer	Process fruit and dried fruit

Table 6. Main countries importing fruit from Thailand in 2012

Importers	Exported value (USD '000)	Trade balance (USD '000)	Share of Thailand's exports	Export quantity	Quantity unit	Unit value (USD/ unit)	Export growth value PA (2008–12)	Export growth quantity PA (2008–12)	Export growth in value (2011–12)	Ranking of partner countries in world imports	Share of partner countries in world imports	Total import growth in value of partner countries PA (2008–12)	Average distance between partner countries and all supplying markets	Concentration of exporting countries in partner countries exports	Tariff (est) faced by Thailand (%)
World	393,224	391,620	100%	158,185	Metric tons	2,518	54%	6%	28%	–	100%	16%	–	–	–
Vietnam	235,270	235,270	59.8%	57,735	Metric tons	4,078	260%	130%	1241%	1	28.5%	245%	855km	1	5
PR China	105,742	104,758	26.9%	61,378	Metric tons	1,723	31%	–7%	–58%	3	10.3%	6%	2,855km	1	0
USA	7,212	7,008	1.8%	2,926	Metric tons	2,465	13%	7%	32%	2	11.5%	6%	9,116km	0.1	2.8
Hong Kong	4,528	4,528	1.2%	635	Metric tons	7,131	–6%	–38%	27%	13	1.5%	15%	5,706km	0.3	0
UAE	3,997	3,997	1%	3,322	Metric tons	1,203	43%	10%	29%	16	1.2%	13%	3,184km	0.3	5
Russia	3,918	3,918	1%	2,236	Metric tons	1,752	137%	117%	3%	19	1%	–10%	2,929km	0.2	7.5
Myanmar	3,363	3,254	0.9%	4,211	Metric tons	799	94%	55%	11%	33	0.4%	93%	633km	1	10
Philippines	3,261	3,261	0.8%	508	Metric tons	6,419	52%	9%	279%	51	0.2%	42%	3,285km	0.8	5
Canada	2,384	2,383	0.6%	834	Metric tons	2,859	19%	3%	76%	6	3.3%	7%	5,560km	0.3	0
Malaysia	2,215	2,215	0.6%	1,414	Metric tons	1,566	44%	21%	51%	11	1.5%	34%	2,163km	0.2	0

Source: Compiled using information from the Thailand Board of Investment website [5].

Notes: PA, per annum; UAE, United Arab Emirates.

Subsector 3: Manufacture of Bakery Products

In 2013, the value of exported bakery products was THB32,710 million which decreased by 9.4% from 2012 [5]. Overall, Thailand's exports had decreased with each of its trade partners as a result of the decelerating global economy and reduced purchasing power of its major trade partners.

Six SMEs participated in the research study. Four were private limited companies and two were partnerships. The breakdown of the companies is shown in Table 7.

Table 7. Breakdown of participating small and medium enterprises

Type of business	Mode of factory operation	Type of food manufacturer	Business type
1 private limited company	3 shifts	Own-product manufacturer	Bakery products (bread, cakes)
1 private limited company	2 shifts	Own-product manufacturer	Bakery products (bread, cakes)
2 private limited companies	1 shift	Own-product manufacturer	Bakery products (bread, cakes)
2 partnerships	1 shift	Own-product manufacturer	Bakery products (bread, cakes)

Subsector 4: Manufacture of Beverages

In 2013, Thailand exported 12,628,756 metric tons of beverages valued at THB531,644 million, which decreased by 7.2% compared to the previous year. Overall, Thailand's exports had decreased with each of its trade partners as a result of the decelerating global economy and the decreased purchasing power of its major trade partners.

Six SMEs participated in the research study, all of which were private limited companies. The breakdown of the companies is shown in Table 8.

Table 8. Breakdown of participating small and medium enterprises

Type of business	Mode of factory operation	Type of food manufacturer	Business type
2 private limited companies	1 shift	Contract manufacturer, own-product manufacturer	Fruit and vegetable drink, functional drink
2 private limited companies	1 shift	Own-product manufacturer	RTD tea, fruit and vegetable drink, functional drink
1 private limited company	2 shifts	Own-product manufacturer	Fruit and vegetable drink, functional drink
1 private limited company	3 shifts	Own-product manufacturer	Fruit and vegetable drink, functional drink

Notes: Functional drinks are non-alcoholic beverages. RTD, ready to drink.

KEY PERFORMANCE OF PARTICIPATING COMPANIES FROM THAILAND

Financial Perspective

Subsector 1: Processing and Preserving of Meat and Meat Products

Table 9 shows the average financial performance results for this subsector.

Table 9. Financial performance results

No.	Key performance indicators	2011	2012	2013
1	Value added (USD)	471,331.10 (71,913.98–1,344,905.19	571,741.95 (81,378.82–1,828,305.39)	459,863.80 (55,946.76–1,615,115.44)
2	Value added-to-sales ratio (%)	0.2 (0.1–0.4)	0.2 (0.0–0.3)	0.1 (0.0–0.3)
3	Labor cost competitiveness	2.1 (1.1–4.6)	2.9 (1.2–6.6)	2.4 (1.3–4.5)
4	Working capital ratio	–5.1 (–58.3–15.7)	6.8 (–18.–16.4)	5.9 (–49.7–22.3)
5	Profit margin (%)	5.2 (0.5–6.3)	6.8 (–3–8.6)	7.2 (–5.9–9.6)
6	Sales growth (%)	9.1	8.5 (–7.3–11.2)	10.5 (–49.3–20.4)
7	Export ratio (%)	0.1 (0.0–0.2)	0.1 (0.0–0.2)	0.1 (0.0–0.3)

Notes: Range in parentheses. No., number.

- The VA ranged from USD55,946.76 to USD1,828,305.39 in the three years.
- The VA-to-sales ratio ranged from 0.0 to 0.3.
- The labor cost competitiveness range over the three years was from 1.1 to 6.6 as some participating SMEs operated their businesses well, with good labor cost management.
- The average working capital ratio each year from 2011 to 2013 was –5.1, 6.83 and 5.9 respectively.
- The profit margin range was –5.9% to 9.6% in 2013. The higher figure represents the high margin resulting from good cost management.
- Sales growth ranged from –49.3 to 20.4. The negative sales growth from some companies was due to the temporary suspension of business caused by the 2013 political crisis.
- The export ratio range was 0% to 0.3% as some SMEs did not export their products.

Subsector 2: Processing and Preserving of Fruit and Vegetables

Table 10 shows the average financial performance results for this subsector.

Table 10. Financial performance results

No.	Key Performance Indicators	2011	2012	2013
1	Value added (USD)	1,777,228 (4,704.08–4,433,388.00)	2,225,218 (140,899.50–4,862,605.20)	2,611,592 (41,457.00–5,747,604.30)
2	Value added-to-sales ratio (%)	0.3 (0.1–0.4)	0.3 (0.1–0.6)	0.2 (0.0–0.4)
3	Labor cost competitiveness	1.5 (0.1–2.8)	1.9 (1.0–2.9)	1.8 (0.6–3.1)
4	Working capital ratio	–5.5 (–23.4–5.8)	3.9 (–68.5–33.6)	6.7 (–52.8–16.6)
5	Profit margin (%)	9.70 (–4.4–14.5)	10.10 (0.7–13.6)	10.2 –2.2–16.6
6	Sales growth (%)	8.1	75.1 (–33.6–234.6)	22 (–45.3–121.8)
7	Export ratio (%)	0.3 (0.0–0.8)	0.3 (0.0–0.8)	0.4 (0.0–0.8)

Notes: Range in parentheses. No., number.

- The VA ranged from USD41,457.00 to USD5,747,604.30 in 2013. It was rather high because of the respondents' effective cost management practices and processes. The VA figure for one company was low (USD4,704.80) as a result of massive nationwide flooding in 2011, and poor cost-management practices. Though Thailand has one of the largest and most active food-processing sectors in the world, many facilities had to temporarily stop production due to damage and lack of raw materials.

- The VA-to-sales ratio ranged from 0% to 0.6%.

- The labor cost competitiveness range was positive as the respondents expended much effort on matching the correct staff to the job. Although the increased minimum wage led to higher labor costs in 2013, sales growth still increased. The companies' effective cost management and competitive agility are proof of the excellent management teams at their helm.

- The working capital ratio average from 2011 to 2013 was –5.4, 3.9 and 6.7 respectively.

- The profit margin ranged from –4.4% to 16.3%. The highest, at 16.3%, was due to effective cost management practices.

- Sales growth ranged from –45.3% to 234.6%. Some companies showed negative sales growth as they had to temporarily stop their operations for several months due to the political crisis.

- The export ratio ranged from 0% to 0.8%. Some SMEs did not export, and some focused on continuous increases in product development.

Subsector 3: Manufacture of Bakery Products

Table 11 shows the average results for the financial perspective in this subsector.

Table 11. Financial performance results

No.	Key Performance Indicators	2011	2012	2013
1	Value added (USD)	217,774.70 (64,086.75–337,982.97)	308,317.47 (83,114.16–443,435.08)	380,121.71 (74,293.62–533,345.71)
2	Value added-to-sales ratio (%)	0.12 (0.1–0.2)	0.2 (0.1–0.3)	0.2 (0.1–0.2)

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No.	Key Performance Indicators	2011	2012	2013
3	Labor cost competitiveness	2.2 (1.1–3.7)	2.2 (1–3.7)	2.1 (1.1–3.5)
4	Working capital ratio	6.2 (–4.2–26.5)	8.5 (–2.9–27.5)	5.6 (–24.7–20.3)
5	Profit margin (%)	11.1 (–2.4–15.5)	11.4 (3.8–17.7)	12.5 (2.8–16.3)
6	Sales growth (%)	NA	10.8 (–19.8–23.5)	7.3 (–26.9–26)
7	Export ratio (%)	0.01 (0.00–0.01)	0.03 (0.00–0.12)	0.07 (0.00–0.21)

Notes: Range in parentheses. NA, not applicable; No., number.

- The VA ratio ranged from USD64,086.75 to USD533,345.71.
- The VA-to-sales ratio ranged from 0.1% to 0.3%. The VA products were developed together with potential suppliers and partners.
- The labor cost competitiveness ranged from 1.0 to 3.7.
- The working capital ratio showed operating liquidity and short-term financial health. The average working capital ratios each year from 2011 to 2013 were 6.2, 8.5 and 5.6 respectively.
- The profit margin ranged from –2.4% to 17.5%. The highest figure was a result of some respondents receiving high margins from good construction cost management.
- Sales growth ranged from –26.9% to 26.0%. Some respondents developed marketing plans to increase sales and support continuous product development.
- The export ratio ranged from 0% to 0.2% as some companies did not export their goods and had to solely rely on the Thai market. Other companies had R&D departments that continuously developed new products, including export-quality products. These companies were the higher performers.

Subsector 4: Manufacture of Beverages

Table 12 shows the average results for the financial perspective in this subsector.

Table 12. Financial performance results

No.	Key Performance Indicators	2011	2012	2013
1	Value added (USD)	124,064.40 (37,952.25–190,607.98)	127,095.20 (41,002.16–183,685.24)	135,941.90 (45,356.36–210,528.44)
2	Value added-to-sales ratio (%)	0.1 (0.1–0.2)	0.1 (0.1–0.2)	0.1 (0.1–0.2)
3	Labor cost competitiveness	1.5 (0.8–2.2)	1.8 (1–2.9)	1.7 (1.1–2.5)
4	Working capital ratio	–3 (–28.5–17.8)	5.5 (–22.1–18.7)	6.6 (–25.5–27.2)
5	Profit margin (%)	6.2 (–4.5–9.9)	6.8 (0.8–8.7)	7.8 (0.6–10.0)
6	Sales growth (%)	7.2 (1.1–10.2)	20.1 (9.9–40.1)	19.7 (–16.9–57.7)
7	Export ratio (%)	0.00 (0.00–0.01)	0.01 (0.00–0.02)	0.01 (0.00–0.03)

Notes: Range in parentheses, No., number.

- The VA ranged from USD37,952.25 to USD210,528.44.
- The VA-to-sales ratio ranged from 0.1% to 0.2%. The VA was increased by original equipment manufacturer (OEM) expansion in both finished and semi-finished goods. Following this expansion, sales growth increased.
- The labor cost competitiveness ranged from 0.8 to 2.9, indicating good labor cost management systems.
- The working capital ratio represented operating liquidity and short-term financial health. The average working capital ratios each year from 2011 to 2013 were –3.0, 5.5 and 6.6 respectively.
- The profit margin ranged from –4.5% to 10.0%. The best performer earned good margins from effective construction-cost management.
- Sales growth ranged from –16.9% to 7.7%. Some companies developed marketing plans to increase sales by OEM in both local and international markets. Some organizations implemented continuous R&D and enjoyed high sale growth in health-related products.

- The export ratio ranged from 0% to 0.03% as some companies did not export their goods.

Customer Perspective

Subsector 1: Processing and Preserving of Meat and Meat Products

Table 13 below shows the average customer perspective results for this subsector.

Table 13. Customer perspective results

No.	Key Performance Indicators	2011	2012	2013
1	Compliments to complaint ratio	NA	NA	NA
2	Customer reject/ return (%)	0.1 (0.1)	0.1 (0.0–0.1)	0.1 (0.0–0.1)
3	Sales per employee (USD)	27,240.10 (8,021.20–50,572.10)	29,593.70 (7,322.20–53,840.90)	34,652.30 (6,957.30–61,457.90)
4	On-time delivery (%)	91.6 (85.1–96.4)	93.6 (86.5–97.5)	94.2 (89.8–97.2)
5	No. of new products per year	5 (0–8)	6 (1–10)	7 (1–10)

Notes: Range in parentheses. NA, not applicable; No. number.

- Respondents only collected customer-complaint data.

- The customer reject/return ratio ranged from 0% to 0.1%. Some companies had a very low three-year reject/return ratio due to implementing a systematic customer satisfaction survey and Kaizen (a Japanese continuous improvement practice) to enhance their products and services to meet the requirements of their customers.

- Sales per employee ranged from USD6,957.30 to USD61,457.90, which demonstrated the efficiency and effectiveness of the respondents' marketing strategies. Some SMEs achieved good results due to their clear and well-defined KPIs, targets and monthly monitoring process. They had developed appropriate solutions for achieving higher sales growth.

- The on-time delivery (OTD) to commit range was from 85.1% to 97.53%. Although some companies recorded these data, no analysis was made. The best company established quality objectives to control and maintain its delivery processes.

- The number of new products introduced by the SMEs ranged from 0 to 10 products per year.

Subsector 2: Processing and Preserving of Fruit and Vegetables

Table 14 below shows the average customer perspective results for this subsector.

Table 14. Customer perspective results

No.	Key Performance Indicators	2011	2012	2013
1	Compliments to complaint ratio	NA	NA	NA
2	Customer reject/ return (%)	3.2 (0.1–8.9)	7.1 (0.1–23.2)	4.4 (0.1–9.8)
3	Sales per employee (USD)	34,671.90 (6,039.8–68,914.1)	48,190.70 (9,685.2–102,463.5)	40,061.60 (12,498.9–80,914.7)
4	On-time delivery to commit (%)	97 (96–100)	98.5 (96.5–100)	99.2 (98.8–100)
5	No. of new products per year	7 (0–30)	16 (1–50)	22 (0–70)

Notes: Range in parentheseis. NA, not applicable; No., number.

- Respondents only actively collected customer-complaint data, however; some respondents received high customer-satisfaction rates from systematic customer-satisfaction surveys and data analysis.

- The customer reject/return ratio ranged from 0.1% to 23.2%. The rate of product return was high in 2012 due to new distributors and product recalls before their expiry dates. Although some of the companies kept records of the customer reject/ return ratio, there was no analysis made.

- Sales per employee ranged from USD6,039.80 to USD102,463.50, which reflected successful marketing strategies from the participating companies.

- The on-time delivery ranged from 96% to 100%. Some companies recorded the rate but no analysis was made. The highest score of 100% is a result of the organization's strict quality control objectives.

- The number of new products per year is represented in the development of new products, new flavors, sizes, and packaging styles.

Subsector 3: Manufacturing of Bakery Products

Table 15 shows the average results for the customer perspective in this subsector.

Table 15. Customer perspective results

No.	Key Performance Indicators	2011	2012	2013
1	Compliments to complaint ratio	NA	NA	NA
2	Customer reject/ return (%)	1.1 (0.1–2.5)	1.0 (0.1–1.3)	0.2 (0.0–1.2)
3	Sales per employee (USD)	13,905.10 (6,306.20–20,739.30)	13,750.50 (5,277.89–21,740.00)	14,515.80 (5,451.44–23,658.80)
4	On-time delivery (%)	90.1 (84.1–95.2)	91.4 (84.45–96.5)	90.2 (83.82–96.8)
5	No. of new products per year	12 (2–28)	8 (2–18)	10 (2–20)

Notes: Range in parentheseis. NA, not applicable; No., number.

- Respondents only collected customer-complaint data. The number of complaints ranged from 5 to 12 over the three years.

- The customer reject/return ratio ranged from 0% to 2.5%. Some respondents had very low three-year reject/return rates due to conducting regular customer satisfaction surveys. Customer service departments are responsible for taking customer complaints and reporting directly to top management and related departments to mutually resolve the problems.

- Sales per employee ranged from USD5,277.89 to USD23,658.80. Some respondents recorded high sales as they defined clear KPIs and targets, and also established monthly top-management monitoring to implement solutions for higher sales growth.

- The on-time delivery range was from 83.8% to 96.8%. Some respondents recorded data but performed no analysis. The best-performing respondent defined delivery as a quality objective.

- The number of new products per year ranged from 2 to 28. One respondent's R&D fell under the business development department and coordinated with

the marketing division, as well as suppliers, to produce new products and marketing plans.

Subsector 4: Manufacturing of Beverages

Table 16 shows the average results for the customer perspective in this subsector.

Table 16. Customer perspective results

No.	Key Performance Indicators	2011	2012	2013
1	Compliments to complaint ratio	NA	NA	NA
2	Customer reject/ return (%)	1.8 (0.1–2.5)	0.75 (0.0–1.2)	0.51 (0.0–1.0)
3	Sales per employee (USD)	55,504.80 (24,743.74–108,113.53)	67,417.62 (23,725.78–160,060.92)	78,880.98 (23,684.27–237,059.40)
4	On-time delivery	NA	NA	NA
5	No. of new products per year	3 (0–5)	5 (0–7)	4 (0–6)

Notes: Range in parentheses,. NA, not applicable. No., number.

- Respondents only collected customer-complaint data. The number of complaints ranged from three to 19 over the three years.

- The customer reject/return ratio ranged from 0.0% to 2.5%. Some respondents had very low three-year reject/return rates due to taking regular customer satisfaction surveys. The Kaizen continuous improvement practice was implemented to improve products and services to better meet customer requirements.

- The sales per employee range was from USD23,684.27 to USD237,059.40 Some respondents recorded high sales; a successful result of having defined clear KPIs and work targets among staff that were monitored monthly by top management.

- Almost all respondents did not keep OTD records. Only one respondent recorded OTD over the three years, being 90.2%, 95.9% and 98.7% respectively.

- The number of new products per year ranged from zero to seven.

Operational Perspective

Subsector 1: Processing and Preserving of Meat and Meat Products

Table 17 below shows the operational perspective results for this subsector.

Table 17. Operational perspective results

No.	Key Performance Indicators	2011	2012	2013
1	Labor productivity (USD)	3,329.94 (1,797.85– 4,100.30)	3,984.72 (1,937.6–5,441.4)	3,304.60 (1,364.6–4,641.1)
2	Annual inventory turns (no. of turns per year)	11.3 (4.4–16.7)	10.9 (4.2–14.6)	10.0 (4.1–12.2)
3	Labor cost to sales ratio (%)	11.6 (6.4–18.7)	10.5 (5.9–13.0)	11.4 (5.1–18.0)
4	Sales per fixed assets (USD)	14.51 (1.40–31.80)	12.53 (1.13–23.81)	11.78 (1.50–21.30)
5	Capital intensity (USD)	13,726.06 (1,590.16–35,994.38)	12,886.31 (2,261.07–28,881.11)	12,837.96 (2,894.53–24,370.19)
6	R&D investment ratio (USD)	0.01 (0.00–0.01)	0.01 (0.00–0.02)	0.01 (0.00-0.02)

Notes: Range in parentheses. No., number.

- The labor productivity ranged from USD1,364.60 to USD5,441.4. Some respondents achieved better results as they had clear employee KPIs and implemented suitable productivity tools, such as quality circles, Kaizen activities, etc.

- The annual inventory turns (number of turns per year) ranged from 4.1 to 16.7. Some of the SMEs utilized IT programs for their data management systems.

- The labor cost to sales ratio ranged from 5.9% to 18.7%. Some respondents implemented and regularly monitored good manufacturing practices (GMP), hazard analysis and critical control points (HACCP), International Organization of Standardization (ISO) 9001 Systems, and organizational KPIs, that were analyzed to improve operations.

- Sales per fixed assets ranged from USD1.13 to USD31.80. This shows that many respondents utilized their assets well to generate sales.

- The R&D investment ratio ranged from USD0 to USD0.02. SMEs at the higher end of the range were there due to top-management focus on new product development to meet customer requirements. Additionally, these SMEs utilized IT systems

very well in their business management, cost management, production, and quality control functions.

Subsector 2: Processing and Preserving of Fruit and Vegetables

Table 18 below shows the average operational perspective results for this subsector.

Table 18. Operational perspective results

No.	Key Performance Indicators	2011	2012	2013
1	Labor productivity (USD)	6,032.10 (522.80– 11,917.70)	9,135.20 (4,223– 14,386.40)	8,604.70 (2,181.90– 19,616.40)
2	Annual inventory turns (no. of turns per year)	9.5 (0.6–26.4)	7.6 (0.4–19.3)	4.5 (0.5–12.1)
3	Labor cost to sales ratio (%)	19.9 (6.2–38.7)	18.1% 5.5–33.0	13.3% (6.0–20.0)
4	Sales per fixed assets (USD)	17.80 (1.30–46.30)	19.50 (1.30–51.90)	14.20 (1.50–47.60)
5	Capital intensity (USD)	7,244.70 (751.20–16,732.80)	7,097.40 (634.00– 14,510.70)	9,118.50 (512.00– 16031.90)
6	R&D investment ratio (USD)	0.32 (0–0.70)	0.28 (0–0.40)	0.34 (0.–0.80)

Notes: Range in parentheses. No., number.

- The labor productivity ranged from USD522.80 to USD19,616.40. These results reflect the capability of the respondents' workforces to generate VA. Some respondents also had high results due to the effectiveness of their production and planning processes.

- The annual inventory turns results show effective material inventory management. The results among the respondents over the three years ranged from 0.4 to 26.4. The annual inventory turn of one respondent was low because of low sales and high amounts of in-stock finished products. Some respondents utilized IT programs for their data management systems.

- The labor cost to sales ratio shows the effectiveness of operational strategy and staff management. The labor cost reported was higher than that of 2011 and 2012 because the company started expanding the number of new products.

- Sales per fixed assets ranged from USD1.30 to USD51.90, showing that many companies utilized their assets well in order to generate better sales.

- The R&D investment ratio range was from USD0 to USD0.80. Some were higher due to investments in new product development. In addition, local area networks (LAN) were implemented in some SMEs to enhance business management, accounting, and human resource management, production, and quality control functions. IT systems such as enterprise resource planning (ERP) enabled more data analysis capabilities to develop new products and achieve higher productivity.

Subsector 3: Manufacture of Bakery Products

Table 19 shows the average results for the operational perspective in this subsector.

Table 19. Operational perspective results

No.	Key Performance Indicators	2011	2012	2013
1	Labor productivity (USD)	2,160.80 (1,173.90–2,879.90)	2,580.70 (1,216.60–2,895.90)	2,651.80 (1,259.50–3,514.30)
2	Annual inventory turns (no. of turns per year)	10.8 (3.0–16.7)	11.5 (3.2–15.6)	13.3 (4.6–21.2)
3	Labor cost to sales ratio (%)	9.9 (6.0–12.7)	9.7 (5.1–13.0)	10.2 (5.1–13.5)
4	Sales per fixed assets (USD)	10.50 (1.56–21.23)	12.40 (1.76–23.81)	18.20 (1.95–35.9)
5	Capital intensity (USD)	3,776.10 (599.15–7,116.98)	3,994.80 (464.64–7,802.61)	3,890.60 (1,408.70–6,854.34)
6	R&D investment ratio (USD)	0.02 (0–0.05)	0.03 (0–0.06)	0.04 (0.01–0.07)

Notes: Range in parentheses. No., number.

- Labor productivity ranged from USD1,173.90 to USD3,514.30. Some respondents achieved good results through well-defined employee KPIs and by establishing a practice of having regular meetings with staff to solve customer issues.

- The annual inventory turns (number of turns per year) range was from 3.0 to 21.2. Some of the respondents with good results utilized IT solutions for their inventory-management system.

- The labor cost to sales ratio range was from 5.1% to 13.5%.

- Sales per fixed assets ranged from USD1.56 to USD35.90. Some companies utilized their assets well to generate sales.

- The capital intensity range was from USD464.64 to USD7,802.61.

- The average R&D investment ratio ranged from USD0 to USD0.07. Some were higher as top management focused on new product development to meet customer requirements.

Subsector 4: Manufacture of Beverages

Table 20 shows the average results for the operational perspective for this subsector.

Table 20. Operational perspective results

No.	**Key Performance Indicators**	**2011**	**2012**	**2013**
1	Labor productivity (USD)	7,826.08 (3,161.69–13,614.86)	8,465.91 (3,154.01–14,129.63)	9,277.73 (3,239.74–15,037.75)
2	Annual inventory turns (no. of turns per year)	16.2 (5.4–26.7)	16.8 (6.9–24.6)	23.5 (9.5–31.7)
3	Labor cost to sales ratio (%)	15.6 (6.4–28.0)	14.8 (5.9–23.3)	13.1 (4.8–20.0)
4	Sales per fixed assets (USD)	16.16 (1.45–32.20)	16.52 (1.4–29.42)	18.48 (1.6–36.13)
5	Capital intensity (USD)	6,686.82 (1,562,75–17,667.96)	6,981.09 (1,305.18–17,007.04)	7,358.17 (1,641.66–16,006.51)
6	R&D investment ratio (USD)	0.04 (0.01–0.06)	0.02 (0.01–0.03)	0.03 (0.01–0.04)

Notes: Range in parentheses. No., number.

- The labor productivity range was from USD3,154.01 to USD15,037.75.

- The annual inventory turns (number of turns per year) range was from 5.4 to 31.7. Some respondents utilized IT for the inventory-management system.

- The labor cost to sales ratio ranged from 5.92% to 23.33%. Some respondents had low results because they outsourced their production.

- Sales per fixed assets ranged from USD1.40 to USD36.13, which shows that many respondents utilized their assets well to generate sales.

- The capital intensity range was from USD1,305.18 to USD17,667.96.

- The R&D investment ratio range was from USD0.01 to USD0.06. Some were higher as top management focused on cost management and new product development to meet customer requirements.

Human Resource Perspective

Subsector 1: Processing and Preserving of Meat and Meat Products

Table 21 below shows the average human resource perspective results for this subsector.

Table 21. Human resource perspective results

No.	Key Performance Indicators	2011	2012	2013
1	Training hours per staff member (hours/year)	7 (3.5–12)	9 (4–13)	10 (5–14)
2	Training expenditure per staff member (USD/year)	55 (0–84)	87.5 (0–153.20)	111.2 (0–211.10)
3	Full-time staff turnover rate (%)	9.5 (2.9–15.0)	9.7 (2.4–18.2)	8.5 (2.8–12.6)
4	Part-time staff turnover rate (%)	NA	NA	NA
5	Absenteeism rate (%)	0.1	0.1	0.1

Notes: Range in parentheses. NA, not applicable; No., number.

- The range of training hours per staff was 3.5% to 14.

- The training expenditure per staff member ranged from USD0 to USD211.10. Some of the SMEs did not keep training records and those that did had records to satisfy ISO requirements.

- The full-time staff turnover rate ranged from 2.4% to 18.2%, with the lower figures showing high staff morale.

- No respondents recorded part-time staff turnover rate due to high turnover rates and the poorer part-time welfare scheme.

- The absenteeism ratio rate was 0.1% for all years.

Subsector 2: Processing and Preserving of Fruit and Vegetables

Table 22 shows the average human resource perspective results for this subsector.

Table 22. Human resource perspective results

No.	Key Performance Indicators	2011	2012	2013
1	Training hours per staff member (hours/year)	24.4 (4.5–80)	29.8 (10–80)	27.4 (10–80)
2	Training expenditure per staff member (USD/year)	102.80 (0–327.90)	103.70 (0–321.70)	113.20 (0–324.80)
3	Full-time staff turnover rate (%)	9.7 (5–13.9)	14.3 (4.4–39.2)	8.1 (4.4–12.6)
4	Part-time staff turnover rate (%)	NA	NA	NA
5	Absenteeism rate (%)	0.2 (0.1–0.4)	0.2 (0.1–0.3)	0.1

Notes: Range in parentheses. NA, not applicable; No., number.

- The average number of training hours per staff member from 2011 to 2013 was 24.4, 29.8 and 27.4 hours respectively.
- The average training expenditure per staff member from 2011 to 2013 was USD102.80, USD103.70, and USD113.20 respectively.
- Some respondents had a very low turnover rate amongst the full-time staff as a result of high staff morale.
- No companies submitted part-time staff turnover rates.
- The absenteeism rate ranged from 0.1% to 0.4% Many SMEs did not keep records of this ratio. Only two out of six companies collected the ratio.

Subsector 3: Manufacture of Bakery Products

Table 23 shows the average results for the human resource perspective in this subsector.

Table 23. Human resource perspective results

No.	Key Performance Indicators	2011	2012	2013
1	Training hours per staff member (hours/year)	6 (3–10)	8 (4–12)	10 (6–14)
2	Training expenditure per staff member (USD/year)	31.20 (0–49.19)	48.80 (0–80.43)	56.80 (0–100.87)
3	Full-time staff turnover rate (%)	7.8 (2.9–17)	9.8 (2.4– 18.2)	6.2 (2.8–13.6)
4	Part-time staff turnover rate (%)	NA	NA	NA
5	Absenteeism rate (%)	0.1 (0.0–0.1)	0.1 (0.0–0.2)	0.1 (0.0–0.1)

Notes: Range in parentheses. NA, not applicable; No., number.

- The average number of training hours per staff member each year from 2011 to 2013 was 6, 8, and 10 hours respectively.
- The average training expenditures per staff member each year from 2011 to 2013 were USD31.20, USD48.80, and USD56.80 respectively. Some respondents had no training records and some of them focused on employee training and development, without recording the expenditure.
- The three-year full-time staff turnover rate ranged from 2.4% to 18.2%. Some of the respondents had low results due to high staff morale.
- No respondents submitted part-time staff turnover rates.
- The absenteeism rate range was from 0% to 0.2%.

Subsector 4: Manufacture of Beverages

Table 24 shows the average results for the human resource perspective for this subsector:

Table 24. Human resource perspective results

No.	Key Performance Indicators	2011	2012	2013
1	Training hours per staff member (hours/year)	12 (5–16)	13 (5–20)	13 (5–19)
2	Training expenditures per staff member (USD/year)	97.90 (0–234.20)	88.90 (0–216.20)	95.10 (0–229.10)
3	Full-time staff turnover rate (%)	7.8 (2.9–15.0)	8.8 (2.2– 21.4)	6.9 (2.8–13.6)
4	Part-time staff turnover rate (%)	NA	NA	NA
5	Absenteeism rate (%)	0.1 (0.0–0.2)	0.1 (0.0–0.2)	0.1 (0.0–0.2)

Notes: Range in parentheses. NA, not applicable; No. number.

- The average number of training hours per staff member each year from 2011 to 2013 was 12, 13, and 13 hours respectively.
- The training expenditure per staff member per year range was USD0 to USD234.20. Some respondents had no training records and some focused on employee training and development without measurement.
- The three-year full-time staff turnover rate ranged from 2.2% to 21.4%, which was low due to high staff morale.
- No respondents submitted part-time staff turnover rates.
- The absenteeism rate ranged from 0% to 0.2%.

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OVERALL FINDINGS

BEST PRACTICES

Based on references from related literature and understanding from this research project, the key best practices in the food-manufacturing sector can be summarized as follows:

Business-to-Consumer (B2C) Business Model

"Tourism factories" have become a well-received practice for a variety of processed gourmet food producers. Manufacturers transform a section of their manufacturing sites into customer-facing outposts to promote "experience marketing." According to a report, 50% of about 100 tourism factories in the Republic of China (ROC) are in the food-manufacturing sector. Some of them have become weekend and holiday tourism hotspots. Related to this, some food producers have enriched their products with cultural elements, making these more attractive, enjoyable and of higher value. To safeguard their brand integrity, a few small- and medium-sized branded food producers have formed partnerships with domestic farmers in the form of "contact farming" to secure the quality and quantity of raw materials.

Besides "tourism factories," other companies extended their operations from production to post-production services, by earning direct sales from owning their own cafés, restaurants, marts, and kiosks. Besides marketing their products directly to consumers, they also provided ideas to customers as to how these products can be served and consumed. In addition, this style of product distribution eliminates unnecessary costs imposed by other distributors and enable these companies to introduce their own product varieties under the same brand to customers.

Targeted Marketing to Foreign Visitors

Some food manufacturers have stepped up their marketing efforts to target foreign visitors. In particular, 2008 was a turning point for the ROC's tourism industry. For the first time, the ROC opened its inbound visits and tourism market to PR China in July 2008. As a result, the number of foreign visitors to the ROC has seen substantial growth, from 3.85 million visitors in 2008 to 8.01 million visitors in 2013. In 2010, PR China overtook Japan to become the largest source of inbound visitors to the ROC, accounting for 36% of foreign visitors to the ROC in 2013. For these tourists, famous products or specialty goods (including food products such as pineapple pies) and tea were very popular. Against this backdrop, some of the ROC food producers have promoted their products as souvenirs to foreign visitors, e.g., from PR China. They have also endeavored to develop emerging overseas markets and offer "Airport + Farm" quick tour packages and "order in Taiwan, pickup in China" services for tourists from PR China visiting the ROC.

R&D and New Product Development

With parallel and substantial investments in technology and marketing, there may be opportunities for companies in the food-manufacturing sector to strengthen their product brands. Therefore, one best practice is to focus on R&D for higher value-added (VA) products. Manufacturers can even collaborate to produce more ready-to-cook products. Additionally, companies could review their stock keeping units (SKUs) for product-proliferation rationalization, and introduce new products where necessary.

With higher emphasis on healthy lifestyles, companies have embarked on R&D journeys towards healthier foods by offering fresh and nutritious ingredients.

The ability to improve and design its own machinery has also given one company the advantage over competitors when it comes to introducing new products. In addition, automation has led to improved product quality and productivity.

Human Resource Management

As staff are the key assets of every company, a high level of effort has gone into ensuring staff retention and satisfaction. Initiatives include, but are not limited to:

- Staff incentives to include a profit-sharing model and performance bonus scheme
- Designing and introducing a career-progression roadmap for new staff
- Compulsory in-house training provided by the management in simple terms and concepts, e.g., work standardization, food handling, and hygiene practices
- Focus on employee training and development

Food Product Certification

Halal products are fast gaining worldwide recognition, as halal certification has become a new benchmark for food safety and quality assurance. Many food-manufacturing SMEs obtained halal certification to tap this advantage and gain additional market opportunities.

Further emphasis has been placed on food safety management by firms, leading to Hazard Analysis and Critical Control Point (HACCP) certification. Such certification has enabled these companies to expand and penetrate global markets, namely Brunei, Indonesia, PR China, Singapore, Japan, USA, Europe, and the Middle East.

Supply-Chain Management

Supply-chain management was one of the key success factors of companies. The efficiency of the suppliers in providing raw materials and services was closely related to efficient logistics, after-sales services, and post-production functions. The best performing companies were able to consistently obtain the finest ingredients and supplies. These companies also had their own marketing arms and distribution departments, equipped with efficient transportation to ensure that products reached their customers on time.

Online Platform

Participating companies took advantage of online marketing as a powerful tool. Besides being promoted through their company's websites, official Facebook and Instagram pages, products were also advertised and sold through the Amazon website in the "Grocery & Gourmet Food" section. Favorable reviews of products sold through amazon.com (4.5 out of 5 stars) helped to broaden market reach to more than 20 countries. By establishing an online store, companies can widen their customer outreach.

Economies of Scale

Instead of producing their own brands, companies also supplied their products to major food manufacturers and fast-food chains. One of the companies produced products for international hypermarket in-house brands. Such activities enabled these companies to operate with economies of scale.

Companies were able to expand their customer base by producing original equipment manufacturer (OEM) brands instead of their own brands. OEMs also enabled these companies to operate with economies of scale to reduce production costs.

RECOMMENDATIONS

Based on this research study, the team noted that numerous approaches could be adopted by SMEs in the food-manufacturing sector to improve their business performance (financial, customer results, operational results, and human resources results) through the following recommendations:

Improving Financial Results

SMEs should be further trained in data collection and analysis for their development.

Note that SMEs are not required to disclose their financial reports, leading to a key challenge of this project. Consequently, SMEs should be encouraged by public policies (such as tax deduction schemes) to do so in order to enable data gathering and sharing for future projects.

Improving Customer Results

1. Branding: Companies should improve their website creation, development, and updating skills.

2. Market research: Enable companies to understand their direct consumers' preferences and buying trends. This would also encourage improved customer feedback collection practices.

3. Joint overseas marketing among food manufacturers: Initiatives such as "Working in Partnership" and "Tasty Singapore" are already in place for food manufacturers to introduce their products to overseas hypermarkets based on a mutually beneficial, win-win relationship.

4. Enterprise resource planning (ERP) and customer relationship management (CRM): These programs should be initiated to retain existing customers and increase customer engagement and loyalty for sustained and higher business growth.

Improving Operational Results

1. Streamlining processes and reducing utilities by using shared facilities, e.g. cold rooms etc.

2. Shared logistics solutions providers/drivers.

3. Shared consultants to assist companies in regular audits and productivity programs, including shared training.

4. Promotion and implementation of productivity programs, quality standards, and Kaizen projects, as well as mutual sharing through benchmarking and business excellence frameworks.

Improving Human Resource Results

1. Establishment of a pool of part-timers with experience in food manufacturing, so that companies can easily recruit experienced part-timers.

2. Employee satisfaction should be defined in the human resources strategy to improve staff morale.

3. Incentive programs should be reviewed and customized for each employee segment, especially part-time staff, to reduce their high turnover rate.

CONCLUSION

There were several interesting and valuable learning insights gained during this second APO Benchmarking Research Project on the Food-Manufacturing Sector in Asia.

1. While it was noted that the benchmarking process is a powerful and proven methodology to enhance continuous and breakthrough improvements, it was also noted that companies were generally cautious and concerned about their data and information being made public due to the food-manufacturing sector's highly competitive business environment.

   As such, in order to motivate companies to take part in this research project, a common approach was taken to assure that specific information would not be mentioned in the findings, especially financial perspective information. As a result, the findings in all perspectives were expressed as overall averages and not based on individual companies' figures.

2. As each country has different business environments and practices, they also maintain their own specific definitions and categories of the subsectors within their overall food-manufacturing sector. These definitions and categories are linked to their national statistics from their respective national statistics departments.

3. Generally, with the exception of basic financial data, most of the SMEs in the six countries do not have a structured approach for collecting, analyzing, and sharing data and information from the key organizations. Also, applications and practices differ in each of the countries.

4. While information on the value-added, number of companies, and employment size of the food-manufacturing sector are available at the national level, this information is not further segmented and categorized into the corresponding subsectors. This makes it difficult for the SMEs in each of the subsectors to compare and benchmark themselves for continuous and breakthrough improvements, especially considering the wide variation of the companies' structures and sizes.

5. It was insightful to note the numerous interesting best practices and achievements to be found among the SMEs in the food-manufacturing sector. The adoption and implementation of these best practices will help enhance competitiveness in this sector, which will lead to sustainable business growth of the SMEs in the years ahead.

For this Benchmarking Research Project, every effort has been taken by the research team to endorse a benchmarking framework and structure to define a holistic set of key performance indicators based on the four perspectives of the balanced scorecard, as well as to design a comprehensive set of questionnaires to gather additional data. It is the hope of the project expert team that the findings and framework will be beneficial for follow-on research projects on other business sectors in the years to come.

Appreciation and thanks go to all six national experts namely, Dr. Shin-Horng Chen, Atsushi Miyasaka, Sangmi Cha, Mazlina binti Shafi'i, Lim Jiaxuan Gillian, and Janna Sanguanroongvong, for their personal contributions and efforts in making this research project possible.

Special thanks to APO for the opportunity for us to work together on this project. A special mention and thanks to Mr. Jose Elvinia, APO Program Officer, Research and Planning Department, for his invaluable assistance and support throughout this benchmarking research project for SMEs in the food-manufacturing sector.

APPENDICES

APPENDIX A

Table of Performance Metrics

Table 1 below shows the key performance indicators for the food-manufacturing sector, as categorized in the four perspectives of financial, customer, operational and human resources.

Table 1. Table of Performance Metrics

1. Financial Perspective							
Key performance indicators		**What it measures**	**Formula**	**Data (performance results)**			**Notes / Remarks**
				2011	**2012**	**2013**	
1	Value added	Wealth generation/ Creation by the company	Sales - Bought materials and services				
2	Value added-to-sales ratio	Proportion of sales created by the organization over and above purchased materials and services	Value added ÷ Sales				
3	Labor cost competitiveness	Efficiency and effectiveness of the organization in term of its labor cost	Value added ÷ Labor cost				
4	Working capital ratio	Operating liquidity and short-term financial health	Current assets – Current liability				
5	Profit margin	Proportion of sales left to the organization after deducting all costs	EBITDA ÷ Sales				

2. Customer Perspective							
Key performance indicators		**What it measures**	**Formula**	**Data (performance results)**			**Notes/ Remarks**
				2011	**2012**	**2013**	
1	Customer satisfaction index	The degree that products and services supplied by a company meet or surpass customer requirements and expectations	Rating score by customer ÷ Maximum rating score possible				
2	Compliments to complaints ratio	The customer service level that increases customer retention and loyalty	Compliments/ Complaints ratio				
3	Sales per employee	Efficiency and effectiveness of marketing strategy	Sales ÷ Number of employees (FTE)				
4	Sales per customer	Which product or service line produces the most sales per customer and therefore which customer relationships are the most important	Sales ÷ Number of customers (using sales transactions as a proxy)				

3. Operational Perspective							
Key performance indicators		**What it measures**	**Formula**	**Data (performance results)**			**Notes/ Remarks**
				2011	**2012**	**2013**	
1	Labor productivity	Efficiency and effectiveness of employees in the generation of value added	Value added ÷ Number of staff				
2	Annual inventory turns (number of turns per year)	Effectiveness in inventory management of the materials used e.g. efficient buying practices, inventory cost and quality (obsolescence level)	Cost of goods sold ÷ Average inventory				
3	Labor cost to sales ratio (%)	Efficiency and effectiveness of the operational strategy and management of staff	Labor cost ÷ Sales				
4	Sales per fixed assets (dollar of capital)	Efficiency and effectiveness of fixed assets in the generation of sales	Sales ÷ Fixed assets				

4. Human Resource Perspective							
Key performance indicators		**What it measures**	**Formula**	**Data (performance results)**			**Notes/ Remarks**
				2011	**2012**	**2013**	
1	Training hours per staff	Learning and development with a focus on enhancing staff competencies	Training hours ÷ Number of staff				
2	Training expenditures per staff	Learning and development with a focus on enhancing staff competencies	Training cost ÷ Staff				
3	Staff turnover rate	The retention rate of staff and overall staff satisfaction level	Number of staff resigned ÷ Total number of staff				
4	Absenteeism rate	Engagement and morale of staff	Number of absenteeism ÷ Total number of staff				

Notes: EBIDTA, earnings before interest, taxes, depreciation, and amortization; FTE, full-time equivalent.

APPENDIX B

Research Questionnaires

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APO Research Project on Cross-country Assessment of Productivity Performance of SMEs in the Food Manufacturing Sector

Survey Questionaire

Introduction and Background of this APO Research Project

The objective of this questionnaire is to identify the productivity level and best practices adopted by SMEs in the Food Manufacturing Sector among 6 Asian countries comprising Republic of China, Japan, Republic of Korea, Malaysia, Singapore and Thailand. The compilation of the data and information will help generate the pertinent research publication/report and to provide best practice cases.

The small and medium enterprises (SMEs) in the Food Manufacturing Sector continue to play an increasingly important role in the Asian economies in terms of contributions to gross domestic product (GDP) and employment. Hence, they are the core engines for productivity and economic growth. The APO recognizes the importance of monitoring the progress of SME performance in the Food Manufacturing Sector in the region and sharing the best practices of high business performers to the various SMEs in APO member economies.

Benchmarking is a continuous process of self-assessment and initiating actions to close gaps, surpass the best performers, and retain a competitive edge. To pursue continuous improvement, it is essential that SMEs not only have a relevant basis for comparison but also learn from the achievements and results obtained from the benchmarking exercise, as well as sharing useful reference data and information to compare their performance.

In June 2014, a study meeting was held to discuss on how to make cross-country comparison of productivity performance of SMEs in the Food Manufacturing sector. The meeting has identified a set of comparable indicators for the pertinent SME business performance assessment amongst countries. Based on the set of indicators identified and the methodology agreed in the study meeting, this research project will collect data, information and best practices by 6 National Experts under the direction and instruction of the Chief Expert.

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APO Research Project on Cross-country Assessment of Productivity Performance of SMEs in the Food Manufacturing Sector

Survey Questionaire

Company Background/Outline

Please complete the boxes/check off the appropriate choices.

1. **Name of Company**

2. **Correspondence Address**

3. **Contact Person & Designation**

4. **Contact Telephone Number**

5. **Email Address**

6. **Name of Chief Executive Officer**

7. **Year Incorporated**

8. **Type of Business**
   - ☐ Sole Proprietor
   - ☐ Partnership
   - ☐ Private Limited
   - ☐ Public Listed

9. **Number of Manufacturing Sites (Factories)**

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10. Business Type

- ☐ Processing and Preserving of Meat and Meat Products
- ☐ Processing and Preserving of Fishes and Edible Seaweeds
- ☐ Processing and Preserving of Fruits and Vegetables
- ☐ Manufacture of Bakery Products (Bread, Cakes and Confectionery)
- ☐ Dairy Products (e.g. Butter, Cheese, Ice Cream Mixes and Powder, Yoghurt)
- ☐ Seasonings
- ☐ Others (Please Specify)

11. What is your mode of factory operation?

- ☐ Single Shift
  Please specify timing of shift:
- ☐ 2 Shifts
  Please specify timing of each shift:
- ☐ 3 Shifts
  Please specify timing of each shift:
- ☐ Others, please specify:

12. What type of food manufacturer are you?

- ☐ Contract Manufacturer
- ☐ Own Product Manufacturer (Produces Own Brand)
  Please specify your product brand(s):
- ☐ Others, please specify:

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APO Research Project on Cross-country Assessment of Productivity Performance of SMEs in the Food Manufacturing Sector

Survey Questionaire

Financial Perspective Information (for the past 3 years)

		2011	2012	2013
1.	**What were your Annual Sales Turnover (Revenues) over the past years?**			
2.	**What percentage of your Total Sales/Turnover was generated out of your country?**			
3.	**What was your cost of goods sold (COGS) over the past years?**			
4.	**What were your total Labour Costs?**			
5.	**What were the Fixed Assets at Net Book Value?**			
6.	**What was the Operating Profit/Loss after Tax?**			
7.	**What were the Interest Incurred from Loans and Hire Purchase?**			
8.	**What were the Depreciations from Buildings, Equipment and Machinery, etc.?**			
9.	**What were the Taxes (excluding Income Tax)?** i.e. Customers & Excise Duties, Property Tax, etc.			
10.	**What were your Earnings Before Interest, Tax, Depreciation & Amortization (EBITDA)?** *i.e. Sales-COGS – Labour Cost – other operating expenditure (e.g. Selling & Admin expenses)*			
11.	**What was your Current Asset?**			
12.	**What was your Current Liability?**			
13.	**What was your Export Ratio?** **i.e. Percentage of export sales to the total sales**			

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14. What was your R&D Expenditure?

15. What other performance indicators have you used in the area of Financial Management?

	2011	*2012*	*2013*

Next ...

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APO Research Project on Cross-country Assessment of Productivity Performance of SMEs in the Food Manufacturing Sector

Survey Questionaire

Customer Perspective Information (for the past 3 years) **Customer includes wholesaler, retailer and consumer*

1. **How do you gather feedback from your customers?**
   - ☐ By Telephone
   - ☐ By Letters
   - ☐ By Email
   - ☐ Through Website's feedback page
   - ☐ In Person
   - ☐ By Other Channels: Please specify

2. **How are the feedback recorded?**

3. **Do you collect and record number of customer complaints?**
   - ☐ Yes
   - ☐ No

   If Yes,

   a. What were the numbers of customer complaints received over the past years?

2011	*2012*	*2013*

4. **Do you collect and record number of compliments from your customers?**
   - ☐ Yes
   - ☐ No

   If Yes,

   a. Describe the system you are using to record and track compliments from customers

   b. What were the numbers of compliments received from customers over the past years?

2011	*2012*	*2013*

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5. **Is there a formalised system in your organization that keeps the management informed of customer feedback (e.g. complaints, suggestions and compliments)?**

☐ Yes
☐ No

If Yes,

a. Briefly describe your formalised system.

6. **Please describe your system how you monitor all customer complaints and ensure that follow-up actions are taken.**

	2011	2012	2013
7. **How many new products were introduced per year?**			

8. **Do you collect and record number of orders rejected/returned?**

☐ Yes
☐ No

If Yes,	2011	2012	2013
a. What were the order reject/return rate (%) over the past years?			

9. **Do you collect and record number of on-time deliveries?**

☐ Yes
☐ No

If Yes,	2011	2012	2013
a. What were the on-time delivery rate (%) over the past years?			

10. **What other performance indicators do you used in the area of Customer Management?**

	2011	2012	2013

Next ...

APO Research Project on Cross-country Assessment of Productivity Performance of SMEs in the Food Manufacturing Sector

Survey Questionaire

Operational Perspective Information (for the past 3 years)

		2011	2012	2013
1.	**What was the Average Annual Inventory ($)?** **Average Inventory is the amount of items available for sales or in the process of being made ready for sales*			

2. **What are the Key Success Factors for your business?** **Please tick all applicable options*

- ☐ Value for money
- ☐ Good, quality product according to customers'
- ☐ Strong reputation/brand name
- ☐ Low Operating cost
- ☐ Good customer service
- ☐ Others (Please specify)

3. **Do you have a manufacturing methodology (e.g. Lean, Six Sigma, Toyota Production System, etc.) implemented in your organisation to improve productivity and quality?**

- ☐ Yes
- ☐ No

If Yes,

a. Please describe your organisation's manufacturing methodology

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4. Do you use technology (automation, IT systems, etc) to increase productivity?

☐ Yes
☐ No

If Yes,

a. Please indicate the type of system used **Please tick all applicable options*

☐ Human Resource Management System
☐ E-commerce as a channel for business
☐ Inventory Management System
☐ Enterprise Resource Planning (ERP)
☐ Customer Relationship Management
☐ Purchasing/Requisition System
☐ Financial Management System
☐ Others: Please specify

		2011	2012	2013
b.	How much capital expenditure did you spend on IT over the past years?			
c.	How much capital expenditure did you spend on machinery/equipment?			
d.	How much total capital expenditure did you spend over the past years? *i.e. All asset expenditures that were capitalized and depreciated over the past years*			

5. What other performance indicators do you used in the area of Operational Management?

	2011	2012	2013

Next ...

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APO Research Project on Cross-country Assessment of Productivity Performance of SMEs in the Food Manufacturing Sector

Survey Questionaire

Human Resource Perspective Information (for the past 3 years)

		2011	2012	2013
1.	**What was the average number of full-time employees you have over the past years?**			
2.	**On average, how many hours do full-time employees work a week?**			

3. **Do you employ part-time employees?**
   - ☐ Yes
   - ☐ No

If Yes,

		2011	2012	2013
a.	What was the average number of part-time employees you have?			
b.	On average, how many hours do part-time employees work a week?			

4. **Do you track Staff Turnover Rate?**
   - ☐ Yes
   - ☐ No

If Yes,

		2011	2012	2013
a.	What was the percentage of full-time staff who had left the company?			
b.	What was the percentage of part-time staff who had left the company?			

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5. Do you provide training to your employees?

☐ Yes
☐ No

If Yes,

a. What are the types of training do you provide to your employees?

	2011	2012	2013
b. What was the average number of training hours for each employee per year?			
c. What was the total training expenditure for employees per year?			

6. Is there any form of On-the-Job (OJT) training programmes for employees?

☐ Yes
☐ No

If Yes,

a. What are the OJT programmes? *Please state if OJT programmes are structured or informal

7. Do you have a performance-based monetary incentive system (in addition to basic salary and wages)?

☐ Yes
☐ No

If Yes,

a. Please indicate the types of incentive system you used?

	2011	2012	2013
b. On average, what percentage of a full-time employee's compensation is variable?			

8. Do you use utilize non-financial mechanisms to incentivise your employees to perform their work better?

☐ Yes
☐ No

If Yes,

a. What were the non-financial mechanisms you had used?

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9. Do you track Absenteeism Rate?

☐ Yes
☐ No

If Yes,

a. What was the absenteeism rate for the past years?

	2011	*2012*	*2013*

10. What were the important aspects of human resource management in your business?

11. What other performance indicators do you used in the area of Human Resource Management?

	2011	*2012*	*2013*

Next ...

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APO Research Project on Cross-country Assessment of Productivity Performance of SMEs in the Food Manufacturing Sector

Survey Questionaire

Thank You for your participation in this APO Research Project

Thank you for agreeing to participate in our survey.

Your inputs will be very valuable to us in our efforts to help enhance the productivity performance of SMEs in the Food Manufacturing Sector in Asia.

Thank you for your participation.

ASIAN PRODUCTIVITY ORGANIZATION