博士論文

Factors in the Development of Low-Technology Small and Medium Enterprises: Evidence from Indonesia

（ローテク中小企業の発展要因：インドネシアにおける事例研究）

舟橋　學

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Chapter I. Introduction

1. Economic development and SMEs

Small and medium enterprises (SMEs) are considered a driver of economic development for less developed countries. For example, Ayyagari, Beck, and Demirgüç-Kunt (2007) find a positive correlation between the share of SMEs in GDP and GDP per capita in a sample of 35 developed and developing countries (Table I-1). Bech, Demirgüç-Kunt, and Levine (2005) and Thurik and Wennekers (2004) conclude that there is a strong and positive association between SME growth in numbers and employment and GDP per capita growth. The relationship between SME growth and economic growth can be explained more clearly by focusing on the manufacturing industry. SMEs are expected to contribute to industrial growth by promoting economic dynamism as part of supply chains or as providers of innovative products and services (OECD 2005; Wren & Storey 2002).

Although the contribution by SMEs is not small in middle- and low-income countries, it is lower than that in high-income countries.[1] In Japan, a high-income country, SMEs' share of the manufacturing industry in terms of value added was 53.7 per cent in 2010 (Government of Japan 2012), when the GDP per capita was USD 43,118 (World Bank). SMEs' average share of the manufacturing industry in terms of value added in Organisation for Economic Cooperation and Development (OECD) countries is approximately 50 per cent (Ardic, Mylenko & Saltane 2011). However, in Indonesia, a middle-income country, SMEs' share of the manufacturing industry with respect to value added was 23.8 per cent in 2006 (Tambunan 2009a), when GDP per capita was USD 1,601 (World Bank).

[1] According to the World Bank, low-income economies are those that had average incomes of USD1,005 or less in 2010; lower-middle-income economies had average incomes of USD1,006 to USD3,975; upper-middle-income economies had average incomes of USD3,976 to USD12,275; and high-income economies had average incomes of USD12,276 or more.

Moreover, SMEs contribute to employment by providing workers with sources of income (Ayyagari, Demirgüç-Kunt & Maksimovic 2011; Coad & Tamvada 2008). Thus, SMEs are expected to reduce poverty by increasing employment. The contribution of SMEs to employment was 63 per cent in Japan in 2009 (Government of Japan 2012), whereas it was 60 per cent in Indonesia in 2006 (Government of Indonesia 2010b). Employment is not solely created by formal enterprises; it is also created by informal micro and small businesses. According to Ayyagari, Beck, and Demirgüç-Kunt (2007), the informal sector created an average of 29 per cent of total employment in middle- and low-income countries, which is higher than that in high-income countries. This trend is shown in Table I-1. The contribution of SMEs to employment may be greater than what the official statistics reveal when informal businesses are included.

Table I-1. Share of SMEs (1990-1999 average)

Country	GDP/capita (USD)	GDP share (%)	Employment share (%)	Informal sector (%)
High-income countries				
Germany	30,240	42.5	70.4	12.8
United Kingdom	19,361	51.4	56.4	10.4
Japan	42,520	56.4	74.1	11.1
United States	28,232	48.0	52.5	12.2
Middle- and low-income countries				
Indonesia	963	-	79.2	-
Philippines	1,099	31.5	66.0	50.0
Thailand	2,590	-	86.7	71.0
Vietnam	278	24.0	74.2	-
Colombia	2,290	38.7	67.2	30.1
Ecuador	1,521	20.0	55.0	31.2
Nigeria	256	-	16.7	76.0
Tanzania	183	-	32.1	31.5

Source: Ayyagari, Beck, and Demirgüç -Kunt (2007)

SME development is one of the most prioritised economic development policies in many countries because of SMEs' share in GDP and employment. For example, SME development is

included as an important policy issue in the policy blueprint of the Association of South East Asian Nations (ASEAN 2003). SME development is also included in the lists of top-priority policies in all 10 ASEAN member countries. The economic policies of the government of Indonesia, such as the Presidential Regulation on National Industry Development, established SME development as one of the key objectives (Government of Indonesia 2008a). International donors also support SMEs in middle- and low-income countries.

2. Characteristics of SMEs

Firms targeted for SME development represent the category of SMEs as they are defined in each country. However, the characteristics of SMEs vary, especially in less developed countries. Indeed, there are various types of SMEs, and a single support programme cannot target all types of SMEs. In this section, I discuss perspectives for understanding different types of SMEs before discussing studies in detail. Four key perspectives are necessary for understanding SMEs in less developed countries: informality, survival orientation, low technology, and the local market.

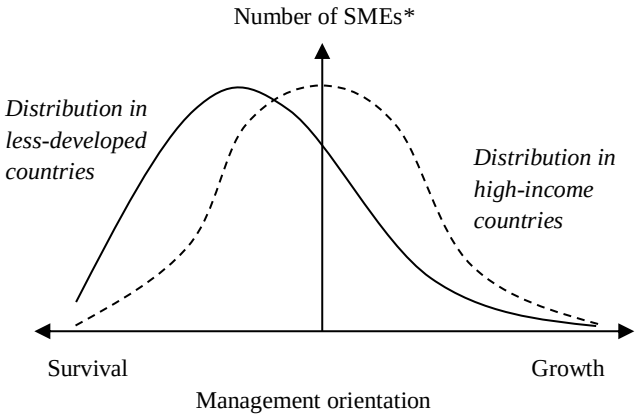
The first perspective for understanding SMEs is the difference in the level of formality between formal enterprises and informal businesses. As I discussed in Section 1, some micro and small businesses are not registered as enterprises or as sole proprietorships. Such businesses constitute the informal sector (ILO 1972). The formal and informal sectors have different motivations with respect to business. In many cases, the owners of informal businesses start their businesses not because they identify opportunities as an entrepreneur, as Schumpeter (1961) defined, but because they simply cannot find a job. Fajnzylber, Maloney, and Rojas (2006) and Maloney (2004) find the reverse correlation between the share of the labour force in self-employment and the industrial value added per worker. The share of the labour force in self-employment is larger in less developed countries because formal enterprises cannot supply a sufficient amount of employment.

Because the motivation for taking risks is low, the productivity and income of the informal sector are lower than those of formal SMEs (Maloney 2004). Hence, it is often necessary to consider different ways to support informal businesses. In fact, informal businesses cannot receive licences or official support for business development, except in the case of being a recipient of social policy safety net as an individual. Thus, support measure in some cases should also include a formalisation process for target informal businesses.

The second perspective for understanding SMEs in middle- and low-income countries is the difference in management orientation between growth- and survival-oriented SMEs (Downing & Daniels 1992). Many SMEs are growing rapidly with high-technology and strong organisational capabilities, even in less developed countries. Successful SMEs are able to increase their revenue and, thus, their profits by developing new product and services, improving the quality of existing products, or reducing costs. Such SMEs, which are led by entrepreneurs who achieve the new combination of materials and forces (Schumpeter 1961), contribute to economic growth by providing new products and services to consumers or by supplying components to large multinational corporations that ultimately export products. However, many other SMEs are vulnerable and often have difficulty growing because of lack of resources (Acs 1999; Auster & Aldrich 1984). In less developed countries, many SMEs are not focused on growth (Stanworth & Gray 1992; Tybout 2000); their main concern is survival.

The share of informal business tends to be larger in middle- and low-income countries than in high-income countries, as shown in Table I-1. The share of survival-oriented SMEs is also considered larger in less developed countries; thus, the distribution of firms is considered more skewed toward survival-oriented firms, as illustrated by Figure I-1. Informal or survival-oriented businesses are located in more remote areas, whereas most large enterprises are located in large- and medium-sized cities (Gill & Kharas 2007). The existence of informal or survival-oriented firms is also critical for the stability of employment in less populated areas of a country.

Figure I-1. Distribution trend of SMEs in less-developed countries



* Including informal businesses
Source: Author's own compilation

The third perspective for understanding SMEs in middle- and low-income countries is the difference in technology level. Informal or survival-oriented businesses as well as many small registered enterprises operate with a small number of members and within a limited area of market. Their sources of materials and forces of informal or formal small firms are limited. Hence, the contribution to GDP and employment by such firms is neither large nor rapidly growing. These businesses cannot lead the market with innovative and high-quality products, as expected by Schumpeter (1961). Many small firms cannot produce high-quality products because their technology level is relatively low as a result of limited sources for materials and forces as well as other factors, such as family ownership, reliance on indigenous resources, and skills acquired from outside of the formal school system (Swaminathan 1991). Many studies discuss small firms in middle- and low-income countries and their constraints based on the factors above. However, many existing studies of SMEs largely focus on innovative and high-technology firms that have sufficient resources and the potential to export products. There is no concrete definition of low-technology in the literature. In this dissertation, I define low-technology as a technology that is introduced to firms

with low costs and applied in actual production processes by using low cost equipment, which is available in domestic markets.

The fourth perspective for understanding the activities of SMEs in less developed countries is the difference in the sales market. When the resources of low-technology firms are limited, the market in which informal or formal small firms can sell their products is also limited to the areas that they can reach. Therefore, the main market in which these firms operate is a local market, frequently a market at the same district level. Many studies of SMEs' internationalisation examine the factors that enable SMEs to export as one of market expansion patterns from domestic market to foreign market. However, only a few studies discuss market expansion by SMEs at different levels of the local market.

3. Cases studied and motivation for the research

Although SMEs are considered important for the economy of a country and although governments of many countries emphasise support to SMEs, it is also true that only a limited number of firms experience substantial growth in less developed countries (Nichter & Goldmark 2009). This limitation is especially applicable to informal and survival-oriented micro and small firms operating in the local market with low levels of technology. My motivation for initiating the research of this dissertation was to identify the factors behind the growth of such firms so that we can better support small firms in less developed countries such as Indonesia.

Many public sector officials and practitioners involved in SME support programmes often attempt to find excuses for the lack of achievement. Their criticism is that the initial technology level of most SMEs is too low and that staff members have difficulty absorbing skills and thus cannot produce what consumers require. SMEs also lack capital and have less access to external sources; thus, they cannot benefit from higher quality production machines. In addition, SMEs that sell their

products only in local markets have little opportunity to grow because the size of local markets is too small. However, it is possible to improve businesses and increase revenue and profit for micro and small firms in the above unfavourable conditions. Table I-2 shows four successful cases of micro and small firms in Indonesia. These firms are participants in the training programmes that the Ministry of Industry (MOI) in Indonesia conducted for SMEs together with the Japan International Cooperation Agency (JICA) since 1999. The training implemented at MOI centres in major cities was designed largely for micro and small manufacturing firms with relatively low-technology. Details of the training will be explained later in Chapter II.

Table I-2. Cases of successful micro and small firms

Case 1	
Firm	Location: Yogyakarta; owner: man Established in 1970, Number of employees: 8
Product	Souvenir made with leather (e.g. bookmark)
Sales area	Yogyakarta, Jakarta, Bali
Changes after training	Improved quality of products (more precise in finishing) Price (bookmark): Before Rp1,500 → After Rp3,500 Sales (bookmark): Before 100~200/month → After 700/month Although the time for production per product increased from 1 hour to 2 hours, sales increased at a higher rate.
Comparison	Monthly sales (bookmark only): Before Rp1,500×200＝300,000, After Rp3,500×700＝2,450,000 Increase Rp2,150,000
Case 2	
Firm	Location: Yogyakarta; owner: man 10 participants of training established together after training
Product	Batik
Sales area	Yogyakarta, Regions close to Yogyakarta
Changes after training	Improved quality Price (hand-made): Before Rp75,000 (2.5m x 1.05m) → After Rp150,000 Cost (hand-made): Before Rp50,000 → After Rp100,000 Possible to produce 20/month
Comparison	Gross profit per product: Before Rp75,000－Rp50,000＝Rp25,000, After Rp150,000－Rp100,000＝Rp50,000 Monthly gross profit (calculated with the same sales volume): Before Rp25,000×20＝Rp500,000, After Rp50,000×20＝Rp1,000,000 Increase Rp500,000 Need to invest in Rp2mil for equipment (large pot), months necessary to purchase equipment (price / increased monthly profit): 4 months

Case 3	
Firm	Location: Pontianak, West Kalimantan; owner: man Established in 2007, Number of employees: 7, Not yet registered
Product	Confectionary made of Aloe
Sales area	West Kalimantan
Change after training	Introduced Good Manufacturing Practices Price: Rp5,000/pack, Production: Before 800 → 1,200 packs/week Cost: Rp300,000/process (including salary), 1 process/day, Work 7 days a week (no changes) Number of business partners: Before 40 → After 50 Number of employees: Before 5 → After 7 Moved from owner's house as a processing area to another building as a factory
Comparison	Monthly operating profit: Before: (Rp5,000×800－Rp300,000×5)×4 weeks＝Rp10,000,000 After: (Rp5,000×1,200－Rp300,000×7)×4 weeks＝Rp15,600,000 Increase: Rp5,600,000 Need a new equipment (mixer) Rp15mil, months necessary to purchase equipment (price / increased monthly profit): 2 months
Case 4	
Firm	Location: Yogyakarta; owner: woman Number of employees: 4
Product	Bag
Sales area	Yogyakarta
Changes after training	Applied leather processing technology from training, improved quality Sales: Before 300/week → After 500/week Price: Rp40,000 (no changes) Raw material cost: Rp20,000 (no changes)
Comparison	Sales: Before Rp40,000×300＝Rp12,000,000/week After Rp40,000×500 fish＝Rp20,000,000/week Cost: Before Rp20,000×300＝Rp6,000,000/week After Rp20,000×500＝Rp10,000,000/week Profit: Before Rp12,000,000－Rp6,000,000＝Rp6,000,000/week After Rp20,000,000－Rp10,000,000＝Rp10,000,000/week Increase Rp10,000,000－Rp6,000,000＝Rp4,000,000/week

Source: Compiled by the author based on the results of visits to firms

MOI officials and I administered a brief survey to 28 randomly selected businesses in seven cities on four different islands between March and June 2008. We conducted direct interviews with owners at the sites of their businesses. Questions were asked primarily to determine the changes that each firm made after the training. We also asked owners to show us products they produced before and after the training if they produced semi-durable goods to enable us compare the differences in product quality.

The case 1 firm, a leather product manufacturer in Yogyakarta with eight employees, improved the quality of their product, leather bookmark. As a result, their sales volume tripled from 200 to 700 a month even at a higher price. The case 2 firm, a batik producer with 10 employees, also improved the quality of products, and its monthly gross profit increased despite the increased costs of production. It was possible for this firm because they could sell their products at higher prices as a result of quality improvement. The case 3 firm, a producer of snacks in West Kalimantan, introduced a better manufacturing method with more attention to hygiene issues and was able to increase the number of business partners selling their products, yielding a sales volume increase of 50 per cent per a month. This firm also increased its number of employees from five to seven. However, the increase of revenue exceeds increase of labour costs, thus, received more profit. The case 4 firm, a producer of leather bag in Yogyakarta, applied the processing technology taught at the training course on leather shoes production and improved quality of bags, resulting in gross profit increase of 67 per cent per a week.

In all of the cases in Table I-2, the firms have 10 employees or fewer, including the owner. These firms are micro and small enterprises, and two of them are not even registered yet (i.e., they are informal businesses). These businesses are typical of small, low-technology firms. However, it seemed all of the above firms absorbed the skills taught at the training, especially production skills, and such changes are somehow related to the increase in revenue, particularly profit. These four firms are not exceptional cases. Table I-3 summarises the results of visits to 28 firms. Of the training participant firms that we visited, 78 per cent exhibited positive changes in terms of improving product quality based on what they learned from the training, and 57 per cent increased their sales revenues and profits. How were the majority of small, low-technology firms operating largely in local markets able to increase their revenue or profit? To answer this question, I examine both formal enterprises and informal firms in this dissertation. Many of these firms are survival-oriented

firms. The technology level of SMEs that I examine is relatively low, as most firms belong to the cottage industry. I also study the operations of SMEs in various levels of local markets.

Table I-3. Summary of changes by training participants

The application of knowledge	Changes	No. of firms	%	
Implemented	Improved quality, Increased sales/profit	16	96.4	57.1
	Improved quality, No changes in profit	6		21.4
	No changes in quality	5		17.9
Not implemented	Still considering how to apply	1	3.6	3.6
	No plan to apply	0		0.0
Total		28	100.0	100.0

Source: Compiled by the author based on the results of a preliminary survey

4. Framework for understanding SMEs

Storey (1994) provides an overall framework for understanding SMEs with three pillars ─the entrepreneur, firm, and strategy─ based on the investigation of various studies, especially in the United Kingdom, Ireland, and the United States (US). Storey (1994) considers strategy to be the prime interest of small businesses. However, the characteristics of individuals who start and manage firms are also critical factors influencing strategy, as shown in Table I-4. An individual's characteristics affect not only the strategy decision-making process but also access to resources that enable the implementation of strategies. The studies conducted by Storey (1994) primarily focus on SMEs in high-income countries. However, Storey's (1994) framework can also be applied to the major issues involved in the growth and constraints of SMEs in less developed countries.

With respect to first issue, entrepreneurship, Schmitz (1982) discusses the importance of entrepreneurial and managerial skills for SMEs in less-developed countries. Entrepreneurial skills are essential for recognising business opportunities, whereas managerial skills are necessary for establishing systems and processes (Penrose 1959). It is difficult for low-technology SME owners to

be innovative entrepreneurs, as defined by Schumpeter (1961). However, these owners can be equipped with entrepreneurial skills, as defined by Penrose (1959), which enable owners to find business opportunities. Managerial capabilities are important because management systems benefit firms by disseminating learning from innovation (MacPherson & Holt 2007). However, managerial capabilities are not directly linked to innovation. As Schmitz (1982) concludes, successful SMEs are well managed, but SMEs with strong managerial skills are not necessarily successful. Mead and Liedholm (1998) and Nichter and Goldmark (2009) consider the characteristics of owners, such as their education level, prior work experience, and gender, to be critical aspects of management decision making. The interpersonal relationships of owners are further explored in the concept of social networks (Nichter & Goldmark 2009).

Table I-4. Framework for understanding SMEs, according to Storey (1994)

Entrepreneur	Firm	Strategy
- Motivation (including unemployment push) - Education/training - Functional skills - Prior experience (management, self-employment, business failure, sector experience, and firm size experience) - Age - Gender - Family history/social marginality - Number of founders	- Age - Size - Ownership/legal form - Sector/markets - Location	- Management training - Competition - Planning - Market (positioning, adjustment, and customer concentration) - Technology (technological sophistication and new product introduction) - Exporting - Workforce training - Management recruitment - External financial resource - State support - Information advice

Source: Storey (1994)

With respect to the second issue, the firm, MacPherson (1996), Mead and Liedholm (1998), and Nichter and Goldmark (2009) examine the importance of firm characteristics, such as size, age, and formality. Mead and Liedholm (1998) discuss the differences in business situations by sector. The infrastructure in many less developed countries is not well established, which can be a constraint

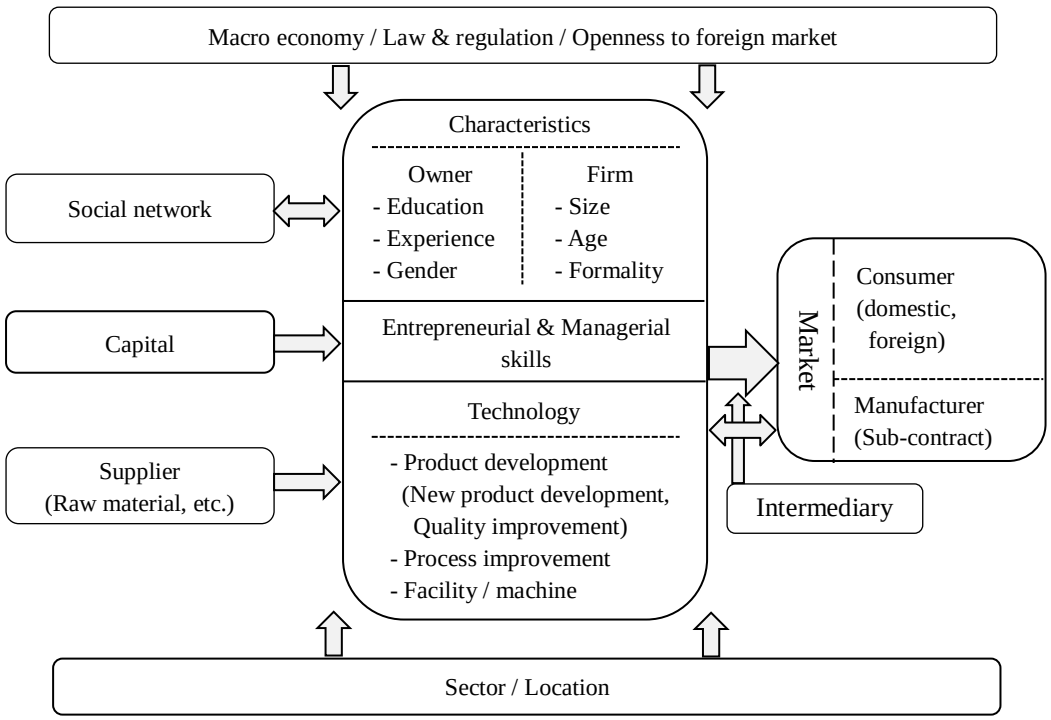
for local SMEs attempting to communicate with larger manufacturers and customers (Schmitz 1982). Location is important to local SMEs because the physical distance to customers influences their operations.

For the third issue, strategy, Penrose (1959) states that enterprises are motivated by profit. Penrose's (1959) statement is true even in the case of low-technology informal or survival-oriented firms in less developed countries. To be sustainable, enterprises must increase profit first and then invest in future opportunities. The continuation of such an operation makes it possible to secure a stable basis for business. Firms have two possible methods to increase profits. The first method is to increase revenue by increasing either the sales volume or the prices of existing products. Introducing new products into markets can also be used to increase revenue. The second method is to reduce costs. The first method of increasing profit is closely linked with entrepreneurial skills as well as with managerial skills as the production scale grows. The second method, cost reduction, is associated with managerial skills. Storey's (1994) discussion of technology is focused on technological sophistication; by contrast, Schmitz (1982) is focused on the technology gap between large enterprises and local SMEs based on the technology level of local SMEs. Tybout (2000) and Wolff and Pett (2006) further study the positive influence of product development, including new product development, the quality improvement of existing products, and process improvement. Schmitz (1982) also discusses access to markets and credit as constraints faced by SMEs in middle- and low-income countries. SMEs are able to obtain critical information for improving products and services with close relationships with customers in markets.

There are several issues pertaining to less developed countries that are not discussed by Storey (1994) but are emphasised by Schmitz (1982). These issues include the importance of inter-firm cooperation, the concept of subcontracting with large manufacturers, foreign investment, and access to raw materials. The concept of subcontracting has been further developed in terms of clusters (MacPherson 1996) and value chains (Nichter & Goldmark 2009). Small producers benefit

from enterprises at a higher level of value chains by obtaining technical information. External conditions, such as the macro-economy, laws and government regulation (Mead & Liedholm 1998; Nichter & Goldmark 2009), and the market openness of a country (Tybout 2000), are discussed as factors influencing SMEs. SMEs in middle- and low-income countries also encounter obstacles arising from government discrimination. SMEs rely heavily on support programmes instituted by the government; however, SMEs are also harassed by government officials upon requesting support or submitting the necessary documents. Figure I-2 summarises the above discussions as the framework for understanding SMEs.

Figure I-2. Issues for understanding SMEs in less developed countries



Source: Author's compilation from MacPherson (1996), Mead & Liedholm (1998), Nichter & Goldmark (2009), Schmitz (1982), Storey (1994), Tybout (2000), and Wolf & Pett (2006)

As shown by the direction of the arrows in Figure I-2, markets are the final destination for SME activities. The most critical aspect of increasing revenue is that products produced by SMEs

are accepted in markets in terms of product quality and price. Market demands vary. To meet the needs of markets, a certain type of technology must be used to produce products with a certain level of quality. This type of operation requires entrepreneurial skills; however, the technology level does not need to be high. Even low-technology can be used for development in the case of local markets. Many studies discuss the relationship between SME operations and markets as well as the technology needed for SME growth. However, few studies investigate the various types of markets, especially domestic markets, that local low-technology SMEs consider to be targets in middle- and low-income countries. Furthermore, few studies examine the effects of various operations related to technology by utilising detailed data on revenue and profit as well as changes in the quantity sold and the prices of each product. The first contribution of this dissertation is to extend the literature on SME growth by utilising detailed revenue and profit data from formal and informal low-technology businesses in Indonesia. Second, I examine SME characteristics and activities in various types of markets and analyse product differences resulting from the technology and operation of each firm.

The remainder of this dissertation is organised as follows. Chapter II describes the general situation of SMEs in Indonesia and explains the survey and data used in this dissertation. Chapter III discusses SME growth factors, particularly which characteristics and operations influence SME profit growth. Chapter IV discusses the differences in the factors that affect SME sales market expansion. Chapter V considers SMEs' reactions to the sudden shrinking of the market during the global economic crisis of 2008-2009. Chapter VI compares the growth factors for SMEs in another middle-income ASEAN country, Vietnam. Lastly, Chapter VII provides policy implications based on the discussions and presents conclusions.

Chapter II. Data

I examine local SMEs in Indonesia in this dissertation. I conducted a firm-level survey in Indonesia to collect data on sales revenue by product item and costs, including raw material costs, salaries, rents for facilities, and other data. Gross profit and operating profit were calculated using the above data. In addition to the above information, questions related to firm characteristics were posed to the respondents.

1. SMEs in Indonesia

Table II-1. Definition of SMEs in Indonesia

	Micro	Small	Medium
Micro, Small and Medium Enterprise Law (unit: Rp)			
Total asset	≤ 50 mil.	50 mil. < ≤ 5,000 mil.	500 mil. < ≤ 10 bil.
Annual revenue	≤ 300 mil.	300 mil. < ≤ 2.5 bil.	2.5 bil. < ≤ 50 bil.
National Statistics Office			
Number of employees	≤ 4	5 - 19	20 - 99

Source: Government of Indonesia (2008b), Government of Indonesia (2013a)

I chose to use Indonesia to examine local SMEs in a less developed country in this dissertation for two reasons. First, Indonesia is a large country with five main islands and more than 17,000 islands in total. The country extends from 6º08'N to 11º15'S vertically and from 94º45'W to 141º05'E horizontally (Government of Indonesia 2010a). Hence, it is possible to identify and consider a variety of markets from the perspectives of both local government borders and geographic characteristics. Second, the population of Indonesia is large at 238 million. Specifically, 137 million people live on Java, and more than 10 million reside on other major islands, i.e., Sumatera, Kalimantan, and Sulawesi (Government of Indonesia 2010a). Therefore, the size of each market is not small, even when I divide the domestic market of each island into several regions.

Data on SMEs in Indonesia are presented in Table II-1. Two SME definitions are utilised by the government of Indonesia. Most of the statistics related to SMEs are published by the National Statistics Office; thus, most data are based on this office's definition regarding the number of employees.

Table II-2. SMEs in the manufacturing industry

	2008		2009		2010		2011	
		%		%		%		%
No. of enterprises	3,238	71.2	3,268	73.5	3,423	73.7	3,538	79.3
No. of workers (000)	10,769	86.6	11,037	87.5	11,457	87.4	11,878	89.0
Export (trillion Rp)	158	16.3	144	17.4	155	15.8	166	16.5
GDP contribution (trillion Rp)	435	31.5	491	33.2	567	33.4	786	35.7
GDP contribution in other sectors								
Agriculture	683	95.4	821	95.7	962	95.8	1,010	95.4
Retail, hotel, restaurant	666	96.4	723	96.3	845	96.5	1,148	96.7

Source: Government of Indonesia 2010b, Government of Indonesia 2013b

The total number of SMEs, including sole proprietorships, was 51.4 million in 2008 (Government of Indonesia 2010a). The share of the number of SMEs was 21.6 per cent of the population, which is extraordinarily large even when compared with the share in high-income countries. One of the reasons for this large number of enterprises is that farmers are included in the statistics for registered firms in Indonesia. In 2008, there were 26.2 million firms (Government of Indonesia 2010b) in the agricultural sector, and thus, agriculture dominated with more than half of the total number of enterprises. However, the number of workers in the agricultural sector was 42.2 million in the same year (Government of Indonesia 2010b). The average number of workers per firm was only 1.6. Individuals and families engaged in agriculture are counted as enterprises. The discussion of the small size of enterprises is similar for the retail sector. In 2008, there were 14.7 million enterprises employing 20.6 million people (Government of Indonesia 2010b). Micro enterprises tend to dominate the agriculture and retail sectors. As shown in Table II-2, SMEs

(including micro enterprises) are dominant, with more than 95 per cent of the GDP created by the agriculture and retail sectors, whereas SMEs' share of GDP in the manufacturing sector was approximately 35 per cent.

Table II-3. Number of enterprises and workers by industry (2012)

	Number of enterprises (000)			Number of workers (000)		
	Micro & Small	Total	%	Micro & Small	Total	%
Food, beverage & tobacco	1,013	1,020	44.2	2,570	3,613	41.0
Textile & apparel	511	516	22.4	1 087	2,094	23.8
Footwear	33	34	1.4	114	340	3.9
Wood processing	639	640	27.8	1,185	1,405	15.9
Chemical	19	22	0.9	44	624	7.1
Metal processing	63	64	2.8	185	393	4.4
Machine & electric	10	11	0.5	27	341	3.9

Source: Government of Indonesia (2013b)

SMEs are not dominant in the manufacturing sector. However, the SMEs' share in terms of the number of enterprises, the number of workers, and GDP contribution showed a gradual increase, except for exports in the manufacturing sector. Table II-3 presents the number of enterprises and the number of workers by industry in the manufacturing sector. The food, beverage, and tobacco industry dominates, with 44.2 per cent of all enterprises in the manufacturing sector. Light industries, including food processing, textiles, footwear, and wood processing accounts for 95.8 per cent. The majority of light industries are micro and small enterprises with fewer than 20 employees.

Table II-4 indicates that Java dominates the economy of Indonesia, especially in the manufacturing sector. Java's share of the population is nearly 60 per cent, and Java dominates with nearly 80 per cent of manufacturing sector workers. In Java, 8.9 per cent of the total population is employed in manufacturing, whereas many other islands employ three per cent or less. The influence of islands other than Java on the national economy appears small. However, the population of each major island is more than 10 million, except for the Maluku and Papua regions. Thus, the size of the

non-Java markets is not small; hence, some local markets on the islands other than Java may also be important for SME development in Indonesia.

Table II-4. Number of workers in the manufacturing sector by island (2012)

	A. Number of workers (000)*	(%)	B. Population (000)	(%)	A / B (%)
Sumatera	1,659	10.8	50,629	21.3	3.3
Java	12,176	79.2	136,611	57.5	8.9
Bali & Nusa Tenggara	638	4.2	13,075	5.5	4.9
Kalimantan	333	2.2	13,788	5.8	2.4
Sulawesi	475	3.1	17,373	7.3	2.7
Maluku & Papua	87	0.5	6,165	2.6	1.4

* Population of individuals 15 years of age and older who worked during the previous week
Source: Government of Indonesia (2013b)

2. Description of the survey

In this dissertation, the data from local SMEs include informal and registered cottage industry SMEs. The data were collected from a survey that I conducted in several provinces with the cooperation of MOI. The enterprises targeted by our survey are those that participated in the management skills and production technology training jointly conducted by MOI and JICA. The official name of the training is the 'In-Country Training Programme on Technology and Management Improvement for Small and Medium Enterprises'.

The training was conducted between November 2008 and February 2009. During the above period, 15 training programmes were conducted at 13 centres under the MOI, Industrial Centre, *Balai Besar Industri*, and Industrial Research and Standardisation Centre, *Balai Riset dan Standardisasi Industri*, in 11 cities. Figure II-1 presents the locations of the centres that conducted training with JICA, and Table II-5 presents the themes, periods, and number of participants in the training programmes. The target beneficiary of training is SMEs, including micro enterprises. Informal businesses are also included. SMEs receive training information either from MOI centres or

from the industry and trade department of the provincial government. JICA financed 70 to 80 per cent of the training budget, whereas the MOI shared in 20 to 30 per cent of the costs.

Figure II-1. Sites for training by centres of the Indonesian Ministry of Industry

Industry Centre Industrial Research and Standardisation Centre

Source: Indonesian Ministry of Industry, Map from Compare Infobase Limited

Most of the training curricula relate to production technologies, and the remainder relate to managerial skills. The training programmes were primarily planned and organised by MOI centres with the consultation of an expert sent to MOI by JICA. All lecturers were Indonesian locals. Lecturers for the production technology part of the training programmes were from MOI centres, local universities, or other local organisations. For the managerial skills portion, lectures were delivered by local consultants on SME management diagnosis who were trained in JICA project programmes. The duration of the training programmes was five to 10 days.

The technology levels of the training programmes were not high-technology but were rather low-technology because the programmes were largely intended for cottage industries. The owners of SMEs decided whether they would participate in the training programmes after examining the

curriculum. Hence, enterprises that had already obtained technological support from foreign capital or achieved a certain technology level higher than a standardised level did not participate. There was no substantial difference in the technology levels among the participating enterprises because of the participant selection process. Table II-6 presents the sample curriculum used in the training programmes at the Centre for Textiles in Bandung on Java Island and the Centre for Plantations in Makassar on Sulawesi Island.

Table II-5. List of JICA / MOI In-Country Training in JFY2008

No	Location	Institution conducted training*	Theme	No of Participants (male:female)	Training Period	Survey Month
1	Bandung	IC Textile	Developing weaving design on natural material	20 (16; 4)	Nov. 12-25, 2008	Mar. 2009
2	Bandung	IC Textile	Developing knitting design with natural material	20 (19:1)	Jan. 19-30, 2009	June 2009
3,4	Yogyakarta	IC Leather, Rubber & Plastic	Technology of footwear manufacturing	40 (40:0)	Nov. 10-19, Nov.24-Dec.5 2008	Mar. 2009
5	Manado	IRSC	Managerial and technological aspects of coconut processing	20 (16:4)	Nov. 17-22, 2008	Mar. 2009
6	Palembang	IRSC	Human resource competency of rubber goods	25 (20:5)	Nov. 23-29, 2008	Mar. 2009
7	Ambon	IRSC	Quality improvement of clove oil	25 (25:0)	Nov. 17-21, 2008	Mar. 2009
8	Makassar	IC Plantation	Technology and management of various chocolate products	20 (14:6)	Feb. 8-14, 2009	July 2009
9	Medan	IRSC	Heat treatment process for improving metalworking quality	30 (30:0)	Feb. 10-21, 2009	June 2009
10	Bandar Lampung	IRSC	Food safety for MSMEs	20 (12:8)	Feb. 17-21, 2009	June 2009
11	Padang	IRSC	Quality improvement and diversification of fishery products	25 (15:10)	Jan. 26-31, 2009	June 2009
12	Pontianak	IRSC	Application and remedial of the ISO9001-2000 quality management system	20 (15:5)	Feb. 3-8, 2009	July 2009
13	Banjar Baru	IRSC	Quality improvement of rattan knitting	25 (12:13)	Feb. 25-31, 2009	June 2009
14	Yogyakarta	IC Handicraft & Batik	Art paper making process from agriculture waste	20 (17:3)	Feb. 3-12, 2009	July 2009
15	Bandung	IC Ceramic	Raw material preparation for earthenware and stoneware body of pottery for plastic forming and slip casting	20 (20:0)	Feb. 12-20, 2009	June 2009
	Total			330 (271:59)		

* IC: Industry Centre, IRSC: Industrial Research and Standardisation Centre
Source: Author's own compilation from the minutes of Meeting between the Japan International Cooperation Agency and the Ministry of Industry on the In-Country Training Programme on Technology and Management Improvement for Small and Medium Enterprises (November 2008, January 2009)

Four to five months after the completion of a training programme at each centre, the participating SMEs were requested to return to the training venues to complete a survey between March and July 2009. The survey month for participant at each centre is shown in Table II-5.

Table II-6. Curriculum of the courses

No.	Subject	Number of sessions
	"Developing Circular Knitting Designs to Support SMEs for Textile and Textile Products" at the Textile Industry Centre (Bandung)	
1	General Lecture Introduction to the Centre for Textile Activities to Support SMEs' Textile Efforts	2
2	Quality Control of the Circular Knitting Product	7
3	Processing Analysis and Operation Analysis	10
4	Kaizen (5-S Framework)	4
5	Knowledge of the Textile and Product Textile Material and Planning of the Material	3
6	Circular Knitting Plan and Preparation	9
7	Processing of Circular Knitting	13
8	Knowledge of Circular Knitting Design	28
9	Plant Visit	10
10	Other	10
Total		100
	"Technology and Management of Various Chocolate Products" at the Plantation Industry Centre (Makassar)	
1	General Lecture: Introduction to the Centre	2
2	Entrepreneurship and Small Business Management	2
3	Marketing and Production Management	2
4	Cocoa Fermentation and Drying Technology	3
5	Cocoa Powder Processing Theory	3
6	Chocolate Beverage Technology Theory	3
7	Chocolate Food Technology Theory	3
8	Cocoa Powder Processing Practice	4
9	Chocolate Beverage Technology Practice	4
10	Chocolate Food Technology Practice	6
11	Plant Visit	6
12	Other	12
Total		50

Source: Minutes of the meeting between the Japan International Cooperation Agency and the Ministry of Industry on the In-Country Training Programme on Technology and Management Improvement for Small and Medium Enterprises (November 2008, January 2009)

In the survey, the participants were requested to answer questions in a questionnaire and to calculate profits following instructions from a trainer. The questionnaire included questions aiming to collect data on price, sales volume and revenue for each product item, as well as costs, including

raw material cost, salary, rents for facilities, and other costs. The gross profit and operating profit for two different periods (one month before and three months after the training programme) was calculated based on the revenue and costs. In this dissertation, gross profit is calculated as the sales revenue less the costs of raw materials. Operating profit is calculated as the gross profit less the costs of salary, rents for facilities, and other costs, excluding corporate tax payment.

Additional questions posed to the participants included the year of establishment, the number of employees, location, registration and licenses, sales markets, changes in obtaining business partners, loans, and new facilities. Questions regarding owners' motivation for business growth and satisfaction levels regarding the training programmes were also asked. The trainer recalculated the profits for all respondents to avoid errors resulting from participants' miscalculations. The survey was completed before Ramadan in August, the fasting month for Muslim people in 2009, to ensure that the sales and profits reported in the survey would not be affected by consumption fluctuations resulting from Ramadan. The questionnaire used for the survey is provided in the Appendix. It was translated into the Indonesian language, and the method how to fill out a survey sheet and to calculate profits were explained in the Indonesian language.

Table II-7. Distribution of the sample enterprises (N = 163)

Number of Employees (%)		*Location (%)*		*Industry (%)*	
1-4 (micro)	33.3	Java	49.4	Food processing	27.6
5-19 (small)	43.8	Sumatra	25.3	Textiles	14.1
20-99 (medium)	20.1	Kalimantan	8.4	Footwear	19.0
100- (large)	2.8	Sulawesi	14.3	Ceramics	4.9
		Maluku	2.6	Metalworking	4.9
Year of establishment (%)				Wooden furniture	3.7
-1989	14.8	*Registration (%)*		Handicrafts	9.2
1990-1999	28.2	Registered	46.1	Chemical	12.3
2000-	57.0	Not registered	53.9	Others	4.3

Source: Author's own calculation

In total, 163 of the 330 training participants participated in this survey. Some participants

were from the same firm, and in these cases, only one response was used. Some responses were incomplete and thus eliminated based on the variables included in an estimation model in each chapter. Tables II-7 summarises the distribution of the sample enterprises. Of the total, 77.1 per cent of the sample firms are micro and small enterprises, and more than half are informal firms. Furthermore, 49.4 per cent of the firms are located in Java, and 41.7 per cent of firms belong to either the food processing or textile industries. The distribution of sample firms represents the situation of Indonesia in terms of the share of enterprises in Java and the shares of SMEs in the food processing and textile industries.

The data employed in this study have several shortcomings. First, the SMEs that participated in the training programme were not randomly selected. The participants were self-selected; thus, they may be more motivated and aggressive than the average firm (Storey 2004). In addition, because the training courses provided were relatively simple, only SMEs with a low level of management skills and technology should have participated in the training. Therefore, the results from the data can be applied only to low-technology SMEs that are eager to improve their technology levels.

The second shortcoming of the data is that there is also a question regarding the timeframe of the survey used to examine the effect of variables on SME growth. Karlan and Valdivia (2011) compare sales data for several points of time over a two-year period. Mano et al. (2012) study changes that occur one year after training. Arguing that a considerably longer period is necessary to observe changes, Tan (2009) conducts a survey ten years after programme completion. In general, management decisions by SME owners are made over a shorter period than those made by directors of large enterprises. Although enormous uncertainties in decision making exist, entrepreneurs are encouraged to take action before decisions have been completely considered (Busenitz & Barney 1997). Therefore, smaller enterprises' ways of managing organisations are more influenced by the information that they receive immediately prior to making decisions. If an opportunity that induces

actions by SMEs is simultaneously provided, then it is possible to examine the development of firms over a short period of time. Furthermore, in a longer survey period, SMEs will be further influenced by changes in external business environments, such as economic conditions. Business results are also affected by idiosyncratic shocks (Mano et al. 2012). I avoided the influences of changes in external business environments by using data from a shorter survey period.

Chapter III. Factors Related to the Growth of Low-Technology SMEs

In Chapter I, cases of SMEs that have been able to develop their businesses were presented. Nearly 60 per cent of the firms that MOI officials and I visited had increased their revenue or profit after participating in the training, regardless of the firm size. Why were these firms successful in increasing their profit? The purpose of this chapter is to consider the factors that influence profit growth in low-technology SMEs. This chapter is organised as follows. Section 1 reviews the existing literature, and Section 2 considers firm characteristics in Indonesia and presents the hypotheses. Section 3 presents the model, and Section 4 explains the data. Section 5 shows the results of the estimations, and Section 6 discusses the results. Section 7 concludes this chapter.

1. Literature review

In this section, I review the existing literature examining the factors related to SME growth in middle- and low-income countries. Table III-1 is a summary of these growth factors. The factor variables are categorised into four types: (1) the characteristics of enterprises, (2) intentions of operations, (3) the sectors to which SMEs belong, and (4) SMEs' locations.

The first category of factor variables is the characteristics of enterprises. As described in Jovanovic's (1982) model, many articles conclude that young and smaller enterprises grow faster than well established and large enterprises (in addition to the studies shown in Table III-1, see, for example, Andersson, Gabrielsson & Wictor 2004; Ayyagari, Demirgüç-Kunt & Maksimovic 2011). By contrast, formality has a positive effect on growth (Capp, Elstrold & Jones 2005; Storey 1994). Registered enterprises tend to grow faster than informal firms do. Access to finance also influences advancing businesses (Beck & Demirgüç-Kunt 2006; Karlan & Morduch 2009). Access to finance has a secondary effect in that it induces SMEs to retain accounting records that are essential for

analysing a firm's own business (Karlan & Valdivia 2011; Mano et al. 2012). Individual entrepreneur characteristics include the owner's gender. Although female entrepreneurs are often successful in high-income countries (Kalleberg & Leicht 1991), they are often disadvantaged in middle- and low-income countries because of women's risk-averse characteristics and low social status in those countries (MacPherson 1996; Mead & Liedholm 1998).

Table III-1. Factors for SME growth according to the existing literature

	Mead & Liedholm (1998)	Tybout (2000)	Sleuwaegen & Goedhuys (2002)	Biggs & Shah (2006)	Bigsten & Gebreeyesus (2007)	Nichter & Goldmark (2009)	Berry et al. (2002)*
(1) Firm characteristics							
a) Age	–		+		–	–	
b) Size	–	–	+		–		
c) Formality			+			+	
d) Access to finance				+			
e) Owner gender	–					–	
(2) Operation							
a) Product development							+
b) Process improvement		+		+	+		+
c) Internationali -sation		+					+
d) Inter-firm cooperation				+		+	+
(3) Sector	x					x	
(4) Location	x						

Notes: (+) a positive relationship between the element and enterprise growth; (–) a negative relationship between the element and enterprise growth; (x) either a positive or negative relationship exists, depending on the case. *This study discusses cases in Indonesia.

The second category of factor variables is the intentions of operations. Fundamentally, all research results discuss the positive effect of product development and process improvement on growth. As SMEs increasingly develop new products and increase their productivity using higher technology, they tend to expand in size more rapidly and increase their likelihood of survival (Bernard et al. 2007; Crick & Jones 2000; Madsen & Servais 1997; Melitz 2003; Wagner 2007). Internationalisation, which refers to exporting, also has a positive influence on growth (Clercq,

Sapienza & Crijns 2005; Clerides, Lach & Tybout. 1998; Wolff & Pett 2006). Inter-firm cooperation is also a key to growth because it allows for market expansion. Agreements with buyers decrease the risks and costs associated with entering new markets by providing a guaranteed flow of orders and critical information regarding market requirements (Aitken, Hanson & Harrison 1997; Aw 2002). Operations become smoother in foreign markets as relationships with intermediary enterprises progress from merely marketing to a network of enterprises (Crick & Spence 2005; Zain & Ng 2006). Furthermore, internationalisation and inter-firm cooperation are closely linked. Multinational corporations assume an important role in the exporting of components from SMEs (Acs et al. 1997; Ghauri, Lutz & Tesfom 2003). Internationalisation is also important because it often links companies with foreign learning channels, and firms with foreign technical assistance have higher productivity levels (Levy 1994; World Bank 1993).

The third and fourth categories of factor variables are the sector and location. Sector characteristics often affect the structure of enterprises and investments (Mead & Liedholm 1998; Storey 1994). Enterprises in certain industries such as the chemical industry are usually larger in size and are more capital intensive than others. Hence, sector characteristics could influence the growth of enterprises in terms of economies of scale.

2. Hypotheses in the context of Indonesia

Given all of the above considerations from the existing literature, firm age, size, and female ownership have negative effects, whereas formality and access to finance have positive impacts on SME growth. In addition, product development, process improvement, internationalisation, and inter-firm cooperation have positive effects on SME growth. Moreover, there are certain sectors and locations in which SMEs grow faster. In this section, I first consider the situations of SMEs in Indonesia and then provide hypotheses.

Table III-2. Cases of profit increase

Case 1 of quality improvement	
Firm	Location: Yogyakarta; owner: man Established after training, Number of employees: 12
Product	Leather bag, Leather footwear
Sales area	Yogyakarta
After training	Improved quality, Introduced 6 new sawing machines, Improved speed of production: Before 2/day → After 4/day Price (bag): Before Rp35,000 → After Rp38,000 Cost (bag): Leather Rp20,000/kg (possible to produce 2 large bags), Others: Rp100,000 Order: Approximately 500/month
Comparison	Monthly gross profit (bag, calculated with the condition that sales volumes are the same) Before: (Rp35,000－Rp20,000/2)×500＝Rp7,500,000 After: (Rp38,000－Rp20,000/2)×500＝Rp9,000,000 Increase: More than Rp1,500,000
Case 2 of new product development	
Firm	Location: Samarinda, East Kalimantan; owner: man Established in 1986, Number of employees: 32
Product	Snack made of fish powder
Sales area	Samarinda
After training	New product development using fish skin (which was disposed of before) Price: Rp25,000 / pack Cost: Rp5,000 / pack (raw material), Rp5,000 / pack (packaging, etc.), Total Rp10,000 Average sales: 5,000 packs / month
Comparison	Profit per pack from new product: Rp15,000 Monthly gross profit: Rp15,000×5,000＝Rp75,000,000
Case 3 of cost reduction	
Firm	Location: Bandung, West Java; owner: man Established in 1990, Number of employees: 10
Product	Ceramic (large pottery pot), produce approximately 50/week Price: Rp175,000, Raw material cost: Clay Rp60,000/bag (40kg), use approximately 120 bags/month (Rp7,200,000/month)
Sales area	Surabaya, Kalimantan, Papua, Jambi (through intermediaries)
Changes after training	Introduced new kiln (investment capital: Rp75,000,000) Fuel cost: decreased by reducing operation time from 12 hours to 8 hours Old type kiln 280 litre/day, 1,680 litre/week New type kiln 150 litre/day, 900 litre/week (price of gasoline: Rp2,500/litre)
Comparison	Reduced gasoline consumption per week 780 litre Reduced fuel cost per month: 780 liter×Rp2,500×4 weeks＝Rp1,950,000×4＝Rp7,800,000 Months needed to cover investment (equipment price/reduced cost): Rp75,000,000÷Rp7,800,000/month＝9.6 months Monthly revenue: Rp175,000×50/week×4 weeks＝Rp35,000,000 Monthly gross profit: Rp35,000,000－(Rp2,500×900 liter＋Rp7,200,000) ＝Rp25,550,000

Source: Author's own compilation based on the results of visits to firms

Among the existing studies of Indonesian SMEs, Indarti and Langeberg (2004) show the same positive results as the above literature with respect to access to finance. Tan and Batra (1995) also argue for a positive effect of access to finance on firm growth. Better access to finance appears to have positive influence on further investment in equipment and other investments. Table III-2 shows cases of profit increases from the preliminary visits to micro and small firms. The third case of the ceramic producer in West Java showed that the consumption of fuel for producing ceramic products was reduced by 780 litres per week by introducing a new facility. This firm could reduce cost for fuel by Rp1.95 million per week, which is equivalent to 22.3 per cent of weekly revenue of this firm. The investment amount for this new facility was Rp75 million. The firm needed to acquire investment capital from external sources.

Table III-3. Actions by successful firms

Firm	Sector	No. of employees	Register	Island	Action after training
A	Food processing	3	No	Maluku	Improving quality
B		32	Yes	Kalimantan	New product development
C		4	Yes	Sumatra	Improving quality (price increase)
D		8	Yes	Sumatra	New product development
E		3	Yes	Sumatra	New product development (price increase)
F		5	Yes	Kalimantan	New product development (price increase, business partner increase)
G		7	No	Kalimantan	New product development, quality improvement (sales quantity increase)
H		23	Yes	Kalimantan	New product development, quality improvement (sales quantity increase)
I	Ceramic	10	No	Java	Production facility improvement (cost decrease)
J	Leather product	12	No	Java	Improving quality (price increase)
K		8	No	Java	Improving quality (price increase)
L		4	No	Java	Start new business
M		4	No	Java	New product development, quality improvement
N	Textile	10	No	Java	Improving quality (price increase)
O		35	No	Java	Start new business

Source: Author's own compilation based on the results of visits to firms

With respect to firm size, Indarti and Langeberg (2004) show negative results for firm size. In contrast, Tan and Batra (1995) conclude that larger firms grow faster in Indonesia. Table III-3 summarises the actions made by firms to increase revenue or profit among those firms that the MOI officials and I visited. Successful firms have a number of employees ranging from three to 35. It is difficult to hypothesise that a certain firm size clearly has positive or negative influences on growth in Indonesia. In addition, it is also difficult to predict that informal firms tend to be inferior in terms of skills. Even informal firms tend to produce substandard products.

Indarti and Langeberg (2004) also show negative results with respect to female ownership. In Table III-2, all three firms have male owners. However, in the fourth case in Table I-2 in Chapter I, successful micro firm has a female owner. In Indonesian local markets, there are sufficient numbers of consumers in local markets in the same district level even on islands other than Java. Hence, firms with female owners, who have less access to formal markets because of their low social status, also have business opportunities as shown in the fourth case in Table I-2.

With respect to firm operations, Berry, Rodriguez, and Sandee (2001) and Sandee and Rietveld (2001) argue that the positive effects of better quality products and process improvements in export markets can lead to growth in demand. Table III-3 also shows the possibility that quality improvements in existing products, new product development, and cost reduction, which is a part of process improvement, positively influence profit increase. The cases in Table III-2 also support this hypothesis. The first firm, the leather product producer in Yogyakarta, could sell a similar quantity every month and increased gross profits by Rp1.5 million even after raising the price to Rp38,000 from Rp35,000 because of improved product quality. The second firm for food processing products in East Kalimantan developed a new product utilising a material that previously been disposed of and succeeded in generating a new source of profit amounting to approximately Rp75 million. The third case of the ceramic producer in West Java was able to reduce the consumption of fuel for producing ceramic products to a cost of Rp7.8 million per month.

Geenhuizen, Indarti, and Soetanto (2010) and Weijland (1992) discuss the importance of middlemen for expanding markets and various trade networks that link rural industries with distant markets. Tambunan (2008) shows that firms in clusters secure access to a wider market when those clusters have external networks linked to large enterprises. Inter-firm cooperation can be important. However, the cases in Table I-2 and III-2 show that it is possible to increase profit without inter-firm cooperation if SMEs sell their products in a local market. It is difficult to conclude that internationalisation has an effect on increasing profits, as many firms in Table III-2 and III-3 sold their products only in local markets.

Moreover, a considerable number of studies focus only on Indonesia, including Sandee and Rietveld (2001) and Sato (2000a), who discuss the growth of small businesses in a specific area of Central Java. However, little attention has been devoted to comparing different regions in the country. In fact, 42 per cent of the population of 238 million reside on islands other than Java (Government of Indonesia 2010a). Thus, the operations of SMEs on other islands may affect firms despite the dominance of Java in the country's economy.

Given the above consideration in the context of Indonesia, it is hypothesised that product development and process improvement have positive effects on SME profit growth as well as access to finance. On the contrary, it is expected that other matters related to firm characteristics as well as firm operations, including inter-firm cooperation and internationalisation, do not have clear positive or negative effects on profit increases.

3. Estimation methodology

I estimate the effects of variables in the above mentioned hypotheses on profit changes by applying the linear regression estimation model as follows and using firm-level data for the manufacturing sector in Indonesia.

$$\Delta Profit_i = \alpha + \beta_1 Est_i + \beta_2 Size_i + \beta_3 Reg_i + \beta_4 Loan_i + \beta_5 Fem_i + \beta_6 Prod_i + \beta_7 Highpr_i + \beta_8 Lrgqu_i + \beta_9 Urmc_i + \beta_{10} Mrk_i + \beta_{11} Bizp_i + \beta_{12} Sec_i + \beta_{13} Java_i + \beta_{14} Curprod_i + \beta_{15} Curproc_i + \varepsilon_i$$

The dependent variable is the growth rate of gross profits (Profit) in the period between one month before and three months after training programmes. The independent variables included four categories: firm characteristics, operations, sectors, and locations. The variables of firm characteristics include the year of establishment (Est), the number of employees for measuring firm size (Size), registration (Reg), obtaining a new loan (Loan), and female ownership (Fem). Variables related to operations are changes in product lines (Prod), products that were sold at higher prices (Highpr), products that were sold in larger quantities (Lrgqu), changes in unit raw material costs (Urmc), markets reached by sample firms (Mrk), and the existence of new business partners (Bizp). The variables for sector (Sec) and location in Java (Java) are also included, and ε is an error term. I also added variables for the share of product development curriculum (Curprod) and the share of process improvement curriculum that each firm participated (Curproc). The curriculum was decided by each centre, which organised the training. Firms could not control them.

The majority of studies of small firm growth in developing countries use employment numbers as a measure of growth. However, the growth factor regarding the number of employees and the growth factor for profits may differ. There are two main reasons that existing studies use the number of employees to measure firm growth. First, because of the expected role of SMEs as providers of employment, high-growth SMEs can simultaneously demonstrate labour productivity and employment increases (Smallbone, Leig, & North 1995). However, productivity can be damaged by an excessive number of employees. If profits decrease because of low labour productivity, then businesses are not sustainable. Therefore, the number of employees is not the most important measure for evaluating enterprises. As Penrose (1959) clearly states, enterprises are motivated by

profit. To be sustainable, enterprises must first increase profit and then invest in future opportunities. The continuation of such operations makes it possible to secure a firm basis for enterprise development. Only enterprises with a strong operational and financial base can contribute to creating employment opportunities and establishing sustainability in industrial growth.

Another reason for using employment information in evaluating SME growth is that it is often extremely difficult to obtain reliable financial data from small firms in middle- and low-income countries (Bigsten & Gebreeyesus 2007; MacPherson 1996; Mead & Liedholm 1998). Hence, few existing studies investigate small firm growth using actual profit data, and even fewer studies examine low-technology informal firms. Some researchers examine the effect of programmes in terms of profit changes. For example, Karlan and Valdivia (2011) study the sales of training participants in good and bad months for micro-finance borrowers in Peru. Additionally, Mano et al. (2012) show how the profits of management training participants changed in Ghana. However, these studies do not thoroughly examine the factors related to profit changes. The literature examining profit changes focuses on the effect of support programmes rather than factors affecting growth, whereas the studies that discuss SME growth factors do not investigate actual profit information. Thus, in this study, I examine factors related to growth in gross profits.

4. Data description

In this dissertation, gross profits are calculated as sales revenue less the costs of raw materials. Some enterprises could have extraordinarily high sales revenue, despite having a small number of employees. In most of these cases, the cost of raw materials is also high. Hence, I consider gross profit rather than sales revenue. In the apparel industry, several enterprises are subcontractors for which raw materials are provided free of charge. However, material costs are already deducted when the price is set by manufacturers at a higher level in the supply chain. Thus, sales revenue equals

gross profits. It is possible to compare the profits of all sample firms at the same level using gross profits.

The dummy for registration was one if an enterprise was already registered and zero otherwise. The dummy for a new loan was one if an enterprise acquired a loan from a financial institution after training and zero otherwise. I used gross profits from which interest payments were not yet deducted. Hence, the costs for raising capital from external sources do not influence gross profit in this model. The dummy for female ownership was one if an owner was a woman and zero otherwise.

An increase in product items indicates the development of new products. Because most technology is imported from more advanced countries, I did not expect to find a great deal of innovation-oriented research and development by SMEs in middle- and low-income countries. However, technical efforts to modify imported technology to differentiate local products are often observed (Biggs 1995). In this dissertation, this type of modification is considered new product development. Products sold at higher prices and products sold in larger quantities indicate the quality improvement of existing products. Consumers buy products at higher prices or in larger quantities when they recognise quality improvements, unless additional services are added or prices are lowered. The share of products sold at higher prices and the share of products sold in larger quantities are calculated as the number of such products three months after training divided by the total number of product items one month before training.

A change in unit raw material costs is calculated as (RMC t2/NS t2) – (RMC t1/NS t1), where RMC is the monthly raw material cost, NS is the monthly net sales, t1 indicates one month before training, and t2 indicates three months after training. If sample firms could reduce the unit costs of raw material, then this value was negative. Introducing new production facilities can also influence process improvement, but this factor was not included in this model because of its high collinearity with access to finance.

To estimate the effect of internationalisation, I establish three stages of sales market expansion including a stage of foreign market and two stages of domestic markets, characterising local government boundaries, considering that Indonesia is a large country with many islands. Stage 1 (home province) involves selling products only in the home province, Stage 2 (other provinces) includes selling products in other provinces, and Stage 3 (foreign country) involves selling products also in foreign countries. The sales market expands with each new stage. Stage 1 is denoted as unity, Stage 2 = 2, and Stage 3 = 3. The dummy for a business partner was used to observe the influence of inter-firm cooperation. In this dissertation, business partners are intermediaries who sell products in other markets. This value was one if sample firms acquired business partners after training and zero otherwise.

The dummy variable for each sector indicates the industry to which each firm belongs, including the food processing, textile, footwear, ceramic, metal processing, wooden furniture, handicraft, and chemical industries. A dummy variable for location is also included. This value was one if a sample enterprise produced products in Java and zero otherwise.

The target enterprises for the survey were those described in Chapter II. Among the 163 individuals who participated in the survey, some participants were from the same firm, and in those cases, I used only one response. Some responses were incomplete and thus eliminated. Eventually, data from 85 firms were used for the estimation. The results should be interpreted with caution because of the sample size and possible biases resulting from endogeneity. Tables III-4 summarises the sample's descriptive statistics. The mean and median of the number of employees is 16.1 and six, respectively; more than half of the sample firms are micro firms, although they are spread out over a large range, and the standard deviation is 36.349. Net sales per month and gross profit per month per employee are also spread out over a large range. The number of product lines is rather small, even for medium enterprises; the mean is 3.0, and the standard deviation is 2.464.

Table III-4. Summary of sample enterprises (N = 85)

Variable	*Mean*	*Median*	*Std. Dev.*	*Min.*	*Max.*
Number of employees	16.141	6	36.349	1	278
Number of product lines	3.0	2	2.464	1	12
Net sales per month (rupiah)	200 mil.	14 mil.	926 mil.	215,000	7.0 bil.
Gross profit per month per employee (rupiah)	16.8 mil.	1 mil.	138 mil.	23,182	1.3 bil.
2000−Year of establishment	12.353	10	9.798	1	60
Registration	0.482	0	0.503	0	1
New loan	0.165	0	0.373	0	1
Female owner	0.223	0	0.419	0	1
Change rate of product lines	0.364	0	0.779	−0.5	4
Share of products sold at higher prices	28.035	0	40.524	0	100
Share of products sold in larger quantities	50.647	50	44.048	0	100
Unit raw material cost	0.005	−0.004	0.146	−0.311	0.801
Market reached	2.365	2	1.045	1	4
Business partner	0.506	0	0.503	0	1
Food processing	0.365	0	0.484	0	1
Textile	0.188	0	0.393	0	1
Footwear	0.176	0	0.383	0	1
Metal processing	0.059	0	0.237	0	1
Wooden furniture	0.059	0	0.237	0	1
Handicraft	0.024	0	0.152	0	1
Chemical	0.024	0	0.152	0	1
Java	0.471	0	0.502	0	1
Share of product development curriculum	67.953	68	13.131	0	86
Share of process improvement curriculum	10.647	8	12.625	0	78

Source: Author's own calculation

5. Estimation results

The results of the baseline estimation are presented in column (1) of Table III-5. It is found that the change rate of product lines is positively and significantly correlated with profit growth, implying that new product development improves profits. The share of products sold at higher prices and the share of products sold in larger quantities, which may be due to improvement in product quality, are

also positively correlated with profit growth. The change in unit raw material costs, a measure of production process improvement, shows a negative correlation with profit growth. It means productivity was improved with respect to the use of raw materials. These are mostly consistent with results from existing studies and predictions in the context of Indonesia explained in Section 2, suggesting that product development, including new product development and quality improvement, as well as process improvement are key factors of profit growth. Figure III-1 shows the graphical presentation of the correlation between the four variables and profit growth.

In addition, it is found that firm size, firm age, the level of formality of firms, access to finance, the gender of owners, or the geographical rank of markets reached is not correlated with profit growth. These results are not always consistent with those of existing studies, but they are mostly predicted in the context of Indonesia, as I argued in Section 2. Because many of the sample firms are in cottage industries using simple equipment for production, firm size, experience, formal registration, or investment is not required for profit growth. In other word, even small, unexperienced, and informal firm without any access to credit can grow, once they can achieve product development or process improvement. Expanding markets to further areas may not lead to profit growth, probably because of the low quality of products of sample firms. In contrast, the correlation between the existences of business partners was positive and statistically significant.

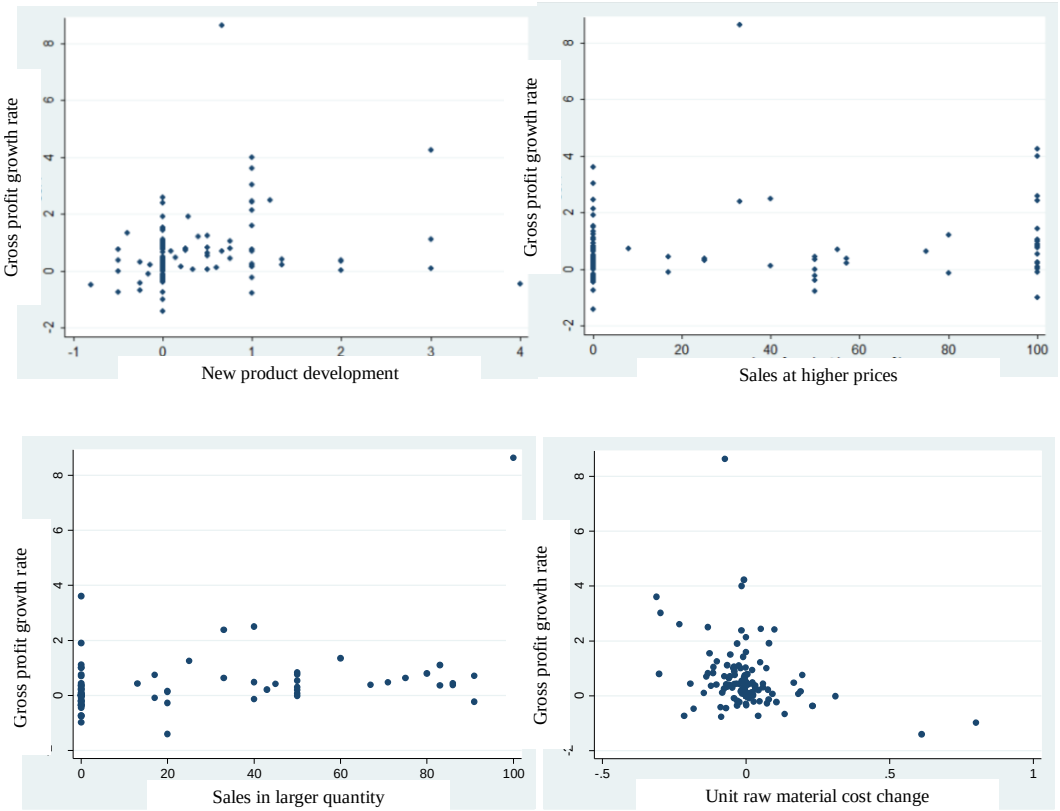
The mostly insignificant correlation between firm characteristics and profit growth may be due to multicollinearity between these variables and the four variables that are significantly correlated with profit growth. Therefore, I drop the latter four variables from the set of independent variables and run the same regression. In addition, to alleviate multicollinearity among the variables for firm characteristics, I use only one of the firm characteristic variables in one regression. The results shown in columns (2)-(7) of Table III-5 confirm that the correlation between these variables for firm characteristics and profit growth is insignificant.

Table III-5. Estimation results

Dependent variable	Rate of gross profit growth						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Product line change	0.396**						
	(0.181)						
Product sold at higher prices	0.009**						
	(0.004)						
Product sold in larger quantities	0.013***						
	(0.003)						
Unit raw material cost	−3.110***						
	(0.962)						
ln (Number of employee)	−0.034	0.047	0.024				
	(0.178)	(0.221)	(0.210)				
2000−Year of establishment	0.009	0.010		0.012			
	(0.015)	(0.018)		(0.018)			
Registration	−0.302	−0.268			−0.205		
	(0.324)	(0.388)			(0.350)		
New loan	−0.310	0.143				0.052	
	(0.386)	(0.469)				(0.438)	
Female owner	0.216	0.224					0.180
	(0.331)	(0.402)					(0.387)
Market reached	0.003	−0.097	−0.106	−0.124	−0.070	−0.106	−0.115
	(0.159)	(0.193)	(0.177)	(0.172)	(0.180)	(0.170)	(0.171)
Business partner	0.527*	0.455	0.454	0.453	0.490	0.451	0.469
	(0.294)	(0.357)	(0.337)	(0.330)	(0.333)	(0.343)	(0.330)
Food processing	4.445	−2.798	−2.230	−2.623	−2.258	−2.189	−2.552
	(5.259)	(6.010)	(5.797)	(5.778)	(5.753)	(5.786)	(5.795)
Textile	−1.856	−0.167	−0.276	−0.853	−0.792	−0.890	−0.766
	(1.319)	(1.499)	(1.454)	(1.684)	(1.690)	(1.697)	(1.701)
Footwear	−0.253	0.298	0.276	−0.446	−0.324	−0.374	−0.238
	(0.641)	(0.760)	(0.739)	(1.019)	(1.013)	(1.022)	(1.044)
Metal processing	5.133	−2.632	−1.929	−2.494	−1.940	−1.859	−2.154
	(5.237)	(5.963)	(5.727)	(5.738)	(5.673)	(5.706)	(5.701)
Wooden furniture	3.641	−2.550	−1.998	−2.430	−2.036	−1.937	−2.187
	(4.572)	(5.231)	(5.039)	(5.036)	(4.995)	(5.027)	(5.016)
Handicraft	1.233	0.865	0.878	Omitted	Omitted	Omitted	Omitted
	(1.014)	(1.253)	(1.217)				
Chemical	4.147	−2.616	−1.991	−2.426	−2.117	−1.944	−2.254
	(5.247)	(6.022)	(5.811)	(5.799)	(5.770)	(5.806)	(5.796)
Location in Java	5.490	−2.602	−1.970	−1.753	−1.424	−1.265	−1.688
	(5.383)	(6.109)	(5.876)	(6.077)	(6.050)	(6.098)	(6.098)
Share of production technology curriculum	−0.055	−0017	−0.017	−0.015	−0.020	−0.018	−0.019
	(0.035)	(0.044)	(0.042)	(0.041)	(0.041)	(0.041)	(0.041)
Share of process improve. curriculum	−0.055	−0.029	−0.024	−0.027	−0.025	−0.024	−0.028
	(0.035)	(0.080)	(0.078)	(0.077)	(0.077)	(0.078)	(0.078)
N = 85 *R-sq*	0.468	0.110	0.095	0.097	0.096	0.092	0.095
Adj.-R sq	0.291	−0.116	−0.071	−0.066	−0.067	−0.072	−0.069

Notes: Standard errors are in parentheses. ***, ** and * indicate statistical significance of the coefficients at the 1%, 5% and 10% levels, respectively. The handicraft industry was omitted because of collinearity.
Source: Author's own calculation

Figure III-1. Distribution of sample firms



Source: Author's own compilation

Another problem of the results in Table III-5 is endogeneity. Because gross profit is calculated using the formula below,

$$Gross\ profit = \sum_{i=1}^{n}(Price\ of\ product_i \times Sales\ quantity\ of\ product_i) - \sum_{i=1}^{n} Cost\ of\ raw\ material_i$$

It is natural that the four variables, the change rate of product lines, the share of products sold at higher prices, the share of products sold in larger quantities, and unit raw material costs, had significant correlation with profit increases. Then, it may be the case that firm characteristics have no direct correlation with profit growth but have indirect correlation through the correlation with the four key determinants of profit growth. Therefore, I examine how the four key variables of profit growth are determined by firm characteristics. The results shown in Table III-6 indicate that all firm characteristic variables, except for some industry dummies, are uncorrelated with the four key determinants of profit growth. The results imply that any firm, regardless of whether it is small,

unexperienced, informal, or inaccessible to credit, could, at least potentially, increase product and quality, decrease production costs, and thus eventually improve profits.

Table III-6. Estimation results 2

Dependent variable		New product development	Product sold at higher prices	Product sold in larger quantities	Unit raw material cost
ln (Number of employee)		−0.060	0.007	0.064	0.010
		(0.120)	(0.058)	(0.065)	(0.022)
2000−Year of establishment		−0.004	0.002	−0.005	−0.002
		(0.010)	(0.005)	(0.006)	(0.002)
Registration		−0.011	0.144	−0.149	−0.021
		(0.210)	(0.100)	(0.114)	(0.040)
New loan		0.293	0.158	0.032	−0.057
		(0.259)	(0.124)	(0.140)	(0.049)
Female owner		−0.144	−0.182	0.141	−0.029
		(0.228)	(0.109)	(0.124)	(0.043)
Food processing		0.632	−0.693*	0.055	0.008
		(0.842)	(0.403)	(0.456)	(0.159)
Textile		0.091	0.160	0.099	−0.041
		(0.383)	(0.183)	(0.207)	(0.072)
Footwear		0.020	0.290	0.082	−0.030
		(0.384)	(0.184)	(0.208)	(0.072)
Metal processing		−0.063	−0.880**	0.475	−0.044
		(0.896)	(0.429)	(0.486)	(0.169)
Wooden furniture		−0.876	−0.101	−0.386	−0.112
		(0.691)	(0.331)	(0.374)	(0.130)
Handicraft		0.237	−0.542	−0.289	−0.103
		(0.650)	(0.311)	(0.352)	(0.123)
Java		0.656	−1.120**	−0.286	−0.005
		(0.922)	(0.441)	(0.499)	(0.174)
Sumatra		0.351	−0.332**	−0.263	0.014
		(0.294)	(0.141)	(0.159)	(0.055)
Kalimantan		1.768*	−0.859*	0.396	−0.028
		(1.045)	(0.501)	(0.567)	(0.197)
Maluku		0.345	−1.144**	0.431	−0.166
		(1.178)	(0.564)	(0.638)	(0.222)
N = 85	*R-sq*	0.138	0.269	0.208	0.129
	Adj.-R sq	−0.050	0.110	0.036	−0.060

Notes: Standard errors are in parentheses. ***, ** and * indicate statistical significance of the coefficients at the 1%, 5% and 10% levels, respectively. Ceramic, chemical, and Sulawesi are omitted because of collinearity.
Source: Author's own calculation

6. Discussion of the results

The estimation results in the previous section reveal that profit increases mostly attribute to product

development, including new product development and quality improvement of existing products, and process improvement.

Table III-7. Consequences of product development (N = 83*)

Product development	Change of product lines**		Change of gross profit		Sales quantity increase***	
					without lowering price****	with higher price*****
Done	Increase	29	Increase	26	13 (50.0%)	7 (26.9%)
			Decrease	3	0 (0%)	0 (0%)
	Same	16	Increase	12	10 (83.3%)	5 (41.7%)
			No change	2	0 (0%)	0 (0%)
			Decrease	2	0 (0%)	0 (0%)
	Decrease	3	Increase	3	2 (66.7%)	1 (33.3%)
			Decrease	0	0 (0%)	0 (0%)
Not	Same	31	Increase	19	15 (78.9%)	3 (15.8%)
			No change	2	0 (0%)	0 (0%)
			Decrease	10	1 (10.0%)	1 (10.0%)
	Decrease	4	Increase	1	0 (0%)	0 (0%)
			Decrease	3	1 (33.3%)	1 (33.3%)
Total		83		83	42	18

* Among 85 sample firms, two firms did not indicate whether they had worked on product development.
** Seven firms answered that they had not developed products but had actually increased the number of product lines. These firms are included in the category of firms that developed products and increased product lines.
*** Only the sales quantity of existing products is calculated; the sales of new products are not included.
**** Firms that are: (number of products with higher prices + number of products with the same prices – number of products with lower prices) > 0, under the condition that (number of products with increased sales – number of products with decreased sales) > 0.
***** Firms that are: (number of products with higher prices – number of products with lower prices) > 0, under the condition that (number of products with increased sales – number of products with decreased sales) > 0.
Source: Author's own calculation

To highlight consequences of product development, Table III-7 compares firms that implemented product development with those that did not. The table clearly shows that firms that worked on product development were better able to increase sales quantity without lowering prices. Approximately one-third of the firms sold in larger quantities than before training, even at higher prices. Consumers positively accepted higher prices and purchased more of those products because of the quality improvement of their existing products.

Table III-8 provides examples of successful firms that increased their sales quantities at higher prices as a result of product development. Half of the firms added new product lines, while the other half increased gross profits with the same number or a smaller number of product lines. For

example, Firms A and H doubled or tripled their gross profits by introducing new products, whereas Firms C and G increased their gross profits even with higher unit raw material costs for the same or fewer product lines. The only way to achieve higher gross profits for Firms C and G was to increase revenue from existing products by selling a larger quantity or by raising prices.

Table III-8. Examples of successful sample firms with product development

Firm	*Sector*	*Product**	*Location***	*No. of emplo -yees*	*Monthly revenue (mil Rp)*	*Gross profit increase (%)*	*No of product changed (%)*	*Unit raw material change (% points)*
A	Food process -ing	Processed fish (1 line)	Solok W. Sumatra	3	1.6	240.9	100	0.10
B	Food process -ing	Processed coconut (2 lines)	Makassar S. Sulawesi	8	12.4	54.1	50	−0.01
C	Textiles	Clothes (7 lines)	Garut W. Java	15	8.3	21.4	−14	0.04
D	Textiles	Clothes (1 lines)	Majalaya W. Java	55	87.5	260.0	0	−0.23
E	Footwear	Shoes (6 lines)	Bantul C. Java	7	19.3	35.8	0	−0.01
F	Ceramics	Pottery (5 lines)	Purwakarta W. Java	9	5.8	249.9	120	−0.13
G	Metal working	Knives, pans (7 lines)	Bedagai N. Sumatra	6	18.2	37.5	0	0.03
H	Wooden furniture	Rattan chairs (5 lines)	Margasari Ulu S. Kalimantan	90	11.4	121.5	40	0.05

* The number of product lines one month before training
** N: North, S: South, E: East, W: West, C: Central
Source: Author's own calculation

Firm A, which is not even registered, with only three employees, added a new product and sold its existing product in a larger quantity at a higher price. Firm H was also able to sell all five existing products in larger quantities with four of their products at higher prices, in addition to introducing new products. Firm C, which produces hand-weaved clothes, decreased the number of product items but improved the design of their remaining products with a wider variety of motifs and colours. Such actions enabled Firm C to sell larger quantities of three products even at higher prices. Firm G, which is a blacksmith-type cottage industry, was able to sell six products among its seven existing products in larger quantities, despite increasing the prices of four products.

Product development by these firms may have probably been induced by the training provided to them. Table III-9 indicates the curriculum distribution of the training programmes in which the sample enterprises participated. More than half of the curriculum focused on production technology for product development and introduced production methods whose level was relatively low-level but sufficiently high to these firms

Table III-9. Curriculum distribution of trainings

Location	*Theme*	*Curriculum (%)**		
		Process	*Product*	*Others*
Bandung	Developing a weaving design on natural material	20	66	14
	Developing a knitting design on natural material	24	60	16
	Raw material preparation for earthenware and stone ware body of pottery for plastic forming and slip casting	4	74	22
Yogyakarta	Technology of footwear manufacturing	8	76	16
	Art paper-making process from agriculture waste	3	86	11
Medan	Heat treatment process for metalworking quality improvement	9	86	5
Padang	Quality improvement and diversification of fishery products	5	68	27
Palembang	Human resource competency of rubber goods	4	54	42
Bandar Lampung	Food safety for MSMEs	8	54	38
Pontianak	Application and remedial of ISO9001-2000 quality management system	78	0	22
Banjar Baru	Quality improvement of rattan knitting	16	67	17
Makassar	Technology and management of various chocolate products	0	65	35
Manado	Managerial and technological aspects of coconut processing	6	72	22
Ambon	Quality improvement of clove oil	5	72	23
Average		14	64	22

* Process: process improvement skills; Product: production processing skills; Others: general management and site visits

Source: Compiled by the author from the ‘minutes of meeting between the Japan International Cooperation Agency and the Ministry of Industry on the In-Country Training Programme on Technology and Management Improvement for Small and Medium Enterprises’ (November 2008, January 2009)

Besides product development, another key factor for profit growth is decreases in the unit raw material cost. As Table III-9 shows, sessions pertaining to process improvements were not dominant in the training programmes. However, firms participated in such training could still largely reduce unit raw material costs. In Table III-8, Firms B, D, E, and F decreased their unit raw material

costs. The share of process improvement curriculum in the course that Firm B attended was 20 per cent, and the share of process improvement curriculum in the courses that Firms D, E, and F attended ranged from zero to eight per cent. How was the reduction in unit raw material costs possible with such a low share of process improvement curriculum?

The level of technology taught at the training was again relatively low, such that participants can apply it within a short period without making a large investment. Therefore, many firms could work on product development. I assume that many firms had to change their actual production systems to apply the lessons learned in production technology training. As a result, the curriculum aimed at product development also worked to improve the effectiveness of production process.

Table III-10. Unit raw material cost changes and curriculum participation

Dependent variable		Unit raw material cost change			
					Coefficient
Independent variable		Share of product development curriculum			−0.003* (0.002)
		Share of process improvement curriculum			−0.004* (0.002)
N	85	*R sq*	0.047	*Adjusted R sq*	0.024

Notes: Standard errors are in parentheses. ***, ** and * indicate the statistical significance of the coefficients at the 1%, 5% and 10% levels, respectively. The ceramic industry was omitted because of collinearity.
Source: Author's own calculation

For example, the training in Makassar for the food processing industry included no process improvement classes. Among the sample firms from this course, 55 per cent worked on product development, and all of those firms decreased their unit raw material costs. In contrast, among the participants of the course in Pontianak, which contained no production technology classes, 75 per cent decreased their unit raw material costs, but only 25 per cent worked on product development. Learning production technology for product development influenced unit raw material cost reduction, but the reverse was true. Table III-10 shows the results of the linear regression estimation with unit raw material cost changes as a dependent variable and with the shares of product development

curriculum and process improvement curriculum as independent variables. The share of product development curriculum was negatively correlated with unit raw material cost change. The result was the same for the share of process improvement curriculum.

Moreover, the existence of business partners was not statistically significantly correlated with the profit growth. SMEs usually need to have business partners, especially when entering wider markets. I discuss the influence of business partners on sales market expansion in Chapter IV.

Finally, I would like to emphasize that the estimation results are well consistent with what I had observed in the field through the training that may not be reflected in quantitative data. For example, one firm located in Tulehu village in the suburb of Ambon (one hour by car), Maluku Province, produces smoked tuna. This firm is informal and micro firm, not yet registered with only three employees. Their way of production before the female owner participated in a training course on fish processing was to smoke fish in an open area in owner's house as is shown in Figure III-2. They sold approximately 30 fish per day before training at the price of Rp24,000 to 30,000 depending on the price of fresh fish they bought from fishermen at the port nearby (Rp10,000 to 15,000 per fish). Coconut shell has been used as fuel. It costs Rp15,000 per day. At a training course the owner learned the way to improve quality, washing fish with salted water before smoking, cooling down smoked fish in a closed basket to avoid flies, and cutting fish head and tail so that all fish look the same in shape. The owner also learned how to use new equipment, a steel smoking box shown in Figure III-2. The cost of this equipment was Rp10 million.

The owner of this firm applied the method she learned at the training course and could improve the quality of their smoked fish. It was not difficult for consumers to see the changes in colour and taste, eventually the sales volume increased by approximately 100 per cent (to 60 smoked fish per day). There was another benefit brought by new production method. Workers of this firm started working at two in the morning every day before the training, but now they start working at four because the new production system with a closed box reduced production time. The

consumption of fuel, coconut shell, was also reduced, thus unit material costs per fish decreased. As a result, their monthly gross profit increased by more than 100 per cent. This firm's investment of new equipment, Rp10 million, was covered by the increase of monthly gross profit. Accordingly this informal micro firm owned by a woman had increased gross profit by increasing sales volume and reducing costs, although they remained in the market of their home village by introducing a new production system to improve product quality. The experience of this firm confirms the estimation results that even small informal firm can increase their profit by improving the quality of their products. The case of this firm also shows that efforts for product development improves the production process, thus, contributes to reducing costs of production.

Figure III-2. Comparison of production system at smoked fish firm

Traditional method (before training) Smoked fish production box (after)

Source: JICA Expert to Indonesian Ministry of Trade

7. Conclusions

This chapter discussed critical factors in the profit growth of low-technology SMEs. From the linear regressions, SME's profit growth is found to be correlated with product development, i.e., developing new products and improving the quality of existing products, and process improvement, i.e., reducing unit material costs. The estimation results justify conclusions of the existing literature regarding the effects of SME operations. In addition, firm characteristics, such as firm size, firm age,

or access to finance, are uncorrelated with profit growth, product development, or process improvement. These results are consistent with the cases observed by the author.

Can all of the results above be applied to the majority of SMEs in Indonesia? I now consider the characteristics of the Indonesian market with Wedel's (2000) observable segmentation bases of the market: 1) cultural, 2) geographic, 3) demographic, and 4) socio-economic aspects. First, with respect to cultural aspects, Indonesia is an ethnically diversified country (Okten & Osili 2004). Ethnically different people traditionally speak their own language, not Indonesian, and they live different life-styles. Preferences for products in the taste of food or the design of clothes and goods may differ among markets consisting of different ethnicities. Second, Indonesia is a large country in geographic term. The country extends from 6º08'N to 11º15'S vertically and from 94º45'W to 141º05'E horizontally, and it has more than 17,000 islands in total (Government of Indonesia 2010a). Each province in Indonesia is also relatively large in area. Maluku Province has a population of only 1.5 million, but it is more than 500 km from Ambon, the provincial capital, to distant islands in the province (Government of Indonesia 2010a). Third with respect to demographic aspects, the population of Indonesia is large at 238 million. Approximately 137 million live on Java, while more than 10 million live on other major islands, i.e., Sumatra, Kalimantan, and Sulawesi (Government of Indonesia 2010a). The largest province, West Java, has a population of 43 million (Government of Indonesia 2010a), which is greater than the populations of many countries in the world. Therefore, the size of each market is not small. Fourth, with respect to socio-economic aspects, Indonesia is a middle-income country of which 2008 GDP per capita was USD 2,178 (World Bank). However, researchers have observed that Indonesian consumers were optimistic in 2008 (Prasetyo & Yuliatiningsih 2009). Purchasing power in Indonesia was higher than other countries at similar economic level.

Considering the third and fourth aspects discussed above (demographic and socioeconomic aspects), I assume that it is possible to apply the results, in which profit is increased by introducing

new products, improving the quality of existing products or by decreasing costs, to other SMEs in Indonesia as long as SMEs have the ability to absorb production technology without great investments. However, it is difficult to conclude whether SMEs can be profitable when first and second (cultural and geographic) aspects are considered. I will discuss the association of one of these aspects, geographic aspect, with firm characteristics and operations in the next chapter.

Chapter IV. Empirical Evidence of the Geographic Expansion of Sales by SMEs

In Chapter III, I discussed factors for profit growth and concluded that operations focused on product development and process improvement in the existing market provide low-technology SMEs with more opportunities for growth. For further development, firms need to expand their sales market; nonetheless, the risk in harming profitability in short term. The determinants of market expansion have been studied extensively. Existing studies typically divide markets into two groups; domestic and foreign markets. This chapter examines what factors promote the growth of SMEs with a focus on geographic market expansion. The remainder of this chapter is organised as follows. Section 1 reviews the existing literature, and Section 2 discusses studies and cases in the context of Indonesia and provides hypotheses. Section 3 presents the estimation methodology, and Section 4 explains the data. Section 5 shows the estimation results, and Section 6 discusses the results. Section 7 concludes this chapter.

1. Literature review

In this section, I review the literature discussing the determinants of export decisions because the export of goods is a type of market expansion and the literature has broadened in recent years. The factor variables are categorised into three types: (1) productivity, (2) the existence of business partners, and (3) firm size. First, Melitz (2003) theoretically argues that exporting goods involves initial marketing and product modification costs and that a more productive firm that is able to pay back the initial costs, is more likely to export goods. Many empirical studies that use firm-level data find evidence supporting the theoretical prediction of Melitz (2003), as summarised by Bernard et al. (2007), Madsen and Servais (1997), and Wagner (2007). Crick and Jones (2000) find that this prediction also holds true for SMEs from case studies in the UK.

Second, relationships with business partners who can serve as intermediaries in SME attempts to reach distant markets can stimulate market expansion. For example, multinational enterprises (MNEs) can serve as intermediaries in the case of exporting. It is documented that SMEs gain essential knowledge concerning the process of exporting from MNEs and foreign buyers (Acs et al. 1997; Aitken, Hanson & Harrison 1997; Ghauri, Lutz & Tesfom 2003; Lim & Kimura 2010; Lu & Beamish 2001). Expanding business networks with buyers can result in SME expansion of sales markets (Crick & Spence 2005; Fuller-Love & Thomas 2004; Lin & Chaney 2007; Zain & Ng 2006). In addition, Jayawarna, Jones, and MacPherson (2011) note the positive influence of social networking based on relationships with business development service providers that contribute to business transaction networks with buyers. Collaboration among manufacturing SMEs in industrial clusters allows an SME to expand its sales market by lowering its risk and market barriers (Peng & Ilinitch 1998; Schmitz & Nadvi 1999).

Third, the aforementioned empirical studies on exporting also find that firm size is another major determinant of the decision to export, as firms with sufficient human and financial resources are more likely to pay the initial costs of entry. Again, similar evidence is found for SMEs (Ceglie & Dini 1999; Das 1994; O'Cass & Weerawardena 2009; Wincent 2005). Examining case studies from Ethiopia, Zhang, Moorman, and Ayele (2011) observe that cluster activities are effective for rural handloom weaving enterprises that face financial constraints.

2. Hypotheses in the context of Indonesia

Based on the literature described in Section 1, the degree of market expansion in Indonesia of each SME ―that is, the markets in which it sells its products― depends on productivity, the level of relationships with business partners, and firm size.

Evidence that is consistent with the findings of existing studies has also been found in Indonesia. Berry, Rodriguez, and Sandee (2002), Sandee, Isdijoso, and Sulandjari (2002), Sandee and Rietveld (2001), and Tambunan (2005) find a positive effect of product development and production process improvement on export decisions, although they did not study the effect of productivity directly. Those researchers employ case studies of industrial clusters from the wood furniture, garment, and handicraft industries. However, it is difficult to observe a clear effect of productivity from the cases in Table IV-1 that I observed. The monthly gross profit per employee of a producer of fried banana chips in West Sumatra in case 2 of sales in the same province, is Rp1.3 million. The monthly operation profit per employee of a producer of snacks in West Kalimantan in case 4 of sales in other provinces, is Rp0.98 million, whereas the operation profit per employee per month of another type of fried banana chips in West Sumatra in case 1 of sales in the same region is Rp35 million. The case 1 firm has generated larger profits than the firms in cases 2 and 3, although the case 1 firm operates in a narrower market. Furthermore, the cases in Table I-2 in Chapter I show that even an informal firm that sells only in its own village has relatively high productivity.

The diffusion of knowledge from foreign buyers necessary for exporting is documented in the theoretical work by Berry, Rodriguez, and Sandee (2001), Geenhuizen, Indarti, and Soetanto (2010), Weijland (1992), and Wiklund and Shepherd (2003). According to Tambunan (2008), who examines cases of the metalworking industry in Tegal, Central Java Province, networks with large distant firms encourage the market expansion of SMEs. The cases in Table IV-1 are consistent with the above mentioned studies. Relationships with business partners and firm size appear to be important for sales market expansion even for these cases. Case 4 involving sales in other provinces, a snack producer in West Kalimantan, found a business partner at an exhibition and was able to expand its sales market to Riau Islands Province, which is not even on Kalimantan Island. As a result, the firm was able to increase its operating profit by more than Rp10 million. Case 5 involving sales in foreign countries, a producer of ceramic vases in West Java, also established contact with

intermediaries at exhibitions and was able to sell 30 per cent of its sales to various countries throughout the world.

Table IV-1. Cases from the preliminary survey

Case 1: sales in the same region	
Firm	Location: Padang, West Sumatra; owner: man Number of employees: 4, Established by owner's father
Product	Fried banana chips
Sales area	Same district
Changes after training	Improved hygienic matters (changed production method and registered at Ministry of Health) + Developed new product Price (per pack 500g): Before Rp10,000, After Rp20,000 Cost (including salary): Rp7,500/pack, banana (one cluster) Rp20,000 (possible to produce 6~8 packs), Purchase of raw material banana is from West Sumatera and North Sumatera by a car; hence, an increase in gasoline prices also has an influence Sales: Approximately 500 packs/day
Comparison	Operation profit (calculated based on this condition: work for 6 days a week, sales of 500 packs for 4 days and 400 packs for 2 days) Before: (Rp10,000－Rp7,500)×(500×4 days＋400×2 days)＝Rp7mil/week After: (Rp20,000－Rp7,500)×(500×4 days＋400×2 days)＝Rp35mil/week Increase: Rp28mil/week, Rp108mil/month Need to purchase equipment to improve hygienic issues (Rp30mil), months needed to purchase necessary equipment (price / increased monthly profit): 0.3 months
Case 2: sales in the same province 1	
Firm	Location: Solok, West Sumatra; owner: woman Established in 2004, Number of employees: 3 Obtained industry and trade licenses, submitted for Ministry of Health registration
Product	Fried banana chips, cakes Price: Rp5,000/200g, Rp6,000 (with additional tastes), Rp500/30g Cost: Rp3,000 (banana Rp100, plastic bag, etc.) Deliver to super markets twice a week large 200/delivery (before 150), small 900/week
Customer area	West Sumatera
Changes after training	Developed new flavours of chips (e.g., chocolate taste) Improved packaging
Other info.	Problem: oil price increase
Comparison	Monthly gross profit Before: (Rp5,000－Rp3,000)×150/delivery×2 times×4 weeks＋Rp200×900×4 weeks ＝Rp2,400,000＋Rp720,000＝Rp3,120,000 After: (Rp5,000－Rp3,000)×200/delivery×2 times×4 weeks＋Rp200×900×4 weeks ＝Rp3,200,000＋Rp720,000＝Rp3,920,000 Increase: Rp800,000
Case 3: sales in the same province 2	
Firm	Location: Pontianak, West Kalimantan; owner: woman Established in 2001, Number of employees: 5 Already have registration no. from Ministry of Health

Product	Snack made of Aloe Price: Before Rp6,000/200g, sales 50 packs/week, 1 process/week After: Rp8,500, sales 200 packs/week, 3 processes/week Cost: After Rp285,000/process (including salary)
Customer area	West Kalimantan
Changes after training	Before: Only one flavour, only 1 shop sold After: Added more flavour and changed packaging, increased to 9 shops Changed processing in the last process without splaying sugar
Comparison	Monthly operating profit Before: (Rp6,000 x 50 packs－Rp285,000) x 4 weeks＝Rp15,000 x 4＝Rp60,000 After: (Rp8,500 x 200 packs－Rp285,000 x 3 processes) x 4 weeks ＝(Rp1,700,000－Rp855,000) x 4＝Rp845,000 x 4＝Rp3,380,000 Increase: Rp3,320,000/month Need packaging machine (Rp10mil), a month necessary to purchase machine with increased profit: 3 months
Case 4: sales in other provinces	
Firm	Location: Pontianak, West Kalimantan; owner: woman Established in 2000, Number of employees: 23 Already have registration no. from Ministry of Health
Product	Snack made with aloe Production: Before 25～30kg/day, After 40~50kg/day Price: Rp4,000/100g, Rp35,000/kg Cost: More than Rp1mil/process, 1 process/day
Customer area	West Kalimantan, Riau Islands (found business partner at exhibition in Pontianak)
Changes after training	Improvement in how to clean raw materials Changed process of colouring food products
Comparison	Monthly operating profit Before: (Rp35,000×30kg－Rp1,000,000)×30 days＝Rp1,500,000 After: (Rp35,000×40kg－Rp1,000,000)×30 days＝Rp12,000,000 Increase: Rp10,500,000
Case 5: sales in foreign countries	
Firm	Location: Bandung, West Java; owner: man Established in 1980, Number of employees: 25
Product	Large ceramic vase Produce 40/day, raw material from West Java
Sales area	70% domestic market (throughout the country), 30% export (e.g., Spain, US, Middle East, made contact with intermediaries at exhibitions)
After training	Changed layout of factory to improve production management

Source: Compiled by the author based on the results of visits to firms

The firm size issue is discussed by Burger, Kameo, and Sandee (2001) based on the concept of clusters. Clusters offset the resource constraints of SMEs, enabling SMEs to target external markets despite the presence of uncertainty and risk. With respect to case 4 involving sales in other provinces and case 5 involving sales in foreign countries in Table IV-1, these two firms have 23 and

25 employees, respectively, which is larger than the other case firms in narrower markets, which have three to five employees. These results are consistent with the findings of existing studies.

Another aspect that shows a clear tendency from the cases in Table IV-1 is the difference in industries. No firm in the food processing industry sells its products in other provinces, especially on other islands or foreign markets. Sandee and Rietveld (2001) discuss the influence of transport facilities on rural firm access to urban markets in Indonesia. It is assumed that small firms in the food processing industry in Indonesia do not have sufficient facilities for producing products with a certain hygiene level, given the long distance to other provinces, especially to other islands.

Based on the facts above, I hypothesise that relationships with business partners and firm size have positive effects on the expansion of sales markets. I also consider that certain industries have either positive or negative effects and that productivity is not crucial to sales market expansion, as even firms that compete only in a district-level market can have relatively high productivity.

3. Estimation methodology

To test the hypotheses, I first develop an ordered logistic estimation in which the dependent variable is the stage of the sales market as follows.

$$Mk_i^* = \alpha + \beta_1 Prod_i + \beta_2 Size_i + \beta_3 Bizp_i + \beta_4 Java_i + \beta_5 (Prod_i \times Sec_i) + \beta_6 (Size_i \times Sec_i) + \beta_7 (Bizp_i \times Sec_i) + \varepsilon_i$$

$$Mk_i = k \; if \; Market_i = \alpha_{k-1} < Market_i^* \leq \alpha_k$$

$$\begin{cases} 1 \; if \; Market_i = Home \; city \; or \; region \\ 2 \; if Market_i = Home \; province \\ 3 \; \; if Market_i = Other \; provinces \\ 4 \; \; if Market_i = Foreign \; countries \end{cases}$$

The data used in this study enable the categorisation of a dependent variable, the sales market stages of each SME into four groups (Mk): (1) selling products in the home region or city

only, (2) selling products in other regions and cities in the home province, (3) selling products in other provinces, and (4) selling products abroad. Cultural borders also indicate differences in consumer preferences. However, the issue of cultural borders is beyond the scope of this study and thus is not included in the model. The independent variables include gross profit per employee, which measures the productivity level (Prod), and the number of employees, which measures firm size (Size). A dummy variable is used for business partners that sell products in distant markets to measure the effect of business relationships (Bizp). A dummy variable for Java firms is used for the location (Java). Variables to examine the effect according to industry differences are also included to account for intrinsic differences across regions and industries (Sec). Industry variables are included in the interaction terms for each sector and variables related to productivity, firm size, and business partners.

An ordered logistic estimation may not be appropriate because such estimations assume that the effect of each independent variable is the same for any change in market stage at each step. For example, it is assumed that a 10 per cent increase in the productivity level has the same effect on the change in probability that an SME will expand its market from the city level to the province level and from the other province level to the foreign country level. This assumption may be inaccurate because the initial costs of market expansion and the importance of each factor may vary depending on the stage of market expansion. For example, transportation costs between islands are high (Lim & Kimura 2010), and the costs of market expansion beyond the home island are higher than the costs of expansion beyond the home village to other villages. Therefore, a multinomial logistic estimation, in which each SME chooses one stage of market expansion depending on its characteristics is also utilised, as shown below. In this estimation, each factor can have a different effect on the different stages of sales market expansion.

$$Mk_{1i}^{*} = \alpha_1 + \beta_{11}Prod_{1i} + \beta_{21}Size_{1i} + \beta_{31}Bizp_{1i} + \beta_{41}Java_{1i} + \beta_{51}(Prod_{1i} \times Sec_{1i}) + \beta_{61}(Size_{1i} \times Sec_{1i}) + \beta_{71}(Bizp_{1i} \times Sec_{1i}) + \varepsilon_1$$

$$Mk_{2i}^{*} = \alpha_2 + \beta_{12}Prod_{2i} + \beta_{22}Size_{2i} + \beta_{32}Bizp_{2i} + \beta_{42}Java_{2i} + \beta_{52}(Prod_{2i} \times Sec_{2i}) + \beta_{62}(Size_{2i} \times Sec_{2i}) + \beta_{72}(Bizp_{2i} \times Sec_{2i}) + \varepsilon_2$$

$$Mk_{3i}^{*} = \alpha_3 + \beta_{13}Prod_{3i} + \beta_{23}Size_{3i} + \beta_{33}Bizp_{3i} + \beta_{43}Java_{3i} + \beta_{53}(Prod_{3i} \times Sec_{3i}) + \beta_{63}(Size_{3i} \times Sec_{3i}) + \beta_{73}(Bizp_{3i} \times Sec_{3i}) + \varepsilon_3$$

A major econometric issue with respect to these estimations is endogeneity. For example, when SMEs aim to expand their sales market, they may seek business partners in the target market. Therefore, a positive correlation between the level of market expansion and the presence of business partners in distant markets does not necessarily indicate causality from business relationships to market expansion but rather indicates causality from the intention of market expansion to business relationships. Moreover, reverse causality from market expansion to the productivity level through learning, and from market expansion to firm size through sales growth, is possible. However, as is typical, the data used in this study do not include any variable that would be appropriate to use as instrumental variables. The use of lagged independent variables alleviates possible biases resulting from such endogeneity. The data for the dependent variable indicate the situation three month after training, whereas the data for the independent variables indicate the situation one month before training. Thus, the independent variables are lagged three months behind the dependent variable. Biases resulting from endogeneity remain; thus, the results should be interpreted with caution.

4. Data description

Among 163 individuals who completed the survey, some participants were from the same firm; in such cases, I used only one response. Some responses were incomplete and were thus eliminated from our sample. Data from 104 firms were used in our estimations. Tables IV-2 summarises the descriptive statistics of the sample, including summaries by market stage.

Table IV-2. Summary of the sample firms

	Variable	*Mean*	*Median*	*Std. Dev.*	*Min.*	*Max.*
Total (N=104)	Number of employees	20.087	6	41.380	1	278
	Number of product lines	3.125	2	2.534	1	12
	Net sales per month (rupiah)	393 mil.	14.0 mil.	2 .07 bil.	215,000	19.4 bil.
	Gross profit per employee (rupiah)	16.6 mil.	1.0 mil.	127 mil.	23,182	1.28 bil.
	Business partner	0.500	0	0.502	0	1
	Light industry	0.856	1	0.353	0	1
	Java	0.433	0	0.498	0	1
Stage 1 (home region or city) (N=28)	Number of employees	8.964	5	11.657	2	55
	Number of product lines	2.250	1	1.898	1	8
	Net sales per month (rupiah)	30.7 mil.	9,800,000	8.2 mil.	215,000	432 mil.
	Gross profit per employee (rupiah)	954,677	678,333	995,055	54,667	5.13 mil.
	Business partner	0.321	0	0.476	0	1
	Light industry	0.929	1	0.262	0	1
	Java	0.393	0	0.497	0	1
Stage 2 (home province) (N=26)	Number of employees	11.885	6	21.108	1	93
	Number of product lines	2.962	3	2.107	1	7
	Net sales per month (rupiah)	404 mil.	14.7 mil.	1,390 mil.	850,000	7 bil.
	Gross profit per employee (rupiah)	51.9 mil.	1,292,381	250 mil.	280,000	1.28 bil.
	Business partner	0.385	0	0.496	0	1
	Light industry	0.769	1	0.430	0	1
	Java	0.308	0	0.471	0	1
Stage 3 (other province) (N=35)	Number of employees	17.543	8.5	20.058	2	90
	Number of product lines	4.057	3	3.115	1	12
	Net sales per month (rupiah)	636 mil.	15.7 mil.	3,270 mil.	480,000	19 bil.
	Gross profit per employee (rupiah)	9.4 mil.	1,018,705	41.2 mil.	23,182	245 mil.
	Business partner	0.629	1	0.490	0	1
	Light industry	0.857	1	0.355	0	1
	Java	0.486	0	0.507	0	1
Stage 4 (foreign countries) (N=15)	Number of employees	61.000	21.5	91.314	4	278
	Number of product lines	2.867	1.5	2.231	1	7
	Net sales per month (rupiah)	483 mil.	43.8 mil.	1,270 mil.	2.5 mil.	4.93 bil
	Gross profit per employee (rupiah)	1.5 mil.	1,168,750	1.6 mil.	0.3 mil.	4.74 mil.
	Business partner	0.733	1	0.458	0	1
	Light industry	0.867	1	0.352	0	1
	Java	0.600	1	0.507	0	1

Source: Author's own calculation

The mean and median of the number of employees at each stage increase as each stage progresses. A similar trend can be observed for net sales per month, except for the mean in stage 4. However, this pattern does not apply to the gross profit per month per employee. Essentially, the

samples are spread out over a large range. For example, the standard deviation of the gross profit per month per employee for the total sample is Rp127 million, while the mean is Rp16.6 million.

The dependent variable is the stage reached by an SME. For this study, I consider four stages of sales market expansion in Indonesia, to characterise local government boundaries and geographic characteristics. The sales market expands with each new stage. Stage 1, which includes selling products in the home region or city, is denoted as unity; Stage 2, which involves selling products in other regions and cities in the home province, is 2; Stage 3, which includes selling products in other provinces, is 3; and Stage 4, which involves selling products abroad, is 4. The independent variables are the log of gross profit divided by the number of employees, the log of the number of employees, a dummy variable for business partners, and a dummy variable for Java. As in Chapter III, the gross profit is the sales revenue minus the cost of raw materials. The dummy variable for business partners indicates whether the sample firms have business transactions with other enterprises. Business partners are sales agents that sell the products produced by SMEs. In other cases, business partners are large manufacturers to which SMEs supply products. The dummy variable for Java is used for locations because Java dominates the national economy. I also add the interaction terms of variables for productivity, firm size, and the existence of business partner with industry dummies to examine variations of correlations across industries.

5. Estimation results

The results from the estimated ordered logistic model are shown in Table IV-3.

Table IV-3. Estimation results 1 (Ordered Logistic Regression)

Dependent variable:		Sales market				
		(1)	(2)	(3)	(4)	(5)
ln (Gross profit / No.of employees)	*Coefficient*	0.137	0.137*	−0.091	0.202	0.209
		(0.122)	(0.120)	(0.361)	(0.134)	(0.137)
	ME	0.013	0.014	0.015	−0.034	−0.035
		(0.012)	(0.012)	(0.061)	(0.023)	(0.024)
ln (Number of employees)	*Coefficient*	0.651***	0.721***	0.890***	1.428**	0.885***
		(0.178)	(0.177)	(0.214)	(0.755)	(0.227)
	ME	0.061***	0.073***	−0.149***	−0.240*	−0.149***
		(0.020)	(0.022)	(0.038)	(0.128)	(0.040)
Business partner	*Coefficient*	0.963**		0.763*	0.926**	1.379
		(0.381)		(0.399)	(0.413)	(1.767)
	ME	0.092**		−0.128*	−0.155**	−0.232
		(0.040)		(0.067)	(0.070)	(0.297)
Location in Java	*Coefficient*	0.553	0.533	0.587	0.599	0.565
		(0.379)	(0.377)	(0.412)	(0.411)	(0.412)
	ME	0.054	0.056	−0.096	−0.098	−0.093
		(0.039)	(0.041)	(0.066)	(0.066)	(0.067)
ln (Gross profit / No.of employees) x Light industry	*Coefficient*			0.377		
				(0.392)		
	ME			−0.063		
				(0.066)		
ln (No.of employees) x Light industry	*Coefficient*				−0.629	
					(0.789)	
	ME				0.105	
					(0.132)	
Business partner x Light industry	*Coefficient*					−0.593
						(1.859)
	ME					0.102
						(0.324)
Light industry	*Coefficient*			−4.263	3.814	1.730
				(6.174)	(3.113)	(1.143)
	ME			0.327	−0.741	−0.371
				(0.240)	(0.341)	(0.266)
ln (Gross profit / No.of employees) x Metal & chemical industry	*Coefficient*			−0.149		
				(0.731)		
	ME			0.025		
				(0.122)		
ln (No.of employees) x Metal & chemical industry	*Coefficient*				−0.275	
					(1.651)	
	ME				0.046	
					(0.277)	
Business partner x Metal & chemical industry	*Coefficient*					−0.606
						(2.133)
	ME					0.118
						(0.467)
Metal & chemical industry	*Coefficient*			4.317	4.249	2.757**
				(10.926)	(3.949)	(1.324)
	ME			−0.277	−0.276	−0.237
				(0.247)	(0.099)	(0.060)
N = 104	*Pseudo R sq:*	0.102	0.078	0.127	0.124	0.122

Notes: Standard errors are in parentheses. ***, **, and * indicate the statistical significance of the coefficients at the 1%, 5% and 10% levels, respectively. ME: marginal effect

Source: Author's own calculation

Column (1) is the baseline model, whereas column (2) excludes the dummy for the existence of business partners to examine correlations of firm characteristics with market stages. The insignificant correlation between the location variable and sales market may be due to multicollinearity between the location variable and the variable for firm operation, business partner that is significantly correlated with sales market. Therefore, I drop the variable for business partner from the set of independent variables and run the same regression. Columns (3)-(5) incorporate the interaction terms between profit per worker, the number of employees, or the business partner dummy and industry dummies to examine possible industry differences.

In column (1) in Table IV-3, the coefficients of the number of employees and the dummy for having business partners were statistically significant. Because the coefficients on the interaction term with the industry dummy are insignificantly different from zero, I reject the hypothesis that the coefficients on the number of employees and the business partner dummy differ across industries. In addition, the productivity measure is not significantly correlated with market expansion. These results of the estimation from the ordered logistic model are consistent with the hypotheses.

The results from the multinomial logistic model are shown in Table IV-4[2] and Figure IV-1 shows graphical presentation of these relations. As in Table IV-3, column (1) of Table IV-4 is based on the baseline estimation, whereas I dropped the dummy for business partners to avoid multicollinearity in column (2) and incorporated interaction terms to examine industry heterogeneity in columns (3)-(5). I found three key results, indicating that different firm characteristics and operations are correlated with different stages. First, when the productivity level of SMEs is higher, the probability that the SME is in Stages 2-4 (i.e., selling products beyond the home city) is higher. In column (1), the productivity level is not correlated with the probability that the SME is in Stage 4 (exporting). However, this result is probably due to multicollinearity between the productivity level

[2] Because I did not find any industry variation from the ordered logit estimation, I do not incorporate the interaction terms with industry dummies.

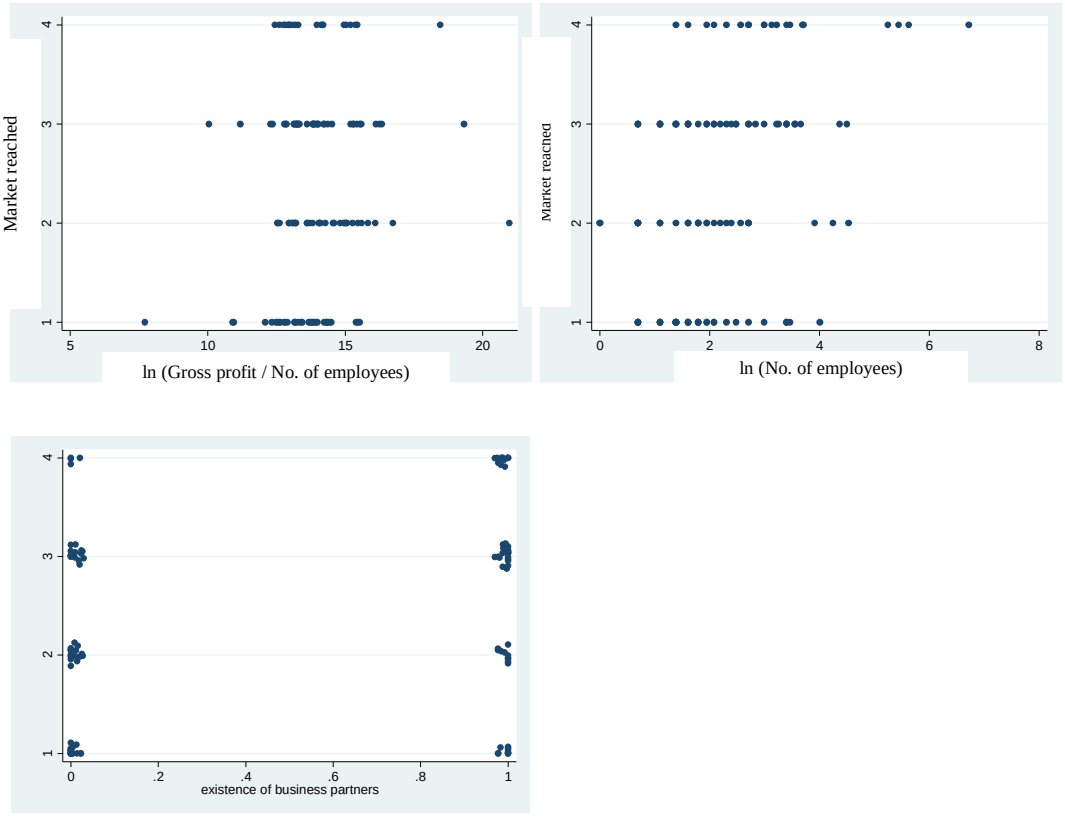
and the business partner dummy, as the correlation is significant in column (2) when the business partner dummy is dropped. Second, firm size, measured by the number of employees, is correlated with the probability of selling products beyond the home province. Third, having a business partner is positively correlated with the probability of exporting.

Table IV-4. Estimation results 2 (Multinomial Logistic Regression)

Dependent variable:		Sales Market						
			(1)			(2)		
Independent variable		*Stage 1 (home city)*	*Stage 2 (home province)*	*Stage 3 (other provinces)*	*Stage 4 (foreign countries)*	*Stage 2 (home province)*	*Stage 3 (other provinces)*	*Stage 4 (foreign countries)*
ln (Gross profit / number of employees)	*Coefficient*		0.709***	0.525**	0.380	0.542**	0.392**	0.442*
			(0.261)	(0.246)	(0.303)	(0.212)	(0.198)	(0.239)
	Marginal effect	–0.106***	0.070**	0.040	–0.005	0.055**	0.021	0.012
		(0.041)	(0.032)	(0.038)	(0.022)	(0.032)	(0.033)	(0.018)
ln (Number of employees)	*Coefficient*		–0.039	0.528*	1.172***	–0.089	0.438*	1.221***
			(0.340)	(0.306)	(0.381)	(0.282)	(0.252)	(0.332)
	Marginal effect	–0.081	–0.090*	0.081	0.090***	–0.094**	0.062*	0.103***
		(0.050)	(0.048)	(0.055)	(0.030)	(0.043)	(0.046)	(0.027)
Business partner	*Coefficient*		0.173	1.095	1.443*			
			(0.628)	(0.580)	(0.820)			
	Marginal effect	–0.154	–0.110	0.179*	0.085			
		(0.095)	(0.091)	(0.104)	(0.066)			
Light industry	*Coefficient*		–0.831	–0.478	–0.428	–1.289	–0.981	–0.132
			(0.972)	(0.999)	(1.377)	(0.907)	(0.930)	(1.340)
	Marginal effect	0.100	–0.101	–0.003	0.004	–0.152	–0.067	0.057
		(0.131)	(0.154)	(0.170)	(0.107)	(0.147)	(0.153)	(0.070)
Location Java	*Coefficient*		0.056	0.486	0.680	0.316	0.625	1.033
			(0.642)	(0.596)	(0.813)	(0.566)	(0.531)	(0.736)
	Marginal effect	–0.069	–0.055	0.081	0.043	–0.029	0.072	0.068
		(0.094)	(0.103)	(0.118)	(0.071)	(0.095)	(0.104)	(0.068)
N = 104	*Pseudo R-sq:*		0.150			0.131		

Notes: Standard errors are in parentheses. ***, **, and * indicate the statistical significance of the coefficients at the 1%, 5% and 10% levels, respectively.
Source: Author's own calculation

Figure IV-1. Distribution of sample firms



Source: Author's own compilation

One econometric issue in the analysis above is endogeneity of the covariates. It is possible that the correlations found here reflect reverse causality. For example, the number of employees is larger for SMEs selling products in larger markets, possibly because SMEs expand their firm size by entering larger markets, rather than because larger SMEs can enter larger markets. Because appropriate instruments are not available in this study, I cannot fully correct for possible biases due to endogeneity. Instead, I try to find exogenous factors that influence the endogenous covariates in ordered and multinomial logit estimations so that I can show some exogenous factors that ultimately affect geographic expansion of sales of SMEs.

Table IV-5. Estimation results 3

Dependent variable	ln (Gross profit / number of employees)	ln (Number of employees)	Business partner
Female owner	−0.650* (0.363)	0.212 (0.221)	−0.077 (0.565) −0.019 (0.141)
Registration	−0.096 (0.285)	0.723*** (0.173)	0.896* (0.473) 0.219* (0.112)
2000−Year of establishment	0.005 (0.015)	0.024** (0.009)	0.038 (0.024) 0.009 (0.006)
Food processing	−3.181* (1.607)	−0.191 (1.014)	−0.399 (1.394) −0.099 (0.345)
Textile	−0.396 (0.625)	0.666* (0.386)	−1.485 (1.266) −0.345 (0.249)
Footwear	−0.886 (0.598)	−0.519 (0.375)	−3.333*** (1.259) −0.596 (0.120)
Ceramic	Omitted	Omitted	−2.625* (1.344) −0.491 (0.138)
Metal processing	−1.654 (1.678)	−0.432 (1.057)	−0.225 (1.510) −0.056 (0.377)
Wooden furniture	−2.209** (0.949)	−1.094* (0.599)	2.097 (1.509) 0.388** (0.162)
Handicraft	−0.463 (0.700)	−0.092 (0.428)	Omitted
Chemical	−2.709 (1.697)	Omitted	Omitted
Java	−0.900 (0.902)	−1.268** (0.569)	1.598 (1.800) 0.377 (0.381)
Sumatra	1.044 (1.722)	−1.618 (1.088)	−0.925 (0.721) −0.227 (0.169)
Kalimantan	Omitted	Omitted	−2.431 (1.943) −0.478** (0.221)
Sulawesi	2.845 (1.779)	−1.770 (1.123)	omitted
Maluku	0.581 (2.092)	−2.398 (1.237)	omitted
N=103 *R-sq*	0.224	0.449	
Adj.-Rsq	0.126	0.385	0.152

Notes: Standard errors are in parentheses. ***, ** and * indicate statistical significance of the coefficients at the 1%, 5% and 10% levels, respectively. Logistic model was used for the estimation with business partner as dependent variable, upper results show coefficient and lower results show marginal effect. Some variables are omitted because of collinearity.

Source: Author's own calculation

Therefore, I run regressions of the three variables, productivity, the number of employees, and the existence of business partner on firm characteristics and location and industry dummies. The results shown in Table IV-5 indicate the significance of correlation between registration and firm size and between firm age and firm size. This may imply that registered or older SMEs are more likely to expand their sales beyond the home province through enlarging their size, although the interpretation is not formally tested. In addition, the existence of business partners is correlated significantly with registration. Business partners in distant areas may prefer having transactions with firms in more formalised manner.

6. Discussion of the results

Although the analysis above may be contaminated with endogeneity biases, I will carefully interpret the results with support of the existing literature and my own field observations.

One key finding from the results of the multinomial logistic estimations was the significant correlation of the productivity level with the probability of reaching Stages 2, 3 and 4, i.e., selling products in domestic markets beyond the home city. By contrast, firm size measured by the number of employees is positively correlated with the probability of reaching Stages 3 and 4, i.e., selling products beyond the home province, including exporting. These results imply that productivity improvement is more important in earlier stages of geographic expansion of sales, while firm size matters more in later stages. The latter result is probably due to the importance of initial costs of marketing in other provinces and foreign markets. Only large firms can cover such large costs.

Besides initial costs of exporting, there are a number of reasons why exporting requires large firm size. First, foreign buyers often request large quantities at one time, because exporting a small amount of products is too costly. Second, to export to foreign countries, developed countries in particular, firms are required to meet numerous compulsory standards (UNESCAP 2009). For

example, in the food processing industry, such standards include good manufacturing practice, hazard analysis and critical control point (HACCP), and the Euro-Retailer Produce Working Group Good Agricultural Practice (EUREPGAP). The Restriction of Hazardous Substances (RoHS) in the electrical and electronics industry is another such standard. To be certified under these standards, SMEs need a large number of workers engaging in certification processes and a large amount of investment in facility and equipment. These results are consistent with thick literature on effects of productivity and firm size on firms' internationalization (see Bernard and Jensen 2004 and Todo 2011, among many others).

These results are also related to the literature on development of small firms located in industrial clusters in less developed countries. In particular, Sonobe and Otsuka (2006) and Sonobe, Suzuki, and Otsuka (2011) find that early stages of cluster development are driven by increases in production quantities whereas its later stages are driven by quality improvement. Combined with their findings, my finding suggests that a firm in an industrial cluster in early stages of cluster development can be stagnant without going beyond the home region or city with respect to sales market of their products due to lack of high quality required in larger markets. However, once sufficient number of firms in the cluster reaches stages of quality improvement, it can also expand sales to further markets beyond the home city. The access to further markets accelerates development of the cluster in the stage of quality improvement, which is observed in many cases examined in Sonobe and Otsuka (2006).

Another key finding from the ordered logit estimations is a positive and significant correlation between the existence of business partners and geographic expansion of sales. In addition, the multinomial logit estimations reveal that the correlation is greater for later stages of geographic expansion, i.e., stages beyond the home province. The importance of business partners outside the home region is also emphasized by Sonobe and Otsuka (2006) who particularly argued the role of traders in cluster development.

The firms in Table IV-6 are fair representations of our estimation results. For example, the productivity of Firms C, D, and E in Stage 2 is larger than that of Firms A and B in Stage 1. Firms F, H, and I in Stage 3 and 4 are relatively larger than most firms in Stages 1 and 2. When Firms B and F in the textile industry are compared, there are no clear differences in their product in terms of quality, operational method, or firm size. However, Firm F had connections with several organisations in West Java Province and was able to find business partners at exhibitions. In contrast, Firm B's connections reached only as far as Bandung, the capital of the same province, and the firm had no business partner as an intermediary.

Table IV-6. Examples of sample enterprises

Market reached	*Firm*	*Sector*	*Product**	*Location***	*No. of emplo -yees*	*Monthly revenue (mil Rp)*	*Gross profit / No. of employee (mil Rp)*	*Business partner*
S1	A	Food Process -ing	Processed fish (6 lines)	Lansano W. Sumatra	7	13.4	0.6	No
	B	Textiles	Clothes (1 line)	Tasikmalaya W.Java	30	12.0	0.3	No
S2	C	Food Process -ing	Chocolate (1 lines)	Palopo S. Sulawesi	15	330.0	1.0	No
	D	Footwear	Shoes (5 lines)	Yogyakarta	3	7.9	1.2	No
	E	Metal working	Knives, pans (7 lines)	Binjai Utara N. Sumatra	7	54.0	5.2	No
S3	F	Textiles	Clothes (4 lines)	Klaten C. Java	35	37.8	0.6	Yes
	G	Ceramics	Pottery (11 lines)	Bandung W. Java	17	59.3	1.7	No
	H	Wooden furniture	Rattan chairs (5 lines)	Banjar Baru S. Kalimantan	39	26.5	0.6	Yes
S4	J	Textiles	Islam clothes (4 lines)	Bogor W. Java	278	267.5	0.5	Yes

* The number of product lines one month before training
** N: North, S: South, E: East, W: West, C: Central
Source: Author's own calculation

Among these firms, the case of Firm J, which is located in West Java Province and producing Islamic clothing, is of particular interest. This firm was established in 2001 by a female owner who initially produced clothes and sold products by herself only in Bogor. In 2002, the owner employed

four workers but had remained stagnant for more than three years. In 2006, the owner formally registered her micro business, and she decided to pay more attention to product quality. By the end of 2006, it expanded sales beyond the local market, selling its products in a market located approximately one hour by car from the firm. In addition, the firm started to transact with 12 sales agents who are connected with retail shops in distant areas. The number of agents had increased continuously to 85 in 2007, 170 in 2008, and 210 in 2009. In 2007, as a result of the firm's efforts to improve quality management, it was certified ISO 9001:2000, an international standard for quality management. Then, in 2008, the firm started exporting to Singapore and Malaysia, because they were successfully connected with sales agents in these countries. The owner usually found sales agents in exhibitions such as Smesco and IndoCraft held in Jakarta. Clothes produced by this firm are with embroideries, for which more labours are required than for ordinary apparel products. Hence, the number of employees had increased to 20 in 2006, 137 in 2007, and 278 in 2008, as sales increased. Gross profit had also increased from Rp246 million in 2007 and, Rp477 million in 2008 to Rp1,073 million in 2009.

Figure IV-2. Production system at Islamic clothes firm

Embroidery Sewing

Source: JICA Expert to Ministry of Industry

Rapid growth of this firm has been recognised by many organisations supporting SMEs. This firm was awarded the 'Young Entrepreneur Award' by a newspaper company, *Bisnis Indonesia*, in

2009 and the 'SME Award' by the Indonesian Ministry of Cooperatives and SMEs. The experience of this firm confirms the estimation results that quality improvement is important in earlier stages of geographical expansion of sales then networks with business partners, while firm size is more important in later stages.

7. Conclusions

This chapter discussed the expansion of domestic sales markets by SMEs possessing relatively low-technological capabilities. The factors required to enter new markets differ depending on the geographical distance between existing markets and new markets.

In cases in which an SME sells its products only in the region or city where it is located, expanding its sales markets geographically requires productivity improvement. Hence, a relevant support measure may include productivity improvement training, which can enable participating firms to sell products in wider markets within their home province.

Firms that are able to achieve such a productivity level can pursue further stages, including domestic markets and foreign markets. The existence of business partners that understand new markets is important for the pursuit of wider markets beyond home provinces. Hence, at later stages, policies to match business partners, for example, promoting trade fairs and exhibitions and subsidising SMEs' travels to such trade fairs would help.

Can all of the above results be applied to most cases of low-technology SMEs in Indonesia? Again, I consider the characteristics of the Indonesian market with the market segmentation bases by Wedel (2000): 1) cultural, 2) geographic, 3) demographic, and 4) socio economic aspects, especially for the first and second aspects. Indonesia is an ethnically diversified country with different preferences and is geographically large with respect to cultural and geographic characteristics. Under such conditions, more resources are necessary when they go beyond a border of the local

government or a geographical unit. For example, when a next target market is in territories of different local governments, the information an SME has about societies and people decreases drastically. SMEs need to deliver products to different islands because they must use both land and sea routes. The effort and capital SMEs have to spend for market development do not increase proportionally. Moreover, transportation systems, including infrastructure to neighbouring provinces, are not yet well established. Firms face constraints when accessing other markets. Therefore, it is required to cover cost increases, such as the costs of transporting goods, for firms that do not have factories close to markets. More capital sources are needed, thus, larger firms tend to benefit in expansion of sales markets. It is also necessary for SMEs to have additional channels for accessing distant markets and for obtaining market information, thus, the importance of business partners can be applied to many SMEs in Indonesia in expanding their sales markets.

Chapter V. SMEs during the Global Economic Crisis

In Chapters III and IV, I discussed factors related to SME growth with respect to profit and sales market expansion. The estimation results showed that growth is largely influenced by firm operations. However, both types of growth can be hindered by a sudden change in external economic conditions, such as an economic crisis of which SMEs have no control.

For example, a ceramic producer in West Java that I observed was forced to reduce its number of employees from 22 to five because of the Asian financial crisis in 1997. The firm had not increased its number of employees since then. The same was observed for another case in West Sumatra. The producer of banana chips and fruit jelly was influenced by the earthquake near Nias Island in 2005 and reduced its number of employees from 50 to eight. Since that time, it has not regained its former size. After SMEs are influenced by sudden external shocks, it is difficult for them to recover to their previous levels because of debts acquired from external shocks and difficulties obtaining capital to reacquire facilities. SMEs are vulnerable to changes in economic and environment situations. Such effects can persist not only during disaster periods but also long after these incidents have occurred.

Countries in Southeast Asia experienced two significant periods of economic turbulence in the last two decades; the Asian financial crisis in 1997-1998 and the global economic crisis in 2008-2009. This chapter discusses SMEs' reactions to the global economic crisis compared with reactions to the Asian financial crisis and examines the factors that led SMEs to increase their sales even during the global economic crisis. The remainder of this chapter is organised as follows. Section 1 discusses the differences between the two economic crises and Section 2 reviews the existing literature in the context of Indonesia and presents the hypotheses. Section 3 presents the estimation methodology, and Section 4 explains the data. Section 5 shows the estimation results. Section 6 discusses the results and Section 7 presents the conclusions.

1. Differences of two crises

The Asian financial crisis was triggered by the rapid depreciation of the Thai Baht and spread to other Asian countries such as South Korea, Malaysia, Indonesia, and the Philippines. Currency depreciation and rising interest rates had caused production costs to increase, especially with respect to imported materials and capital costs increases for working and investment capital, resulting in declining investment (Harvie 2002; Lauridsen 1998). Consequently, the unemployment rate increased, and regional domestic demand collapsed (Deyo 2002; Harvie 2002, Patten, Rosengard & Johnston 2001; Ter Wengel & Rodriguez 2006a).

The global economic crisis of 2008 was catalysed by the sub-prime mortgage crisis in the US and spread to other high-, middle- and low-income countries throughout the world (Liu 2009; Udell 2009; Vandenberg 2009). This US-based crisis had significant global effects because of the reduction in the main export markets for middle- and low-income countries, such as the US and European Union (EU) (Cosh et al. 2009; Tambunan 2010). The global economic crisis caused sharp declines in exports (Liu 2009).

Table V-1. Major differences in the influences of two crises on Indonesian firms

		Asian financial crisis 1997-1998	Global economic crisis 2008-2009
Credit crunch		Yes	Yes
Currency (Rupiah) value to USD		−83.5*	−10.6**
Inflation rate		58.4% (1998)***	4.8% (2009)***
Market shrinking	Domestic	Yes	No
	Foreign	No	Yes

Source: * Calculated changes between the end of June in 1997 and 1998 with the interbank exchange rate
** Calculated changes between the end of June in 2008 and 2009 with the interbank exchange rate (http://www.oanda.com/lang/ja/currency/converter/)
*** World Bank World Development Indicator (http://data.worldbank.org/indicator)

Table V-1 shows the major differences between the two crises. During the Asian financial crisis in Indonesia, the rupiah-US dollar exchange rate depreciated by 83.5 per cent from the end of

June 1997 to the end of June 1998. Interest rates on most loans increased from 17 per cent per annum in mid-1997 to 36 per cent in 1998 (Patten, Rosengard & Johnston, 2001). The inflation rate in 1997 was 6.2 per cent, but it increased to 58.4 per cent in 1998 (World Bank). As a result, the rate of total investment as a percentage of GDP declined to 19.1 per cent in 1998 from its previous rates of more than 30 per cent throughout the 1990s until 1997 (Harvie 2002), after which the GDP decreased in 1998 by 13.1 per cent relative to the previous year (World Bank). Approximately 30 per cent of the enterprises that existed in 1994 closed (Ter Wengel & Rodriguez 2006b).

Conversely, during the global economic crisis, the rupiah-US dollar exchange rate depreciated by only 10.6 per cent between the end of June 2008 and the end of June 2009. A more serious problem that occurred was the shrinking of the main export markets, such as the US and EU (Cosh et al. 2009; Tambunan 2010). Indonesia's non-oil and gas exports decreased by 28 per cent in 2008 compared with the previous year (Bank Indonesia 2009). The interest rates on working and investment capital rose because of foreign and joint-venture bank groups (Bank Indonesia 2009), and the total small-scale business credit by local banks decreased by 20.9 per cent in 2009 relative to the previous year (Government of Indonesia 2010a). The GDP growth rate in 2009, however, was positive at 4.6 per cent (World Bank), and the monthly average expenditures per capita in Indonesia increased by 11.3 per cent in 2009 relative to 2008 (Government of Indonesia 2010a). Domestic markets expanded even during the crisis. The inflation rate in 2009 also remained at a low level of 4.8 per cent (World Bank).

2. Literature review and hypotheses in the context of Indonesia

Our argument with respect to the possible factors influencing the increased sales of SMEs in Indonesia during the global economic crisis is based on the literature that discusses the characteristics and operations of SMEs during the Asian financial crisis. The operations of SMEs

during the Asian financial crisis have been studied extensively, although few studies have examined the characteristics and operations of SMEs during the global economic crisis. Factor variables are separated into two categories: (1) the characteristics of SMEs and (2) the intentions of SME operations.

Five characteristics of SMEs are discussed in the existing literature with respect to the Asian financial crisis: 1) the utilisation of credit from financial institutions, 2) owner gender, 3) firm size, 4) location, and 5) sector. First, formal credit influences advancing businesses (Beck & Demirgüç-Kunt 2006; Biggs & Shah 2006; Karlan & Morduch 2009) during times of growth and stability. Access to formal finance also has a secondary effect in that it induces SMEs to retain accounting records, which are essential for analysing businesses (Karlan & Valdivia 2011; Mano et al. 2012). However, in Indonesia interest payments on the credit that enterprises obtained before the crisis increased because of the drastically increased interest rates (Sato 2000b). SMEs that were less reliant on formal credit were influenced to a lesser extent (Berry, Rodriguez & Sandee 2001).

Second, female entrepreneurs are often disadvantaged in middle- and low-income countries because of their risk-averse characteristics and low social status (Mead & Liedholm 1998; Nichter & Goldmark 2009; Sinha 2005). However, a situation of lesser reliance on formal markets could leave firms less damaged ex post in Indonesia (Berry, Rodriguez & Sandee 2001; Tambunan 2010). Hence, the disadvantages of inaccessibility to formal markets had an adverse effect during the crisis and protected female-owned firms from the shrinking markets. Third, many articles conclude that smaller enterprises grew faster than well-established and large enterprises did during stable economic conditions (Andersson, Gabrielsson & Wictor 2004; Ayyagari, Demirgüç-Kunt & Maksimovic 2011; Bigsten & Gebreeyesus 2007; Tybout 2000). Even during the Asian financial crisis, firms that increased in size before the crisis reduced their levels of flexibility and crisis survivability (Wiklund, Davidsson & Delmar 2003). The same was observed for the cases in Indonesia during the Asian financial crisis (Berry & Rodriguez 2001; Sato 2000b). Smaller firms

also expanded their exports more than larger enterprises did (Hall & Harvie 2003; Tambunan 2005; Ter Wengel & Rodriguez 2006a).

Fourth, Brata (2004) and Wie (2000) conduct studies in Indonesia and conclude that SMEs in Java suffered more than other islands did during the Asian financial crisis. Tambunan (2010) also assumes the possibility of regional differences in the effects of the crisis. Patten, Rosengard, and Johnston (2001) explore how rural sectors were less affected by the Asian financial crisis than were urban areas and how rural sectors were affected to a relatively greater extent by severe drought in the 1997-1998 season. Fifth, Sandee, Isdijoso, and Sulandjari (2002) and Tambunan (1999) study cases of successful export firms during the crisis in the agro, ceramic, metal casting, rattan handicraft, footwear, and garment industries in Indonesia. Sato (2000b) and Wie (2000) discuss how the engineering goods industries that depended on imports for most of their inputs, such as the automotive industry, were heavily damaged. The automotive industry was also affected severely because vehicles are often purchased on credit (Wie 2000).

With regard to the second category, operational intentions, the existing literature on Indonesian SMEs concludes that primarily two types of operations by SMEs, resulting in increased survival rates during the Asian financial crisis: a) penetration into foreign markets and b) entry into lower-price domestic markets. First, non-exporters were affected most severely (Berry & Rodriguez 2001; Tambunan 1999); thus, SMEs that had sold products only in domestic markets before the crisis began to pursue foreign markets (Harvie 2002; Sandee, Isdijoso & Sulandjari 2002; Sato 2000b; Wie 2000). The Asian financial crisis influenced Asian countries heavily, but it did not greatly influence countries in other regions. For example, the International Monetary Fund (IMF) raised its forecast of the GDP growth rate of the US when it was revised after the outbreak of the crisis (Goldstein 1998). Hence, markets in other regions could be the sources of revival for SMEs in Asian countries. For the shift to foreign markets, product quality improvements and the introduction of new products were necessary to meet the needs of more demanding markets (Harvie 2002; Sandee, Isdijoso &

Sulandjari 2002; Sato 2000b). Meanwhile, alliances with other enterprises were strengthened as buyers helped these firms to penetrate new markets in other countries (Birchall & Ketilson 2009; Marino et al. 2008; Sandee, Isdijoso & Sulandjari 2002).

Second, SMEs without sufficient resources to penetrate foreign markets had shifted their target domestic markets to the demand for low-price products utilising domestic raw materials (Sato 2000b). The import of materials from abroad was impossible because foreign banks refused to receive letters of credit from Indonesian banks on behalf of Indonesian enterprises (Tambunan 1999; Wie 2000). SMEs producing cheaper, low-quality products had better survived the crisis than did large enterprises that were more dependent on imported materials (Patten, Rosengard & Johnston 2001; Ter Wengel & Rodriguez 2006a). For the shift to domestic low-end markets, it was necessary to reduce costs (Sandee, Isdijoso & Sulandjari 2002; Sato 2000b; Ter Wengel & Rodriguez 2006a). The range of cost increases in imported materials was approximately 100 to 600 per cent for the textile industry and 50 to 250 per cent for the food industry (Tambunan 1999). The greater flexibility of SMEs relative to large enterprises allowed them to adjust their production processes under such conditions (Tambunan 2005). Of course, small firms cannot absorb cost increases by merely reducing material costs. Hence, reducing costs was supplemented by reducing salaries and other managerial costs (Chu & Siu 2001; Vandenberg 2009). Collaboration with other firms to purchase materials at less expensive prices and securing financing at lower costs through cooperatives assumed an important role (Marino et al. 2008). Cooperative enterprises can withstand shocks by participating in distribution networks whose members provide services to more risk-averse consumers (Birchall & Ketilson 2009).

Among the five firm characteristics, the utilisation of credit from financial institutions, owner's gender, firm size, location, and sector, formal loans from financial institutions could have a negative effect during the global economic crisis that is similar to the effect of the credit crunch in the Asian financial crisis. However, it is difficult to determine how female entrepreneurs were less

influenced because of their lower reliance on formal markets. Because the GDP of Indonesia did not decline, male owners with more connections to formal domestic markets could have been expected to perform better. During the global economic crisis, it was necessary to shift the focus from foreign markets to domestic markets; thus, smaller firms encountered opportunities. However, Indonesia is a vast country with many islands; it is necessary to deliver goods across long distances and to travel beyond the sea between islands to diversify domestic markets. Hence, it is predicted that relatively larger firms with more resources would benefit from changes in consumer market structure, as we discussed in Chapter IV. Although it is difficult to assume that location has influence on increasing sales, as observed during the Asian financial crisis, the effect of the global economic crisis on SMEs in Java may have differed from that of SMEs elsewhere in the country because 58 per cent of the population and more than 60 per cent of SMEs are concentrated in Java (Government of Indonesia 2010a). A large portion of Java firms has many connections with foreign enterprises. Moreover, Indonesia's largest contributor to exports ─except for oil, natural gas, and their derivatives─ is clothing and accessories, with a 10.3 per cent share in 2007 (Bank Indonesia 2009). Garments constituted 36 per cent of Indonesia's exports to the US (Bank Indonesia 2009). Because export markets shrunk during the global economic crisis, industries with strong export contributions, such as the textile industry, could have been more negatively influenced.

In contrast to the Asian financial crisis, the expansion of domestic markets was critical during the global economic crisis (Tambunan 2009b). Depending on the needs of domestic consumers, SMEs may have needed to develop products by either introducing new products or improving the quality of existing products. It is also predicted that the existence of business partners had a positive influence on diversification and entry into markets on other islands. Furthermore, a tendency in the consumer demand in domestic markets to shift to cheaper low-end products, as found during the Asian financial crisis, may not be a major trend in consumer behaviour in this more recent crisis considering the changes in domestic consumption. Among the countries that were heavily influenced

by the Asian financial crisis in terms of GDP growth, Indonesia was the country that was least damaged by the global economic crisis (Tambunan 2010). It is also observed that Indonesian consumers were optimistic even during the global economic crisis (Prasetyo & Yuliatiningsih 2009). Therefore, it is possible that new products or better-quality products, even at higher prices, could be more important than the provision of lower-priced products.

Based on the discussions above in the context of Indonesian economic conditions and SMEs, it is hypothesised that SMEs increased sales are affected by the firm characteristics of obtaining formal credit, owner gender, and firm size, even during the global economic crisis. Negative effects of loans and owner gender are expected, whereas positive effects are expected for firm size. In contrast to the situation in 1997-1998, firms that sell products abroad could have been negatively influenced because of the shrinking foreign markets in the global financial crisis. The increased sales observed during the global economic crisis are also dependent on the level of product quality improvement, new product development, and relationships with business partners.

3. Estimation methodology

To test the hypotheses, a probit estimation in which the dependent variable is a dummy variable that takes a value of one if net sales increase (Rev) is positive and zero otherwise, as shown below.

$$\begin{aligned}\Delta Rev_i^* = \alpha + \beta_1 Loan_i + \beta_2 Fem_i + \beta_3 Size_i + \beta_4 Java_i + \beta_5 Foremrk_i + \beta_6 Npd_i \\ + \beta_7 Quaimp_i + \beta_8 Lowpr_i + \beta_9 Bizp_i + \beta_{10}(Foremrk_i \times Npd_i) \\ + \beta_{11}(Java_i \times Bizp_i) + \beta_{12}(Java_i \times Slother_i) + \varepsilon_i\end{aligned}$$

$$\begin{aligned}\Delta Rev_i = \quad & 1 \; if \; Rev_i^* > 0 \\ & 0 \; \; if \; Rev_i^* \leq 0\end{aligned}$$

During the crisis, survival in the shrinking markets was a critical issue for SMEs. To survive, it was more important for SMEs to maintain the same or a slightly higher sales level than to grow

their profits as much as possible. Thus, I used a dummy variable that shows the net sales increase. The net sales per month at two different points of time during the economic crisis with three months in between were calculated.

The following independent variables were used to examine the effects of firm characteristics: a dummy variable for obtaining a loan from a financial institution (Loan), a dummy variable for having a female owner (Fem), the log of the number of employees that shows firm size (Size), and a dummy variable for being located in Java (Java). As we discussed in the literature review, industries such as the textile industry could show such effect because of their high contributions to exports. However, biases could result from endogeneity between the variable for industry with a high export ratio and the variable for sales in foreign markets. Hence, I did not include a variable for industry sector in the model.

The following independent variables were used to examine the effect of firm operations: a dummy variable for sales in foreign markets (Foremk), a variable that measures new product development (Npd), a dummy variable that measures quality improvement (Quaimp), a dummy variable that measures efforts to lower prices (Lowpr), and a dummy variable for the existence of business partners (Bizp). It should be noted that the results must be interpreted with caution because of the biases that may remain as a result of endogeneity.

4. Data description

The net sales per month at two different points of time during the economic crisis with three months in between were calculated. This value is one if a sample firm increased its net sales and zero otherwise.

The variable that measures new product development is the change rate of the number of product lines.

The dummy variable that measures quality improvement is one when (the number of products with increased sales) – (the number of products with decreased sales) > 0 and (the number of products sold at higher prices) – (the number of products sold at lower prices) > 0. Firms raise prices on existing products either to impose a cost increase on prices or to improve the quality to encourage consumers to purchase the products at higher prices. Price increases and sales increases occur simultaneously most probably when product quality is improved in the case of relatively low-technology SMEs. Hence, the dummy variable that measures quality improvement is one when price increases and sales increases occur simultaneously.

The dummy variable that measures efforts to lower prices is one when (the number of products sold at lower prices) – (the number of products sold at higher prices) – (the number of products sold at the same prices) > 0. This variable shows that firms stimulate consumption not by improving product quality but by lowering prices.

Situations of product quality improvement and lowering prices in each firm vary because majority of sample firms have several product items. It is possible that one firm improves the quality of a product and raise its price then that product brings more revenue whilst they lose a part of revenue from another product simultaneously. It is necessary to scrutinise trends of all product items of all sample firms. However, the decision which firms improved quality or lowered prices can be biased with such a way to define each firm. Thus, I set the formula in the above to have the common method to define firms for variables of product improvement and lowering prices.

The dummy variable for business partners shows whether the sample firms entered into business transactions with other enterprises. In some cases, the business partners are buyers that sell the SME's products. In other cases, business partners are large manufacturers to which an SME supplies products. The value for this variable is one if the sample firms acquired business partners and zero otherwise.

Table V-2. Summary of sample firms (N = 82)

Variable	*Mean*	*Median*	*Std. Dev.*	*Min.*	*Max.*
Number of employees	17.732	7	37.838	1	278
Number of product lines	3.171	2	2.479	1	11
Net sales per month (rupiah)	150 mil.	14 mil.	597 mil.	215,000	4.9 bil.
Gross profit per employee (rupiah)	3.3 mil.	1.18 mil.	7.2 mil.	−394,000	51.4 mil.
New loan	0.159	0	0.367	0	1
Female owner	0.232	0	0.425	0	1
Location in Java	0.451	0	0.501	0	1
Sales in foreign market	0.159	0	0.367	0	1
New product development (change in product line number, %)	36.506	0	80.603	−80	400
Product quality improvement (sales at higher prices)	0.268	0	0.446	0	1
Sales at lower price	0.061	0	0.241	0	1
Business partner	0.500	0.5	0.503	0	1
Sales on an another island by Java firm	0.183	0	0.389	0	1
Exporter with product development	12.239	0	59.230	0	400
Java firm with business partner	0.280	0	0.452	0	1

Source: Author's own calculation

Among the 163 individuals who completed the survey, some participants were from the same firm; in such cases, I used only one response. Some responses were incomplete and were eliminated from our sample. Data from 82 firms were used in our estimations. Table V-2 summarises the sample's descriptive statistics. The mean and median of the number of employees are 17.732 and seven, respectively; more than half of sample firms are micro firms, although they represent a large range of sizes; and the standard deviation is 37.838. The broad representation in the sample is similar for the net sales per month and gross profit per month per employee. The number of product lines is rather small even for medium enterprises; the mean is 3.171, and the standard deviation is 2.479.

5. Estimation results

Table V-3 presents the estimation results. The results of the baseline estimation are presented in

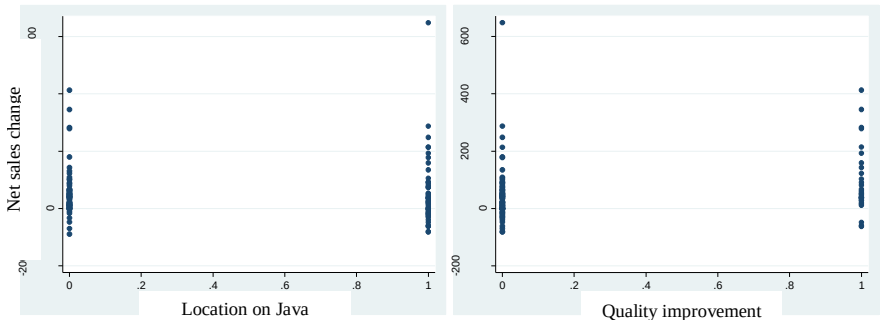
column (1) of Table V-3. Figure V-1 shows the graphical presentation of the correlation between the two variable and sales changes.

Table V-3. Estimation results

Dependent variable:		Dummy variable for revenue increase				
		(1)	(2)	(3)	(4)	(5)
Independent variable						
New product development	*Coefficient*	0.004*				
		(0.003)				
	Marginal effect	0.001*				
		(0.001)				
Product quality improvement	*Coefficient*	1.391*				
		(0.745)				
	Marginal effect	0.201***				
		(0.066)				
Sales at lower prices	*Coefficient*	0.019				
		(0.791)				
	Marginal effect	0.004				
		(0.158)				
Sales in foreign market	*Coefficient*	–1.585***	–1.287***	–0.674	–0.621	–0.976**
		(0.583)	(0.490)	(0.412)	(0.403)	(0.445)
	Marginal effect	–0.490**	–0.457***	–0.232	–0.206	–0.335**
		(0.197)	(0.175)	(0.155)	(0.147)	(0.166)
Location on Java	*Coefficient*	–1.195***	–0.825**	–0.767**	–0.678**	–0.846***
		(0.420)	(0.332)	(0.301)	(0.295)	(0.297)
	Marginal effect	–0.263***	–0.242**	–0.231**	–0.200**	–0.246***
		(0.100)	(0.096)	(0.089)	(0.088)	(0.086)
New loan	*Coefficient*	0.180	–0.097	–0.106		
		(0.611)	(0.439)	(0.431)		
	Marginal effect	0.034	–0.029	0.033		
		(0.106)	(0.134)	(0.136)		
Female owner	*Coefficient*	0.558	0.551		0.299	
		(0.494)	(0.438)		(0.374)	
	Marginal effect	0.095	0.139		0.080	
		(0.073)	(0.094)		(0.093)	
ln (Number of employee)	*Coefficient*	0.439*	0.308*			0.299*
		(0.232)	(0.180)			(0.160)
	Marginal effect	0.089**	0.089*			0.084**
		(0.045)	(0.051)			(0.044)
Business partner	*Coefficient*	0.606	0.375	0.547*	0.615**	0.477
		(0.416)	(0.340)	(0.312)	(0.298)	(0.307)
	Marginal effect	0.124	0.108	0.161*	0.178**	0.133
		(0.090)	(0.098)	(0.091)	(0.086)	(0.086)
N = 82	*Pseudo R sq:*	0.327	0.167	0.112	0.114	0.151

Notes: Standard errors are in parentheses. ***, ** and * indicate statistical significance of the coefficients at the 1%, 5% and 10% levels, respectively.
Source: Author's own calculation

Figure V-1. Distribution of sample firms



The results in column (1) in Table V-3 indicate that new product development and the quality improvement of existing products are positively and significantly correlated with revenue growth, implying that product development may improve negative influences of the economic crisis. On the contrary, selling products at lower prices is not correlated with revenue growth significantly. As I predicted in the hypothesis, the shift to domestic lower-price market for revenue increases during the Asian financial crisis was not seen during the global economic crisis. Sales in foreign markets and location in Java are negatively correlated with statistical significance, as I predicted in Section 2. One possible reason for the negative influence on the Java firms is that they had more connections with foreign enterprises for importing materials before the crisis. With market shrinking in their own countries, partners could have difficulties in continuing business transactions. Estimation results also imply how serious problems they faced. Efforts in developing new products by exporters and in shifting to other markets in the ways of finding business partners and diversifying domestic markets on other islands seemed not to function well.

The results shown in the columns (1) of Table V-3 indicate that the correlation between variables of firm characteristics and revenue growth is insignificant. The insignificant correlation between firm characteristics and revenue growth may be due to multicollinearity between these variables and the two variables for firm operation, new product development and product quality improvement that are significantly correlated with revenue growth. Therefore, I drop the variables

for firm operation from the set of independent variables and run the same regression in column (2) of Table V-3. In addition, to alleviate multicollinearity among the variables for firm characteristics, I use only one of the firm characteristic variables in one regression in column (3)-(5).

Table V-4. Estimation results 2

Dependent variable		New product development	Product quality improvement
ln (Number of employee)		−0.081	−0.043
		(0.111)	(0.066)
2000−Year of establishment		−0.004	0.0001
		(0.010)	(0.006)
Registration		−0.041	0.177
		(0.198)	(0.127)
New loan		0.201	0.086
		(0.230)	(0.150)
Female owner		−0.112	−0.052
		(0.217)	(0.134)
Food processing		−0.888*	−0.186
		(0.525)	(0.597)
Textile		0.040	0.079
		(0.395)	(0.234)
Footwear		−0.163	0.100
		(0.387)	(0.241)
Ceramic		−0.056	Omitted
		(0.443)	
Metal processing		−1.577**	−0.303
		(0.664)	(0.623)
Wooden furniture		−0.589	0.133
		(0.597)	(0.367)
Handicraft		Omitted	0.187
			(0.263)
Chemical		−1.551	0.265
		(0.791))	(0.347)
Java		−0.786	−0.054
		(0.573)	(0.357)
Sumatra		0.375	−0.039
		(0.281)	(0.478)
Kalimantan		Omitted	Omitted
Sulawesi		Omitted	0.369
			(0.513)
Maluku		0.363	Omitted
N = 85	*R-sq*	0.117	0.125
	Adj R-sq	−0.049	−0.053

Notes: Standard errors are in parentheses. ***, ** and * indicate statistical significance of the coefficients at the 1%, 5% and 10% levels, respectively. Ceramic, Handicraft, Kalimantan, Sulawesi, and Maluku are omitted because of collinearity.
Source: Author's own calculation

The estimation results in columns (2)-(5) of Table V-3 show that the correlations with

obtaining loans and owner gender are still insignificant, but the correlation between firm size and revenue growth is statistically significant. Although obtaining additional capital is not associated with the growth due to the credit crunch by the global economic crisis, firms with sufficient resources may have more choices in making decision such as domestic market diversification.

It may be the case that firm characteristics such as obtaining loans or owner gender have no direct correlation with revenue growth but have indirect correlation through the correlation with the two key determinants of revenue growth. Therefore, I examine how the two key firm operation variables are determined by firm characteristics. Table V-4 shows that the results of estimation with two variables, new product development and product quality improvement, as dependent variables and firm characteristics as independent variables. Location variables are dummies of Java, Sumatra, Kalimantan, Sulawesi, and Maluku. The results shown in Table V-4 indicate that all firm characteristic variables, except for some industry dummies, are uncorrelated with the key two determinants of revenue growth. The results imply that any firm, regardless of whether it is small, unexperienced, informal, or inaccessible to credit, could, at least potentially, develop new product and improve product quality even when it is hit by the economic crisis.

6. Discussion of the results

There are two main findings from the estimation results. One is the negative correlation between sales in foreign markets and location in Java with revenue growth. Second, firms which worked on product development, including new product development and quality improvement of existing products, had more opportunities to increase their revenue than firms which did not during the global economic crisis. I discuss on these two issues more in detail in this section.

First, it is not difficult to consider why exporters had negative correlation with revenue increase. As I discussed in Section 1, one of differences between two crises was the difference of

shrinking market. For Indonesian firms, foreign markets shrunk during the global economic crisis. Hence, exporters lost revenue from foreign countries. Some exporters nevertheless succeeded in increasing their sales revenue. Table V-5 compares three types of firms: 1) firms that increased their sales and sold their products exclusively in domestic markets, 2) firms that increased their sales and sold their products in foreign markets, and 3) firms that suffered a decrease in sales and sold their products in foreign markets. There are two distinctive differences between the two types of firms that increased sales.

Table V-5. Profile of sales by sample firms

	Increased (%)		Decreased (%)
	Sales only in domestic markets	Sales in foreign markets	Sales in foreign markets
Used loan from financial institution	17.3	28.6	16.7
Introduced new facility / equipment	25.0	71.4	16.7
Developed new products	42.3	57.1	16.7
Improved existing product quality	34.6	14.3	0.0
Lowered prices	7.7	0.0	0.0
Collaborated with business partners	48.1	100.0	50.0
Sales only in foreign market	―	14.3	50.0
Female owner	23.1	57.1	33.3

Source: Author's own calculation

First, successful exporters were more likely to introduce new facility or equipment; 71.4 per cent of successful exporters introduced new facility or equipment, while 25 per cent of successful domestic market-oriented firms and 17 per cent of unsuccessful exporters did so. Investment in new facility and equipment should lead to revenue growth through new product development.

Second difference between successful and unsuccessful exporters involves sales market diversity. Only 14.3 per cent of successful exporters sold products exclusively in foreign markets, whereas this figure is 50.0 per cent with respect to unsuccessful exporters. Successful exporters tend to diversify their sales markets more than unsuccessful exporters do, aiming to reduce risks.

The second main finding from the estimation results was the positive correlation between product development and revenue growth. This is probably because imported products became very expensive due to depreciation of Indonesian rupiah during the global financial crisis. As a result, Indonesian consumers demanded cheap domestic products to substitute for imported goods. Under this circumstance, new product development was effective to raise revenue

Table V-6. Imports by goods and monthly average expenditure per capita by commodity group

Import	2008 (mil. USD)	2009 (mil. USD)	Growth (%)
Processed food	1,903.1	1,367.3	−28.2
Durable goods	822.1	818.3	−0.5
Semi-durable goods	1,134.7	941.0	−17.1
Non-durable goods	1,229.2	1,189.4	−3.2

Consumption	2008 (mil. IRP)	2009 (mil. IRP)	Growth (%)
Food	193,828	217,720	12.3
Clothing, footwear, headgear	13,014	14,328	10.1
Total (including other non-food commodities)	386,370	430,065	11.3

Source: Author's own calculation from the government of Indonesia (2010a)

Table V-6 shows that the imports of processed food and semi-durable goods such as textile and footwear, decreased more than the imports of other goods in 2009. Meanwhile, Table V-6 also shows that the average expenditures per capita for food and semi-durable goods increased in 2009 over the previous year, with a growth rate that was larger than the inflation rate in the same year. Indonesia imported fewer consumer products but consumed more products. This trend in consumption during the global economic crisis is clearly different from that in the period during the Asian financial crisis. The GDP of Indonesia (especially for private consumption) in 1998 decreased by 2.9 per cent from 1997 (Wie 2000).

The depreciation of Indonesian rupiah during the global economic crisis was smaller than the

depreciation during the time during the Asian financial crisis. However, the value of Indonesian rupiah still dropped by 10.6 per cent within a year. The prices of imported products increased then consumers tended not to purchase imported products. During the global economic crisis, Indonesian consumers were still willing to buy products with a certain level of quality. Hence, consumers purchased products to substitute for imported products if products of similar quality were available. The type of products consumers looked for was not the products with cheaper prices.

Table V-7. Examples of sample firms

Firm	*Sector*	*Product**	*Location***	*No. of emplo -yees*	*Monthly revenue (mil Rp)*	*Revenue increase (%)*	*No of product changes (%)*	*Market*
A	Food Process -ing	Snack (8 lines)	Bandar Lampung Lampung	8	33.5	41.0	50	Home city only
B	Food Process -ing	Processed fish (1 line)	Padang W. Sumatra	23	32.5	54.6	300	Domestic + Foreign
C	Textile	Clothes (1 line)	Bandung W. Java	41	60.0	−30.0	0	Foreign only
D	Ceramic	Pottery (5 lines)	Purwakarta W. Java	15	32.2	−18.3	0	Domestic + Foreign
E	Ceramic	Pottery (6 lines)	Anjun W. Java	15	75.5	105.3	0	Domestic + Foreign
F	Footwear	Shoes (4 lines)	Klaten C. Java	8	57.0	214.0	0	Domestic

* The number of product lines one month before training
** W: West, C: Central
Source: Author's own calculation

Firms in Table V-7 are fair representative of the firms discussed the above. Firm C is a sub-contractor of a foreign apparel company. This firm is fully reliant on the foreign company to which it sells products, including obtaining raw materials since raw materials, which are provided from a partner company. During the global economic crisis, Firm C's foreign partner faced a shrinking market; thus, the orders from the partner abroad decreased. As a result, Firm C's revenue decreased by 30.0 per cent. Firm D was in a similar situation. The exporter of pottery with 15 employees experienced a decrease in revenue by 18.3 per cent. On the contrary, Firm A was able to increase its revenue by 41.0 per cent by adding a new flavour product to its product line in the

market of its home city only. Firm F, a producer of shoes, increased its revenue by more than 200 per cent even at higher prices for two of its four existing products; it was possible for Firm F to improve the quality of its existing products. Firm E is a pottery exporter that sold its product in both foreign and domestic markets within its home province and other provinces. Firm B, a producer of processed fish that increased its revenue by 54.6 per cent, also sold products by diversifying both the domestic and foreign markets in addition to developing products within a new facility and relying on business partners.

7. Conclusions

This chapter discussed the characteristics and operations of SMEs that contributed to increases in net sales during the global economic crisis of 2008-2009. The results from a probit estimation indicate that exporters clearly had difficulties increasing revenue. Java firms were also disadvantaged; this trend did not change even when such firms had diversified their domestic markets and enter markets on islands other than Java. Positive increases in revenue were enabled by improving the quality of existing products rather than by selling products at lower prices. Consumers demanded better-quality domestic products to substitute for imported goods during the global economic crisis because of the price increase of imported products.

Can the above findings be applied to most cases of low-technology SMEs in Indonesia, inducing them to survive under similar operations? In the case of sudden external shocks, it is difficult to apply most of the market segmentation bases by Wedel (2000) as I did in Chapters III and IV. Influence of external shocks on the socio-economic aspect is important when applying these findings to other SMEs. In Indonesia, local markets have a large proportion of the population with relatively higher purchasing power compared with that observed in other middle-income countries. As long as Indonesian consumers are optimistic as Prasetyo and Yuliatiningsih (2009) observed, the

lessons learned from this study ─such as the effectiveness of product quality improvement─ may positively influence SMEs. Thus, it is important to observe trends in consumer behaviour carefully when external shocks occur.

Chapter VI. Factors for SME Growth: Evidence from Vietnam

In previous chapters, I discussed the factors underlying SME growth in terms of profit increases and sales market expansion as well as growth during the global economic crisis using firm-level data from Indonesia. This chapter examines the revenue growth factors for SMEs in Vietnam to investigate and compare the elements of SME development with another middle-income ASEAN country. The remainder of the chapter is organised as follows. Section 1 explains the general situation of SMEs in Vietnam. Section 2 discusses the existing literature and presents hypotheses. Section 3 presents the estimation methodology, and Section 4 describes the data. Section 5 shows the estimation results and discusses these results. Section 6 presents conclusions.

1. SMEs in Vietnam

Vietnam is the third largest country in ASEAN in terms of its population of 88.8 million (World Bank 2012), which exceeded only by Indonesia and the Philippines. The GDP per capita of Vietnam reached the level of a middle-income country in 2008, and as of 2012, it had continuously grown to USD 1,755 (World Bank).

Vietnam was once considered one of least developed ASEAN countries, along with Cambodia, Laos, and Myanmar. However, Vietnam is now categorised by ADB (2011) as a country with substantial growth potential together with countries such as Malaysia, Thailand, and Indonesia, whose 2012 GDP per capita was two to six times larger than that of Vietnam; USD10,432, UD5,480, and USD3,557, respectively (World Bank). As I discussed in Chapter I, there is a strong and positive association between GDP per capita and SME growth in numbers and employment (Bech, Demirgüç-Kunt & Levine 2005; Thurik & Wennekers 2004). SMEs in Vietnam have experienced a rapidly changing economy with substantial growth.

The structure of SMEs in Vietnam differs from that in Indonesia. Table VI-1 indicates the number of SMEs by sector. The number of small enterprises and the number of micro enterprises are close, except for the retail and service sectors, in which the number of micro enterprises certainly exceeds the number of small enterprises in Indonesia. One reason is that the maximum number of employees according to the definition of small enterprises in the industry sector in Vietnam is larger than that in Indonesia. The definition of SMEs in Vietnam is shown in Table VI-2. A firm with up to 200 employees is considered a small enterprise. By contrast in Indonesia, the maximum number of employees for small enterprises in the industry sector is 19.

Table VI-1. Number of enterprises by size and industry in Vietnam (2011)

	Number of enterprises (000)				
	Micro	Small	Medium	Total*	%
Agriculture, forestry, fishery	1,463	1,681	53	3,308	0.8
Mining	47,258	48,103	2,054	101,288	24.0
Construction	21,158	21,589	648	44,183	10.5
Manufacturing**	23,834	24,516	1,334	52,587	12.5
Food, beverage & tobacco	3,768	3,137	183	7,492	
Textile & apparel	2,339	3,364	266	6,792	
Leather products	305	61	59	1,260	
Wood processing	1,967	1,829	37	3,878	
Chemical	2,485	2,973	164	5,851	
Metal processing	5,821	6,287	266	12,740	
Machine & electric	1,362	1,962	153	3,834	
Retail, hotel, restaurant, other services	168,011	43,572	4,746	220,095	52.2
Total	242,681	139,461	8,835	421,461	100.0

* Total number includes large enterprises.
** The total number for the manufacturing sector includes other industries as described in the table.
Source: Government of Vietnam (2013)

The total number of enterprises in Vietnam in 2011 was approximately 420,000, which is merely 0.5 per cent of total population. The Vietnamese government officially recognised private enterprises in the early 1990s with the introduction of the Company Law and the Law on Private Enterprises. However, it was not until 2000 that Vietnam experienced an increase in private SMEs

(Nguyen et al. 2011). Although SMEs are already dominant in the manufacturing sector, with 97.5 per cent of the enterprises being SMEs, the number of micro enterprises remains small. I assume that there are still a substantial number of informal businesses with fewer than 10 employees.

Table VI-2. Definition of SMEs in Vietnam

	Micro	Small		Medium	
	Number of employees	Total capital (VND)	Number of employees	Total capital (VND)	Number of employees
Agriculture, forestry and fishery	≤ 10	≤ 20 bil.	10 < ≤ 200	20 bil. < ≤ 100 bil.	200 < ≤ 300
Industry and construction	≤ 10	≤ 20 bil.	10 < ≤ 200	20 bil. < ≤ 100 bil.	200 < ≤ 300
Retail and service	≤ 10	≤ 10 bil.	10 < ≤ 50	10 bil. < ≤ 50 bil.	50 < ≤ 100

Source: Government of Vietnam (2009)

2. Literature review and hypotheses

In this section, I discuss existing literature adding to those already discussed in Chapter III and provide hypotheses to examine the factors underlying SMEs' revenue increase.

I investigate the hypotheses based on the discussion of the literature review in Chapter III. In this chapter I categorise factor variables as follows: (1) the characteristics of enterprises, including the sector and location, and (2) the intentions behind operations. Adding to the variables examined in Chapter III, this study also examines the effects of the prior experiences and education levels of SME owners and employees. Table VI-3 shows the successful Vietnamese SMEs that I visited and observed in a preliminary manner. Two enterprises were established by owners, who have experiences in other organisations in similar fields. A co-founder of the second case and the owner of the third case had worked for a research institute under the Ministry of Industry and Trade that time and a state-owned enterprise in the field in which both firms has been engaged since their establishment. In a socialist country such as Vietnam, state institutes or state-owned enterprises were the organisations that had the most advanced technology, except for foreign manufacturers.

Table VI-3. Cases in Vietnam

Firm	Location: Quang Minh Industrial Zone, Hanoi owner: man Established in 1995, Number of employees: 130
Product	Injection mould, metal processing, mould manufacturing
Customer area	Hanoi and surrounding provinces (the main customers are foreign manufacturers invested in Vietnam)
Other information	Co-founder has experience at a research institute in the field of mould and dies under the Ministry of Industry and Trade. Introduced production machines from Japan, Germany, and Korean/Taiwan machines for processing
Firm	Location: Tu Liem Industrial Park, Hanoi; owner: man Established in 2001, Number of employees: 45
Product	Metal processing, mould manufacturing
Customer area	Hanoi and surrounding provinces (the main customers are Japanese manufacturers invested in Vietnam)
Other information	Director has experience at a state-owned Enterprise in the field of mould and dies and has engaged in machine technology. Introduced production machines from Japan and other foreign manufacturers for processing

Source: Compiled by the author based on the results of firm visits

Some studies conclude that owners with higher education levels are associated with better performance (Bosma et al. 2004; Nichter & Goldmark 2009; Rauch, Frese & Utsch 2005: Sonobe, Akoten & Otsuka 2011), along with the prior experience of owners in similar fields (Elfenbein et al. 2010; Nichter & Goldmark 2009; Oviatt & McDougall 2005). Thus, it is hypothesised from the existing literature and actual cases that the education level and experience of owners have positive effects on firm performance. Employees' skills and education prior to their employment are also discussed as critical for enhancing the productivity of firms. In-firm training is influenced by the amount and quality of education that workers receive before entering the work force (Biggs 1995; Lynch 2007; Tan & Batra 1995; Tybout 2000).

I also examine the effects of location in an industrial park. Location in agglomerated areas, such as industrial parks and clusters, allow firms to conduct transactions at low costs and provide better access to market information (Ruan & Zhang 2009; Schmitz & Nadvi 1999; Sonobe & Otsuka 2010). Firms also benefit from the pooling of human resources, including intermediaries and engineers, within a cluster (Mano et al. 2012). Collaboration among manufacturing SMEs in

industrial clusters allows an SME to expand its sales market by lowering its risk and market barriers (Peng & Ilinitch 1998; Schmitz & Nadvi 1999). Two cases in Table VI-3 are located in industrial parks in Hanoi.

It is hypothesised that the revenue increase of Vietnamese manufacturing SMEs are affected by firm characteristics in terms of size, age, formality, access to finance, sector, and location, as well as human resource characteristics, such as gender, the education levels and prior experience of owners, and the education levels of employees. Positive correlation with the level of formality, access to finance, owners' education levels, owners' prior experience, and employees' education levels are expected based on both existing studies and in the context of Vietnamese SMEs by considering cases described above; however, it is difficult to predict the correlation with owner gender, firm size, and firm age in the context of Vietnamese SME from cases. Product development, process improvement, internationalisation, and inter-firm cooperation are expected to have positive effects on SME revenue growth in the case of Vietnam, as in Indonesia.

3. Estimation methodology

The following estimation model was used to investigate the hypotheses.

$$\begin{aligned}\Delta Rev_i^* = \alpha &+ \beta_1 Size_i + \beta_2 Asset_i + \beta_3 Fem_i + \beta_4 Owexp_i + \beta_5 Owedu_i + \beta_6 Empdeg_i \\ &+ \beta_7 Machine_i + \beta_8 Light_i + \beta_9 North_i + \beta_{10} Indp_i + \beta_{11} Npd_i \\ &+ \beta_{12} Quaimp_i + \beta_{13} Prdmng_i + \beta_{14} Foremk_i + \beta_{15} Npm_i \\ &+ \beta_{16}(Npm_i \times Jpkr_i) + \varepsilon_i\end{aligned}$$

$$\Delta Rev_i = \begin{cases} 1 \; if \; Rev_i^* > 0 \\ 0 \;\; if \; Rev_i^* \leq 0 \end{cases}$$

To test the hypotheses, I employ a logistic estimation in which the dependent variable is a dummy variable for revenue increases (Rev). It takes a value of one if the sample firm increased its revenue in the last two years and zero otherwise.

I employ a number of independent variables for firm operations and characteristics in the logit estimations. Key independent variables include dummy variables that indicate new product development (Npd), quality improvement (Quaimp), production management improvements (Prdmng) which shows the efforts of process improvement including cost reduction, sales in foreign markets (Foremk), and the introduction of new machines (Npm). I also add an interaction term for introducing new production machines, especially machines from Japanese or Korean manufacturers (Npm x Jpkr).

In addition, the log of the number of employees is used to indicate firm size (Size), whereas the log of total assets is employed to measure access to finance (Asset). The dummies for female ownership (Fem), machine-related industries (Machine), light industries[3](Light), Northern regions (North), and industrial parks (Indp) are also incorporated.

In addition, owners' prior experience within the same field (Owexp) is included in the set of independent variables to account for effects of experience on revenue growth. Prior experience for up to three years is one, two if for three to five years, three if for five to 10 years, and four if for more than 10 years. Another categorical variable for owners' education (Owedu) is one if the owner did not graduate from a high school, two if graduated from a high school, three I graduated from a vocational school, four if graduated from a college or university, and five if graduated from a graduate school. To represent the level of workers' education, I also include the log of the ratio of employees with a college or university degree (Empdeg). As discussed in the literature review of Chapter III, firm age can have a substantial effect. However, only 39,600 enterprises were established during the 1990s in Vietnam (Nguyen et al. 2011). The majority of firm establishments are skewed towards the late 2000s. Hence, firm age is not included in the model. Moreover, all of the sample firms in our study are registered; hence, a variable for formality is not included.

[3] The machine-related industry includes the mechanical engineering, metal working, electrical and electronics industries. The light industry includes the food processing, textile, footwear, wood processing, and ceramic industries.

Additionally, appropriate instruments are not available in this study, I cannot fully correct for possible biases due to endogeneity. Instead, I try to find exogenous factors that influence the endogenous covariates in the estimations so that I can show some exogenous factors that ultimately affect revenue increase of SMEs.

4. Firm-level survey

A survey was conducted to collect data from SMEs in Vietnam. The target firms for our survey were randomly selected from three lists of enterprises. The 'Yellow Pages' and 'Enterprises in Industry Zone' are lists published periodically, and the 'Supporting Industry Directory' was prepared by the project of JICA together with the Vietnamese Ministry of Planning and Investment. The sample firms are located in five provinces in the North region (Hanoi, Vinh Phuc, Hung Yen, Bac Ninh, and Bac Giang) and in four provinces in the South region (Ho Chi Minh City, Dong Nai, Binh Duong, and Long An). Data were collected for the analysis between February and June 2013. Note that the survey was conducted after the holidays of the lunar new year day in February, a period in which consumption increases substantially; the sales and profits reported in the survey were not affected by consumption fluctuations resulting from the lunar new-year.

In total, 290 firms participated in the survey. Some responses were incomplete and were, thus eliminated. Ultimately, data from 186 firms were used in the estimation.

Tables VI-4 shows the distribution of sample firms, and VI-5 summarises the sample's descriptive statistics. The results show that 55.4 per cent of the sample firms have 20 or fewer employees; the mean is 31.6, and the standard deviation is 58.538. More than half of the firms (65.1 per cent) are located in the North region. 67.2 per cent of the sample firms belong to machine-related industries.

Table VI-4. Distribution of sample firms (N = 186)

*Number of Employees (%)**			*Industry (%)*	
1–10	(micro)	25.8	Mechanical engineering	40.9
11–20	(small – lower 1)	29.6	Metal processing	17.2
21–50	(small – lower 2)	27.4	Electrical and electronics	9.1
51–100	(small – middle)	10.2	Food processing	1.6
101–200	(small – upper)	4.3	Textile	2.2
201–300	(medium)	2.2	Footwear	1.1
301–	(large)	0.5	Wood processing	8.1
Location (%)			Ceramic	2.7
North region		65.1	Others	17.1
South region		34.9		

* The definition of SMEs is based on Decree No.56/2009/ND-CP (June 30, 2009); a small enterprise is further divided into four categories by the author because the range of the small enterprise definition is large, from 11-200.

Source: Author's own calculation

Table VI-5. Summary of sample enterprises (N = 186)

Variable	*Mean*	*Median*	*Std. Dev.*	*Min.*	*Max.*
Number of employees	31.602	20	58.538	5	530
Capital (bil. VND)	17.368	4,500	49.780	0.3	500
Fixed assets (bil. VND)	8.519	2,000	23.509	0.1	200
Turnover (mil. USD)	0.883	161,904	6.081	0	66.7
Female owner	0.145	0	0.353	0	1
Owners' year of experience	3.070	3	0.907	1	4
Owners' education level	3.780	4	0.819	1	5
Employees' education level	3.255	3.401	0.849	0	4.605
Machine-related industry	0.672	0	0.471	0	1
Light industry	0.156	0	0.364	0	1
Location in North region	0.651	0	0.478	0	1
Location in industrial park	0.167	1	0.374	0	1
New product development	0.425	0	0.496	0	1
Quality improvement	0.462	0	0.500	0	1
Production management	0.435	1	0.497	0	1
Sales in foreign market	0.215	0	0.412	0	1
New production machine	0.527	1	0.501	0	1
Japanese and Korean machine	0.301	0	0.460	0	1

Source: Author's own calculation

5. Estimation results and discussion

The benchmark result from the logit estimation shown in column (1) of Table VI-6 indicates that new product development, the amount of assets, and owners' experience were positively correlated with revenue growth. The strong correlation between new product development and revenue growth is consistent with my finding in Chapter III. The importance of owners' experience is also found in existing studies such as Sonobe and Otsuka (2006). Column (1) also shows that introducing new machines has a higher correlation with revenue growth. The correlation is higher if the machines are made by Japanese or Korean manufacturers, probably because the quality of Japanese and Korean machines is high. Sales in foreign market are negatively correlated with revenue growth, as I found in the case of Indonesian SMEs during the global economic crisis.

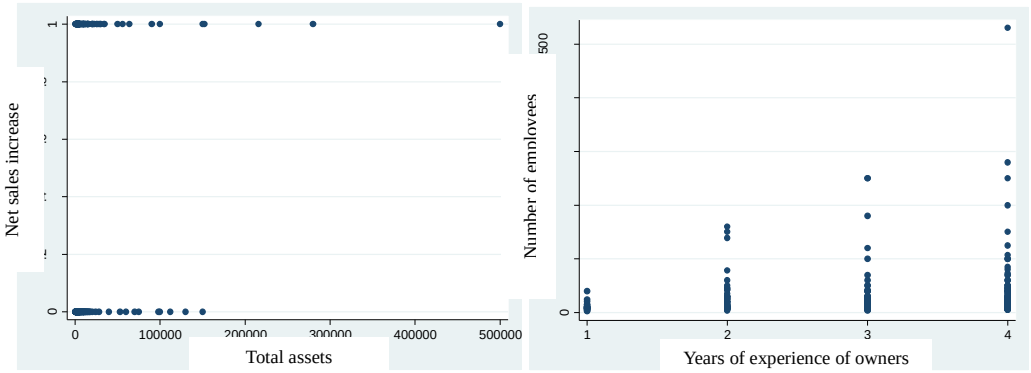
However, new product development may be closely correlated with the firm characteristics such as firm size or the amount of assets. Hence, I drop the three variables for firm operation from the set of independent variables and run the same regression to avoid multicollinearity. The results of columns (2)-(6) in Table VI-6 indicate that the number of employees, the amount of assets, owner gender, and the education level of owners are statistically significantly correlated with revenue increase, when each variable for firm characteristics is included in a separate estimation one by one. Therefore, these characteristic of firms are considered as possible determinants of revenue increase.

Table VI-6. Estimation results

Dependent variable:		Revenue increase					
		(1)	(2)	(3)	(4)	(5)	(6)
New product development	*Coefficient*	0.909*					
		(0.519)					
	Marginal effect	0.200*					
		(0.115)					
Product quality improvement	*Coefficient*	−0.721					
		(0.503)					
	Marginal effect	−0.154					
		(0.105)					
Production management improvement	*Coefficient*	0.219					
		(0.476)					
	Marginal effect	0.048					
		(0.105)					
Length of owners' experience	*Coefficient*	0.503**					
		(0.246)					
	Marginal effect	0.110**					
		(0.054)					
ln (Number of employee)	*Coefficient*	0.066	0.331**				
		(0.299)	(0.158)				
	Marginal effect	0.014	0.077**				
		(0.065)	(0.037)				
ln (Total assets)	*Coefficient*	0.424*		0.351***			
		(0.239)		(0.112)			
	Marginal effect	0.092*		0.082***			
		(0.052)		(0.026)			
Female owner	*Coefficient*	−0.328			−0.746*		
		(0.656)			(0.394)		
	Marginal effect	−0.068			−0.159**		
		(0.129)			(0.075)		
Owners' education level	*Coefficient*	0.354				0.428***	
		(0.297)				(0.161)	
	Marginal effect	0.077				0.099***	
		(0.064)				(0.367)	
Employees' education level	*Coefficient*	−0.301					0.037
		(0.279)					(0.180)
	Marginal effect	−0.066					0.009
		(0.061)					(0.043)
Machine-related industry	*Coefficient*	−0.587	−0.140	−0.205	−0.282	−0.118	−0.379
		(0.564)	(0.367)	(0.361)	(0.355)	(0.368)	(0.384)
	Marginal effect	−0.131	−0.033	−0.048	−0.067	−0.027	−0.090
		(0.129)	(0.087)	(0.086)	(0.084)	(0.086)	(0.092)
Light industry	*Coefficient*	0.460	−0.037	0.0002	0.113	0.219	0.086
		(0.813)	(0.500)	(0.490)	(0.477)	(0.504)	(0.531)
	Marginal effect	0.105	−0.009	0.0001	0.027	0.051	0.020
		(0.193)	(0.115)	(0.114)	(0.113)	(0.121)	(0.127)
Location in the North region	*Coefficient*	−0.106	0.014	0.071	−0.193	−0.008	−0.295
		(0.548)	(0.333)	(0.335)	(0.322)	(0.330)	(0.354)
	Marginal effect	−0.023	0.003	0.016	−0.045	−0.002	−0.070
		(0.121)	(0.077)	(0.077)	(0.076)	(0.076)	(0.085)
Location in industrial park	*Coefficient*	−0.589	−0.444	−0.470	−0.331	−0.422	−0.201
		(0.573)	(0.373)	(0.373)	(0.366)	(0.389)	(0.399)
	Marginal effect	−0.118	−0.099	−0.104	−0.074	−0.093	−0.047
		(0.105)	(0.078)	(0.078)	(0.079)	(0.081)	(0.091)
Sales in foreign market	*Coefficient*	−1.589**	0.296	0.371	0.494	0.448	0.222
		(0.675)	(0.385)	(0.366)	(0.356)	(0.364)	(0.395)
	Marginal effect	−0.280***	0.070	0.089	0.119	0.106	0.053
		(0.095)	(0.093)	(0.089)	(0.087)	(0.088)	(0.096)
New production machine	*Coefficient*	2.396***					
		(0.560)					
	Marginal effect	0.477***					
		(0.090)					
New machine × Japanese or Korean machine	*Coefficient*	1.265**					
		(0.535)					
	Marginal effect	0.290**					
		(0.124)					
N = 186	*Pseudo R sq:*	0.389	0.026	0.045	0.026	0.038	0.018

Notes: Standard errors are in parentheses. ***, ** and * indicate statistical significance of the coefficients at the 1%, 5% and 10% levels, respectively. Source: Author's own calculation

Figure VI-1. Distribution of sample firms



Source: Author's own compilation

In addition, to check if these firm characteristics affect revenue growth through new product development and introduction of new machines, I regress each of the two variables on firm characteristics and show the results in Table VI-7. Results in column (1) on correlation between new product development and firm characteristics shows that the total assets and machine-related industry are correlated positively with new product development. New production machine is also correlated with new product development. Firms may introduce new machines for the purpose of developing new products. The correlation between the dummy for new production machines and any variable of firm characteristics is not significant. This result implies that regardless of firm characteristics, firms could potentially introduce new machine for production and accordingly improve their revenues. Therefore, policy measures for encouraging new product development through production skill training and introducing new production machines for that purpose are possible effective support.

In contrast to the importance of new product development and introduction of new machines, the estimations in this chapter have found that product quality improvement or production management improvement is not correlated with revenue increase. This is probably because firms in the sample are still in a very early stage of development and the quality of their products largely depends on types of machines they use, rather than types of production management.

Table VI-7. Estimation results 2

Dependent variable	New product development		New production machine	
	(1)		(2)	
	Coefficient	*Marginal effect*	*Coefficient*	*Marginal effect*
ln (Number of employee)	−0.136	−0.032	0.199	0.049
	(0.266)	(0.063)	(0.227)	(0.057)
ln (Total assets)	0.547***	0.130***	0.042	0.010
	(0.195)	(0.047)	(0.159)	(0.040)
Female owner	0.342	0.083	−0.669	−0.165
	(0.565)	(0.140)	(0.450)	(0.108)
Length of owners' experience	0.285	0.068	0.077	0.019
	(0.215)	(0.051)	(0.177)	(0.044)
Owners' education level	0.086	0.021	0.044	0.011
	(0.243)	(0.058)	(0.200)	(0.050)
Employees' education level	0.231	0.055	0.289	0.072
	(0.246)	(0.059)	(0.198)	(0.049)
Machine-related industry	0.865*	0.196*	−0.091	−0.023
	(0.524)	(0.111)	(0.420)	(0.104)
Light industry	1.107	0.270	−0.322	−0.080
	(0.704)	(0.165)	(0.588)	(0.146)
Location in the North region	−0.909**	−0.219**	−0.566	−0.139
	(0.434)	(0.104)	(0.372)	(0.089)
Location in industrial park	−0.199	−0.047	0.173	0.043
	(0.498)	(0.115)	(0.416)	(0.102)
New production machine	1.886***	0.419***		
	(0.383)	(0.073)		
N=188 *Pseudo R-sq*	0.258		0.046	

Notes: Standard errors are in parentheses. ***, ** and * indicate statistical significance of the coefficients at the 1%, 5% and 10% levels, respectively. Source: Author's own calculation

These conclusions are well consistent with what I observed in the field through the training that may not be reflected in quantitative data. For example, one firm located in Tu Liem Industrial Park in Hanoi, produces automatic machineries and jigs. Main customers of this firm are Japanese manufacturers, which had invested and operated in Hanoi and surrounding provinces in the North part of Vietnam. The strength of this firm is that it can produce tailor-made automatic machineries upon requests from their customer manufacturers. Hence, their products are somehow considered new products. This firm produces products with higher specification machines made in Japan, Germany, and so on. The male owner graduated from Hanoi University of Science and Technology, one of the best universities in the engineering field in Vietnam, and has experience as an engineer for seven years at a Japanese manufacturer of motorbike in Vietnam. The founder of this firm

understood the needs of Japanese manufacturers from his previous working experiences; thus he had clear ideas what products with what level of quality can be purchased by foreign manufacturers, which have difficulties in finding appropriate suppliers of components within Vietnam. It is one of the reasons that he could invest in high price production machines. This firm was established in 2007 and had grown rapidly because of high needs from satisfied customers. The number of employees reached 142 in 2012, only five years after the establishment. The story of this firm represents results of the estimation.

6. Conclusions

This chapter discussed the factors underlying SMEs' revenue increases in the North and South regions of Vietnam. The critical factor required to increase revenue was new product development for domestic markets. Owners' prior experience also had positive influences in terms of reducing the risks of investment in new machines.

As observed in the case of Indonesian SMEs, the Vietnamese SMEs also have opportunities to grow, even within the domestic market. Although many studies discuss the positive influence of internationalisation, it is possible for local SMEs to find opportunities in local markets. Local markets are not yet sufficiently cultivated in either Indonesia or Vietnam. However, there is a difference in the estimation results for the two countries. In the case of Indonesian firms, it was possible for them to develop products without large new investments. However, investments in new production machines were significantly correlated with revenue growth for the Vietnamese SMEs. One possible explanation for the difference between the Indonesian and Vietnamese SMEs is that the sample firms in Vietnam included more firms in the machinery-parts industry that do not produce final products directly sold to consumers. Rather, these SMEs produce and supply components to larger manufacturers including foreign-owned firms. The components produced by SMEs are

ordered by manufacturers in upper streams of supply chains. Hence, I assume that firms in the machinery-parts industry must produce better quality products with better production machines to meet requirements of orders from upper-stream manufacturers.

These results in this chapter suggest that in Vietnam, a possible policy measure for the central and local governments to promote SMEs' development is to support new product development by production skill training or provision of the information on the needs of upper-stream manufacturers of supply chains. Another measure is to encourage investment in new production machines by subsidising such investment and developing financial institutions including microfinance institutions for better access to finance.

Chapter VII. Policy Implications and Conclusions

In the previous chapters, I examined the growth factors for low-technology SMEs in Indonesia and compared with those in Vietnam. To examine growth of SMEs in Indonesia and Vietnam, I estimated how firms' profits and revenues increase in Chapters III, V, and VI and how firms' sales markets expand in Chapter IV. In this chapter, I first summarise the findings in each chapter and then provide policy implications and conclusions.

1. Summary of findings

Chapter III found from OLS estimations that product development, including new product development and quality improvement of existing products, and process improvement, i.e., reductions in unit raw material costs, are associated with profit growth. In addition, the estimation results did not show significant correlation between profit growth and any of firm characteristics, such as firm size, experience, access to finance or formality of the business. These results imply that regardless of such firm characteristics, SMEs have potential to improve profits, once they are able to absorb new techniques and achieve product development or process improvement.

In Chapter IV, I found from multinomial logit estimations that critical factors required to enter new markets differ depending on the geographical distance between firms and new markets. Productivity improvement is more important in earlier stages of geographic expansion of sales, i.e., when firms sell their products beyond their home city. By contrast, firm size is more important in later stages, i.e., when firms sell their products beyond their home province. Although the importance of the productivity level and firm size in firm's exporting behaviours has been found in the empirical literature in international trade (Bernard et al. 2007; O'Cass & Weerawardena 2009; Wagner 2007; Wincent 2005), no study has examined how these factors affect geographic expansion

of sales in domestic markets, to my best knowledge. This study is the first to show that geographic expansion of sales in domestic markets also requires productivity and firm size, as expansion to foreign markets does. In addition, the finding that productivity is more important in earlier stages while firm size is in later stages imply that expanding out of the home province or the country requires large initial costs of marketing that can be covered by only large firms. Another important finding in Chapter IV is that when firms are connected with business partners, they are more likely to reach markets out of the home province including foreign markets. The importance of business partners in development of SMEs in less developed countries is consistent with the finding of Sonobe and Otsuka (2006). My field observations also confirm that business partner firms found in trade fairs provided great opportunities for expansion of their sales markets.

Chapter V examined how firms increased revenue during the global economic crisis of 2008-2009, using probit estimations. The main findings include that firms in Java and exporters were more likely to lower revenue, probably because they were connected with the world market to a larger extent than other firms. Even during the crisis, increases in revenues were facilitated by product development, as found in Chapter III. Successful exporters were found to have attempted to develop new products by investing in facilities or equipment. By contrast, revenues were unlikely to increase when firms sold their products at lower prices. This result implies that during the crisis, consumers did not demand cheaper products but substitute high-quality imported products that became too expensive due to depreciation of Indonesian rupiah for domestic products. Under this circumstance, lowering prices was not a good strategy for firm growth.

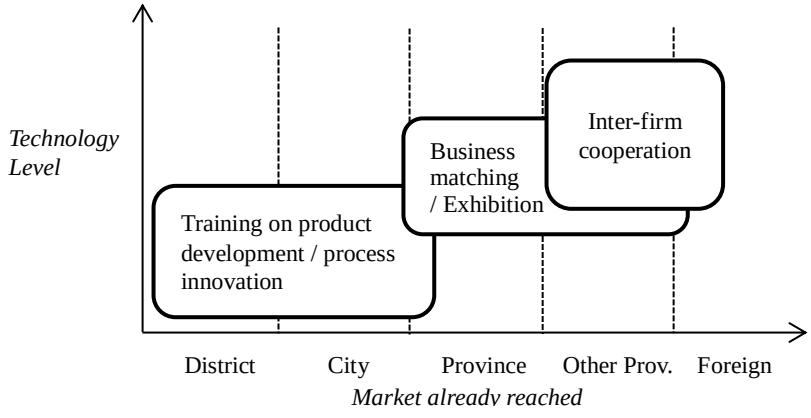
Chapter VI using firm-level data for Vietnam found that firms which developed new products are more likely to increase revenue, as I found in Chapter III using data for Indonesia. However, unlike in Indonesia, firm size, the amounts of assets they have, and the length of owners' experiences, seem to be correlated with new product development.

2. Policy implications and conclusions

The results of all these chapters provide two important conclusions. First, new product development and quality improvement are more associated with firm growth in the early stages of SME development. Firms' operations focusing on new product development and quality improvement may result in increasing profits then expanding sales markets in the home province. Even small, informal firms have opportunities to grow by implementing these operations. Second, firm size and the existence of business partners are more associated with the growth in the later stages when firms expand their sales markets beyond the home province.

The results of this study provide several implications to policies for SMEs in Indonesia. It is emphasised that appropriate policies to SMEs' development vary depending on their stages of development, rather than depending on firm size as often suggested in practice. As illustrated by Figure VII-1, I recommend that possible support measures be determined based on the levels of market reached by SMEs.

Figure VII-1. Implications for low-technology SME support measures in Indonesia



Source: Author's own compilation

First, when support institutions provide trainings to SMEs, it should focus more on trainings for new product development and product quality improvement especially for firms operating in the

home city market, as firms are more likely to grow through the two, rather than process improvement, or reduction in costs. Many existing studies had an opposite conclusion that only rudimentary managerial skill training, not even the standard-level, improves practices by small businesses (Bjorvatn & Tungodden 2010; Field, Jayachandran & Pande 2010). It is considered that small, low-technology firms are not able to absorb technologies even they are taught at training. However, the cases of smoked fish producer in a village near Ambon and Islamic clothes producer in Bogor, which I showed in chapters III and IV, clearly indicate their ability in absorbing and utilising technologies from production technology training. In addition, SMEs in Indonesia have opportunities for selling more products after implementing new product development and quality improvement considering the characteristics of the Indonesian market from the viewpoints of cultural, geographic, demographic, and socio-economic aspects (Wedel 2000). Indonesia is an ethnically diversified and a large country in geographic term with large population who are optimistic in their purchasing behaviour even during the global economic crisis in 2008.

For the implementation of production technology training, central and local governments have an important role in supporting SMEs. The costs for conducting production technology training are higher than ordinary management skill training, because production technology training involves equipment and materials for specific industries. Many SMEs are not able to pay high costs for such training thus the number of SMEs, which can participate, is limited. It is difficult for private and non-governmental support institutions to organise feasible product development and production technology training for specific industries. According to Hallberg (2000), government intervention in SME support is welcome when the market of support fails. McKenzie and Woodruff (2012) conclude that one of the reasons for the failure of the SME support market is the constraint of the supply side in which services do not exist in the market. Given the conclusions of Hallberg (2000) and McKenzie and Woodruff (2012), governmental institutions such as public testing and research institutes can assume a role in organising production skill training.

Second, for SMEs to reach markets out of the home province, business partners who connect them with distant markets are helpful. Therefore, at this stage, the government should subsidise trade fairs to provide producers and buyers more opportunities to meet each other or subsidise SMEs to participate in such trade fairs. This finding is consistent with many existing studies. However, different from the literature, this study implies that the selection of firms for business matching opportunities should be conducted cautiously because positive results are expected only for firms, which have already reached a certain level of productivity and sold their products beyond the home city markets.

The penetration of markets beyond an SME's home province also requires a firm to have a certain size because greater resources are necessary for operations in distant markets, such as additional transportation costs. It is not easy for small, low-technology firms to expand their size and capacity within a short period. An alternative way to cover the smallness of firms is operations in the form of inter-firm cooperation. For example, a case of cooperation by essential oil producers in Sumedang Region, West Java Province, represents such an inter-firm cooperation for expanding sales market. Sumedang Region was known as one of major areas for nilam plant production in the country. However, there were only eight producers of nilam essential oil in the region. All eight firms were micro-sized with a range of two to three employees (JICA 2010). The quality of their products was low and production volume was not stable due mainly to unstable supply of raw materials from farmers. It was difficult for these firms to sell their products beyond their home region. Under the above conditions, the Department of Industry and Trade of Sumedang Region decided to support the nilam essential oil industry in 2009. The local government together with JICA organised quality improvement training, then, the department encouraged firms to formulate a cooperative. The department also invited other stake holders such as nilam farmers and Padjadjaran University, which could provide support in processing technology, to discussions held to solve problems in the industry. Firms in the cooperative and related organisations had worked on

establishing a more efficient nilam collection system from farmers and collected the information on essential oil markets by participating in international conferences. The objective of this common trial for developing the industry was exporting nilam essential oil from Sumedang, thus, firms and the region department also worked on finding potential buyers for exporting. In this case of inter-firm cooperation initiated by the local government, small firms gained capability and were ready for export within a year.

However, the above result of inter-firm cooperation is not always successful in Indonesia as a means to enjoy a collective scale especially in the shape of clustering, which are agglomerations of firms producing similar and closely related products in the same area. For example, Sandee, Supratikno, and Yuwono (1994) note that only a limited number of industrial clusters promoted favourable growth. Based on a study of casting companies in Central Java, Sato (2000a) concludes that industrial clusters do not significantly influence the acquisition of information and technology by firms. Van Dijk and Sverrisson (2003) argue that growth mechanisms differ depending on the type of cluster. Further study of the application of inter-firm cooperation as an alternative to firm size enhancement is necessary.

Finally, I must admit that this dissertation has limitations. First, the population sampled in this survey consisted of participants in training programmes in Indonesia. Although I extended the study to Vietnam for the sake of comparison, the results are conditional to the extent that the sample reflects the characteristics of Indonesian SMEs. Second, it is possible that the correlations found in this study reflect reverse causality due to endogeneity of the covariates, as I explained in each chapter. Because appropriate instruments are not available in this study, I could not fully correct for possible biases due to endogeneity. This issue should be considered more carefully in future research.

Reference

Acs, ZJ 1999. *Are Small Firms Important? Their Role and Impact,* Kluwer Academic Publishers, Boston.

Acs, ZJ, Morck, JR, Shaver, M & Yeung B 1997, 'The Internationalization of Small and Medium-sized Enterprises: A Policy Perspective', *Small Business Economics*, vol. 9, no. 1, pp. 7–20.

Aitken, B, Hanson, GH & Harrison, AE 1997, 'Spillovers, Foreign Investment, and Export Behavior', *Journal of International Economics*, vol. 43, no. 1, pp. 103–132.

Anderson, D 1982, 'Small Industry in Developing Countries: A Discussion of Issues', *World Development*, vol. 10, no. 11, pp. 913–948.

Andersson, S, Gabrielsson, J & Wictor, I 2004, 'International Activities in Small Firms: Examining Factors Influencing the Internationalization and Export Growth of Small Firms', *Canadian Journal of Administrative Sciences,* vol. 21, no. 1, pp. 22–34.

Ardic, OP, Mylenko, N & Saltane V 2011, 'Small and Medium Enterprises A Cross-Country Analysis with a New Data Set', *World Bank Policy Research Working Paper*, no. 5538.

Association of Southeast Asian Nations (ASEAN) 2003, *ASEAN Policy Blueprint for SME Development 2004–2014*.

Asian Development Bank (ADB) 2011, *Asia 2050: Realizing the Asian Century*.

Auster, E & Aldrich, H 1984. 'Small Business Vulnerability, Ethnic Enclaves and Ethnic Enterprise', in Ward, R. and Jenkins, R. (ed.) *Ethnic Communities in Business: Strategies for Economic Surviva,* Cambridge University Press.

Ayyagari, M, Beck, T & Demirgüç-Kunt, A 2007, 'Small and Medium Enterprises Across the Globe', *Small Business Economics*, vol. 29, pp. 415–434.

Ayyagari, M, Demirgüç-Kunt, A & Maksimovic, V 2011, 'Small vs. Young Firms across the World, Contribution to Employment, Job Creation, and Growth', *World Bank Policy Research Working Paper*, no. 5631.

Aw, BY 2002, 'Productivity Dynamics of Small and Medium Enterprises in Taiwan', *Small Business Economics*, vol. 18, no. 1, pp. 69–84.

Bank Indonesia (BI). 2009. *2008 Economic Report on Indonesia*

Batra, G & Mahmood, S 2003, 'Direct Support to Private Firms: Evidence on Effectiveness', *World Bank Policy Research Working Paper*, no. 3170.

Beck, T & Demirgüç -Kunt, A 2006, 'Small and medium-size enterprises: Access to Finance as a Growth Constraint', *Journal of Banking & Finance*, vol. 30, no. 11, pp. 2931–2943.

Beck, T, Demirgüç -Kunt, A & Levine, R 2005, 'SMEs, Growth, and Poverty: Cross-Country Evidence', *Journal of Economic Growth*, vol. 10, no. 3, pp. 199–229.

Bernard, AB & Jensen, JB 2004, 'Why some firms export', *Review of Economics and Statistics*. Vol. 86, pp. 561–69.

Bernard, AB, Jensen, JB, Redding, S & Schott, PK 2007, 'Firms in International Trade', National Bureau of Economic Research, no. w13054.

Berry, A & Rodriguez, E 2001, 'Dynamics of Small and Medium Enterprises in a Slow-Growth Economy: The Philippines in the 1990s', World Bank Institute, no. 37181.

Berry, A, Rodriguez, E & Sandee, H 2001, 'Small and Medium Enterprise Dynamics in Indonesia', *Bulletin of Indonesian Economic Studies*, vol. 37, no. 3, pp. 363–384.

Berry, A, Rodriguez, E, & Sandee, H 2002, 'Firm and Group Dynamics in the Small and Medium Enterprise Sector in Indonesia', *Small Business Economics*, vol. 18, no. 1/3, pp. 141–161.

Biggs, T 1995, 'Training, Technology and Firm-Level Efficiency in Sub-Saharan Africa', *Regional Program on Enterprise Development Paper*, no. 48.

Biggs, T & Shah, MK 2006, 'African Small and Medium Enterprises, Networks, and Manufacturing Performance', *World Bank Policy Research Working Paper*, no. 3855.

Bigsten, A & Gebreeyesus, M 2007, 'The Small, the Young, and the Productive: Determinants of Manufacturing Firm Growth in Ethiopia', *Economic Development and Cultural Change*, vol. 55, no. 4, pp. 813–840.

Birchall, J & Ketilson, LH 2009, 'Resilience of the Cooperative Business Model in Times of Crisis', International Labour Office, Sustainable Enterprise Programme.

Bjorvatn, K & Tungodden, B 2010, 'Teaching Business in Tanzania: Evaluating Participation and Performance', *Journal of the European Economic Association*, vol. 8, no. 2-3, pp. 561-70.

Bosma, N, Van Praag, M, Thurik, R & De Wit, G 2004, 'The Value of Human and Social Capital Investments for the Business Performance of Startups', *Small Business Economics*, vol. 23, no. 3, pp. 227–236.

Brata, AG 2004, 'Spatial Dynamic of Small and Medium Enterprises in the Recent Economic Crisis', *Proceedings of RSA International Conference Series*, pp. 227–283.

Burger, K, Kameo, D & Sandee, H 2001, 'Clustering of Small Agro-Processing Firms in Indonesia', *International Food and Agribusiness Management Review*, vol. 2, no. 3/4, pp. 289–299.

Busenitz, LW & Barney, JB 1997, 'Differences between Entrepreneurs and Managers in Large Organizations: Biases and Heuristics in Strategic Decision-Making', *Journal of Business Venturing*, vol. 12, no. 1, pp. 9–30.

Capp, J, Elstrold, H & Jones, W Jr. 2005, 'Reining in Brazil's Informal Economy', *The McKinsey Quarterly*, McKinsey & Company.

Ceglie, G & Dini M 1999, 'SME Cluster and Network Development in Developing Countries: The Experience of UNIDO', *United Nations Industry Development Organization PSD Technical Working Papers Series*.

Chu, P & Siu, WS 2001, 'Coping with the Asian Economic Crisis: the Rightsizing Strategies of Small- and Medium-sized Enterprises', *The International Journal of Human Resource Management*, vol. 12, no. 5, pp. 845–858.

Clercq, D De, Sapienza, HJ & Crijns, H 2005, 'The Internationalization of Small and Medium-Sized Firms', *Small Business Economics*, vol. 24, no. 4, pp. 409–419.

Clerides, SK, Lach, S & Tybout, JR 1998, 'Is Learning by Exporting Important? Micro-Dynamic Evidence from Colombia, Mexico, and Morocco', *Quarterly Journal of Economics*, vol. 113, no. 3, pp. 903–947.

Coad, A & Tamvada, JP 2008, 'The Growth and Decline of Small firms In Developing Countries', *The Papers on Economics and Evolution*, no. 0808, Max Planck Institute of Economics.

Cosh, A, Hughes, A, Bullock, A & Milner, I 2009, 'SME Finance and Innovation in the Current Economic Crisis', UK-Innovation Research Centre.

Crick, D & Jones, MV 2000, 'Small High-Technology Firms and International High-Technology Markets', *Journal of International Marketing*, vol. 8, no. 2, pp. 63–85.

Crick, D & Spence, M 2005, 'The Internationalisation of 'High Performing' UK High-Tech SMEs: A Study of Planned and Unplanned Strategies', *International Business Review*, vol. 14, no. 2, pp. 167–185.

Das, M 1994, 'Successful and Unsuccessful Exporters from Developing Country', *European Journal of Marketing*, vol. 28, no. 12, pp. 19–33.

Deyo, FC 2002, 'The 'New Developmentalism' in Post-Crisis Asia: The Case of Thailand's SME Sector', in Yeung, Y. (ed.) *New Challenges for Development and Modernization: Hong Kong and the Asian-pacific Region in the New Millennium.* The Chinese University Press, Hong Kong

Downing, J & Daniels, L 1992, 'The Growth and Dynamics of Women Entrepreneurs in Southern Africa', *Gemini Technical Report,* no. 47.

Elfenbein, DW, Hamilton, BH & Zenger, TR 2010, 'The Small Firm Effect and the Entrepreneurial Spawning of Scientists and Engineers', *Management Science,* vol. 56, no. 4, pp. 659–681.

Fajnzylber, P, Maloney, W & Rojas, GM 2006, 'Microenterprise Dynamics in Developing Countries: How Similar are They to Those in the Industrialized World? Evidence from Mexico', *The World Bank Economic Review* vol. 20, no. 3, pp. 389–419.

Field, E, Jayachandran, S & Pande, R 2010, 'Do Traditional Institutions Constrain Female Entrepreneurship? A Field Experiment on Business Training in India', *American Economic Review,* vol. 100, no. 2, pp. 125-129.

Fuller-Love, N & Thomas E 2004, 'Networks in Small Manufacturing Firms', *Journal of Small Business and Enterprise Development,* vol. 11, no. 2, pp. 244–253.

Geenhuizen, MV, Indarti, N & Soetanto, DP 2010, 'Knowledge Acquisition and Innovation: Potentials for Upgrading of Very Small and Small Firms in Furniture Manufacturing in Indonesia', *International Journal of Foresight and Innovation Policy,* vol. 6, no. 4, pp. 207–224.

Ghauri, P, Lutz, C & Tesfom, G 2003, 'Using Networks to Solve Export-Marketing Problems of Small- and Medium-Sized Firms from Developing Countries', *European Journal of Marketing,* vol. 37, no. 5/6, pp. 728–752.

Gill, I & Kharas, H 2007, *An East Asian Renaissance*, The World Bank, Washington DC.

Goldstein, M. 1998, *The Asian Financial Crisis: Causes, Cures and Systemic Implications*, no. 55, Peterson Institute.

Government of Indonesia 2008a, *Peraturan Presiden Republik Indonesia Nomor 28 Tahun 2008 Tentang Kebijakan Industri Nasional Dengan Rahmat Tuhan Yang Maha Esa: Presidential Regulation on National Industry Development No.28 Year 2008*.

Government of Indonesia 2008b, *Law of Republic Indonesia No.20 of 2008 on Micro, Small and Medium Enterprise*.

Government of Indonesia Badan Pusat Statistik 2010a 2013a, *Statistik Indonesia 2010: Statistical Yearbook of Indonesia 2010, Statistik Indonesia 2013: Statistical Yearbook of Indonesia 2013*.

Government of Indonesia Kementerian Koperasi dan Usaha Kecil dan Menengah 2010b, 2013b (http://www.depkop.go.id/index.php?option=com_phocadownload& view=sections&Itemid=93).

Government of Japan Ministry of Economy, Trade and Industry 2012, *White Paper on Small and Medium Enterprises in Japan*.

Government of Vietnam 2009, *Nghị định 56/2009/NĐ-CP ngày 30/6/2009: Decree No.56/2009/ ND-CP (June 30, 2009) on Assistance to the Development of SMEs.*

Government of Vietnam 2012, *Quyết Định Phê duyệt kế hoạch phát triển doanh nghiệp nhỏ và vừa giai đoạn 2011 – 2015 Số: 1231/QĐ-TTg: Decision on Approving the Plan for Developing Small and Medium Enterprises 2011 – 2015* No. 1231/QD-TTg.

Government of Vietnam General Statistics Office 2013, *SỰ PHÁT TRIỂN CỦA DOANH NGHIỆP VIỆT NAM GIAI ĐOẠN 2006-2011: Development of Vietnam Enterprises in the Period of 2006-2011*.

Hall, C & Harvie, C 2003, 'A Comparison of the Performance of SMEs in Korea and Taiwan: Policy Implications for Turbulent Times', *Economics Working Paper Series*, University of Wollongong

Hallberg, K 2000, 'A Market-Oriented Strategy for Small and Medium-Scale Enterprises', *International Finance Corporation Discussion Paper*, no. 40.

Harvie, C 2002, 'The Asian Financial and Economic Crisis and Its Impact on Regional SMEs', in Harvie, C & Lee, BC (ed.) *Globalisation and Small and Medium Enterprises in East Asia*. Edward Elgar, Cheltenham, UK.

Indarti, N & Langenberg, M 2004, 'Factors Affecting Business Success among SMEs: Empirical Evidences from Indonesia', *Paper presented at the Second Bi-annual European Summer University*, University of Twente.

International Labour Office (ILO) 1972, *Employment, Incomes and Equality: A Strategy for Increasing Productive Employment in Kenya*, International Labour Office, Geneva.

Japan International Cooperation Agency (JICA) 2010, *Final Report of Study for Strengthening Clusters of Small and Medium Industries.*

Jayawarna, D, Jones, O & MacPherson, A 2011, 'New Business Creation and Regional Development: Enhancing Resource Acquisition in Areas of Social Deprivation', *Entrepreneurship & Regional Development,* vol. 23, no. 9/10, pp. 735–761.

Jovanovic, B 1982, 'Selection and the Evolution of Industry', *Econometrica,* vol. 50, no. 3, pp. 649–670.

Kalleberg, AL & Leicht, KT 1991, 'Gender and Organizational Performance: Determinants of Small Business Survival and Success', *Academy of Management Journal,* vol. 34, no. 1, pp. 136–161.

Karlan, D & Morduch, J 2009, 'Access to Finance' in D Rodrik & M Rosenzweig (ed.) *Handbook of Development Economics*, vol. 5, North-Holland, Amsterdam.

Karlan, D & Valdivia, M 2011, 'Teaching Entrepreneurship: Impact of Business Training on Microfinance Clients and Institutions', *The Review of Economics and Statistics,* vol. 93, no. 2, pp. 510–527.

Lauridsen, LS 1998, 'The Financial Crisis in Thailand: Causes, Conduct and Consequences?', *World Development,* vol. 26, no. 8, pp. 1575-1591.

Levy, B 1994, 'Successful Small and Medium Enterprises and Their Support Systems: A Comparative Analysis of Four Country Studies', *World Bank Policy Research Working Paper,* no. 1400.

Lim H & Kimura F 2010, 'The Internationalization of Small and Medium Enterprises in Regional and Global Value Chains', *Asian Development Bank Institute Working Paper Series,* no. 231.

Lin, KH & Chaney I 2007, 'The Influence of Domestic Interfirm Networks on the Internationalization Process of Taiwanese SMEs', *Asia Pacific Business Review,* vol. 13, no. 4, pp. 565–583.

Liu, X 2009, 'Impacts of the Global Financial Crisis on Small and Medium Enterprises in the People's Republic of China', *ADBI Working Paper Series,* no. 180.

Lu, JW & Beamish, PW 2001, 'The Internationalization and Performance of SMEs', *Strategic Management Journal,* vol. 22, no. 6-7, pp. 565–586.

Lynch, LM (Ed.) 2007, *Training and the Private Sector: International Comparisons*, University of Chicago Press.

MacPherson, MA 1996, 'Growth of Micro and Small Enterprises in Southern Africa', *Journal of Development Economics,* vol. 48, no. 2, pp. 253–277.

MacPherson, A & Holt, R 2007, 'Knowledge, Learning and Small Firm Growth: A Systematic Review of the Evidence', *Research Policy*, vol. 36, no. 2, pp. 172–192.

Madsen, TK & Servais, P 1997, 'The Internationalization of Born Globals: An Evolutionary Process?', *International Business Review*, vol. 6, no. 6, pp. 561–583.

Maloney W 2004, 'Informality Revisited', *World Development*, vol. 32, no. 7, pp. 1159–1178.

Mano, Y, Iddrisu, A, Yoshino, Y & Sonobe, T 2012, 'How Can Micro and Small Enterprises in Sub-Saharan Africa Become More Productive? The Impacts of Experimental Basic Managerial Training', *World Development*, vol. 40, no. 3, pp. 458–468.

Marino, LD, Lohrke, FT, Hill, JS, Weaver, KM & Tambunan, T 2008, 'Environmental Shocks and SME Alliance Formation Intentions in an Emerging Economy: Evidence from the Asian Financial Crisis in Indonesia', *Entrepreneurship Theory and Practice*, vol. 32, no. 1, pp. 157–183.

McKenzie, D & Woodruff, C 2012, 'What are We Learning from Business Training and Entrepreneurship Evaluations around the Developing World?, *World Bank Policy Research Working Paper* 6202.

Mead, DC & Liedholm, C 1998, 'The Dynamics of Micro and Small Enterprises in Developing Countries', *World Development*, vol. 26, no. 1, pp. 61–74.

Melitz, MJ 2003, 'The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity', *Econometrica*, vol. 71, no. 6, pp. 1695–1725.

Nguyen, NA, Nguyen, PM, Nguyen, DN & Nguyen DC 2010, 'Trade Liberalization and Innovation Linkages Micro-evidence from Vietnam SME Surveys', in CH Hahn & D Narjoko (ed.), *Globalization and Innovation in East Asia, ERIA Research Project Report*, no. 004, pp. 315-340.

Nichter, S & Goldmark, L 2009, 'Small Firm Growth in Developing Countries', *World Development*, vol. 37, no. 9, pp. 1453–1464.

O'Cass, AG & Weerawardena, J 2009, 'Examining the Role of International Entrepreneurship, Innovation and International Market Performance in SME Internationalisation', *European Journal of Marketing*, vol. 43, no. 11/12, pp. 1325–1348.

Okten, C & Osili, UO 2004, 'Contributions in Heterogeneous Communities: Evidence from Indonesia', *Journal of Population Economics*, vol.17, no.4, pp. 603–626.

Organisation for Economic Cooperation and Development (OECD) 2005, *SME and Entrepreneurship Outlook 2005*, OECD Publishing, Paris.

Oviatt, BM & McDougall, PP 2005, 'Defining International Entrepreneurship and Modeling the Speed of Internationalization', *Entrepreneurship Theory and Practice*, vol. 29, no. 5, pp. 537–554.

Patten, RH, Rosengard, JK & Johnston, DE Jr. 2001, 'Microfinance Success Amidst Macroeconomic Failure: The Experience of Bank Rakyat Indonesia During the East Asian Crisis', *World Development*, vol. 29, no. 6, pp. 1057–1069.

Peng, MW & Ilinitch, AY 1998, 'Export Intermediary Firms: A Note on Export Development Research', *Journal of International Business Studies*, vol. 29, no. 3, pp. 609–620.

Penrose, ET 1959, *The Theory of the Growth of the Firm*, John Wiley & Sons, New York.

Prasetyo, NH & Yuliatiningsih, R 2009, *Bank Indonesia – Consumer Survey Report*, Bank of Indonesia.

Rauch, A, Frese, M & Utsch, A 2005, 'Effects of Human Capital and Long-Term Human Resources Development and Utilization on Employment Growth of Small-Scale Businesses: A Causal Analysis', *Entrepreneurship Theory and Practice*, vol. 29, no. 6, pp. 681–698.

Ruan, J & Zhang, X 2009, 'Finance and Cluster-based Industrial Development in China', *Economic Development and Cultural Change*, vol. 58, no. 1, pp. 143–164.

Sandee, H, Supratikno, H & Yuwono P 1994, 'Promoting Small Scale and Cottage Industries: An Impact Analysis for Central Java' *Bulletin of Indonesian Economic Studies*, vol. 30, no. 3, pp. 115–142.

Sandee, H & Rietveld, P 2001, 'Upgrading Traditional Technologies in Small-Scale Industry Clusters: Collaboration and Innovation Adoption in Indonesia', *Journal of Development Studies*, vol. 37, no. 4, pp. 150–172.

Sandee, H, Isdijoso, B & Sulandjari, S 2002, 'SME Clusters in Indonesia: An Analysis of Growth Dynamics and Employment Conditions', International Labour Office (ILO), Jakarta.

Sato, Y 2000a, 'Linkage Formation by Small Firms: The Case of a Rural Cluster in Indonesia', *Bulletin of Indonesian Economic Studies*, vol. 36, no. 1, pp. 137–166.

Sato, Y 2000b, 'How did the Crisis Affect Small and Medium-sized Enterprises? From a Field Study of the Metalworking Industry in Java', *The Developing Economies*, vol. 38, no. 4, pp. 572–595.

Schmitz, H 1982, 'Growth Constraints on Small-scale Manufacturing in Developing Countries: A Critical Review', *World Development*, vol. 10, no. 6, pp. 429–450.

Schmitz, H & Nadvi, K 1999, 'Clustering and Industrialization: Introduction', *World Development*, vol. 27, no. 9, p. 1503–1514.

Schumpeter, JA 1961, *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*, Transaction Publishers, New Brunswick.

Sinha, S 2005, 'Developing Women Entrepreneurs in South Asia: Issues, Initiatives and Experiences', *ST/ESCAP*, no. 2401, Trade and Investment Division, UNESCAP.

Sleuwaegen, L & Goedhuys, M 2002, 'Growth of firms in developing countries, evidence from Cote d'Ivoire', *Journal of Development Economics*, vol. 68, no. 1, pp. 117–135.

Smallbone, D, Leig, R & North, D 1995, 'The characteristics and strategies of high growth SMEs', *International Journal of Entrepreneurial Behaviour & Research*, vol. 1, no. 3, pp. 44–62.

Sonobe, T, Akoten, JE & Otsuka, K 2011, 'The growth process of informal enterprises in Sub-Saharan Africa: a case study of a metalworking cluster in Nairobi', *Small Business Economics*, vol. 36, no. 3, pp. 323-335.

Sonobe, T, Suzuki, A & Otsuka, K 2011, *'KAIZEN for Managerial Skills Improvement in Small and Medium Firms: An Impact Evaluation Study'*, Japan PHRD Trust Fund No.TF096317, Washington, DC: World Bank.

Sonobe, T & Otsuka, K 2006, *Cluster-Based Industrial Development: An East Asian Model*, Basingstoke, UK: Palgrave Macmillan.

Sonobe, T & Otsuka, K 2010, *Cluster-Based Industrial Development: A Comparative Study of Asia and Africa*, Basingstoke: Palgrave Macmillan.

Stanworth, J & Gray, C 1992, 'Entrepreneurship and Education: Action-based_Research with Training Policy Implications in Britain', *International Small Business Journal*, vol. 10, no. 2, pp. 11–23.

Storey, DJ 1994, *Understanding the Small Business Sector*, Thomson Learning, London.

Storey, DJ 2004, 'Exploring the link, among small firms, between management training and firm performance: a comparison between the UK and other OECD countries', *The International Journal of Human Resource Management*, vol. 15, no. 1, pp. 112–130.

Suwaminathan, M 1991, 'Understanding the "Informal Sector": A Survey', World Institute for Development Economics Research of the United Nations University *WIDER Working Papers*, no. 95.

Tambunan, T 1999, 'Indonesia's Economic Crisis and Its Effect and the Likely Impact of the IMF-Reform Package on Small-scale Industries', *Paper presented at the Conference on International Trade, Industrial Organization, and Asia*, City University of Hong Kong.

Tambunan, T 2005, 'Promoting Small and Medium Enterprises with a Clustering Approach: A Policy Experience from Indonesia', *Journal of Small Business Management,* vol. 43, no. 2, pp. 138–154.

Tambunan, T 2008, 'Development of Rural Manufacturing SME Clusters in a Developing Country: The Indonesian Case', *Journal of Rural Development,* vol. 31, no. 2, pp. 123–146.

Tambunan, T 2009a, 'Export-oriented Small and Medium Industry Clusters in Indonesia', *Journal of Enterprising Communities*, vol. 3, no. 1, pp. 25–58

Tambunan, T 2009b, 'Crisis-Adjustment Strategies Adopted by SMEs in Copying with the 2008–2009 Global Economic Crisis: The Case of Indonesia', *Asian Journal of Agriculture and Development*, vol. 8, no. 1, pp. 57.

Tambunan, T 2010, 'The Indonesian Experience with Two Big Economic Crises', *Modern Economy*, vol. 1, no. 3, pp. 156–167.

Tan, H 2009, 'Evaluating SME Support Programs in Chile Using Panel Firm Data', *World Bank Policy Research Working Paper*, no. 5082.

Tan, HW & Batra, G 1995, 'Enterprise Training in Developing Countries: Overview of Incidence, Determinants, and Productivity Outcomes', *World Bank Private Sector Development Department Occasional Paper*, no. 9.

Ter Wengel, J & Rodriguez, ER 2006a, 'SME Export Performance in Indonesia After the Crisis', *Small Business Economics*, vol. 26, no. 1, pp. 25–37.

Ter Wengel, J & Rodriguez, ER 2006b, 'Productivity and Firm Dynamics: Creative Destruction in Indonesian Manufacturing, 1994-2000' *Bulletin of Indonesian Economic Studies,* vol. 42, no. 3, pp. 341–355.

Thurik, R & Wennekers, S 2004, 'Entrepreneurship, Small Business and Economic Growth', *Journal of Small Business and Enterprise Development*, vol. 11, no. 1, pp. 140–149.

Todo, Y 2011, ‘Quantitative evaluation of determinants of export and FDI: Firm-level evidence from Japan’, *The World Economy*. vol. 34, pp. 355–81.

Tybout, JR 2000, ‘Manufacturing Firms in Developing Countries: How Well do They Do, and Why?’, *Journal of Economic Literature*, vol. 38, no. 1, pp. 11–44.

Udell, GF 2009, ‘Wall Street, Main Street, and a Credit Crunch: Thoughts on the Current Financial Crisis’, *Business Horizons*, vol. 52, no. 2, pp. 117–125.

United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) 2009, ‘Globalization of Production and the Competitiveness of Small and Medium-sized Enterprises in Asia and the Pacific: Trends and Prospects’, *Studies in Trade and Investment*, no. 65.

Van Dijk, MP, & Sverrisson A 2003, ‘Enterprise Clusters in Developing Countries: Mechanisms of Transition and Stagnation’, *Entrepreneurship & Regional Development*, vol. 15, no. 3, pp. 183–206.

Vandenberg, P 2009, ‘Micro, Small and Medium-sized Enterprises and the Global Economic Crisis: Impacts and Policy Responses’, International Labour Office, Sustainable Enterprise Programme.

Wagner, J 2007, ‘Exports and Productivity: A Survey of the Evidence from Firm-Level Data’, *The World Economy*, vol. 30, no. 1, pp. 60–82.

Wedel, M 2000, *Market Segmentation: Conceptual and Methodological Foundations*. Springer.

Weijland, H 1990, ‘Target Groups for Industrial Policy: The Case of Rural Indonesia’, *Research Memorandum* 1990–89, Vrije Universiteit, Amsterdam.

Weijland, H 1992, ‘Trade Networks for Flexible Rural Industry’, *Research Memorandum* 1992–36, Vrije Universiteit, Amsterdam.

Wie, THEE 2000, ‘The Impact of the Economic Crisis on Indonesia's Manufacturing Sector’, *The Developing Economies*, vol. 38, no. 4, pp. 420–453.

Wiklund, J & Shepherd, D 2003, ‘Knowledge-based Resources, Entrepreneurial Orientation, and the Performance of Small and Medium-sized Businesses’, *Strategic Management Journal*, vol. 24, no. 13, pp. 1307–1314.

Wiklund, J, Davidsson, P & Delmar, F 2003, ‘What Do They Think and Feel About Growth? An Expectancy-value Approach to Small Business Managers’ Attitudes Towards Growth’ *Entrepreneurship Theory & Practice*, vol. 27, no. 3, pp. 247–269.

Wincent, J 2005, 'Does Size Matter?: A Study of Firm Behavior and Outcomes in Strategic SME Networks', *Journal of Small Business and Enterprise Development,* vol. 12, no. 3, pp. 437–453.

Wolff, JA & Pett, TL 2006, 'Small-Firm Performance: Modeling the Role of Product and Process Improvements', *Journal of Small Business Management,* vol. 44, no. 2, pp. 268–284.

World Bank 1993, *The East Asian Miracle: Economic Growth and Public Policy*. Oxford University Press, New York.

World Bank. World Development Indicators (http://data.worldbank.org/indicator)

Wren, C & Storey, DJ 2002, 'Evaluating the Effect of Soft Business Support Upon Small Firm Performance', *Oxford Economic Papers,* no. 54.

Zain, M & Ng, SI 2006, 'The Impacts of Network Relationships on SMEs' Internationalization Process', *Thunderbird International Business Review,* vol. 48, no. 2, pp. 183–205.

Zhang, X, Moorman, L & Ayele, G 2011, 'Infrastructure and Cluster Development: A Case Study of Handloom Weavers in Rural Ethiopia', *Journal of Development Studies,* vol. 47, no. 12, pp. 1869–1886.

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Appendix. Survey Sheet (this form was translated into Indonesian language)

JICA In-Country Training Progress Survey Sheet

Funabashi Gaku (gaku@mercury.ne.jp, 0811-1986384)

JICA has supported the trainings by centres of DEPPERIN, and we are always searching for better ways to support industry. Therefore I would like to ask your help for the survey on your actions after the training to measure the effectiveness of our program. Through the examination of the changes of your business, I hope that the survey will contribute to better understanding of the business conditions and to the development of more effective support especially to micro, small and medium enterprises. Information collected in this survey will be used in a report written by me. At a later date, I may include data from this survey in published materials. A copy of any published material will be made available upon request.

With your consent, I would like to interview you or ask you to fill out the survey sheet for this purpose. You will be free to withdraw your consent to participate in interview / survey at any time and without prejudice. Participation in the survey is purely voluntary. I will use pseudonyms, and names or other information identifying you, or any of the people you may talk about, will not be divulged publicly. Participants may request that their information not be used, as long as they do so before the publication is written. All information you provide is treated as confidential and will be stored securely in a locked cabinet. All recordings and transcripts will accompany me back to Japan and will be for analysis / research purposes only.

If you have any questions about this survey, please do not hesitate to contact me at any time. We will gladly address any queries or concerns you may have concerning this survey. If you agree to participate in this study, please kindly fill out this survey sheet. I would very much appreciate your kind cooperation.

I. Basic Information (please fill this part in November 2008)

1. Name of Owner: _____ (same as participant of training: Yes No)
2. Name of Business (Company): _____ 3. Location: _____
4. Established in the year of: _____ 5. Registered? Yes (TDI TDP SIUP Health Halal) No
6. Total number of people (including owner): _____

II. Business Summary

November 2008

Product	Price / Item (Rp) A	Quantity sold / month B	Monthly Sales (Rp) C=AxB	Raw Material Costs (Rp) D	Profit (Rp) E=C-D	Other Costs (Rp) F	Profit (Rp) G=E-F
				1._____		1. Salary	
				2._____			
				3._____		2. Rent	
				4._____			
				5._____		3. Others	
				6._____			
				7._____			
Total	-----	-----					

1. Market place: Same Kechamatan Same Kabupaten / Kota Same Province
   Other Province on same Island Other Islands Foreign country

March 2009

Product	Price / Item (Rp) A	Quantity sold / month B	Monthly Sales (Rp) C=AxB	Raw Material Costs (Rp) D	Profit (Rp) E=C-D	Other Costs (Rp) F	Profit (Rp) G=E-F
				1._____		1. Salary	
				2._____			
				3._____		2. Rent	
				4._____			
				5._____		3. Others	
				6._____			
				7._____			
Total	-----	-----					

Any changes? 1. Employed new people: Yes ( ) No 2. Newly registered: Yes No 3. New Business Partner: Yes No
4. New Product: Yes No 5. Got new Facility / Equipment: Yes ( ) No 6. Got Loan? Yes No
7. Other changes? Yes (In what way?) No

III. Overall Impression (please fill this part in June 2009)

1. Were the contents of training appropriate? Technology: Yes No Management: Yes No

2. What kind of topics you need to learn more? _____

3. Was the duration appropriate? Yes No (Too long Too short)

4. Overall are you satisfied with the training? Yes No

5. How much you would pay for this training, if you are asked to pay? Rp _____

6. Do you wish to introduce new equipment? Yes (What? How much? Rp) No

7. Do you wish to get loan from financial institution? Yes (For what?) No

8. How far you wish to develop your business? Double profit Triple profit 5 times as large 10 times as large More

9. After all do you think your life got better? Yes No

10. Any comment?

THANK YOU