Family Business Management and Succession in Vietnam

A Dissertation

Submitted to the Faculty of the National Graduate Institute for Policy Studies (GRIPS)

In Partial Fulfilment of the Requirements for the Degree of

DOCTOR OF PHILOSOPHY IN DEVELOPMENT ECONOMICS

September, 2014

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Abstract

In recent years, there has been a growing interest among economists in empirical analysis of the role of management in enterprise productivity, growth, and longevity, and a resurgence of an interest in industrial development in the international development cooperation community. Managerial capital is a focal point. One way to increase managerial capital in developing countries is to increase managerial capital of people who are working in industries, especially business owners and managers, through the spread of management knowledge and skills by means of management training, coaching and so forth. Another way, which is a longer-run approach, is to raise the education level in general and that of future business owners and managers in particular. The purpose of my dissertation is to contribute to the knowledge about each of these two approaches by using primary data collected in Vietnam, a country now entering the ranks of emerging states. In such countries, it is the children of current business owners who are more likely to have opportunity to pursue high education and more likely to enter industries by succeeding the business of their parents. Using the data of adult children of business owners collected in two industrial clusters in the suburb of Hanoi, Chapter 4 analyses their occupational and educational choices. Since such choices are made under the influence of their parents, this chapter develops and tests hypotheses derived from the Beckerian model of family with altruistic parents. Chapter 5 analyses the data collected in the above-mentioned industrial clusters before and after the managerial training featuring *Kaizen*, a Japanese management approach for productivity improvement. This training program for enterprises was implemented as a randomized controlled trial and consisted of classroom lectures and on-site coaching. It was followed by three follow-up surveys in the span of two years, which allows me to evaluate the training impacts in more than the very short run. The surveys asked both treatment and control enterprises about their willingness to pay for management training to reveal their value attached to managerial training. Taking advantage of these features, Chapter 5 extends the existing studies of the impact evaluation of management training interventions and finds the persistent impact of the training on the adopted level of managerial practices as well as business performance. This and other results of this chapter suggest that there is a lot of room for making management training and coaching programs more effective for the purpose of increasing managerial capital in developing countries.

Summary

There has been a recent resurgence of an interest in industrial development in the international development cooperation community because industrial development has potential to create jobs in the developing world. In many of the development countries, however, human resource of people who are working in industries is insufficient, which hampers the development of industries. Among the people in industries, business owners and managers are the ones who adopt new technology, production method and business strategy to develop their business as well as the industries in which they do business, and hence, a critical issue in industrial development is how to develop their human resource. Given the importance of the role of management in business, one way to develop human resource of business owners and managers is to increase their managerial capital through the spread of management knowledge and skills by means of management training, coaching and so forth. Another way, which is a longer-run approach, is to raise the education level in general and that of future business owners and managers in particular.

The purpose of my dissertation is to contribute to the knowledge about each of these two approaches by using primary data collected in Vietnam, a country now entering the ranks of emerging states. In such countries, it is the children of current business owners and managers who are more likely to pursue high education because their schooling investment is financed by accumulated wealth from business. In addition, given that the commonly observed form of business is family business, where business is owned and managed by a couple with the help of other family members, it is the children of current business owners who are most likely to enter industries by

succeeding the business of their parents. Therefore, an interest lies in whether educated children of business owners enter the business or not.

In order to address this question, Chapter 2 begins with reviewing the literature on family business studies, which have rapidly developed in the past few decades, as well as the recent economics literature focusing on the issue of family business. In the study of family business, the issue of succession occupies one-third of the literature because it is a major source of concern to business owners and it has profound implication for the future business performance. Chapter 4 analyses succession and educational choices of adult children of business owners, using primary data collected in two industrial clusters, whose main features are described in Chapter 3. The two industrial clusters are located in the suburb of Hanoi and are the typical examples of more than two-thousands of village-based industrial clusters scattered all over Vietnam that have engaged in the non-farm activities for generations. Such industrial clusters have contributed to industrial development, particularly after the *Doi Moi* policy (Renovation) in 1986 which aims to shift the economy from the centrally planned one to the market one.

As the choices of children of business owners are made under the influence of their parents, Chapter 4 develops and tests hypotheses derived from the Beckerian model of family with altruistic parents. I find that the majority of the adult children still choose to succeed their parents' business although they are faced with wider job options made available by the rapid rise of educational standard, urbanization, and changes in industrial structure, compared with their parents, whose limited educational attainment and mobility made the succession of family business an obvious option. I also find that the adult children of business owners with low education, strong

willingness to compete, or large business are more likely to choose family business. The collection of data of behavioural characteristics, including willingness to compete, is one of the features of my study dissertation. Although the adult children who succeed the business are likely to be less educated compared with those who choose jobs outside the business, they instead receive great amount of financial and technical business supports from their parents.

Chapter 5 analyses the data collected in the above-mentioned industrial clusters before and after basic managerial training offered to the enterprises. The feature of my study in Chapter 5 is highlighted in the latter half of Chapter 2, where I review the literature on management and its relationship with business performance, including a number of recent experimental interventions. The basic managerial training program features Japanese *Kaizen* management approach for productivity improvement and consists of two mode of teaching, namely classroom lectures and on-site coaching. The training program was implemented as a randomized controlled trial and followed up by three rounds of follow-up surveys in the span of two years, which allows me to evaluate the training impacts in more than the very short run. I find the training does improve managerial capital of business owners and the improvement is not only observed immediately after the training but also two years after the training. I also find that the training has positive impact on business performance. The data includes the business owners' willingness to pay for management training to reveal their value attached to the training. Although the *ex ante* willingness to pay was low, the actual participation significantly increased willingness to pay, particularly among those benefited from the training.

Chapter 6 concludes with policy implication derived from this dissertation. The

major policy implication is twofold. Firstly, to the extent that managerial training is found to be effective, my dissertation could provide support for certain interventions to disseminate managerial training. I, however, find in Chapter 5 that the effectiveness of the training widely varies by the mode of training, the business practices in each cluster and the characteristics of the business owners, and thus there is a lot of room for making management training and coaching programs more effective for the purpose of increasing managerial capital in developing countries. Secondly, as enterprises are different not only in terms of the business size but also the capacity, preference and motivation, existing policies for the promotion of small and medium enterprises (SMEs), which based on simplistic view on SMEs, do not work. Instead, right policy should be designed for right type of enterprises, and for this purpose, understanding of SMEs should be enhanced. In so doing, my dissertation illustrates that due attention should be given to family business aspect of SMEs as well as managerial capacity.

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Acknowledgement

In the first place, I would like to express my sincere gratitude to my dissertation committee members, Professors Tetsushi Sonobe, Keijiro Otsuka, Alistair Munro and Aya Suzuki for their invaluable comments and suggestions.

I am deeply indebted to my supervisor Professor Tetsushi Sonobe for his outstanding academic guidance and continuous moral support. Without his help, I would not be able to complete my study.

I would like to express my sincere gratitude to Professor Keijiro Otsuka, who strongly encouraged me to continue studying in the Ph.D program when I was about to finish the Master program.

In addition, my appreciation goes to Professors Jonna P. Estudillo, Ryosuke Nakata, Yoichi Arai, Chikako Yamauchi, Takashi Yamano, Kei Kajisa, Tomoya Matsumoto, Yukichi Mano, Hideaki Goto, Yasuyuki Sawada, Nobuhiko Fuwa, and Takashi Kurosaki who gave me the instruction on microeconomics, econometrics, development economics, and other subjects related to my study.

I would like to thank my Vietnamese collaborators and colleagues, Dr. Vu Hoang Nam, Trinh Quang Long, Be Thi Ngoc Quyen and Nguyen Thi My Chau, who have provided generous support in conducting research and analysing data. I also thank all the enumerators worked for the data collection, all the instructors of managerial training, and all the enterprise owners who spared time for us to share invaluable information.

I thank my colleagues in GRIPS. Particularly, I have benefited from discussions with Francis Mwesigwe, Kiprono Philemon, Julious Atuhurra, Kefyalew Endale, Yoko Sakai, Edwin Mhede, Fredrick Manang, Kazuya Masuda, Yoko Oishi, Kasim

Ggombe, Muhammad Halley Yudhistira, Kengo Igei and Akira Shibanuma. I also thank my former classmates, with whom I survived the intensive course work, Drs. Le Anh Xuan, Nguyen Dang Tue and Ryoko Susukida as well as my seniors, Drs. Timothy Njeru Njagi, Amin Md. Nurul, Terrence Kairiza, Girum Abebe Tefera, Yuki Tanaka, and Takuji Tsusaka.

My special thanks go to staffs of GRIPS and Foundation for Advanced Studies on International Development (FASID) for their administrative supports and to GRIPS, Japan International Cooperation Agency (JICA) and Japan Student Service Organization (JASSO) for their financial support.

Last but not the least, I would like to thank my parents, Takuya Higuchi and Misako Higuchi, for allowing me to pursue a doctoral degree with their *laissez faire* principle.

Family Business Management and Succession in Vietnam

Yuki Higuchi

CHAPTER 1

Introduction

Objective

There has been a recent resurgence of an interest in industrial development in the international development cooperation community because industrial development has potential to create jobs in the developing world (World Bank, 2012). In many of the development countries, however, human resource of people who are working in industries is insufficient, which hampers the development of industries. Among the people engaged in industries, business owners and managers are the ones who adopt new technology, production method and business strategy to develop their business as well as the industries in which they do business (e.g., Sonobe and Otsuka, 2006; 2011), and hence, a critical question for industrial development is how to develop their human resource.

As management is increasingly recognized amongst economists as being closely linked with business performance (e.g., Bloom and van Reenen, 2007; Bruhn et al., 2010), one way to develop human resource of business owners and managers is to increase their managerial capital through the spread of management knowledge and skills by means of management training, coaching, and so forth as attested by Karlan and Valdivia (2011) and Bloom et al. (2013) among others. Another way, which is a longer-run approach, is to raise the education level in general and that of future business owners and managers in particular.

The purpose of my dissertation is to contribute to the knowledge about each of these two approaches, using primary data collected in Vietnam, a country now entering

the ranks of emerging states. In so doing, I focus on industrial clusters, that is, geographic concentrations of enterprises producing similar and related products, because they play a central role in industrial development, taking advantages of localization economies (e.g., Felkner and Townsend, 2011; Ruan and Zhang, 2009; Schmitz and Nadvi, 1999).[1] In Vietnam, more than one-thousands of village-based industrial clusters, where the villagers have engaged in non-farm activities for generations, have contributed to the industrial development, particularly after the *Doi Moi* policy in 1986 which aims to shift the economy from the centrally planned one to the market one (JICA, 2004; Oostendorp et al., 2009). Therefore, development of human resource of people in industrial clusters has profound implications in industrial development. In addition, the focus on industrial clusters allows me to naturally control for the effects of various heterogeneity in empirical analyses because the enterprises within the same industrial cluster locate near each other, procure inputs from the same markets, produce the similar products and supply them to the same product market.

Main Findings

Using the data collected in two industrial clusters in the suburb of Hanoi, whose main characteristics will be described in Chapter 3, I analyse occupational and educational choices of the adult children of business owners by shedding light on family

1 The geographic proximity within an industrial cluster reduces monitoring costs as well as other transaction costs associated with the division of labour among enterprises, and agglomeration of enterprises attracts workers, suppliers, and buyers because of reduced search costs (Fujita and Thisse, 2013; Marshall, 1920). An industrial cluster also provides a basis for innovation because it facilitates the matching between employers and workers with specific skills and helps diffuse new information and knowledge within the cluster (Moretti, 2012).

business aspect of enterprises in Chapter 4. In the two industrial clusters, enterprise is owned and managed by a couple with the help of other family members. This is a typical case of family business, which accounts for the larger share of business worldwide (e.g., Gersick et al., 1997; La Porta et al., 1999). The viewpoint of family business is particularly important when business resource is transferred from parents to their children in the process of industrial development. Given the importance of intergenerational transfer of business resource for industrial development as well as the fact that succession is a major source of concern to business owners, the issue of succession occupies one-third of the literature of family business studies (Nordqvist et al., 2013; Sharma et al., 2003).

In emerging economies like Vietnam, the level of educational standard has rapidly improved over the last few decades (Glewwe and Kremer, 2006). In such countries, it is the children of business owners who are likely to pursue high education because business owners are wealthy enough to invest in their children's education. At the same time, the children of business owners are most likely to enter industries by succeeding the business of their parents. For the current business owners, succession of family business was an obvious occupational option due to their limited educational attainment and mobility at the time. Their children, however, are faced with wider job options made available by the rise of educational standard as well as urbanization and changes in industrial structure. As their choices of occupation and education are made under the influence of their parents, I develop and test hypotheses derived from the Beckerian model of family with altruistic parents. I find that the majority of the adult children of business owners still choose to succeed their parents' business, particularly those with low educational attainment, and that their parents generously provide

financial and technical supports for their business. I also find that the children are more likely to succeed family business when their parents have low education, strong willingness to compete, or large business.

Chapter 5 analyses the data collected in the same two industrial clusters before and after basic managerial training offered to the enterprises. As the importance of managerial capital in business is increasingly recognized amongst economists, a number of experimental interventions are conducted by providing management training to enterprises (e.g., Berge et al., 2012; Bruhn and Zia, 2013; De Mel et al., 2014), which are reviewed in Chapter 2. Although the training is found to be effective in most of these studies, there is no consensus on what type of managerial training is effective in what context (McKenzie and Woodruff, 2014). Among various approaches to management, recent empirical studies find that Japanese *Kaizen* management approach is effective in Africa as attested by Mano et al. (2012) and Mano et al. (2014) among others, and thus, I analyse impacts of managerial training featuring *Kaizen* to test whether this approach is effective in an Asian emerging economy. In order to analyse what type of teaching method is more effective, *Kaizen* was taught by two different modes, namely classroom lectures and on-site coaching.

Two other features characterize my study in Chapter 5. One is the collection of information on willingness to pay to reveal the business owners' value attached to managerial training. This is to investigate whether participation in managerial training is discouraged by lack of business owners' information and knowledge because the participation rate of managerial training is usually low even offered free of charge (Suzuki et al., 2014). The other is the collection of follow-up data in the span of two years to evaluate the training impacts in more than the very short run. Most of the

existing literature of managerial interventions measures short run impact of the training, which partly explains the limited or mixed impact of management training on business performance (McKenzie and Woodruff, 2014).

I find the persistent impact of the training on management. In order to measure the level of management, I follow the lead of Bloom et al. (2013) to collect yes/no type of information, such as, whether the raw materials are stored separately from the scrap or whether workers maintain machines every day. The impact on management, however, widely varies by the mode of training, the business practices in each cluster and the characteristics of the business owners. I also find positive impact on business performance but only in one of the industrial clusters under my study. The *ex ante* willingness to pay was low but the actual participation significantly increased the willingness to pay, implying that the lack of information and knowledge discourages the participation in managerial training.

Chapter 6 concludes with policy implication derived from this dissertation. The major policy implication is twofold. Firstly, to the extent that basic *Kaizen* training is found to be effective in improving the adopted level of management practices, my dissertation could provide support for certain interventions to disseminate managerial training. I, however, emphasize the importance of accumulating knowledge because the magnitude of the effectiveness varies and thus there is a lot of room for making management training more effective for the purpose of increasing managerial capital in developing countries. In addition, the impact on business performance is limited, which could be due to the insufficient amount of the training, and hence, the advanced managerial training has potential to further development managerial capital. As the basic managerial training increased the value attached to managerial training, the

enterprises that are eager to improve and expand their business are most likely to participate in such advanced training if offered.

Secondly, as enterprises are different not only in terms of the business size but also the capacity, preference and motivation, existing policies for the promotion of SMEs, which based on such simplistic view that SMEs would grow as long as credit or information is provided, do not work. For instance, Chapter 4 finds that majority of enterprises are succeeded by less educated children of business owners. Those children may not be very eager to expand business but rather prefer to maintain status quo, which generates sufficient income. On the other hand, I find that a number of enterprises are succeeded by highly educated children whose parents have business aspiration and they are more likely to expand their business as well as develop industries in future. In Chapter 5, I find that some enterprises became willing to pay for managerial training to improve their business while majority of enterprises remain unwilling to pay for managerial training. Therefore, more resources should be allocated to such promising enterprises that are succeeded by competent children or managed by motivated business owners. In order to design right policy for right type of enterprises, understanding of SMEs should be enhanced. In so doing, my dissertation illustrates that due attention should be given to family business aspect of SMEs as well as managerial capacity.

Organization of the dissertation

Chapter 2 reviews the literature related to family business and management. Chapter 3 describes the main features of the two industrial clusters under my studies and the data collection procedure. Chapter 4, entitled “The Succession and Education

of the Children of Business Owners," investigates the educational and succession choices of the adult children of business owners. Chapter 5, entitled "The Persistent Impacts of *Kaizen* Training," analyses the impacts of *Kaizen* managerial training. Chapter 6 concludes.

CHAPTER 2

Literature Review

In this chapter, I first review the literature on family business studies, which have rapidly developed in the past few decades, as well as the recent economics literature focusing on the issue of family business. In so doing, I highlight the importance of succession in the study of family business. Second, I review the study of management and its relationship with business performance. The literature review includes recent experimental interventions of managerial training to highlight the feature of my study in Chapter 5.

2.1. Family Business

This section begins with overviewing the presence of family business in the world. Given the worldwide prevalence of family business, I review the literature on the rationale behind family business as well as the literature on performance of family business vis-à-vis non-family business. Next, I highlight the importance of the issue of succession in the study of family business, which Chapter 4 of this dissertation addresses.

Worldwide Prevalence of Family Business and the Rationale Behind

An often-cited paper by La Porta et al. (1999) surveys the business in 27 countries, mostly in the developed countries, finding that the most common form of business is family business. Not only in the developed world but also in developing world, the commonly observed form of business is family business (Bertrand and Schoar, 2006).

Gersick et al. (1997, p2) estimate that the business owned or managed by families account for 65 to 80 per cent of all business in the world. As the family business is so prevalent, numerous studies have investigated various aspects of family business.

Family business has recently gained increasing attention in the economics literature because of its worldwide prevalence and the importance of economic investigation on the topics related to family business. The topics analysed in the recent papers published in top economics journals include, but not being limited to, the impact of family business succession on the enterprise performance (Bennedsen et al., 2007: *QJE*; Pérez-González, 2006: *AER*) and on the investment decisions (Ellul et al., 2006: *AER*), the differences between family and non-family enterprises with regard to the management practices adopted (Bloom and van Reenen, 2007: *QJE*) and the managerial compensation and job assignment (Cai et al., 2013: *REStat*).

In standard theory of economics, the principal-agent model provides insights into the prevalence of family business. When a business owner (principal) is unable to monitor the effort level of the hired manager (agent), he/she prefers to hire a family member as the manager because monitoring of the family member is easier than monitoring the outsiders. As family members interact not only in business but also in daily life, the owner is likely to have a good deal of information on the effort level of the family member, and thus the problem of asymmetric information is minor. In addition, trust between the owner and the family members reduce the cost associated with contract, such as crafting the contract by taking into account various contingency and monitoring its enforcement. The same reasoning applies to the relationship between a manager (principal) and employees (agent). By hiring family members as employees, the manager can reduce the monitoring cost of the effort level of his/her

employees as well as the cost of crafting and enforcing the contract.

To explain why family business is so prevalent worldwide, the literature provides several other explanations, which I categorize into two views based on the conceptual framework described in Hayami and Godo (2005, Chapter 1). One is to view family business as a response to institutions (rules) and the other is to view family business as a response to culture (value system). With regard to the institutions, the degree of the family business prevalence differs by countries or even regions within a country. For instance, family business is more prevalent where the protection of minority shareholder is stronger (La Porta et al., 1999), the investor protection is weaker (Burkart et al., 2003), the inheritance law is looser (Ellul et al., 2010) and the labour relations are more hostile (Mueller and Philippon, 2011). In this view, family business evolves as a rational response to the institutions and therefore it is an efficient form of business given the surrounding institutions.

In view of culture, Gersick et al. (1997) and Kets de Vries (1993) among others argue the parental nepotism lies behind the family business and such nepotism overrules the business reasons in the decision making of business. Using the terminology of Demsetz and Lehn (1985), the decisions are influenced by “amenity potential” to use the resource of enterprises for personal purposes. For instance, the manager uses his/her power for the recruitment of his/her low ability children rather than talented outsiders. Lee (2006) and Schulze et al., (2001) claim the influences of trust, altruism and commitment on family business and Bertrand and Schoar (2006) find that family business is more prevalent in countries where family ties are strong. Because of these influences from culture or value system, the owners of enterprises may not maximize profit or aim to expand business as assumed in standard economic theory. Instead,

they may focus on the nonmonetary component deriving from the direct control of business or they may put priority on the continuation of business to have their children succeed the business. For instance, Bertrand and Mullainathan (2003) provide suggestive evidence that family business owners enjoy the "quiet life" with their priority on the continuation of current scale of business rather than taking risk to scale up. In such cultural view, family business is bound by cultural norms and therefore it may not be the optimal form of business with regard to the economic efficiency.

Performance of Family Business

Whether family business is evolved in response to the institutions or constrained by cultural norms influences the efficiency of family business. Despite the worldwide prevalence of family business, however, the question remains unclear as to whether family business is an efficient form of business. An often-cited paper by Anderson and Reeb (2003) empirically find that among the Standard and Poors 500 enterprises, family business performs better than the non-family business, arguing that the family ownership reduces the agency problem without severe loss of efficiency. Lee (2006) extends the period of analyses of Anderson and Reeb (2003) and confirms that the family business outperforms the non-family business in terms of employment growth, revenue growth and productivity. The similar pattern is found among the Fortune-500 enterprises (Villalonga and Amit, 2006), the enterprises managed by Business Week 1000 CEOs (McConaughy et al., 1998) and the enterprises in the French stock market (Sraer and Thesmar, 2007).

In order to explain the outperformance of family business, Stein (1989) points out that managers of family business commit to the business for longer period of time and

thus maintain the long-term investment horizons rather than pursuing the myopic short-term benefit. Bertrand and Schoar (2006) call such long-term orientation as "patient capital" and argue that family business with such patient capital can maximize the long-run returns by pursuing investment opportunities. The importance of the long-term orientation in family business has recently been emphasized, following the lead of an influential paper by Breton-Miller and Miller (2006).

The emerging literature in economics on the issue of family business, however, provides theoretical explanation as well as empirical evidence of the lower efficiency of family business vis-à-vis non-family business. Caselli and Gennaioli (2013) build a macroeconomic model in which the imperfection in contract enforcement constrains the possibility of hiring a manager from outside family members, which causes loss of efficiency in business. Their calibration based on the model shows that the low productivity of the enterprises in developing countries is explained by the prevalence of family business. Similarly, Burkart et al. (2003) build a model in which family business is the second-best response to the agent problem caused by the poor shareholder protection.

In the empirical analyses, Perez-Gonzalez (2006) provide empirical evidence based on the analyses of U.S. enterprises that family business has lower profitability because the less talented family member, rather than more talented candidate from outside, is selected as a manager based on nepotism. Bennedsen et al. (2007) show that the family business succession has large negative consequence on the enterprise performance, establishing the causal relationship by using the gender of first-child as an instrument for family business succession as first-son is more likely to be appointed as a successor. Similarly, Bertrand et al. (2008) exploit the variation in the number of sons

and daughters of business founders and find that the business succession by founder's child deteriorates the business performance.

Although there is no consensus on the direction of influences of family business on business performance, it is evident that family business is related to the enterprise performance. It is most likely that the family business aspect of the enterprises influences the development process of industries and, hence, my dissertation sheds light on family business in the analyses of industrial development.

Family Business Succession

As pointed out by a number of studies referred above, the succession affects enterprise performance. In the literature of family business studies, the issue of succession occupies one-third of the literature given its profound implications in the business performance as well as the fact that succession is a major source of concern to business owners (Nordqvist et al., 2013; Sharma, 2004; Sharma et al., 2003). The large body of literature provides scientific insights into the succession process and factors affecting succession. Most of the literature of family business succession, however, is theoretically oriented and the empirical studies, particularly that analyse quantitative data of large samples, are scares. There are a number of studies that use quantitative data; however, most of these studies focus on developed countries, particularly in U.S. and in Europe, and thus studies using quantitative data from the developing world is scanty (e.g., Brockhaus, 2004; Sharma and Chua, 2013). As family business is commonly observed also in the developing world, analyses of quantitative data collected from the developing world in its own right will enrich the study of family business succession.

The study of family business succession is of particular importance in the rapidly changing emerging economies. Because of rapid economic growth and accompanying socio-economic changes, those industries adopting advanced technologies and acquiring managerial knowledge grow fast while other industries failing to keep pace with soaring wages decline, and, hence, the fate of an industry as well as individual family business depends crucially on the capacity of business owners. If the capable candidate for successors, who are most likely to be highly educated, succeeds family business, he/she would play an important role in upgrading their industries by adopting new technologies, marketing methods, and management approaches, as the literature on industrial development in developing countries suggests (e.g., Schmitz and Nadvi, 1999; Sonobe and Otsuka, 2011). Therefore, Chapter 4 of my dissertation addresses the question of whether educated children of business owners succeed business or not.

2.2. Management

This section begins with overviewing the presence of SMEs in developing world. Given the wide prevalence of small enterprises, I review possible binding constraint of enterprise growth pointed. Next, I discuss the increasing attention to managerial capital as a binding constraint of enterprise growth. I review the theoretical discussion on why management influences the enterprise performance and review the recent empirical studies, including studies of experimental interventions of managerial training. In so doing, I highlight the feature of my study in Chapter 5.

SMEs and Binding Constraint of Enterprise Growth

In the developing world, the majority of enterprises are SMEs (e.g., Ayyagari et

al., 2007; Bigsten and Söderbom, 2006; Nichter and Goldmark, 2009; Tybout, 2000). This is also evident in industrial clusters (Sonobe and Otsuka, 2006; 2011). Economists have investigated why most of the enterprises in the developing countries are small; in other words, what is the binding constraint of the enterprise growth.

The first possible constraint is credit. The influential papers by De Mel et al. (2008) and McKenzie and Woodruff (2008) conducted experiments by generating shocks to the capital stock to the small enterprises in Sri Lanka and Mexico, respectively, and find that the return from such capital shock is very high in both countries. These studies claim that the financial market in developing countries is imperfect and thus the enterprises are unable to borrow to invest in the optimal level of business. The second possible binding constraint is market distortions. Hsieh and Klenow (2009) provides empirical evidence based on micro-level data that the enterprises in China and India, compared to the U.S. counterparts, have lower productivity due to the misallocation of labour and capital. Similarly, Petrin and Sivadasan (2013) find that the misallocated labour reduces the production efficiency in Chilean enterprises. In macro level analyses, Bartelsman et al. (2009) find that the large cross-country variation in size and productivity of enterprises is explained by the degree of market distortions. These studies argue that the input market in developing countries is distorted and thus the enterprises cannot use the optimal level of the production factors.

The third possible constraint is institutions. There has been an increasing interest among economists in the role of institutions for economic development. An influential book of Acemoglu and Robinson (2012) and a series of their studies emphasize the importance of institutions. Among various type of institution, bad

governance provides unfavourable business environment (Baland et al., 2010). As corruption lies behind such bad governance, Fisman and Svensson (2007) present empirical evidence using micro-level data on enterprises that the bribery payment significantly reduces the enterprise growth. The fourth possible constraint is infrastructure and land. A number of research point out that the lack of infrastructure provision and the limited land availability prevent the enterprises growth (e.g., Collier and Gunning, 1999; Eifert et al., 2008; McCormick et al., 1997).

Whilst the above listed constraints are the factors external to enterprises, the binding constraint could be factors specific to each enterprise. The human capital has long been theoretically argued to be an important determinant of enterprises performance (Schultz, 1975) and a number of studies have empirically find that the lower educational attainment and shorter experience are associated with worse enterprise performance (e.g., McPherson 1996; Mead and Liedholm, 1998). In addition to education and experience, managerial capital has recently caught attention as a possible binding constraint of enterprise growth in developing countries (e.g., Bruhn et al., 2010; Syverson 2011).

Management and Enterprise Performance

In economic theory, Alchian and Demsetz (1972) argue that managerial ability of enterprises to measure and allocate various inputs in production determines the productivity of enterprise because the production involves the cooperation of various inputs. Similarly, Lucas (1978) develops a model in which the varied managerial talent among workforce influences the productivity through the allocation of workforce into managers and employees as well as the allocation of production factors across the

managers. Rosen (1982), based on the model of Lucas, develops a model on the issue of the matching between the managers with different talent and enterprises.

Although the managerial capacity has long been argued to influence the productivity of enterprises in economic theory, it is recently that economists started to empirically analyse the relationship between management and enterprise performance because of the difficulty in measuring and quantifying management. Empirical works are led by Bloom and van Reenen (2007), which systematically measure and quantify management practices adopted by enterprises. Based on data from the enterprises in U.S., U.K., France and Germany, they find that the level of management practice is strongly correlated with the enterprise productivity, growth, and longevity. Bloom and van Reenen (2010) extend the research to 17 countries, including three developing countries, namely Brazil, China and India, and find that such correlation is observed also in the developing world.

Experimental Interventions

Reflecting such growing interest in empirical analysis of the role of management practices in enterprise performance, a number of experimental interventions were conducted to analyse the adoption of management practices and to establish the causal relationship between management and business performance. These interventions provide managerial training to enterprise owners and evaluate the impact on the adoption of management practices as well as business performance. One of the most well-known studies in this strand is Karlan and Valdivia (2011: *REStat*). They provided basic business training to the randomly selected microenterprises in the microfinance institution in Peru, finding that the business knowledge of those who

participated in the training significantly improved after the training. They, however, do not find the significant impact on business performance, such as revenue, profit or employment. The similar interventions include, but not being limited to, Berge et al. (2012: *J of African Economics*) and Bjorvatn and Tungodden (2010: *JEEA*) in Tanzania, Bloom et al. (2013: *QJE*) and Field et al. (2010: *AER*) in India, Bruhn and Zia (2013: *J of Development Effectiveness*) in Bosnia and Herzegovina, De Mel et al. (2014: *JDE*) in Sri Lanka, and Mano et al. (2012: *WD*) in Ghana.

According to an excellent survey of these managerial interventions, McKenzie and Woodruff (2014) find that most of the managerial training has positive impact of the level of adopted management practices. The magnitude of the impact, however, varies, and there is no consensus on what type of managerial training is effective in what context. Chapter 5 addresses this issue by analysing the impact of managerial training taught in two different modes in two different business contexts.

Despite the presence of the positive impact of managerial training interventions on management, the impact on business performance is mixed partly due to the weak power for statistical inference caused by the large variation and fluctuation of the business performance as well as the measurement of the business performance shortly after the interventions. As many of the existing studies target microenterprises, which frequently change business or exit from business, the measurement of longer-run impact is difficult. A notable exception is Bloom et al. (2013) that provide the managerial consultation to the 17 Indian enterprises, which hire 70 to 500 employees, and trace them for two years with the frequent surveys conducted at 2-months intervals. They find the significant increase in management after the training and establish the causal impact of the improved management on business performance. My study in Chapter 5

is closest to their study and addresses the question of the longer-run impact of the managerial training on the adopted level of management practices as well as business performance.

CHAPTER 3

Study Sites and Data Collection

Study Sites

Vietnam achieved rapid economic growth after the adoption of *Doi Moi* policy in 1986 to liberalize its economy. In 2009, Vietnam shifted from a low-income country to a middle-income country according to the classification of the World Bank. More than two thousands of rural industrial clusters scattering all over Vietnam have been found to contribute to such economic growth (JICA, 2004; Oostendorp et al., 2009). The contribution of the industrial clusters comprising of SMEs to the economic growth is also observed in other emerging economies including China, which also experienced the shift from the state-planned economy to the market one (Ruan and Zhang, 2009; Sonobe and Otsuka, 2006).

In Vietnamese industrial clusters, the production of particular items concentrates only within the boundary of villages and thus one village specializes in a specific product so that these clusters can be called industrial villages. For the last few decades, a number of industrial villages have succeeded in upgrading their products to higher-value ones or in beginning mass production, which has made manufacturing much more profitable than farming (Nam et al., 2009; 2010). Today, however, many of industrial clusters started to disappear and even the successfully develop ones started to show declining trend as the high quality products from large enterprises or multinationals are substituting for the low quality products from the village clusters.[2] I

2 This is reminiscent of the story of "z-goods" described by Resnick (1970). The production of handicraft items in the rural areas decreased because of the demand shift toward the imported products as the economy became linked with the world

study two of these village-based industrial clusters that developed but recently started to decline, both located in the suburb of Hanoi with about 15km distance from the city centre out in different directions: one in Bac Ninh province and has produced steel products for centuries and the other in Ha Tay province and has produced knitwear and garment products for several decades.[3]

The steel cluster had produced agricultural tools, bicycle parts, and weapons, responding to the demand of the era since 400 years ago. In 1986, a villager who learned the knowledge and technology from the nearby state-owned enterprises (SOEs), started to produce the construction steel bars and many villagers imitated him to start production of the same product. Since then, continuous innovation has taken place by the introduction of new machines and consequent upgrading of products and thereby the industry has developed rapidly (Nam et al., 2009). Currently, most households are engaged in the industry and agricultural activity is no longer a major source of income in the village.

The steel village is located in the northeast of Hanoi and is connected with a coal mine of Quang Ninh and a port city of Hai Phong by main roads. Enterprises in the village cut and cast the scrap metals and iron plates procured through Hai Phong to produce billets, using coal from Quang Ninh. The billets are purchased by the enterprises in this village that roll the billets to produce construction steel wire and bars. As the village is widely known as the cluster of steel, buyers all over Vietnam and even

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market. The products in the successfully developed clusters are no longer handicraft items because they are produced using machines, and thus, the products may be called "modernized z-goods" using the terminology of Ranis and Stewart (1993). The story of "z-goods" is similarly observed for "modernized z-goods" in the last decade in Vietnam.

3 The knitwear cluster used to be located in Ha Tay province, which has been integrated to Hanoi when Hanoi area was expanded in 2008.

from Laos, which shares border with Vietnam, come to the village to purchase the construction steel. After the rapid expansion, however, no innovation has taken place in the cluster since the mid-2000s, and the demand for the construction steel produced in the cluster has declined; for the quality of steel produced is low while higher quality construction steel produced by the large companies is increasingly demanded as Vietnamese economy develops and the income of consumers increases.

The knitwear cluster is located in the west of Hanoi. In this cluster, villagers who used to work for SOE factories of garment products started to produce knitwear products, such as sweaters, socks, and caps, in the mid-1980s. The knitwear industry has rapidly developed since then, particularly owning to the overseas Vietnamese traders who export the knitwear products to Russia and Eastern Europe (Nam et al., 2010). The exporting enterprises of the knitwear industry receive orders from the overseas Vietnamese of their relatives or friends while the enterprises operating for the domestic market produce until winter comes to accumulate the finished products and sell them in the wholesale market located in big cities, mostly in Hanoi, during the winter season.

After a few decades of rapid development of the production of knitwear items, however, no innovation has taken place and the industry shows signs of decline as in the case of the steel cluster. The declining trend is accelerated by the decreasing export demand caused by the increasing competition with Chinese products and the exclusion of the flea market in Russia where overseas Vietnamese sold the products. Similar to the steel village, agricultural activity is no longer a major source of income in the knitwear village. Although most of the households are engaged in industries, some households have entered the food processing industry which has developed since the

mid-1990s in the village.

In both of the industrial clusters, enterprises are managed by a couple with the help of their family members. Many of parents of the current business owners were engaged in the similar strand of business, and the children of the current owners are most likely to succeed the business. Therefore, the business in the clusters is a typical case of family business. This can be attributed to both the institutional and cultural reasons discussed in Chapter 2. As the Vietnamese economy had been centrally-planned until the mid-1980s when the government implemented *Doi Moi* policy, the market activities had been heavily regulated. Therefore, keeping business inside the family could have been the most efficient form of business, given the surrounding institutions. At the same time, cultures may explain the dominance of family business in the clusters. A unique feature of Vietnamese industrial clusters is that the geographical scope of the clusters coincides with those of villages, and thus the production does not diffuse in surrounding villages. Because most marriage is traditionally arranged among villagers and the ties among the relatives are very strong, villagers keep the business only within their village by transferring business resource only to their children.

Data Collection[4]

In the steel cluster, Nam et al. (2009) conducted a survey in 2007 by interviewing

4 As the data was collected in collaboration with a researcher and enumerators of Foreign Trade University (FTU) in Hanoi, and the experimental managerial training was provided by a group of expert, I refer myself and my collaborators when I use the term "we" in describing the data collection and managerial training hereinafter. The survey protocol is attached in Appendix to this Chapter and the questionnaire used in the survey is attached in Annex at the end of this dissertation.

204 enterprises which are selected from the list of enterprises provided by the commune government office.[5] In June 2010, we revisited the cluster to find 155 out of the 204 enterprises were still operating. The 155 enterprises are our baseline samples of my studies for the steel cluster. In the knitwear cluster, Nam et al. (2010) conducted a survey in 2007 but the data was lost due to the theft. Therefore, we visited the commune office in 2010 to obtain a new list of enterprises and visited all the 161 listed enterprises, which serves as our baseline samples of my studies for the knitwear cluster.

Among the total 316 (= 155 + 161) enterprises, we provided managerial training to the randomly selected 223 enterprises and conducted four rounds of surveys; one before the training and three follow-up surveys in the span of two years. The details of the managerial training and research schedule will be explained in Chapter 5. In the 3rd follow-up survey we conducted in 2013, we collected information on the total 965 children of the enterprise owners in the two industrial clusters, which I use for my study in Chapter 4.

One of the features of my study is the collection of behavioural attributes of enterprise owners. Risk taking behaviour is measured on a scale from 0 to 10 with the values 0, 5, and 10 indicating that the owner is "not willing to take even the slightest risk," "risk neutral," and "very willing to take risks," respectively. We follow the lead of Dohmen et al. (2011) that find that asking general questions about risk taking behaviour is the best predictor of risk attitude. Patience is measured on a scale from 0 to 5 based on the answers to questions as to whether an owner prefers receiving a fixed amount of cash immediately to waiting three months to receive five larger amounts of

5 Enterprises in the village produce either billet or finished product. Nam et al. (2009) randomly selected roughly one third of the billet producers and all the final product producers in the list.

cash. We asked five of such questions by changing the amount they can receive in three months. Respondents preferring the immediate cash to any larger amount of future cash are regarded as impatient, and those who prefer waiting even if the amount of future cash is not very large are regarded as relatively patient.[6] This methodology to elicit time preference has long been used in the economics literature (Frederick et al., 2002). To measure willingness to compete, we asked if the family business owners prefer to be paid on an absolute evaluation basis where the payment depends only on the quantity and quality of their own work or on a relative evaluation basis where the larger payment is made only to a few owners who perform better than others. Owners who prefer to get paid on the relative evaluation basis are categorized as willing to compete, following the lead of Gneezy et al. (2009). Cognitive ability is measured on a scale from 0 to 5. We asked owners to solve five mathematical questions and counted the number of questions correctly answered as a proxy for their cognitive ability. The mathematical questions are presented in section NQ4 of the questionnaire attached in Annex.

6 Our initial plan was to pay actual cash, but the family business owners associated these questions with gambling, which is prohibited in the villages, and hence, we decided to ask hypothetical questions. With regard to the scale, 0 indicates the owner has a three-months discount rate of more than 100 percent, 1 indicates 50-100 percent, 2 indicates 35-50 percent, 3 indicates 20-35 percent, 4 indicates 10-20 percent, and 5 indicates less than 10 percent.

Appendix to CHAPTER 3

Survey Protocol

Enumerators

The data is collected from a face-to-face interview to the enterprise owners conducted by enumerators. The enumerators are recruited student of FTU in Hanoi, who received training by our main collaborator Dr. Vu Hoang Nam, a lecturer in Department of International Economics, FTU. He conducted survey in the two industrial clusters in 2007 and are knowledgeable about the villages. The questionnaire attached in Annex was designed by following the lead of the Nam et al., (2009; 2010), translated into Vietnamese by Dr. Nam, and filled in by the enumerators based on the information collected from the interview. Although the eight types of questionnaire is used (total four rounds of survey in the two industrial clusters), I attach the one used in the latest survey (3rd follow-up) in the knitwear cluster in order to save space. Similar questionnaires were used in the steel cluster and in the earlier surveys.

Data Encoding

The collected information from the interview is checked and encoded by Dr. Nam with the help of the enumerators. The raw data is available in Excel format. The original questionnaires filled in by the enumerators are stored in FTU.

Experts of Managerial Training

The managerial training is financed by the Japan Policy and Human Development Research (PHRD) Fund of the World Bank, and provided in collaboration with FTU.

The expert instructors of the managerial training were dispatched from the Central Japan Industrial Association, which is an independent organization of non-government and public interest, aiming at supporting and facilitating industrial development. Four Japanese instructors were dispatched; Mr. Isao Akiho in charge of the classroom training in the steel cluster, Mr. Takeo Soeda in charge of the classroom training in the knitwear cluster, Mr. Masayasu Kanie in charge of the on-site training in the steel cluster, and Mr. Hiroshi Iwayama in charge of the on-site training in the knitwear cluster. They worked together with two Vietnamese assistant instructors, Nguyen Thi My Chau and Nguyen Tranh Binh, who translated from English to Vietnamese and supported the training provision. The details of the training contents will be described in Chapter 5.

CHAPTER 4

The Succession and Education of the Children of Business Owners

4.1. Introduction

In the literature of family business studies, the issue of succession is of paramount importance, occupying one-third of the literature (Sharma et al., 2003). Family business succession has recently gained increasing attention also in the economics literature because family business is the most common form of business worldwide and whether family business develops or declines largely depends on who succeeds the business (e.g., Bennedsen et al., 2007; Bertrand and Schoar, 2006; La Porta et al, 1999; Pérez-González, 2006). The literature of family business studies provides scientific insights into the succession process and the factors influencing succession, including but not being limited to, the influences of predecessors, the relationship between predecessors and successors, the attributes of potential successors and the environment surrounding family business (e.g., Cadieux, 2007; Chrisman et al., 1998; De Massis et al., 2008; Schulze et al., 2001; Vera and Dean, 2005). As most of these important studies in the literature are theoretically oriented, the empirical studies using quantitative data of large samples to test the theoretical implications are limited (Nordqvist et al., 2013).

While a number of studies conduct quantitative analyses, the data in most studies is collected from the existing business owners with regard to their perceptions or plans. Hence, the empirical analyses using the data of actual succession decisions made by the potential successors are scanty. Particularly, the empirical studies using the data from the developing world are scarce due to the data availability (e.g., Brockhaus, 2004;

Sharma and Chua, 2013). Since family business is prevalent also in the emerging economies and the issue of succession has profound implications for the future of the business particularly in such rapidly-changing economies, extending the empirical studies to emerging economies will enrich the study of family business. In emerging economies, the succession used to be the socially and economically most desirable option for the children of family business owners given their limited mobility and low educational attainment. Today, however, those children have option to choose another occupation as the broader job options made available by the expanded access to tertiary education, the urbanization, and the changes in industrial structure. In other words, for the children of family business owners today, the succession is not attractive as it was for their parents.

This chapter analyses the educational and succession decisions of the adult children of business owners in the two industrial clusters. From the face-to-face interview with 310 family business owners, I collected information on their characteristics, their business and their children. The data includes the behavioural attributes of the owners as such behavioural attributes are increasingly recognized as being associated with many aspects of family business succession (e.g., Lumpkin and Brigham, 2011; Marshall et al., 2006). I collected the quantitative information of behavioural attributes by adopting the methodologies used in the economic literature as explained in Chapter 3. In order to empirically investigate the factors influencing family business succession, I apply two different econometric approaches with the different assumptions about how the adult children of family business owners make decisions. In so doing, my focus on the industrial clusters allows me to naturally control for the effects of heterogeneity in terms of different product markets and

different labour or capital markets as the enterprises within the same industrial cluster locate near each other, procure inputs from the same material or factor markets, produce the same products and supply them to the same product market.

I find that the following two groups are dominant in my sample adult children: one has college education and finds jobs outside family business and the other has lower education and is engaged in family business. I view the educational and succession choices as inseparably connected to each other based on a number of anecdotes I heard from the sample business owners. Some want their children to go on to college in order to leave the family business, while others want to start coaching their children in the business as soon as they finish high school. As these anecdotes also illustrate that parents influence their children's decisions, I explicitly take into account the parental influence in my analyses by adopting Beckerian model of family. I find that the choices of the children are largely influenced by their parents' educational attainment as the children of more educated parents are more likely to choose to pursue higher education and to find jobs outside the family business. Their choice is also influenced by parents' behavioural attributes: for instance, children whose parents have strong willingness to compete are more likely to succeed the family business. I also find that children are more likely to choose the family business when their parents have larger business, but such seemingly obvious tendency is observed only among the children with low educational attainment.

The remainder of this chapter is organized as follows. The second section reviews the existing literature and postulates testable hypotheses. The third section describes the data collection scheme and presents the descriptive statistics of the data. The fourth section specifies my empirical strategy and reports the estimation results,

and the fifth section concludes this chapter.

4.2. Testable Hypotheses

The adult children of family business owners in my study have four major alternatives: (1) engaging in the family business after graduating from college, (2) finding a white-collar job in a city after graduating from college, (3) entering the family business without going to college, and (4) finding a job outside the family business without going to college. When children choose to enter the family business, they start to work under the guidance of their parents. After accumulating experiences, they will take over the parental enterprise by inheriting property rights of enterprise and land or they start up their own enterprise. In developing countries, it is common for business owners to allow their children to start separate enterprises due to the limited economies of scale or scope for production and marketing activities and no significant efficiency gains from having all children work at one enterprise or at multiple enterprises in close collaboration. Therefore, the succession in my study does not necessarily mean that the successors (children) immediately take over the enterprise of predecessors (parents) but broadly means that the children choose to engage in the same strand of business as parents.[7]

The children's choices of education and occupation are under strong influence of their parents although not entirely determined by their parents. Schulze et al. (2001)

7 Although the process of succession is often divided into and separately analysed for pre-succession, succession planning, and post-succession in the literature of family business studies (e.g., Nordqvist et al., 2013), I bracket the succession process for the purpose of quantitative analyses based on the data on actual decisions made by the adult children. Although the gift tax and inheritance tax may have influence on the each process of succession, I defer the issue of tax to future studies as I did not collect data on it.

among others adopt the economic model of family developed by Becker (1974), which explains the interaction between altruistic parents and selfish children, for the analysis of family business. In the context of my study, the parents provide advice on education and career choices of their children, invest in children's education, and transfer business resource when children choose to engage in the family business, children's decisions are influenced by parents, presumably in a manner formulated by Becker.[8]

As De Massis et al. (2008) and Sharma et al. (2001) among others argue that the succession decision is affected by the expected income from succession, how children choose and how parents influence to choose one of the four alternatives mentioned above depends on the relative responsiveness of family business income and wage income to the educational attainment. Two sets of combinations can be expected: If wage income increases with the educational level more steeply than business income, children with an aptitude for education will choose the combination of wage employment with high education, while children without such aptitude will choose the combination of family business with low education, whereby their parents provide a greater amount of business support. If, on the other hand, family business income increases with the educational level more steeply than wage income, parents invest in the education of children who have an aptitude for business so that they will choose the combination of family business with high education, while children without such aptitude will choose the combination of wage employment with low education.

8 Appendix to this Chapter formally set up the model of altruistic parents and selfish children based on Becker (1974)'s rotten kid motel, and derive the equilibrium level of children's choices on education and succession as functions of children's own characteristics, their siblings' characteristics, and their parents' characteristics.

In Vietnam, the return on education is higher in the wage employment sector than in the self-employment sector as found by Oostendorp and Doan (2013) based on their analyses of nationally representative household survey data. Although the self-employment sector covers wide range of occupations including family business, it is most likely that the return on education in family business is lower than in wage employment because the two industrial clusters started to show the sign of decline as described in Chapter 2 and the geographical proximity of the villages to Hanoi opens a window of opportunities to find well-paid white-collar jobs. Therefore, I expect to observe the first set of combination and postulate the following hypothesis:

Hypothesis 4.1*: Children of family business owners are more likely to choose low education with the family business or high education with jobs elsewhere.*

First sons are more likely to succeed family business than daughters and younger sons (Barnes, 1988). In the analyses of the desirable attributes of successors, however, Chrisman et al. (1998) find that the predecessors rank gender and birth-order lowest among the wide range of potentially important attributes of the successors. Such discrepancy is possibly because of the difference between the predecessor's expectation and the actual succession decisions made by the potential successors. I empirically analyse the succession decision using the data of actual occupational choices. As Yan and Sorenson (2006) find the influence of Confucianism in preferring elder sons in family business succession, I expect to find the preference for first-son in Vietnam where Confucianism has some influence. Vera and Dean (2005) posit that the sibling rivalry causes tension in family business succession. This holds true if the children's

only option is to take over the parental enterprise where parents choose only one of their children as a successor. As mentioned earlier, however, the adult children in the clusters have options to succeed the family business by starting up their own business of the same strand. Therefore, instead of the sibling rivalry, gender and birth order presumably have greater influence on family business succession and I postulate the following hypothesis:

Hypothesis 4.2*: Male and first-born children of family business owners are more likely to choose the family business.*

As derived in the model in Appendix to this Chapter, the equilibrium level of children's choices on education and succession is functions of their parents' characteristics as well as their own. Among the characteristics of parents, children's decisions are most likely to be influenced by parental educational attainment (Cadieux, 2007). As the family business is in the declining industries and other emerging white-collar job options in cities are made available, I presume that the better educated parents have a gloomier outlook about the future of their industry and are less willing to have their children stay in the family business. In addition to educational attainment, parental behavioural characteristics, such as risk attitude, time preference and willingness to compete, are found to influence family business succession in the emerging body of literature (e.g., Lumpkin and Brigham, 2011; Marshall et al., 2006; Prokesch, 2002). Assuming that parents who are willing to take risk or willing to compete have high business aspiration and thus are more likely to have their children in the family business, I postulate the following hypothesis:

Hypothesis 4.3*: Business owners who are less educated, more willing to take risks or more willing to compete are more likely to have their children in the family business.*

When the family business owners operate large business, the return from the succession is large. This applies to the case when children start up their own enterprise in the same business because the parents of larger business can provide greater amount of material business support as well as non-material support. As Dunn and Holtz-Eakin (2000) illustrates that the amount of business support determines the expected return from family business, I expect that the return is higher when parents operate larger business and postulate the following hypothesis:

Hypothesis 4.4*: Business owners of larger business, who can provide greater amount of business support, are more likely to have their children in the family business.*

4.3. Data Collection and Descriptive Statistics

Data Collection

In January 2013, I conducted a survey in the two industrial clusters and collected information on a total of 310 family business owners, who have 965 children. Of the 965 children, I focus on the children aged 16 or above at the time of our survey and refer to them as the sample children. 16 is an age at which they finish junior high school and none but three children under 16 have completed schooling and started working. This leaves 574 sample children (322 in the steel village and 252 in the knitwear village) for my analyses.

While the majority of quantitative analyses in family business studies use the data collected by mail-in questionnaires, we visited all the enterprises to interview on a face-to-face basis as described in Appendix to Chapter 3. Because of this data collection procedure, the response rate is very high. We only failed to collect information from the two enterprises in the steel village and the four enterprises in the knitwear village; that is, data collection response rate was 98 percent. The high response rate reduces the bias arising from the selection of enterprises in the sample.

Dependent Variable

In order to quantitatively analyse the succession and educational choices of the adult children of family business owners, I classify the sample children into five education-occupation groups. As shown toward the top of Figure 4.1, I classify them into those who are still in school and those who have completed schooling. The latter group is subdivided into two groups for those with tertiary education (that is, more than 12 years of education) and those without, and each of these two subgroups are further divided into two groups, depending on whether or not the children are engaged in the family business.[9] The figure shows the number of sample children in each category.

I find a clear contrast of occupational choice between children with tertiary education and those without. Among the children with tertiary education, 31 per cent (22 out of 71 children) choose the family business (Group 2), while 64 per cent (239 out of 372) of those without tertiary education choose the family business (Group 4).

9 As the information is collected only on the years of schooling, I do not have data on whether children with tertiary education were in university, college or vocational school. Based on informal interview to the enterprise owners, it is most likely that majority of them have a college degree.

Observing more children in Groups 3 and 4 lends support to Hypothesis 4.1 that the combinations of the family business with low education and that of jobs elsewhere with high education are more likely to be chosen. According to the result of Pearson's chi-square test for the independence, the null hypothesis that the educational and occupational choices are independent is rejected at one percent level, which indicates that the two choices are closely interlinked.

Explanatory Variables

I collected information on characteristics of the sample children, including age, gender, birth order, number of siblings, years of education and marital status. I also collected information of the years of education of the family business owners as well as their spouses. As mentioned in Chapter 3, one of the unique features of my study is the data of the behavioural attributes of the family business owners. The enterprise size is approximated by the log of the average value added in 2008 and 2010.[10] I control these variables in the regression analyses to test Hypotheses 4.2, 4.3 and 4.4.

Descriptive Statistics

Table 4.1 presents the means, standard deviations and pairwise correlation matrix of the variables. Although I categorize the sample children by whether they have tertiary education or not for regression purpose, I present the data on the years of

10 Following the lead of McKenzie (2012), I use the average of value added over time to mitigate the influence of temporary shocks. Value added in 2012 is not included because it is possibly endogenous as the children's succession decision may influence the business outcomes of the parents' enterprises. While the inclusion of the average of value added in 2008 and 2010 is less problematic, the issue of endogeneity will be further discussed below.

education in Table 4.1. Average years of schooling among the sample children are 11.7 years, which is higher than their father's and mother's schooling years (7.2 and 6.2 years, respectively) by more than 4 years. This illustrates how rapidly educational standard improved in Vietnam in the past few decades. The average schooling years among the sample children is higher than average children in the same cohort in Vietnam. According to the educational data of Barro and Lee (2013), the average schooling years as of 2010 are 8.2 for the age cohort 15-19, 9.1 for the age cohort 20-24 and 8.2 for the age cohort 25-29. The comparison shows that the sample children are more educated than the average children in the same cohort. This difference can be attributed to the fact that business owners are wealthy enough to invest in their children's education as well as to the geographical proximity of the two industrial clusters to capital city Hanoi with improved access by the infrastructure development.

The strong negative correlation between the years of education and the succession decision is consistent with Hypothesis 4.1.[11] The correlations of succession decision with male dummy and first-born dummy are positive but insignificant, which does not lend support to Hypothesis 4.2. Many confounding factors, however, potentially influence the succession decision, and thus I rigorously investigate my hypotheses with regression analyses below. The strong negative correlations between the succession decision and the parental education (both fathers' and mothers') support Hypothesis 4.3. Although I observe the positive significant correlation between the children's years of

11 Although admittedly having endogeneity bias, I run Probit regression with succession dummy on the left hand side and schooling years of education on the right hand side, controlling for the covariates same as in Table 4.2, and find that the coefficient for years of education is -0.156 with z-statistics of 0.000. Therefore, the negative correlation between succession and educational attainment is observed even after controlling for other covariates.

education and the parents' behavioural attributes, I do not observe the significant correlation between the children's succession decision and the parents' behavioural attributes. Similarly, I observe the correlation between the children's years of education and the parents' business size, but surprisingly the correlation is not observed between the succession decision and the business size. This may be because the business size has influences in two directions; large business size directly increases the probability of family business succession and indirectly reduces the probability of family business succession by increasing the educational attainment of the children. A similar pattern of correlations is obtained if the sample is limited to the children aged 23 or above in order to remove the influences from the children who are still in school as presented in Appendix Table A4.1.[12]

4.4. Econometric Specification and Estimation Results

Empirical Strategy

To test my hypotheses postulated in the second section, I use the multinomial logit model and the sequential logit model. To see the difference between the two models, consider the following regression equation:

$$\ln\left[\frac{prob\ (Y_{ij}=g)}{prob\ (Y_{ij}=G)}\right] = \alpha_1 X_{ij} + \alpha_2 Z_j + \eta_j\,, \qquad (4.1)$$

12 Children in their teens may be still in school (Group 1) just because of their age. I, however, include Group 1 in my main analyses because whether to stay in school is an important decision made by the sample children and the exclusion of children in school from the empirical estimation will cause selection bias. As a robustness check, I estimate all the regression presented in this chapter by limiting the sample children to those aged 23 or above to remove the influences from schooling age children as almost no children aged 23 or above are still in school. Although I do not present the estimation results, fairly similar results are obtained.

where Y_{ij} represents the educational and occupational choices of a child *i* in family *j*, and the logarithm of the ratio of probabilities is the log-odds of choosing an alternative *g* rather than the reference *G*. The variables on the right-hand side include child's characteristics (X_{ij}), the parents' characteristics (Z_j) and the village in which the family lives (η_j). X_{ij} includes gender and birth-order to test Hypothesis 4.2. It also includes age, its square and number of siblings to control for the influences of age and sibling rivalry (although I do not expect to observe sibling rivalry). Z_j includes parental educational attainment and behavioural attributes to test Hypotheses 4.3. The business size is included as a part of Z_j to test Hypothesis 4.4. The standard errors are clustered at the family level for robust estimation as the choices made by children in the same family may be correlated.

In the multinomial logit model, the outcome Y_{ij} is specified as the choice from the five alternatives shown in the bottom of Figure 1 with Group 5 as a reference group (i.e., *G* = Group 5). Thus, *g* on the left-hand side of Equation (4.1) is 1 if the child is still in school, 2 if the child finishes tertiary education and succeeds family business, 3 if the child finishes tertiary education but does not succeed family business, and 4 if the child does not finish tertiary education but succeeds family business. In the sequential logit model, three either-or choices are made sequentially as shown in Figure 1.[13] First, all the sample children are divided into two categories: those still in school and those who

13 The sequential logit model is somewhat similar to the nested logit model. As I do not have alternative-specific explanatory variables, I use the former model. See Nagakura and Kobayashi (2009) for their relationship. While Hausman test is often performed to compare the nested model with the multinomial logit model, there is no widely-accepted specification test to compare the sequential logit model with the multinomial logit model.

finished schooling. Second, those who finished schooling are classified into two groups according to whether they have tertiary education or not. Third, those who completed schooling with tertiary education are classified into two groups according to whether they are in the same industry as the family business or not. Similarly, those who completed schooling without tertiary education are classified into two groups. For each of these either-or choices, the log-odds are given by an equation similar to Equation (4.1) with the latter option in each choice as a reference group. I estimate these two models that treat the decision-making process differently, to obtain robust results of the hypotheses testing.

Estimation Results

Table 4.2 shows the estimation results of the multinomial logit model for the combination of education and occupation.[14] In this model, the exponential of the estimated coefficient is interpreted as an odds-ratio of choosing an alternative rather than the base outcome.[15] The intuitive interpretation is that the positive coefficient converts into an odds-ratio above one, indicating a unit increase in a covariate increases the probability of choosing the alternative.

With regard to the children's own characteristics, male dummy and first-born dummy are significant in column 2, implying that first sons are more likely to choose family business with tertiary education rather than other occupation without tertiary

14 According to the Hausman test for the independence of irrelevant alternatives (IIA) assumption performed by "mlogtest" command in STATA, the null hypothesis that IIA assumption holds is supported at any conventional level of statistical significance.

15 For instance, the estimated coefficient of 0.21 for the patience of a parent in column 1 means that a one unit increase in the patience measure leads to the relative odds-ratio of choosing to "still in school" rather than "other occupation without tertiary education" that is 1.23 (= $e^{0.21}$) times of what it is without the increase.

education. These variables, however, are not significant in column 4. I may interpret such contrasting results as meaning that parents have a preference for their eldest son particularly when they expect their children to become competent business owners to expand the business. Therefore, Hypothesis 4.2 is partially supported. Regarding the parental educational attainment, column 3 shows that children with highly educated mothers are more likely to choose the combination of the other occupation with high education. Column 4 shows that children with highly educated fathers are more likely to choose not to be in family business. These results support Hypothesis 4.3 that educated parents are less willing to have their children stay in the family business. Regarding the behavioural attributes, although the coefficient of risk taking is not significant, the coefficient of willingness to compete is positive significant in columns 2 and 4. This can be interpreted as meaning that parents who are willing to compete influence their children to choose the family business, which naturally contains a competitive element. It may also be interpreted as meaning that such preference is genetically transferred from the parents to the children. While the underlying mechanism is subject to future research as I do not have data on the behavioural attributes of the children themselves, the significant coefficient of willingness to compete supports Hypothesis 4.3 that parents with high business aspiration are more likely to have their children in the family business.

Another point to note from Table 4.2 is that parents of children in Group 2 are different from other parents. Although not significant, the coefficient for risk taking behaviour is largest among the groups and the coefficient for cognitive ability is positive and significant only in column 2. I interpret this, together with the fact that only children in Group 2 is likely to be an eldest-son, as meaning that business owners with

high business aspiration nurture competent successor of the family business, particularly their eldest-son, by sending him to tertiary education.[16]

With regard to the parental enterprise size, while I do not find the correlation between succession decision and business size in Table 4.1, I observe the positive significant coefficient in column 4. This supports Hypothesis 4.4 that children of owners of larger family business are more likely to choose the family business. Note that the multinomial logit estimation without the log of average value added in 2008 and 2010 as a covariate shows the fairly same results with the same sign and similar magnitude of the coefficients as Table 4.2 (result not shown). Therefore, I claim that the endogeneity bias arising from the addition of parental business size as a covariate is not a serious concern of bias. On the whole, Table 4.2 support my hypotheses postulated in the second section.

Table 4.3 shows the estimation results of the sequential logit model. Column 1 corresponds to the first node in Figure 4.1, in which children are divided into two categories, that is, those still in school and those who finished schooling, with the latter category as a reference group. Column 2 corresponds to the second node, where those who finished schooling are classified into two groups according to whether they have tertiary education or not, with those without tertiary education as a reference group. Columns 3 and 4 estimate whether children choose the family business conditional on having tertiary education or not, corresponding to the third nodes on the left and right in Figure 4.1, respectively. In columns 3 and 4, choosing jobs outside family business is

16 Appendix Table A4.2 compares parental characteristics by children's succession decision. Parents who have children in Group 2 have highest educational attainment, risk preference, willingness to compete, cognitive ability and business size. This supports my argument that parents with high business aspiration nurture competent entrepreneurs.

a reference group. The reported coefficients can be interpreted in terms of the odds-ratio as in the multinomial logit model.[17]

Overall, Table 4.3 shows the pattern similar to Table 4.2, supporting my hypotheses. Regarding the child's own characteristics, column 3 shows that first-born children, among children with tertiary education, are more likely to choose to engage in the family business. The coefficient of the male dummy is positive although insignificant probably due to the relatively small number of sample children who have completed tertiary education. Regarding the parental educational attainment, the coefficients of both fathers' and mothers' education are positive and significant in column 2 and the coefficient of fathers' education is negative and significant in column 4. This can be interpreted as meaning that children of educated parents are more likely to have tertiary education while among children without tertiary education, children of educated father are more likely to choose leave the family business. Similar to Table 4.2, the coefficient for willingness to compete is positive and significant in column 4, lending support to Hypotheses 4.3.

With regard to the parental business size, column 4 shows the positive significant coefficient, illustrating among the children without tertiary education, the children of owners with larger family business are more likely to choose the family business. In column 3, the coefficient is negative although not significant. Thus, such seemingly obvious tendency between succession decision and business size is not observed among the children with tertiary education. Thus, Hypothesis 4.4 is only partially supported.

17 The odds-ratio for father's education in Column 1 is 1.19 ($=e^{0.17}$), meaning that a one year increase in the father's years of education leads to a relative odds-ratio of "still in school" rather than "completed schooling" that is 1.19 times of what it is without the increase.

So far, I do not distinguish those children who succeed the family business. Table 4.4 presents the estimated coefficients of another multinomial logit model that is intended to analyse the choice as to where to work, by using the sub-sample that eliminate Group 1 from the whole sample. Of the four remaining groups, Groups 2 and 4 are combined into a group of adult children working in the same industry as their parents and then repartitioned into three sets: the first is comprised of adult children working at the parents' enterprises including those who have already taken over the businesses (g = 1); the second is comprised of those working in the same industry independently of the parents' enterprises by starting up own enterprise (g = 2), and the third is comprised of those working at the spouses' enterprises in the same industry (g = 3). These three parts of Groups 2 and 4 are compared with Groups 3 and 5 combined as a reference group *G*.

While Table 4.4 uses the same set of the explanatory variables in columns 1 to 3 as in Tables 4.2 and 4.3, it adds in columns 4 to 6 a new dummy variable indicating whether the adult child is married or not.[18] I included marital status in the equation to control for its possible effect on the choice as to where to work. Particularly, when a daughter marries to another villager, she is most likely to help manage the enterprise of her husband. While the children have more freedom to choose their partners compared with earlier generations whose marriage was mostly arranged by parents, the majority still find a partner among villagers, whose parents are likely to be engaged in the same strand of business. The inclusion of marriage dummy as a covariate, however, may cause estimation bias because the choice of whether and whom to get married may be

18 According to the Hausman test for IIA assumption performed by "mlogtest" command in STATA, the null hypothesis that IIA assumption holds is supported for the estimation in columns 1 to 3 but not for the estimation in column 4 to 6.

made simultaneously with the choice of where to work. Thus, I estimated the model without the marital status as well. It turned out, as shown in Table 4.4, that the inclusion of marital status does not affect the qualitative results; that is, the estimated coefficients shown in columns 1 to 3 and those in columns 4 to 6 are very similar.

Columns 1 to 3 show that sons are more likely to work at their parents' enterprise, whereas daughters are more likely to work at their husband's enterprise, implying the presence of traditional norms. I also find the influence of parental characteristics, such as educational attainment, risk-taking behaviour and willingness to compete, as well as parental business size on the children's choice of workplace. These results are largely consistent with my Hypotheses developed in the second section.

Another point to note from Table 4.4 is that very few (only four) children among those who choose to engage in the same strand of business as parents work at an enterprise owned by non-relatives. These exceptional children work at their neighbours' enterprises in the village. As parents are altruistic only toward their own children, they provide business support only to their own children. Such parental altruism may explain the unique characteristics of Vietnamese industrial clusters whereby the production of specific items has concentrated only within the villages. In contrast to the parental benevolent support to their children, they are not willing to support the business of others. In order to inquire into such parental attitudes, I collected information on parental attitude by asking, "What kind of support would you be willing to provide if one of your employees from outside the village wants to become independent and start up a new business in the rolled steel (knitwear) industry?" Admitting that this is merely a hypothetical question, I find a clear contrast between the parental benevolence toward their children and the indifference toward their employees.

Only two family business owners responded that they would provide their employees with concrete supports such as introduction of customers and loan, and 209 family business owners responded that they would offer nothing, even advice.

In columns 4 to 6, the coefficients of the marriage dummy are significant in all the three columns, illustrating that married children are more likely to be in the family business. The magnitude of the coefficients is larger in columns 5 and 6, possibly because children want to run a separate enterprise to become independent from their parents once married and parents take into account such preferences of their children. Parents, however, still generously support the businesses of married children. I collected information on the parental financial for the business of children who do business in a separate enterprise. The amount of business support is, on average, 868 million VND (about 54,680 USD as of 2012) for children who started up their own enterprise and 207 million VND (about 13,040 USD) for children who work at the spouse's enterprise. The amount of support is almost equal to the annual profit of average enterprise in the cluster and is far higher than the provincial average annual household income. Such parental support possibly prevents the entry of outsiders to the industry, and thus the family business in the industrial clusters is still profitable, attracting the majority of the children to succeed the family business.

4.5. Conclusion

This chapter analyses the educational and succession choices of the adult children of family business owners in an emerging economy, where the rapid economic growth provides them with new occupational alternatives to the succession of their family business. This is an early, if not the first, attempt to analyse the primarily collected

quantitative data on family business succession in such a dynamically changing economy. I empirically investigate factors influencing the succession decision, and find that the adult children with educated parents tend to receive tertiary education and seize new job opportunities outside family business. Although the village is modernizing, the traditional norms still have an influence on family business succession as an eldest son is more likely to stay in the family business and daughters tend to marry into their husband's family to support his business. Compared with children who choose the jobs outside the family business, children who succeed the family business tend to be less educated but they probably still make considerable profit with generous business support from their parents.

As many less educated children succeed business, the future of the industries may not be very blight. I, however, have to emphasize that even the less educated children of business owners are much more educated than their parents as well as average children in the same cohort, and thus they may possibly develop the industries with their knowledge and analytical skills acquired through schooling. In addition, I find a number of highly educated children who succeed family business, whose parents have high business aspiration. These children are expected to be future leaders of the industries.

A limitation of this study is that the information is collected only for current occupational choice of the adult children. Some children may plan to accumulate experience outside the family business and eventually succeed the family business while other children may plan to exit from the family business. In addition, children's occupational choices may have been influenced by the business condition at which they entered labour market. In order to analyse such dynamic choices of occupation, a

follow-up survey to construct panel data will allow me to conduct more rigorous analyses. In so doing, I am particularly interested in exploring the exit, survival, and growth of the enterprises owned or managed by the adult children and to link such dynamic performance with the characteristics of their parents as well as themselves. Another interesting direction will be to extend the analyses of the factors associated with the marriage of the adult children and examine the relationship between the marriage, or the characteristics of the in-laws, and the performance of the family business.

Appendix to CHAPTER 4

A Model of Altruistic Parents and Selfish Children

The decision-making of the children regarding the education and occupation is subject to the strong influence of their parents. Becker (1974) and other economists formulate these interactions between parents and children in a model of family. In the model, parents are assumed to have an altruistic utility function of the following form:

$$U = U\,(C, V_1, V_2, \ldots, V_n\,), \tag{A4.1}$$

where utility depends not only on the parents' consumption C but also on their children's utility levels $V_1, V_2, \ldots, V_n$.

Altruistic parents invest in education of their children and give them financial assets as well as other material resources. Let B_i be the total amount of all the material resource given to the i-th child before and after the death of the parent. Since B_i may depend on whether child i succeeds the family business or not, let $B^b{}_i$ be the bequest if the family business is succeeded, and let $B^w{}_i$ be the bequest if the family business is not chosen. I use superscript w because a typical occupational choice in the latter case is to become a wage and salary earner. The budget constraint of the parents is expressed as:

$$W = C + \textstyle\sum_i [\pi E^k{}_i + d_i B^b{}_i + (1 - d_i) B^w{}_i], \tag{A4.2}$$

where W is the financial wealth of the parents, π is the cost of schooling per unit of

educational attainment, E^k_i is the level of education of the *i*-th child, and d_i is a binary variable that is one if the *i*-th child succeeds the family business and zero otherwise.

Each child is assumed to have a selfish utility function, which depends only on his or her consumption, which is equal to the sum of his or her own earnings (Y^b_i if choosing the family business and Y^w_i otherwise) and material resource from the parents:

$$V_i = \begin{cases} V(Y^b_i + B^b_i) & \text{if} \quad d_i=1 \\ V(Y^w_i + B^w_i) & \text{if} \quad d_i=0. \end{cases} \qquad \text{(A4.3)}$$

In addition to the material resource, the altruistic parents are likely to give non-material support to the children, especially to the ones who have entered the family business, by showing examples, giving advice, and introducing customers and suppliers. The influence of such support on the earnings that the *i*-th child will have if he or she enters the same business may depend on parental educational attainment, E^p, and other parental characteristics, X^p, in addition to his or her own educational attainment, E^k_i, and other characteristics, X^k_i; that is,

$$Y^b_i = f\,(E^k_i, X^k_i, E^p, X^p). \qquad \text{(A4.4)}$$

If the *i*-th child chooses any other occupation, the impact of the parents' non-material support on earnings Y^w_i will be much smaller. For simplicity, it is assumed to be nil in such a case; that is,

$$Y^w_i = g(E^k_i, X^k_i). \qquad \text{(A4.5)}$$

I consider a Beckerian type game played by the parent and their children with the full knowledge of the preference, endowment, and ability of each other. In the equilibrium, the *i*-th child's educational attainment and occupational choice are functions of not just his or her own characteristics but also the characteristic of the parents and the siblings:

$$E^k_i{}^* = E^k(X^k_i, X^k_{-i}, E^p, X^p, W), \quad \text{(A4.6)}$$

$$d_i^* = d^*(X^k_i, X^k_{-i}, E^p, X^p, W), \quad \text{(A4.7)}$$

where X^k_{-i} denotes the characteristics of the siblings. The same applies equally to the bequest by the parents to each child. The empirical analyses in the main text of Chapter 4, however, does not deal with the bequest because it is practically impossible to collect reliable data on bequest as it is usually planned but not yet actually left to the child, and hence, my study focuses on the observable educational and occupational choices of the children.

CHAPTER 5

The Persistent Impacts of *Kaizen* Training

5.1. Introduction

Management capacity has been increasingly recognized amongst economists as being closely linked with enterprise performance (e.g., Bloom and van Reenen, 2007; 2010). The weak management capacity has also been argued to be an impediment to the growth of enterprises in developing countries (Bruhn et al., 2010). Reflecting such increasing attention to management, randomized controlled trials have been conducted in a number of countries by providing managerial training to the enterprise owners (e.g., De Mel et al., 2014; Field et al., 2010; Karlan and Valdivia, 2011). Although the business scales of enterprises in these studies widely varies from the microenterprises without any employee to the large companies with hundreds of employees, most of the studies find that the enterprise owners improve their management practices after the participation in the training. The magnitude of the impact, however, varies, and there is no consensus on what type of managerial training is effective in what context.

Among the various approaches to management, *Kaizen*, which is an inexpensive and common-sense approach to reduce wasted work and materials pioneered by Japanese manufacturers (Imai, 1997), has recently been found to be effective for SMEs in Sub-Saharan Africa (Berihu, 2013 and Shibanuma, 2012 in Ethiopia; Kairiza, 2012 in Tanzania; Mano et al., 2012 in Ghana; Mano et al., 2014 in Kenya). *Kaizen* is a human-friendly approach, emphasizing the collaborative effort of the manager and workers to start with small changes. As it does not require sophisticated knowledge or money for investment, *Kaizen* is well understood and adopted by the SME owners in

Sub-Saharan Africa. With the increasing appreciation of *Kaizen*, Ethiopian government established Ethiopian Kaizen Institute in 2010, which is the first public institution in the world to include *Kaizen* in its name.[19] Whether *Kaizen* approach is effective for SMEs in more developed part of the developing world is an empirical question as the industrial structure, the educational standard and the level of practiced management are different. Given the growing presence of emerging economies in today's world economy, the question is worthwhile as the SMEs are the engine of economic growth in such economies (World Bank, 2012).

This chapter attempts to analyse the impact of the managerial training featuring *Kaizen* to the enterprises in the two industrial clusters. The focus on industrial clusters allows me to control for the effects of heterogeneity, and the focus on SMEs allows me to measure the longer-term impact of the training because the owners of SME tend to stay in the same business longer compared to the microenterprise owners, who are often targeted in the RCTs of this kind but are likely to change business and exit frequently. While most existing studies evaluate the impact measured within a year after the training, I collected data two years after the training to measure persistent impact. Another feature of my study is the collection of the information about owners' willingness to pay (hereinafter called WTP) for the training. Although the managerial training is found to be effective in many business contexts, the participation rate is generally low even when the training is offered free of charge. The low participation rate is possibly because of the owners' low value attached to such managerial training without knowing its effectiveness. I analyse whether the actual participation increases

19 The preparation to establish similar institution with *Kaizen* in its name is under preparation in Zambia. *Kaizen* also has recently attracted media attention (e.g., BBC, 25th March 2014; Newsweek, 26th March 2014).

owners' WTP and whether the impact of the training differs by *ex ante* value attached to the training.

Four major findings stand out. First, I find that the managerial training featuring *Kaizen* is indeed effective in improving the *Kaizen* practices immediately after the training and the effectiveness persists two years after the training. I quantify the extent of the adopted *Kaizen* practices with the detailed yes/no type questions about the management practices, following the lead of Bloom et al. (2013). Second, I find that the owners' value attached to managerial training is low before the training, preventing the participation to the training. The valuation, however, greatly increased after the actual participation in the training. Third, I find that the magnitude of the impact of the training on the adoption of *Kaizen* practices varies with owners' characteristics, including educational attainment, behavioural characteristics and *ex ante* WTP. For instance, the owners with low *ex ante* WTP gained more from the training, particularly from the hands-on consultation among the two modes of training. Lastly, I find the positive persistent impact of the hands-on consultation on value added in the knitwear cluster but not in the steel cluster. The contrast can be attributed to the differences in business practices in the two clusters.

The remainder of this chapter is organized as follows. In the second section, I explain the schedule of the data collection and the training programs. In the third section, I present the descriptive statistics of the collected data. I specify my econometric strategy and show the estimation results in the fourth section. The last section concludes with policy implications derived from this chapter.

5.2. Research Schedule and Managerial Training

Schedule of the Intervention and Data Collection

The schedule of the data collection and the training programs are summarized in Table 5.1. From the 155 enterprises in the steel cluster and 161 enterprises in the knitwear cluster, we selected two enterprises in the each cluster as the model enterprises, for which we provide the intensive managerial consultation in the on-site training, and I exclude these enterprises from my empirical analyses. This leaves the total of 312 enterprises (153 in the steel cluster and 159 in the knitwear cluster) for my study in this chapter.

For the classroom managerial training, we randomly invited 108 enterprises in the steel cluster and 89 enterprises in the knitwear cluster to the training. We invited much more than half of enterprises because the owners were not very willing to participate in the training according to the informal interview before the training provision and we estimated that not all the enterprise owners would participate. 41 out of the 108 invited enterprises in the steel cluster and 52 out of the 89 invited enterprises in the knitwear cluster actually participate in the classroom training, with the corresponding participation rates of 38% and 58%, respectively.[20] We conducted the 1st follow up survey about a month after the training.

A few months after the classroom training, we invited enterprises to the on-site managerial raining. We selected enterprises in a stratified random manner, whereby 32 enterprises in the steel cluster were randomly selected from the stratum that had been

20 As we expected that the number of participants in the classroom training in the steel cluster would be particularly small without providing additional period of the training, we decided to provide same training twice in June 2010 and September 2010. 31 enterprises participated in the first classroom training and 13 enterprises in the second one. In the empirical analyses, I do not differentiate the timing of participation to the classroom training and treat all enterprises participate as the participants. In the knitwear village, we provided the classroom training only once in July-August 2010.

previously invited to the classroom training and 10 enterprises from those that had not been invited.[21] The same stratified random sampling is applied in the knitwear cluster. In contrast to the classroom training where enterprise owners had to visit the training venue, the trainers of the on-site training visited each enterprise to provide enterprise-specific consultation, and hence, no enterprise refused to take part in the on-site training.

In order to analyse the impacts of each of the training, I group the enterprises into four by the invitation status to each of the training. I designate the enterprises that are invited to both of the classroom and the on-site training as Group TT, the enterprises invited only to the classroom training as Group TC, the enterprises invited only to the on-site training as Group CT and the enterprises invited to none of the training as Group CC, which serves as a control group. A few months after the on-site training, we conducted the 2nd follow-up survey. Through the baseline survey in June 2010 to the post on-site survey in April 2011, the attrition is zero. About two years after the training, we conducted the 3rd follow-up survey and found that 25 enterprises in the steel cluster and 12 enterprises in the knitwear cluster did not have any production in 2012.[22] We, however, traced the 37 enterprises and found that most of them temporally stop the production. As the majority of them still keep their workshop and machines and are willing to start production in future, I include these enterprises in the empirical analyses when estimating persistent impact of the training.

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21 We provided the on-site training to a smaller number of enterprises due to budgetary constraint and availability of the trainers.

22 In the 3rd follow up survey, information from 2 enterprises in the steel cluster and 4 from the knitwear cluster is missing because 1 enterprise in both of the clusters refused to be interviewed and 1 from the steel cluster and 3 from the knitwear cluster closed their business and moved out of the village.

Managerial Training

The contents of the training are similar in the two industrial clusters while minor details are adjusted to the business practices of the each cluster. In brief, a group consisting of one Japanese trainer-expert and two Vietnamese assistant trainers taught management with lectures and workshops in the classroom training, while the group visited each enterprise to provide enterprise-specific hands-on consultation on management in the on-site training.

The classroom training spans three weeks, each of which consists of 2.5 hours training for five days. In the first week, we taught entrepreneurship, business strategy and marketing based on the improve-your-business (IYB) and start-up-your-business (SYB) training module developed by the International Labor Organization (ILO). The training program by ILO is widely accepted and textbooks are translated into many languages including Vietnamese. In the second week, we taught *Kaizen* approach, also known as TOYOTA type management.[23] *Kaizen* emphasizes the reduction of wasted work and materials by the collaborative effort of the manager and workers to improve productivity. It also emphasizes the importance of 5S (sorting, straightening, scrubbing, systematizing, and standardizing) for production management. The Japanese expert is a specialist in *Kaizen* approach. In the third week, we taught record keeping and costing, based on the IYB and SYB. In short, the classroom training is a unique combination of ILO modules and *Kaizen* approach.

23 Van Biesebroeck (2003) analyses the change in the productivity of the U.S. automobile industry during 1960s to 1990s and finds that the introduction of the lean manufacturing by Japanese car manufactures including TOYOTA considerably increased the productivity of the industry during the 1980s and 1990s.

For the on-site training, we selected the two model enterprises from the each cluster and provided detailed hands-on advices to implement possible *Kaizen* practices. Next, we held a one-day seminar in the each cluster in order to show the pre- and post-*Kaizen* status of the model enterprises in order to teach the basic techniques and perspective of *Kaizen*. After the seminar, we visited each enterprise twice to provide the hands-on consultation. At the first visit, we diagnosed the current situation of each enterprise and gave advices on how to improve their production efficiency. At the second visit, we checked whether the enterprises have implemented the improvement plans, discussed whether there face any other problems, and offered further recommendations to improve their business practices for enhancing productivity.

5.3. Descriptive Statistic

Characteristics of Enterprise Owners

Table 5.2 presents the differences in owners' characteristics among the treatment statuses. As the human capital has been found to be associated with enterprise performance (e.g., McPherson 1996; Mead and Liedholm, 1998), I collected information on years of schooling and the prior training experience to capture the level of human capital of the sample enterprise owners. I also collected information on the enterprise owners' behavioural attributes because such attributes have recently been found to be associated with the enterprise performance and household financial decision making (e.g. Agarwal and Mazumder, 2013; Kremer et al., 2013: Willebrands et al., 2012).

In Table 5.2, columns 1 to 3 show the coefficients and t-statistics from a regression of each characteristic on the group dummies with the Group CC as the

reference group, while column 4 shows the means and medians among Group CC in the steel cluster. Columns 5 through 8 report the same numbers for the knitwear cluster. When the coefficients are insignificant, the characteristics of enterprise owners are balanced among the groups as we designed with the randomization. I, however, find that some significant coefficients including patience in the steel cluster, risk taking behaviour and willingness to compete in the knitwear cluster. As the information on behavioural characteristics was collected in the 3rd follow-up survey, such behavioural characteristics may have been influenced by the training. The emerging body of literature finds that behavioural characteristics can be changed by the daily interaction with classmates (Rao, 2014) or the ideology of college professors (Fisman et al., 2009). As the managerial training provided the owners with an opportunity to interact with the trainer-experts as well as other enterprise owners, I presume that the training has some influence on the behavioural attributes of the owners.

I also find the significant coefficients of past training experience dummy and number of relatives in the sample. These significant coefficients are possibly due to the small number of sample in each group, particularly Groups TT and CT, and the small variation in these variables.[24] In the regression analyses below, I apply fixed effect model to obtain accurate estimation as much as possible by controlling for these differences in owners' characteristics.

24 The significant coefficient of the number of relatives is possibly because of the tedious data collection. In order to collect network information, we listed all the name of sample owners in the cluster and asked the relationships of a respondent with all the listed owners. As this question was asked at the very end of our interview, the owners might have felt tired and not provided full information. The owners in Group TT, however, were more familiar with us and were able to bear with our interview to provide full information.

Management, Valuation of the Training and Business Performance

To quantify the management practice of the sample enterprises, I constructed *Kaizen* score based on the 11 questions listed in Appendix Table A5.1. I follow the lead of Bloom et al. (2013, Table A1) to quantify management practices by collecting the yes/no type of information, such as, whether the raw materials are stored separately from the scrap or whether workers maintain machines every day. I collected information about willingness to pay (WTP) for the training to measure owners' value attached to managerial training. As this type of hypothetical question is subject to an exaggeration of owners' response, the "certainty approach" recommended by Blumenschein et al. (2008) was applied to secure a certain level of validity of response. We first asked a hypothetical question, "Would you pay 3 million Vietnam Dong (VND) (about 150 USD as of 2010) to participate in the training program?", and further asked "How sure are you about the answer?" with dichotomous options of "Definitely sure" and "Probably sure." I only counted enterprises that answered "Yes" to the first question and "Definitely sure" to the second one as willing to pay for the training. With regard to the business performance, it is most likely to observe impact on the value added than the sales revenue or the enterprise size measured by the number of employees because *Kaizen* emphasizes the reduction of wasted input and work rather than expanding business.

As I find that 37 out of the original 312 enterprises did not operate in 2012, I assume that those enterprises did not change the adopted *Kaizen* practices between the period soon after the on-site training and 2 years after the training. As most of them temporary stop operation with their workshop and machines possessed, I assume that the value added of those enterprises is zero rather than excluding them from the

empirical analyses. This allows me to take into account the decision of the enterprises as to whether to operate or not since the enterprises with low productivity may stop operation in order to avoid deficit in the declining industries with lowering profitability.[25] The characteristics of enterprises without production in 2012 are presented in Appendix Table A5.2. In the steel cluster, the enterprises that did not operate in 2012 are similar to the operating enterprises in terms of the *ex ante* level of *Kaizen* adoption and value added. In the knitwear cluster, however, enterprises that did not operate in 2012 have larger value added.

Table 5.3 shows the differences in management, valuation of the training and business performance among the treatment status. Columns 1 through 4 are about the steel cluster while columns 5 through 8 are about the knitwear cluster. By comparing *Kaizen* score, WTP and value added before and after the training, I can estimate intention to treat (ITT) impact on management. I should note, however, that the compliance rate of the classroom training is low and thus ITT estimation of the classroom training is lower than the treatment effect on the treated (TOT). For the on-site training, however, the ITT impact is theoretically identical to TOT due to the perfect compliance.

Table 5.3 shows no baseline differences in *Kaizen* score in both of the clusters. Soon after the classroom training, however, the score is significantly higher among Groups TT and the score is higher among Groups TT and CT soon after the on-site training. The higher score among the treatment groups are still observed 2 years after

25 When I run regression of a dummy variable equal to one if the enterprise operated in 2012 on the training participation dummies, the coefficient of the on-site training in the knitwear cluster is positive and significant (result not shown). This illustrates that the training indeed influences the decisions as to whether continuing operation.

the training. Moreover, while the coefficients are not significant for Groups TC soon after the training, they become significant 2 years after the training in both clusters. For the enterprises in Group CC, however, their management scores are almost constant before and after the training, implying the limited degree of spill-over effect from the treated enterprises to the control enterprises. Figure 5.1 graphically illustrates the *Kaizen* score before and after the training among the groups and show that the training has positive impact soon after the training and such positive impact is persistent two years after the training.

With regard to WTP, there are baseline differences among groups in the knitwear cluster despite the randomization. This may be because of the small number of sample in each group and small variation in WTP. The *ex ante* value attached to managerial training is low because only 3% of owners in the steel village and 11% of owners in the knitwear village were willing to pay for the training. After the training, however, WTP significantly increased in both clusters. The increase of WTP is particularly significant in the knitwear cluster, which may reflect the greater effectiveness of the training there.

Table 3 shows a jump in the value added in 2010 among Groups TT and CT in the steel cluster. It, however, cannot sorely be attributed to the impact of training. In 2010, the Vietnamese real estate market was in boom and consequently the demand for construction steel was extraordinary high. As the on-site training was provided in the end of 2010, the consultation by the experts might have been of great immediate help during such very busy season. When I look at the value added in 2012, however, the value added is almost the same among groups as all the coefficients are insignificant. Therefore, it seems that the training may have the very short-run impact but not the longer-run impact in the steel cluster. On the other hand, the coefficients of value

added in 2012 for Groups TT is positive and significant and that for Group CT is significant at 12% level in the knitwear cluster, implying the impact of the training on the value added. As I find the larger coefficients of Groups TT and CT for both *Kaizen* score and value added, I interpret this as meaning that the training, particularly the on-site training, helped enterprises to adopt *Kaizen* practices, which consequently lead to better business performance. As various factors affect the business performance, however, I rigorously estimate the impact of the training by controlling for the confounding factors in the regression analyses below.

5.4. Econometric Specification and Estimation Results

Econometric Specification

I apply two types of econometric strategies for the consistent estimation. Firstly, I exploit the research design that we randomly invited some enterprises while not others. A difficulty in the impact evaluation lies in the fact that I cannot observe the counterfactual outcome, i.e., I cannot observe the non-treated outcome of the treatment enterprises and the treated outcome of the non-treated enterprises. Because the randomization controls for unobservable differences in the treatment and control groups, any differences between the two groups after the treatment can be attributed to the treatment. As the compliance rate of the classroom training is low, I instrument actual participation with random invitation to the training. By this instrumental variable (IV) approach, I can estimate local average treatment effect (LATE) as there is no defier, that is, the enterprises not-invited but participated in the training (Imbens and Angrist, 1994).[26]

26 As the villagers know each other and frequently communicate, 25 owners in the

Secondly, I exploit the panel nature of my data. Since the data was collected at several points with the low attrition rate, I estimate the fixed effect model to control for the unobserved enterprise-specific characteristics. Let y_{it} be an outcome variable of enterprise i in period t. I regress y_{it} on a vector of the participation status in the training ($\boldsymbol{P_i}$) instrumented by a vector of training invitation status, and its interaction with time dummies ($\boldsymbol{T_t}$). I also add a vector of enterprise characteristics ($\boldsymbol{X_i}$) and interest this with ($\boldsymbol{P_i}$*$\boldsymbol{T_t}$) to capture heterogeneous impact of the training. My general specification is written as:

$$y_{it} = \boldsymbol{\alpha P_i} + \boldsymbol{\beta}(\boldsymbol{P_i}*\boldsymbol{T_t}) + \boldsymbol{\gamma X_i} + \boldsymbol{\delta}(\boldsymbol{P_i}*\boldsymbol{T_t}*\boldsymbol{X_i}) + \upsilon_i + \lambda_t + \varepsilon_{it}. \quad (5.1)$$

$\boldsymbol{\beta}$ and $\boldsymbol{\delta}$ are my main parameters of interest. I control the enterprise-level unobserved heterogeneity (υ_i) by the fixed effect model and control the time trend (λ_t) by time dummies. ε_{it} is the unobserved error term, which I assume to follow the normal distribution with mean zero.

I have to note that my empirical specification does not take into account the spill-over as I assume that the Stable Unit Treatment Value Assumption (SUTVA) holds in this specification (Rubin, 1978). This, however, is not a serious concern of bias as the degree of spill-over effect seems limited as illustrated in Table 5.3 and Figure 5.1 and, more importantly, the estimated $\boldsymbol{\beta}$ is the lower bound of the actual impact as long

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steel cluster obtained the information of the training and appeared on the day of the classroom training although they were not invited. Given the established relationship between the villagers and our enumerators, we were not able to deny their participation and allowed them to participate in the classroom training. This, however, is not a threat to the LATE estimation as they were not surveyed and thus were out of the scope of our initial randomization; in other words, they are not the defiers.

as the spill-over effect is positive. I observe that *Kaizen* score and WTP among the control enterprises slightly increased after the training and I do not have any reason to suspect that the training worsen the management practices or valuation of the training of the control enterprises, and, hence, the spill-over effect on the adoption of *Kaizen* practices and WTP is presumably positive. With regard to the business performance, if the treated enterprises improve their business performance by stealing the market share from the control enterprises, the spill-over effect is negative and $\boldsymbol{\beta}$ overestimates the impact. The degree of market stealing, however, is limited because *Kaizen* approach emphasizes the cost reduction rather than the sales increase.

Estimation Results

Before estimating the impact of the training, I examine the *ex ante* relationship of the owner characteristics with the adoption of *Kaizen* practices, valuation on the training and business performance. I regress *Kaizen* score, WTP and the value added on a vector of owner characteristics. *Kaizen* score and WTP were collected before the training. The value added in the steel cluster is that of 2008 while it is the average of 2008 and 2009 in the knitwear cluster. Following the lead of McKenzie (2012), I take the average of the value added in order to control for fluctuations in business performance although the data for 2009 in available only in the knitwear cluster. As the training was provided in 2010, the value added in 2008 and 2009 is not influenced by the training.

Table 5.4 presents the results. A point to note is that the owners' human capital is positively associated with *Kaizen* score, as illustrated by the positive coefficients of the years of schooling and the past training experience. As Bloom and van Reenen,

(2010) find the strong correlation between the human capital and the adopted management practice based on data from a number of countries including developing ones, the adoption of *Kaizen* practices is associated with the human capital in the two industrial clusters under my study. For the behavioural characteristics, I find that the coefficient of willingness to compete is negative and significant in the knitwear cluster. Although speculative, this may illustrate that the owners who are willingness to compete are less likely to cooperate with their workers although the *Kaizen* approach requires the collaborative effort of the owner and workers.

For WTP, the coefficient of the years of education is positive in both clusters although not significant in the knitwear cluster, suggesting that the educated owners have higher *ex ante* value attached to managerial training. With regard to the value added, the owners' human capital is positively associated with the value added. I also find that risk preference in the knitwear cluster is positive and significant. This may be interpreted as meaning that the owners who are tolerant about risk are more likely to invest in production capacity or input materials and thus are likely to operate larger business.

In order to check whether the value added is associated with the adopted *Kaizen* practices, I regress the value added on *Kaizen* score and the characteristics of owners same as in the estimation of Table 5.4 (result not shown). Admitting that *Kaizen* score may cause estimation bias because the business performance and the adopted level of management may be simultaneously determined and influence each other, I find the positive significant coefficient of *Kaizen* score in both of the clusters. The inclusion of *Kaizen* score as a covariate, however, reduces the magnitude of the coefficient of the years of schooling, which can be interpreted as meaning that the more educated owners

adopt more *Kaizen* practices, which leads to increases the value added.

Overall, Table 5.4 shows that the owners' characteristics influence the adoption of *Kaizen* practices, value attached to managerial training and business performance, and hence, I infer that the magnitude of the training impact differs by the owners' characteristics. In the regression analyses below, I analyse the homogeneous as well as heterogeneous impact of the training caused by the enterprise owners' characteristics.

Table 5.5 shows my main results of the impact of the training estimated using fixed effect model with the instrumental variables (FE-IV). Although I do not show the first stage regression in which the participation status is regressed on the invitation status as well as other covariates, the F-statistics is high (for instance, the Crogg-Donald Wald F-statistics is 25.63 for the estimation in column 1) and thus I am confident of my IV strategy. In column 1 and 4, $\boldsymbol{P_i}$ in Equation (5.1) consists of the participation in the classroom training and that in the on-site training, and $\boldsymbol{T_t}$ consists of the dummies for "soon after the classroom training", "soon after the on-site training" and "2yrsAfter the training." The coefficient of the interaction of $\boldsymbol{P_i}$ with "soon after the classroom (on-site) training" measures the immediate impact of the training, while that with "2yrsAfter the training" measures the persistent impact of the training. The underlying assumption in this specification is that the impact of the training is additive for Group TT. As the inclusion of the dummy for both training participation dummy reduces the degree of freedom, particularly when I estimate the heterogeneous impact, I present the results without the both training dummy in the main text. Appendix Table A5.3 shows the results with the dummy for both training, relaxing the assumption of the additive impact for Group TT.

In the steel cluster, column 1 shows that the training has both immediate and

persistent impact and the impact is slightly larger two years after the training than soon after the training. Compared with the enterprises not participated in either of the training, *Kaizen* score two years after the training is higher by 2.14 points for those participated in the classroom training, 1.38 points for those participated in the on-site training, and 3.52 (sum of 2.14 and 1.38) points for those who participated in both of the training. In the knitwear cluster, column 4 shows that *Kaizen* score is higher by 2.22 points for those participated in the classroom training, 2.85 points for those participated in the on-site training, and 5.07 (sum of 2.22 and 2.85) points for those who participated in both of the training two years after the training. The results show that the training was indeed effective in improving the adoption of *Kaizen* practices in both of the clusters and the impact is persistent after the training.

Columns 2 and 5 show the estimated impact on WTP. As I do not collect information of WTP in the 3rd follow-up survey, $\boldsymbol{T_t}$ in Equation (1) consists of the dummies for "soon after the classroom training" and "soon after the on-site training." As found by Suzuki et al. (2014) which analyse the data from the 2nd follow-up survey in the knitwear cluster, the WTP increased after the training, illustrating that the owners' valuation of the training indeed increased after the actual participation. In the steel cluster, however, the coefficients are positive only for the classroom training, implying that the on-site training may not be very effective in the steel cluster.

Columns 3 and 6 show the estimated impact on the value added. As I have three data points, namely in 2008, 2010 and 2012, $\boldsymbol{T_t}$ in Equation (1) consists of the dummies for "soon after the on-site training" and "2yrsAfter the training," with the former corresponds to the performance in 2010 and the latter to 2012 with performance in 2008 as a reference. In the steel cluster, the coefficients are not significant both in short and

longer run. Although Table 5.3 hints the positive immediate impact, the FE-IV results, controlling for the various confounding factors, show no impact on the value added in the steel cluster. On the other hand, I find the positive impact of the on-site training in the knitwear cluster. Compared with the enterprises not participated in the on-site training, the enterprises that received the on-site consultation have, on average, 902.7 million VND larger value added in 2012. The coefficient of the classroom training is positive but insignificant.

Based on the Table 5.5, I claim that the training has impact on the adopted level of *Kaizen* practices in both clusters. I also claim that the training has no impact on the value added in the steel cluster while the training, at least the on-site training, has the positive impact in the knitwear cluster. The limited impact in the steel cluster is possibly due to the limited room for the incremental change by *Kaizen* approach in the steel cluster. As their workshops are usually very large, consisting of machines made of the second-hand machine parts, they cannot easily change the production process. Given their business practices, the trainer-experts did not show concrete example of *Kaizen* application but tried to give a comprehensive but abstract account of various *Kaizen* activities. Owners might have not understood the importance of *Kaizen* without actually observing the change and applying the method by themselves. I, however, observe some improvement in the production process by removing dangerous operations. Although we were not able to collect information on the accidents or the possible risk of such accidents because owners tend to conceal these accidents, I expect that the risk of accidents caused by dangerous operation has reduced by applying *Kaizen* practices in the steel cluster.

Appendix Table A5.3 presents the results with additional dummy variable for the

both training to capture non-additive nature of the two modes of the training.[27] For the *Kaizen* score, the both training dummy variable is positive significant in the steel cluster but negative significant in the knitwear cluster. This means that the two modes of the training are complementary in the steel village while substitutable in the knitwear village. The dummy variable in the knitwear cluster is largely negative and significant for the value added in 2012. I presume that the regression estimation becomes unstable because the number of enterprises participated in both of the training in the knitwear cluster is only 22.

Table 5.6 shows the estimated heterogeneous impact of the training caused by the owners' characteristics. I present the results only for *Kaizen* score because the impact on WTP has limited variation due to its binary nature and the impact on value added is difficult to accurately estimate even when estimating the homogeneous impact. Column 1 show the heterogeneous impact on *Kaizen* score caused by the *ex ante* WTP. The coefficient of the on-site training interacted with *ex ante* WTP is negative in both clusters although not significant in the steel cluster. The design of the on-site training that the experts visit each enterprise induced the owners whose *ex ante* valuation of the training is low to receive the managerial consultation and it is such owners that actually benefited from the training. This is consistent with Karlan and Valdivia (2011) that find the impact of business training for the microfinance clients is larger for those whose *ex ante* expectation on the training is low. As those who have potentially larger gains are less likely to voluntarily participate in the training, the research on how to provide and disseminate such managerial training should be investigated further in

27 As the participation rate is low for the classroom training, I calculate the propensity score matching estimates as a robustness check. The results presented in Appendix to this Chapter are in line with the estimates in Tables 5.5 and Appendix Table A5.3.

future.

Appendix Table A5.4 shows the differences in *Kaizen* score and value added by the changes in WTP. Comparing columns 1 and 2 with column 3, the initial level of *Kaizen* adoption and value added are higher among the enterprises with high *ex ante* valuation in the training in the steel cluster. The comparison of column 1 and column 2 suggests that despite the similar initial levels of adopted *Kaizen* practices and the value added, the enterprises whose WTP increased improved their adopted level of *Kaizen* practices as well as the value added after the training. More strikingly, all the enterprises whose WTP increased after the training continued operation in 2012 as presented in the last raw. The same is found in the knitwear cluster. Therefore, while admitting that the changes in WTP are endogenous, I claim that WTP is a strong predictor of the impact of the training.

Columns 2 through 5 of Table 5.6 show a number of other interactions are significant, illustrating that the magnitude of impact varies by owner's characteristics including the behavioural attributes. A point to note is that the coefficients for the interaction of the on-site training and the years of education are negative significant in both of the clusters, showing that the less educated enterprise owners benefit more from the on-site training. Similar reasoning as WTP applies. The design of the on-site training induced the less educated owners, who are less willing to participate but have lager potential gain, to participate in the training. Although the estimation is not very stable due to the small number of samples in each group, I show the impact of training varies by the owner's characteristics. The future study of the similar training, desirably with the larger sample, should further analyse who benefit more from what type of training to effectively disseminate managerial training.

Lastly, I investigate the possible mechanism through which the training leads to the higher value added in the knitwear cluster. Our trainer-experts pointed out that many enterprises tend to overproduce the product. As they have only one chance a year to sell their product, they keep the unsold products in their inventory until next year to sell them with a lower price or they untie them to reuse the knit for the next production. Therefore, the overproduction seriously affects the enterprise performance in the knitwear cluster, particularly those targeting only the domestic market because export product is mostly made upon orders. In the 3rd follow-up survey, I collected information on production, in addition to the sales revenue, to analyse whether the overproduction matters. Panel A of Table 5.7 presents the descriptive statistics of the proportion of output sold by the calendar year to capture how much products are left unsold. Although the enterprises in Groups TT and CT sell almost all of their output, the enterprises in Group CC have, on average, 7.2% of their output unsold. In other words, the enterprises in Group CC overproduce the product compared to the treated enterprises. As *Kaizen* approach emphasizes the reduction of wasted work, I interpret that the *Kaizen* training helps enterprises reduce the overproduction and consequently increase the value added.

Panel B of Table 5.7 shows the regression results. I regress the proportion of output sold on the training participation status instrumented by the invitation status. As I collected data on production only in the 3rd follow-up survey, this is a cross-section regression, using the data of one point in 2012. I find the positive significant coefficients of both of the training. The enterprises participated in the classroom training reduced the overproduction by as much as 6.5% point and those participated in the on-site training by 3.3% point. Therefore, Table 5.7 gives the suggestive evidence

that the increased value added in the knitwear cluster is due to the elimination of overproduction.

5.5. Conclusion

This is an early, if not first, study to examine the impact of managerial intervention in Asian emerging economies. The feature of my study is that we provided the managerial training featuring *Kaizen* approach with two different modes of teaching to the enterprises in the two industrial clusters producing different products and that we measured longer run impact compared with the existing studies. I find that the managerial training has persistent impact on the adoption of *Kaizen* practices in both of the industrial clusters two years after the training. For the value added, however, I find the significant impact only of the on-site training in the knitwear cluster. This may suggest that the *Kaizen* approach is not a panacea for all the business. The accumulating the evidence of the similar training in different industries will suffice this study to effectively disseminate managerial training to develop human resource of business owners.

The limited impact of the business performance may be because the insufficient amount of managerial training as the classroom training was only 37.5 hours in total and the consultation was only for 4-6 hours per enterprise. Since it is not easy to change the attitude of owners and business practices, the advanced management training may be required. As the enterprises that increased their WTP after the participation are performing better two years after the training than the enterprises that remain unwilling to pay for the training, such enterprises are eager to improve their management as well as to expand their business. As the eager enterprises are most likely to join advanced

training if such training is offered, the basic training we provided will serve as a screening device.

Appendix to CHAPTER 5

Matching Estimation of the Classroom Training Impact

As the compliance rate for the classroom training is low (93 out of the invited 197 enterprise owners participated), I use the propensity score matching (PSM) to estimate the impact of the classroom training. I begin with analysing who actually participated in the training. Appendix Table A5.5 shows the Probit estimation, where I regress the participation on the characteristics of enterprises owners as well as the *ex ante Kaizen* score and WTP among the 197 owners invited to the classroom training. As the *Kaizen* score and WTP are potentially endogenous, I do not claim any causality but simply examine the associations. Column 1 shows the results using the pooled data of the two clusters and columns 2 and 3 show the results separately estimated for each of the cluster.

Column 1 shows the positive significant coefficient of risk preference. The owner may perceive the participation as investment with uncertainty as Table 5.2 shows that the proportion of owners with past training experience is low. The owners who are tolerant about risk are more likely to participate in such uncertain event. The coefficient for the number of relatives in the sample is also positive and significant. As the owners frequently communicate in the village, they talk about the training invitation and they are probably more likely to participate when they know that their relatives are also participating. As expected, the coefficient for WTP is strongly positive and significant, validating that WTP actually measures owners' value attached to managerial training.

I use the Probit estimation in Appendix Table A5.5 to calculate propensity score

so that we can match the enterprises participated in the classroom training with those did not but share similar characteristics. Based on the propensity score matching, I estimate PSM-DID (difference in difference) to measure the impact of the classroom training (Leuven and Sianesi, 2008; Rosenbaum and Rubin, 1983). Appendix Table A5.6 shows the results. I stratify our sample enterprises by their participation in the on-site training. Columns 1 and 3 show the impact among the enterprises participated in the on-site training, i.e., Groups TT and CT, to capture the additional impact of the classroom training to the on-site training, while columns 2 and 4 show the impact among those not participated in the on-site training, i.e., Groups TC and CC.

With regard to the *Kaizen* practice, columns 1 and 3 show that the enterprises gained from the classroom training in addition to the on-site training in the steel cluster but not in the knitwear cluster. Columns 2 and 4 show the positive impact of the classroom in both clusters. The coefficients of WTP are significant in all columns, showing that the classroom training participation increases the valuation of the training. With regard to the value added, I do not find any significant impact of the classroom training. These results are largely comparable to those presented in Tables 5.5 and Appendix Table A5.3.

CHAPTER 6

Conclusion

The goal of this dissertation is to contribute to the knowledge on how to develop human resource of business owners by using primary data collected in the two industrial clusters in Vietnam. First approach to develop human resource of business owners is to increase managerial capital through the spread of management knowledge and skills by means of management training, coaching and so forth. The other approach is to raise the education level in general and that of future business owners in particular. My studies in Chapters 4 and 5 provide new insights into the two approaches as well as raises important questions to be addressed in future studies.

In Chapter 4, I analyse the factors influencing the succession and educational decisions of the adult children of business owners based on Beckerian model of family. I find that the majority of the adult children, particularly those with lower educational attainment, choose to succeed their parents' business although the white-collar jobs are increasingly becoming available in cities. The adult children are much more educated than their parents but their decisions are under the strong influence of their parents as well as the traditional norms of the rural village. Although children who choose the family business are, in general, less educated that those who choose jobs elsewhere, I find a number of children with tertiary education succeeded the family business. They are nurtured by parents who have high business aspiration and are expected to expand the business as well as to develop industries in future.

Three major future questions emerged from this chapter. First, it is important to explore the factors associated with the business performance of enterprises that the adult

children succeeded or newly established. A follow-up survey in the same industrial clusters will allow me to examine the exit, survival, and growth of their enterprises to link such dynamic performance with the characteristics of their parents as well as themselves. Second, it is interesting to explore the factors associated with the marriage of the adult children and examine the relationship between the marriage, or the characteristics of the in-laws, and the performance of the family business. Third, it is interesting to collect the behavioural characteristics of children themselves so that I can compare the difference or similarity between the children and their parents and analyse how children's such characteristics influence the family business.

In Chapter 5, I analyse the persistent impact of basic managerial training featuring *Kaizen*. I find that the enterprises improve the adopted level of their *Kaizen* management practices after the training participation and some enterprises even increased their business performance. Such impact of the training is persistent two years after the training. I also find that while the *ex ante* value attached to managerial training was low, it increased significantly after the training, particularly among those greatly benefited from the training.

Two major future questions emerged from this chapter. First, although I estimate the persistent impact of the training measured two years after the training, additional follow-up survey will complement this study to analyse the longer-run performance of each enterprise as well as the industrial clusters as a whole. As Sonobe et al. (2014) illustrate that the improvement in management provides a basis for the successful technology transfer, business owners with improved managerial capital may possibly introduce new innovation by borrowing advanced technology in future. Second, since the impact on business performance is limited possibly due to the

insufficient amount of training, the advanced managerial training could be provided. As the enterprises that benefit from the basic managerial training increased their willingness to pay, the enterprises that are eager to improve their management and business will most likely to participate in the advanced training if such training is offered.

To conclude my dissertation, I claim that certain interventions to disseminate managerial training are supported although the accumulation of the knowledge is desirable for the effective dissemination as the magnitude of the effectiveness varies and thus there is a lot of room for making management training more effective for the purpose of increasing managerial capital in the developing world.

I also claim that understanding of SMEs should be enhanced to design appropriate policies for the promotion of SMEs. Although the existing policies for SME promotion tend to be based on such simplistic view that SMEs will grow as long as credit or information is provided. I, however find that even SMEs in the same industrial clusters are different not only in terms of the business size but also the capacity, preference and motivation, and thus blanket policies do not work. For instance, Chapter 4 finds that majority of enterprises are succeeded by less educated children of business owners. Those children may not be very eager to expand business but rather prefer to maintain status quo, which generates sufficient income, and thus, they may not need additional credit or information. Instead, resource should be allocated to a number of enterprises that are succeeded by highly educated children, who are more likely to expand their business as well as develop industries in future. In Chapter 5, I find that while majority of enterprises remain unwilling to pay for managerial training, some enterprises became willing to pay for managerial training to

improve their business. It is desirable to allocate resource to such eager enterprises. In order to make appropriate policy for SME promotion, further understanding of SMEs is necessary and my dissertation claims that due attention should be given to family business aspect of SMEs as well as managerial capacity.

References

Acemoglu, J. and Robinson, J. (2012) *Why Nation Fail: The Origin of Power, Prosperity, and Poverty*. New York: Crown Business.

Alchian, A.A. and Demsetz, H. (1972) Production, information costs, and economic organization, *American Economic Review*, 62(5): 777-795.

Agarwal, S, and Mazumder, B. (2013) Cognitive abilities and household financial decision making, *American Economic Journal: Applied Economics*, 5(1), 193-207.

Anderson, R.C. and Reeb, D.M. (2003) Founding-family ownership and firm performance: Evidence from the S&P 500, *Journal of Finance*, 58 (3): 1301-1328.

Ayyagari, M., Beck, T. and Demirguc-Kunt, A. (2007) Small and medium enterprises across the globe, *Small Business Economics*, 29:415-434.

Baland, J., Moene, K.O. and Robinson, J.A. (2010) Governance and development. In Rodrik, D. and Rosenzweig, M. (eds.) Handbook of Development Economics, Volume 5. Amsterdam: Elsevier.

Barnes, L. (1988) Incongruent hierarchies: Daughters and younger sons as company CEOs, *Family Business Review*, 1(1), 9-21.

Barro, R.J. and Lee, J.W. (2013) A new data set of educational attainment in the world, 1950-2010, *Journal of Development Economics*, 104, 184-198.

Bartelsman, E., Haltiwanger, J.C. and Scarpetta, S. (2009) Cross-county differences in productivity: The role of allocation and selection, *NBER Working Paper 15490*.

BBC. (2014) Japan brings Kaizen philosophy to Ethiopia.

http://www.bbc.com/news/business-26542963, accessed on 11th September 2014.

Becker, G.S. (1974) A theory of social interactions, *Journal of Political Economy,* 82(6): 1063-1093.

Bennedsen, M., Nielsen, K.M., Perez-Gonzalez, F. and Wolfenzon, D. (2007) Inside the family firm: The role of families in succession decisions and performance, *Quarterly Journal of Economics*, 122(2): 647-691.

Berge, L.I.O., Bjorvatn, K., Juniwaty, S. and Tungodden, B. (2012) Business training in Tanzania: From research-driven experiment to local implementation, *Journal of African Economies*, 21(5): 808-827.

Berihu, A.G. (2013) An economic inquiry into the international transfer of managerial skills: Theory and evidence from the Ethiopian manufacturing sector, *Ph.D. Dissertation submitted to National Graduate Institute for Policy Studies, Tokyo*.

Bertrand, M., Johnson, S., Samphantharak, K. and Schoar, A. (2008) Mixing family with business: A study of Thai business groups and the families behind them, *Journal of Financial Economics*, 88:466-498.

Bertrand, M and Mullainathan, S. (2003) Enjoying the quiet life? Corporate governance and managerial preferences, *Journal of Political Economy*, 111(5): 1043-1075.

Bertrand, M. and Schoar, A. (2006) The role of family in family firms, *Journal of Economic Perspectives*, 20(2): 73-96.

Bigsten, A. and Söderbom, M. (2006) What have we learned from a decade of manufacturing enterprise surveys in Africa?, *World Bank Research Observer*, 21(2): 241-265.

Bjorvatn, K. and Tungodden, B. (2010) Teaching business in Tanzania: Evaluating participation and performance, *Journal of the European Economic Association*, 8:

561-70.

Bloom, N., Eifert, B., Mahajan, A., McKenzie, D. and Roberts, J. (2013) Does management matter? Evidence from India, *Quarterly Journal of Economics*, 128(1), 1-51.

Bloom, N. and van Reenen, J. (2007) Measuring and explaining management practices across firms and countries, *Quarterly Journal of Economics*, 122(4), 1351-1408.

Bloom, N. and van Reenen, J. (2010) Why do management practices differ across firms and countries?, *Journal of Economic Perspective*, 24(1), 203-224.

Blumenschein, K., Blomquist, G.C., Johannesson, M., Horn, N. and Freeman, P. (2008) Eliciting willingness to pay without bias: Evidence from a field experiment, *Economic Journal*, 118(525), 114-137.

Breton-Miller, I.L. and Miller, D. (2006) Why do some family businesses out-compete? Governance, long-term orientations, and sustainable capability, *Entrepreneurship Theory and Practice*, 30(6): 731-746.

Brockhaus, R.H. (2004) Family business succession: Suggestions for future research, *Family Business Review*, 17(2): 165-177.

Bruhn, M., Karlan, D. and Schoar, A. (2010) What capital is missing in developing countries?, *American Economic Review: Papers and Proceedings*, 100(2), 629-633.

Bruhn, M. and Zia, B. (2013) Stimulating managerial capital in emerging markets: The impact of business training for young entrepreneurs, *Journal of Development Effectiveness*, 5(2): 232-266.

Burkart, M., Panunzi, F. and and Shleifer, A. (2003) Family firms, *Journal of Finance*, 58(5): 2167-2201.

Cadieux, L. (2007) Succession in small and medium-sized family businesses: Toward a typology of predecessor roles during and after instatement of the successor, *Family Business Review*, 20(2): 95-109.

Cai, H., Li, H., Park, A., and Zhou, L. (2013) Family ties and organizational design: Evidence from Chinese private firms, *Review of Economics and Statistics*, 95(3): 850-867.

Caselli, F. and Gennaioli, N. (2013) Dynastic management, *Economic Inquiry*, 51(1): 971-996.

Chrisman, J.J., Chua, J.H. and Sharma, P. (1998) Important attributes of successors in family businesses: An exploratory study, *Family Business Review*, 11(1): 19-34.

Collier, P. and Gunning, J.W. (1999) Explaining African economic performance, *Journal of Economic Literature*, 37(1): 64-111.

De Mel, S., McKenzie, D. and Woodruff, C. (2014) Business training and female enterprise start-up, growth, and dynamics: Experimental evidence from Sri Lanka, *Journal of Development Economics*, 106: 199-210.

De Mel, S., McKenzie, D. and Woodruff, C. (2008) Returns to capital in microenterprises: Evidence from a field experiment, *Quarterly Journal of Economics*, 123(4): 1329-1372.

De Massis, A., Chua, J.H. and Chrisman, J.J. (2008) Factors preventing intra-family succession, *Family Business Review*, 21(2): 183-199.

Demsetz, H. and Lehn K. (1985) The structure of corporate ownership: Causes and consequences, *Journal of Political Economy*, 93(6): 1155-1177.

Dohmen, T., Falk, A., Huffman, D., Sunde, W., Schupp, J. and Wagner, G.G. (2011) Individual risk attitudes: Measurement, determinants, and behavioral

consequences, *Journal of the European Economic Association*, 9(3), 522-550.

Dunn, T. and Holtz-Eakin, D. (2000) Financial capital, human capital, and the transition to self-employment: Evidence from intergenerational links, *Journal of Labor Economics*, 18(2): 282-305.

Eifert, B., Gelb, A. and Ramachandran, V. (2008) The cost of doing business in Africa: Evidence from enterprise survey data, *World Development*, 36:1531-1546.

Ellul, A., Pagano, M. and Panunzi, F. (2010) Inheritance law and investment in family firms, *American Economic Review*, 100(5): 2414-2450.

Felkner, J.S. and Townsend, R.M. (2011) The geographic concentration of enterprise in developing countries, *Quarterly Journal of Economics*, 126, 2005-2061.

Field, E., Jayachandran, S. and Pande, R. (2010) Do traditional institutions constrain female entrepreneurship? A field experiment on business training in India, *American Economic Review*, 100 (2), 125-129.

Fisman, R., Kariv, S. and Markovits, D. (2009) Exposure to ideology and distributional preferences, *Mimeo*.

Fisman, R. and Svensson, J. (2007) Are corruption and taxation really harmful to growth? Firm level evidence, *Journal of Development Economics*, 83:63-75.

Frederick, S., Loewenstein, G. and O'Donoghue, T. (2002) Time discounting and time preference: A critical review, *Journal of Economic Literature*, 40(2): 351-401.

Fujita, M. and Thisse, J.F. (2013) *Economics of Agglomeration: Cities, Industrial Location, and Globalization*. Cambridge, UK: Cambridge University Press.

Gersick, K.E., Davis, J.A., Hampton, M.M. and Lansberg, I. (1997) *Generation to Generation: Life Cycles of the Family Business*. Boston: Harvard Business School Press.

Glewwe, P. and Kremer, M. (2006) Schools, teachers, and education outcomes. In *Handbook of the Economics of Education Volume 2*. ed. Hanushek, E.A. and Welch, F. Amsterdam: Elsevier.

Gneezy, U., Leonard, K.L. and List, J.A. (2009) Gender differences in competition: Evidence from a matrilineal and patriarchal society, *Econometrica*, 77(5): 1637-1664.

Hayami, Y. and Godo, Y. (2005) *Development Economics: From the Poverty to the Wealth of Nations*, 3rd Edition. Oxford: Oxford University Press.

Hsieh, C. and Klenow, P.J. (2009) Misallocation and manufacturing TFP in China and India, *Quarterly Journal of Economics*, 124(4): 1403-1448.

Imai, M. (1997) *Gemba Kaizen: A commonsense, Low-cost Approach to Management*. New York: McGraw-hill.

Imbens, G. and Angrist, J. (1994) Identification and estimation of local average treatment effects. *Econometrica*, 62, 467-476.

Japan International Cooperation Agency (JICA) (2004) *The Study on Artisan Craft Development Plan for Rural Industrialization in The Socialist Republic of Vietnam*. Hanoi: JICA.

Karlan, D. and Valdivia, M. (2011) Teaching entrepreneurship: Impact of business training of microfinance clients and institutions, *Review of Economics and Statistics*, 93(2), 510-527.

Kairiza, T. (2012). Fostering managerial skills development amongst micro entrepreneurs: experimental evidence from Tanzania, A paper presented at the Spring Conference of Japanese Economic Association.

Kets de Vries, M.F.R. (1993) The dynamics of family controlled firms: The good and

the bad news, *Organizational Dynamics*, 21(3): 59-71.

Kremer, M., Lee, J., Robinson, J. and Rostapshova, O. (2013) Behavioral biases and firm behavior: Evidence from Kenyan retail shops, *American Economic Review*, 103(3), 362-368.

La Porta, R., Lopez-de-silanes, F. and Shleifer, A. (1999) Corporate ownership around the world, *Journal of Finance*, 54(2): 471-517.

Lee, J. (2006) Family firm performance: Further evidence. *Family Business Review*, 16 (2): 103- 114.

Leuven, E. and Sianesi, B. (2008) Psmatch2: Stata module to perform full mahalanobis and propensity score matching, common support graphing, and covariate imbalance testing. http://ideas.repec.org/c/boc/bocode/s432001.html, accessed on 11th September 2014.

Lucas, R.E. (1978) On the size distribution of business firms, *Bell Journal of Economics*, 9: 508-523.

Lumpkin, G.T. and Brigham, K.H. (2011) Long-term orientation and intertemporal choice in family firms, *Entrepreneurship Theory and Practice*, 35(6): 1149-1169.

McConaughy, D.L., Walker, M.C., Henderson, G.V. and Mishra, C.S. (1998) Founding family controlled firms: Efficiency and value, *Review of Financial Economics*, 7(1): 1-19.

Mano, Y., Iddrisu, A., Yoshino, Y. and Sonobe, T. (2012) How can micro and small enterprises in sub-Saharan Africa become more productive? The impacts of experimental basic management training, *World Development*, 40(3), 458-468.

Mano, Y., Akoten, J., Yoshino, Y. and Sonobe, T. (2014) Teaching KAIZEN to small business owners: An experiment in a metalworking cluster in Nairobi, *Journal of*

the Japanese and International Economies, forthcoming.

Marshall, A. (1920) *Principles of Economics*. London: Macmillan.

Marshall, J.P., Sorenson, R., Brigham, K., Wieling, E., Reifman, A. and Wampler, R.S. (2006) The paradox for the family firm CEO: Owner age relationship to succession-related processes and plans, *Journal of Business Venturing*, 21: 348-368.

McCormick, D., Kinyanjui, M.N. and Ongile, G. (1997) Growth and barriers to growth among Nairobi's small and medium-sized garment producers, *World Development*, 25(7): 1095-1110.

McKenzie, D. (2012) Beyond baseline and follow-up: The case for more T in experiments, *Journal of Development Economics*, 99(2), 210-221.

McKenzie, D. and Woodruff, C. (2014) What are we learning from business training and entrepreneurship evaluations around the developing world, *World Bank Research Observer*, 29(1), 48-82.

McKenzie, D. and Woodruff, C. (2008) Experimental evidence on returns to capital and access to finance in Mexico, *World Bank Economic Review*, 22(3): 457-482.

McPherson, M.A. (1996) Growth of micro and small enterprises in southern Africa, *Journal of Development Economics*, 48(2), 253-277.

Mead, D.D. and Liedholm, C. (1998) The dynamics of micro and small enterprises in developing countries, *World Development*, 24 (3), 481-487.

Moretti, E. (2012) *The New Geography of Jobs*. New York: Haughton Mifflin Harcourt Publishing Company.

Mueller, H.M and Philippon, T. (2011) Family Firms and Labor Relations, *American Economic Journal: Macroeconomics*, 3 (2): 218-245.

Nagakura, D. and Kobayashi, M. (2009) Testing the Sequential Logit model against the Nested Logit model, *Japanese Economic Review*, 60(3): 345-361.

Nam, V.H., Sonobe, T. and Otsuka, K. (2009) An inquiry into the transformation process of village-based industrial clusters: the case of an iron and steel cluster in northern Vietnam, *Journal of Comparative Economics*, 37, 568-581.

Nam, V.H., Sonobe, T. and Otsuka, K. (2010) An inquiry into the development process of village industries: the case of a knitwear cluster in northern Vietnam, *Journal of Development Studies*, 46(2), 312-330.

Newsweek. 2014. Japan Takes On China Far From Home in Africa. http://www.newsweek.com/japan-takes-china-far-home-ethiopia-238362, accessed on 11th September 2014.

Nichter, S. and Goldmark, L. (2009) Small firm growth in developing countries, *World Development*, 37(9):1453-1464.

Nordqvist, M., Wennberg, K., Bau, M. and Hellerstedt, K. (2013) An entrepreneurial process perspective on succession in family firms, *Small Business Economy*, 40: 1087-1122.

Oostendorp, R.H. and Doan, Q.H. (2013). Have the returns to education really increased in Vietnam?: Wage versus employment effect, *Journal of Comparative Economics*, 41: 923-938.

Oostendorp, R.H., Trung, T.Q. and Tung, N.T. (2009) The changing role of non-farm household enterprises in Vietnam, *World Development*, 37(3), 632-644.

Pérez-González, F. (2006) Inherited control and firm performance, *American Economic Revie*w, 96(5): 1559-1588.

Petrin, A. and Sivadasan, J. (2013) Estimating lost output from allocative inefficiency,

with an application to Chile and firing costs, *Review of Economics and Statistics*, 95(1): 286-301.

Prokesch, S. (2002). Rediscovering family values. In Aronoff, C.E., Ward, J.L. and Astrachan, J.H. (eds.) *Family Business Sourcebook*, 3rd Edition. Detroit: Omnigraphics.

Ranis, G. and Stewart, F. (1993) Rural nonagricultural activities in development: Theory and application, *Journal of Development Economics*, 40: 75-101.

Rao, G. (2014) Familiarity does not breed contempt: Diversity, discrimination and generosity in Delhi schools, *Mimeo*

Resnick, S.A. (1970) The decline of rural industry under export expansion: A comparison among Burma, Philippines, and Thailand, 1870-1938. *Journal of Economic History*, 30(1), 51-73.

Rosen, S. (1982) Authority, control, and the distribution of earnings, *Bell Journal of Economics*, 13:311-323.

Rosenbaum, P.R. and Rubin, D.B. (1983) The central role of the propensity score in observational studies for causal effects, *Biometrika*, 70 (1), 41-55.

Ruan, J. and Zhang, X. (2009) Finance and cluster-based industrial development in China, *Economic Development and Cultural Change*, 58(4), 143-164.

Rubin, D.B. (1978) Bayesian inference for causal effects: The role of randomization, *Annals of Statistics*, 6(1), 34-58.

Schmitz, H and Nadvi, K. (1999) Clustering and industrialisation, *World Development*, 27(9), 1503-1514.

Schultz, T.W. (1975) The value of the ability to deal with disequilibria, *Journal of Economic Literature*, 13(3): 827-846.

Schulze, W.S., Lubatkin, M.H., Dino, R.N. and Buchholtz, A.K. (2001) Agency relationships in family firms: Theory and evidence, *Organization Science*, 12(2): 99-116.

Sharma, P. (2004) An overview of the field of family business studies: Current status and directions for the future, *Family Business Review*, 17(1): 1-36.

Sharma, P., Chrisman, J.J. and Chua, J.H. (2003) Succession planning as planned behavior: Some empirical results, *Family Business Review*, 16(1): 1-16.

Sharma, P., Chrisman, J.J., Pablo A.L. and Chua, J.H. (2001) Determinants of initial satisfaction with the succession process in family firms: A conceptual model, *Entrepreneurship Theory and Practice*, 25(3): 17-35.

Sharma, P. and Chua, J.H. (2013) Asian family enterprises and family business research, *Asia Pacific Journal of Management*, 30: 641- 656.

Shibanuma, A. (2012) Improving SME's management and performance through KAIZEN: Impacts of teaching KAIZEN and non-KAIZEN practices to manufacturing SMEs in Ethiopia, A paper presented at the Spring Conference of Japanese Economic Association.

Sonobe, T., Higuchi, Y. and Otsuka, K. (2014) Differences in management practices and productivity in micro and small enterprises in industrial clusters, *Journal of International Commerce, Economics and Policy*, 5(2).

Sonobe, T. and Otsuka, K. (2011) *Cluster-Based Industrial Development: A Comparative Study of Asia and Africa.* New York: Palgrave Macmillan.

Sonobe, T. and Otsuka, K. (2006) *Cluster-Based Industrial Development: An East Asian Model.* New York: Palgrave Macmillan.

Sraer, D. and Thesmar, D. (2007) Performance and behaviour of family firms: Evidence

from the French stock market, *Journal of the European Economic Association*, 5(4): 709-751.

Stein, J.C. (1989) Efficient capital markets, inefficient firms: A model of myopic corporate behaviour, *Quarterly Journal of Economics*, 104 (4): 655-669.

Suzuki, A. Nam, V.H. and Sonobe, T. (2014) Willingness to pay for managerial training: a case from the knitwear industry in Northern Vietnam, *Journal of Comparative Economics*, 42(3): 693-707.

Syverson, C. (2011) What determines productivity?, *Journal of Economic Literature*, 49(2): 326-365.

Tybout, J.R. (2000) Manufacturing firms in developing countries: How well do they do, and why?, *Journal of Economic Literature*, 38(1): 11-44.

Van Biesebroeck, J. (2003) Productivity dynamics with technology choice: An application to automobile assembly, Review of Economic Studies,70: 167-198.

Vera, C.F. and Dean, M.A. (2005) An examination of the challenges daughters face in family business succession, *Family Business Review*, 18(4): 321-345.

Villalonga, B. and Amit, R. (2006) How do family ownership, control and management affect firm value?, *Journal of Financial Economics*, 80: 385-417.

Willebrands, D., Lammers, J. and Hartog, J. (2012) A successful businessman is not a gambler. Risk attitude and business performance among small enterprises in Nigeria, *Journal of Economic Psychology*, 33, 342-354.

World Bank (2012) *World Development Report 2013: Jobs*. Washington DC: World Bank.

Yan, J. and Sorenson, R. (2006) The effect of Confucian values on succession in family business, *Family Business Review*, 19(3): 235-250.

Table 4.1: Descriptive statistics and pairwise correlations of main variables

	Mean	(SD)	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Yrs of education (own)	11.7	(2.75)													
2. = 1 if in family biz	0.45	(0.50)	-0.26***												
3. Age	23.2	(4.99)	-0.06	0.23***											
4. = 1 if male	0.52	(0.50)	0.00	0.04	-0.02										
5. = 1 if first-born	0.38	(0.49)	0.05	0.06	0.16***	-0.01									
6. # of siblings	2.7	(1.20)	-0.07*	0.11**	0.25***	-0.17***	-0.22***								
7. = 1 if married	0.58	(0.49)	-0.22***	0.42***	0.59***	-0.18***	0.05	0.19***							
8. Yrs of education (father)	7.2	(2.71)	0.24***	-0.20***	-0.04	-0.08*	0.04	0.01	-0.17***						
9. Yrs of education (mother)	6.2	(2.62)	0.23***	-0.14***	-0.07*	0.00	0.09**	-0.08*	-0.18**	0.32***					
10. Risk taking [0 to 10]	3.0	(2.88)	0.00	0.03	-0.08*	0.05	0.04	-0.13***	0.01	0.00	-0.10**				
11. Patience [0 to 5]	2.4	(2.00)	0.14***	-0.05	0.03	-0.04	0.03	-0.11**	0.04	0.07	0.07	0.10**			
12. = 1 if willing to compete	0.63	(0.48)	0.25***	0.01	-0.06	0.04	0.06	-0.23***	-0.07	0.03	-0.01	-0.14***	-0.06		
13. Cognitive ability [0 to 5]	3.4	(1.30)	0.24***	-0.05	0.02	-0.03	0.03	0.07*	-0.03	0.20***	0.14***	0.02	0.02	0.17***	
14. Value added [mil. VND]	1,297	(1,808)	0.15***	0.04	-0.12**	-0.02	0.00	0.10**	-0.11**	0.18***	-0.03	0.07	0.02	0.04	0.11**

***, **, and * indicate the 1, 5, and 10 percent levels of statistical significance, respectively. The number of the sample children is 574. Value added is the mean of the values in 2008 and 2010.

Table 4.2: Estimated multinomial logit model of educational and occupational choices

Educational and occupational choices (Group)	(1) Still in school (Group 1)	(2) Family business with tertiary education (Group 2)	(3) Other occupation with tertiary education (Group 3)	(4) Family business without tertiary education (Group 4)
Age	-1.52***	0.91**	1.54***	0.25
	(-3.82)	(2.04)	(2.94)	(1.01)
Age squared	0.021**	-0.017**	-0.028***	-0.0042
	(2.41)	(-1.96)	(-2.71)	(-0.89)
Male (yes = 1)	0.32	1.38**	0.46	0.16
	(0.90)	(2.43)	(1.06)	(0.61)
First-born child (yes = 1)	0.37	1.50***	-0.31	0.13
	(1.00)	(2.73)	(-0.84)	(0.49)
Number of siblings	-0.057	0.24	0.0023	-0.056
	(-0.22)	(0.93)	(0.01)	(-0.29)
Father's years of education	0.12	0.16	0.086	-0.13**
	(1.64)	(1.54)	(0.99)	(-2.05)
Mother's years of education	0.045	0.13	0.24***	0.00097
	(0.50)	(1.35)	(2.82)	(0.01)
Parent's risk taking in business	-0.00093	0.094	0.033	0.029
	(-0.01)	(0.82)	(0.38)	(0.54)
Parent's patience	0.21**	0.083	-0.053	-0.0093
	(2.14)	(0.47)	(-0.46)	(-0.12)
Parent's willingness to compete	0.59	1.24**	0.50	0.66*
	(1.42)	(1.98)	(0.82)	(1.77)
Parent's cognitive ability	0.070	0.51*	0.22	0.15
	(0.43)	(1.90)	(1.01)	(0.94)
Log of value added	0.53***	0.084	0.11	0.37**
	(2.82)	(0.30)	(0.57)	(2.44)
Steel village dummy	-0.39	1.17	0.33	1.06**
	(-0.62)	(1.34)	(0.51)	(2.30)
Constant	16.4***	-22.2***	-25.7***	-5.79*
	(3.77)	(-3.57)	(-3.88)	(-1.78)
Number of children in the Group	128	22	46	234

Note: The base outcome is "Other occupation without tertiary education (N=129)" (Group 5). t statistics are in parentheses and standard errors are clustered at the family-enterprise level. ***, **, and * indicate the 1, 5, and 10 percent levels of statistical significance, respectively. The number of sample children in this regression is 559 with 15 observations missing due to missing variables and negative average value added.

Table 4.3: Estimated sequential logit model of educational and occupational choices

Subsample	(1) All	(2) Those who completed schooling	(3) With tertiary education	(4) Without tertiary education
Dependent variables	= 1 if still in school	= 1 if having tertiary education	= 1 if in family business	= 1 if in family business
Groups	Group 1 over Groups 2,3,4 & 5	Groups 2&3 over Groups 4 & 5	Group 2 over Group 3	Group 4 over Group 5
Age	-1.68***	1.24***	0.25	0.20
	(-3.70)	(3.45)	(0.28)	(0.82)
Age squared	0.023**	-0.023***	-0.0054	-0.0032
	(2.20)	(-3.25)	(-0.33)	(-0.70)
Male (yes = 1)	0.16	0.57	0.97	0.12
	(0.56)	(1.55)	(1.36)	(0.45)
First-born child (yes = 1)	0.25	0.26	2.23***	0.052
	(0.76)	(0.97)	(2.70)	(0.18)
Number of siblings	-0.024	0.11	0.24	-0.079
	(-0.11)	(0.72)	(0.71)	(-0.41)
Father's years of education	0.17**	0.26***	0.14	-0.15**
	(2.56)	(3.52)	(0.98)	(-2.05)
Mother's years of education	0.000017	0.23***	-0.18	-0.040
	(0.00)	(3.06)	(-1.10)	(-0.53)
Parent's risk taking in business	-0.021	0.052	0.036	0.035
	(-0.37)	(0.76)	(0.27)	(0.62)
Parent's patience	0.21**	-0.012	0.0069	0.017
	(2.38)	(-0.12)	(0.04)	(0.22)
Parent's willingness to compete	0.11	0.39	0.052	0.69*
	(0.31)	(0.78)	(0.07)	(1.74)
Parent's cognitive ability	-0.055	0.20	0.35	0.13
	(-0.43)	(1.22)	(1.08)	(0.89)
Log of value added	0.34**	-0.093	-0.051	0.44**
	(2.02)	(-0.48)	(-0.15)	(2.49)
Steel village dummy	-1.10**	-0.32	1.02	0.93*
	(-2.02)	(-0.57)	(1.18)	(1.92)
Constant	19.9***	-22.4***	-7.53	-5.12
	(4.25)	(-4.72)	(-0.60)	(-1.58)

Notes: t statistics are in parentheses and standard errors are clustered at the family-enterprise level. ***, **, and * indicate the 1, 5, and 10 percent levels of statistical significance, respectively. The number of sample children in this regression is 559 with 15 observations missing due to missing variables and negative average value added.

Table 4.4: Estimated multinomial logit model of workplace choice

Workplace	(1) Parents' enterprise	(2) Own enterprise	(3) Spouse's enterprise	(4) Parents' enterprise	(5) Own enterprise	(6) Spouse's enterprise
Age	-0.011	0.56**	0.13	-0.16	0.12	-0.25
	(-0.03)	(2.37)	(0.29)	(-0.47)	(0.42)	(-0.67)
Age squared	-0.00034	-0.0079**	-0.0020	0.0019	-0.0010	0.0040
	(-0.05)	(-1.99)	(-0.24)	(0.28)	(-0.21)	(0.59)
Male (yes = 1)	1.01***	-0.055	-3.73***	1.22***	0.28	-3.35***
	(3.37)	(-0.17)	(-4.94)	(3.93)	(0.91)	(-4.31)
First-born child (yes = 1)	0.093	0.32	0.094	0.088	0.28	0.020
	(0.36)	(0.90)	(0.23)	(0.34)	(0.78)	(0.05)
Number of siblings	-0.26	-0.039	0.22	-0.25	-0.019	0.22
	(-1.46)	(-0.18)	(0.85)	(-1.43)	(-0.09)	(0.84)
Father's years of education	-0.17***	-0.13	-0.23***	-0.16***	-0.10	-0.20**
	(-3.06)	(-1.31)	(-2.69)	(-2.81)	(-1.00)	(-2.27)
Mother's years of education	-0.011	-0.091	-0.16	0.0040	-0.053	-0.15
	(-0.17)	(-0.84)	(-1.38)	(0.06)	(-0.50)	(-1.33)
Parent's risk taking in business	-0.015	-0.0074	0.18**	-0.028	-0.031	0.16*
	(-0.30)	(-0.09)	(2.24)	(-0.55)	(-0.39)	(1.95)
Parent's patience	-0.0075	0.052	-0.00033	-0.012	0.045	-0.024
	(-0.11)	(0.47)	(-0.00)	(-0.17)	(0.40)	(-0.20)
Parent's willingness to compete	0.49	0.65	0.98*	0.51	0.70	0.98*
	(1.40)	(1.45)	(1.91)	(1.43)	(1.49)	(1.84)
Parent's cognitive ability	0.17	0.15	-0.065	0.15	0.12	-0.096
	(1.32)	(0.82)	(-0.30)	(1.13)	(0.61)	(-0.43)
Log of value added	0.43***	0.12	0.44*	0.45***	0.15	0.43*
	(2.96)	(0.52)	(1.95)	(2.98)	(0.62)	(1.89)
Steel village dummy	0.55	1.61**	1.45*	0.47	1.49**	1.43*
	(1.33)	(2.20)	(1.96)	(1.14)	(2.03)	(1.91)
Married (yes = 1)				0.79**	20.8***	3.15***
				(2.22)	(4.45)	(2.75)
Constant	-4.21	-12.8***	-5.74	-3.11	-26.8	-3.11
	(-1.16)	(-3.17)	(-1.06)	(-0.77)	.	(-0.61)
Number of children in the Group	136	57	58	136	57	58

Note: The base outcome is "Not in family business". The children who are in the same industry as parents but are working in another enterprise (not parents, own or spouse's) are categorized as "Not in family business" because the number of observations is too small for the model estimation (N=4). t statistics are in parentheses and standard errors are clustered at the family-enterprise level. ***, **, and * indicate the 1, 5, and 10 percent levels of statistical significance, respectively. The estimation only uses the sample children who completed schooling, and the number of observations is 431.

Appendix Table A4.1: Descriptive statistics and pairwise correlations of main variables (children aged 23 or above only)

	Mean	(SD)	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Yrs of education (own)	11.7	(3.06)													
2. = 1 if in family biz	0.56	(0.50)	-0.32***												
3. Age	27.3	(3.64)	-0.22***	-0.03											
4. = 1 if male	0.53	(0.50)	-0.03	0.14**	-0.09										
5. = 1 if first-born	0.41	(0.49)	-0.06	0.13**	0.24***	0.03									
6. # of siblings	2.9	(1.33)	-0.02	0.02	0.22***	-0.23***	-0.20***								
7. = 1 if married	0.86	(0.35)	-0.37***	0.20***	0.17***	-0.11*	0.10*	0.10							
8. Yrs of education (father)	7.2	(2.60)	0.30***	-0.11*	0.03	-0.05	0.00	0.07	-0.30***						
9. Yrs of education (mother)	6.1	(2.34)	0.34***	-0.11*	0.00	0.01	0.01	0.03	-0.28***	0.32***					
10. Risk taking [0 to 10]	2.9	(2.98)	0.02	0.08	-0.11*	0.09	0.03	-0.13**	0.08	-0.03	0.03				
11. Patience [0 to 5]	2.5	(2.01)	0.16**	-0.03	-0.05	-0.08	0.02	-0.14**	0.01	0.09	0.04	0.20***			
12. = 1 if willing to compete	0.63	(0.48)	0.28***	0.01	-0.15**	0.04	0.09	-0.26***	-0.13**	0.06	0.22***	-0.19***	-0.05		
13. Cognitive ability [0 to 5]	3.4	(1.32)	0.32***	-0.08	0.01	-0.04	-0.03	0.12**	-0.11*	0.23***	0.34***	-0.03	0.04	0.17***	
14. Value added [mil. VND]	1,176	(1,758)	0.22***	0.05	-0.11*	-0.03	0.00	0.11*	-0.23***	0.31***	0.35***	0.09	0.03	0.05	0.11*

***, **, and * indicate the 1, 5, and 10 percent levels of statistical significance, respectively. The number of observations is 574. Value added is the mean of the values in 2008 and 2010.

Appendix Table A4.2: Characteristics of parents by children's succession choice

	(1)	(2)	(3)
Subsample	Parents who have at least one child aged 23 or above		
Groups	Having at least one child in Group 2	Having at least one child in Group 4 but not in Group 2	Not having any child in Group 2 or Group 4
Number of parents in the Group	12	77	29
Father's years of education	9.2	6.7	7.7
	(3.64)	(2.51)	(3.22)
Mother's years of education	7.8	5.6	6.6
	(3.39)	(2.23)	(2.21)
Age of owner	50.5	49.5	49.9
	(4.03)	(5.56)	(7.08)
Gender of owner (yes = 1)	0.42	0.42	0.31
	(0.51)	(0.50)	(0.47)
Risk taking in business	3.3	3.0	2.8
	(2.99)	(2.87)	(2.97)
Patience	3.1	2.4	2.8
	(2.07)	(2.08)	(1.99)
Willingness to compete (yes = 1)	0.75	0.69	0.62
	(0.45)	(0.47)	(0.49)
Cognitive ability	3.8	3.3	3.4
	(1.03)	(1.34)	(1.38)
Log of value added	1,681	1,173	967
	(1,635)	(1,432)	(2,591)

Note: Standard deviation is in parenthesis.

Table 5.1: Schedule of the data collection and the training programs

	(1) Steel	(2) Knitwear
Initial survey	2007 Summer (N=204)	N.A.
Baseline survey	2010 Jun. (N=153)	2010 Jul. (N=159)
Classroom training	2010 Jun. or Sep.	2010 Jul.-Aug.
1st follow-up survey	2010 Oct. (N=153)	2010 Sep. (N=159)
On-site training	2010 Dec.-2011 Feb.	2010 Dec.- 2011 Jan.
2nd follow-up survey	2011 Apr. (N=153)	2011 Apr. (N=159)
3rd follow-up survey	2013 Jan. (N=151)	2013 Jan. (N=155)

Table 5.2: Differences in owners' characteristics among the treatment statuses

Sample	(1) Steel Group TT coefficient	(2) Steel Group TC coefficient	(3) Steel Group CT coefficient	(4) Steel Group CC mean	(5) Knitwear Group TT coefficient	(6) Knitwear Group TC coefficient	(7) Knitwear Group CT coefficient	(8) Knitwear Group CC mean
Owners: Age	2.47	0.76	0.89	43.7	-0.39	-0.011	-1.89	44.2
	(1.28)	(0.43)	(0.32)	[45]	(-0.19)	(-0.01)	(-0.73)	[45]
Male	-0.10	-0.14	-0.071	0.57	-0.071	0.069	0.086	0.35
(yes = 1)	(-0.83)	(-1.34)	(-0.39)	[1]	(0.10)	(-0.68)	(0.74)	[0]
Years of education	-0.36	-0.38	-0.97	7.2	-0.75	-0.52	0.13	8.5
	(-0.48)	(-0.61)	(-0.93)	[7]	(-1.26)	(-0.89)	(0.13)	[7.5]
Past training experience	0.0027	-0.015	0.071	0.03	0.10	0.085	0.19*	0.06
(yes = 1)	(0.06)	(-0.49)	(0.71)	[0]	(1.39)	(1.51)	(1.70)	[0]
Risk taking in business	-0.88	-0.028	0.46	3.4	1.41**	0.16	-0.16	3.0
(0-10)	(-1.24)	(-0.05)	(0.46)	[4]	(2.03)	(0.31)	(-0.23)	[3]
Patience	0.86*	0.18	1.18*	1.8	-0.27	0.25	0.69	2.6
(0-5)	(1.81)	(0.48)	(1.82)	[2]	(-0.57)	(0.65)	(1.24)	[2.5]
Willingness to compete	0.15	-0.0012	0.059	0.44	-0.20**	-0.12*	-0.25**	0.94
(yes = 1)	(1.24)	(-0.01)	(0.32)	[0]	(-2.33)	(-1.97)	(-2.09)	[1]
Cognitive ability	-0.033	-0.024	0.13	3.0	-0.091	0.22	0.072	3.9
(0-5)	(-0.10)	(-0.08)	(0.27)	[3]	(-0.33)	(1.15)	(0.25)	[4]
# of relatives in the sample	0.31	-0.094	0.21	0.7	1.16***	-0.10	-0.41	0.9
	(1.12)	(-0.43)	(0.50)	[0]	(2.67)	(-0.31)	(-1.30)	[0]
Number of observations	32	76	10	35	32	57	16	54

Notes: The coefficients and t-statistics are from the regression of each characteristic on the group dummies with the group CC as the reference group. ***, **, and * indicate significance at 1%, 5%, and 10%. Numbers in bracket are medians.

Table 5.3: Differences in *Kaizen* score, WTP and value added among the treatment statuses

Sample	(1) Steel Group TT coefficient	(2) Steel Group TC coefficient	(3) Steel Group CT coefficient	(4) Steel Group CC mean	(5) Knitwear Group TT coefficient	(6) Knitwear Group TC coefficient	(7) Knitwear Group CT coefficient	(8) Knitwear Group CC mean
Kaizen score (0-11)								
before the training	0.20	0.21	0.49	6.1	-0.17	-0.22	0.64	3.8
	(0.57)	(0.73)	(0.80)	[6]	(-0.64)	(-0.89)	(1.14)	[3]
soon after the classroom training	1.08***	0.46	0.43	6.2	1.07***	0.43	0.57	3.9
	(3.05)	(1.54)	(0.70)	[7]	(3.06)	(1.50)	(1.00)	[3]
soon after the on-site training	2.33***	0.41	0.90*	6.2	3.85***	0.37	3.48***	4.0
	(5.90)	(1.37)	(1.71)	[7]	(13.11)	(1.28)	(10.93)	[4]
2 years after the training	2.93***	0.56**	1.17**	6.2	4.14***	1.21***	4.04***	4.0
	(9.72)	(2.43)	(2.50)	[7]	(16.12)	(3.67)	(14.92)	[4]
Willingness to pay (=1 if yes)								
before the training	0.096	0.050	0.17	0.03	0.17*	0.047	0.26**	0.11
	(1.47)	(1.19)	(1.31)	[0]	(1.86)	(0.72)	(2.03)	[0]
soon after the classroom training	0.19**	0.15**	0.14	0.06	0.56***	0.26***	0.25*	0.13
	(2.21)	(2.48)	(1.06)	[0]	(5.87)	(3.20)	(1.87)	[0]
soon after the on-site training	0.32***	0.15**	0.14	0.06	0.65***	0.25***	0.37***	0.13
	(3.33)	(2.48)	(1.06)	[0]	(7.40)	(3.15)	(2.72)	[0]
Value added (mil. VND) [a]								
in 2008	131.4	-54.5	622.8	1,744	-275.1	-704.5	30.2	1,437
	(0.34)	(-0.14)	(0.86)	[980]	(-0.51)	(-1.41)	(0.04)	[495]
in 2010	2313.2*	1196.1	4791.8**	1,489	-0.59	-285.6	223.5	1,150
	(1.85)	(1.15)	(2.10)	[1,319]	(-0.00)	(-1.01)	(0.39)	[481]
in 2012	447.4	90.2	-104.0	1,630	663.8*	-32.7	2072.0	559
	(0.77)	(0.14)	(-0.12)	[740]	(1.80)	(-0.19)	(1.59)	[176]
Number of observations	32	76	10	35	32	57	16	54

Notes: The coefficients and t-statistics are from the regression of each characteristic on the group dummies with the group CC as the reference group. ***, **, and * indicate significance at 1%, 5%, and 10%. Numbers in bracket are medians. To obtain the real value added, the producer price index reported by General Statistics Office of Vietnam (GSO) is used as deflators. The price index of metal is used for the steel cluster and that of garment is used for the knitwear village. The deflator for the steel village is 1 for 2008, 1.014 for 2010 and 1.200 for 2012, while that for the knitwear village is 1 for 2008, 1.131 for 2010 and 1.421 for 2012. As the average exchange rate in 2008 is 1USD = 16,302 VND, 1 mil. VND is equivalent to 61 USD. a. The value for knitwear cluster in 2008 is the average values for 2008 and 2009.

Table 5.4: *Ex ante* correlates of *Kaizen* score, WTP and value added (OLS)

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	Steel	Steel	Steel	Knitwear	Knitwear	Knitwear
Outcome variable	*Kaizen* score	WTP	Value added	*Kaizen* score	WTP	Value added
Age	0.062	-0.0023	367.2*	0.11	0.024	273.4**
	(0.43)	(-0.08)	(1.77)	(1.26)	(0.78)	(2.19)
Age squared	-0.00096	0.000072	-4.26*	-0.00079	-0.00030	-3.01**
	(-0.56)	(0.20)	(-1.66)	(-0.72)	(-0.82)	(-2.16)
Male	-0.42*	-0.024	-366.7	0.36*	0.028	-34.0
(yes = 1)	(-1.69)	(-0.44)	(-1.18)	(1.80)	(0.41)	(-0.13)
Years of education	0.11**	0.028***	155.6**	0.23***	0.013	153.0
	(2.10)	(2.84)	(2.58)	(4.87)	(1.03)	(1.11)
Past training experience	0.46	-0.12**	503.1	0.79**	0.015	1467.8*
(yes = 1)	(0.51)	(-2.29)	(0.48)	(2.22)	(0.15)	(1.67)
Risk taking in business	-0.037	0.0031	92.0	0.043	0.0085	119.5*
	(-0.91)	(0.31)	(1.23)	(1.29)	(0.79)	(1.79)
Patience	0.043	0.0015	-1.74	0.034	-0.0026	17.4
	(0.65)	(0.13)	(-0.02)	(0.85)	(-0.17)	(0.29)
Willingness to compete	0.29	0.075	539.4	-0.61*	-0.11	-320.1
(yes = 1)	(1.26)	(1.54)	(1.60)	(-1.75)	(-1.22)	(-0.78)
Cognitive ability	0.044	0.0096	142.2	0.080	-0.0013	54.7
	(0.44)	(0.64)	(1.00)	(1.09)	(-0.05)	(0.50)
# of relatives in the sample	0.084	-0.019	364.1**	0.00042	0.024	-51.4
	(0.84)	(-1.28)	(2.27)	(0.01)	(1.21)	(-0.58)
Constant	4.52	-0.18	-7979.0*	-1.50	-0.33	-6542.5*
	(1.46)	(-0.30)	(-1.71)	(-0.77)	(-0.53)	(-1.72)
Number of observations	151	151	151	155	155	155

Notes: t statistics are in parentheses and standard errors are robust to heteroskedasticity. ***, **, and * indicate the 1%, 5%, and 10 percent level of statistical significant, respectively. *Kaizen* score and WTP are as of before the training, value added for the steel cluster is in 2008 and value added for the knitwear cluster is the average of 2008 and 2009.

Table 5.5: Impacts of the training (FE-IV)

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	Steel	Steel	Steel	Knitwear	Knitwear	Knitwear
Outcome variable	*Kaizen* score	WTP	Value added	*Kaizen* score	WTP	Value added
Classroom * After CL	1.14***	0.30***		1.45***	0.46***	
	(3.83)	(3.32)		(6.30)	(6.05)	
Classroom * After OS	1.61***	0.38***	1302.5	1.34***	0.45***	569.2
	(5.38)	(4.20)	(0.53)	(6.03)	(5.38)	(0.93)
Classroom * 2yrsAfter	2.14***		1002.5	2.22***		313.0
	(4.82)		(0.56)	(8.21)		(0.44)
On-site * After CL	0.16	-0.090*		0.20	0.058	
	(0.91)	(-1.78)		(1.01)	(0.99)	
On-site * After OS	1.11***	-0.019	1424.9	3.08***	0.16**	-74.7
	(6.35)	(-0.36)	(1.48)	(16.63)	(2.56)	(-0.21)
On-site * 2yrsAfter	1.38***		-319.0	2.85***		902.7**
	(5.84)		(-0.42)	(13.00)		(2.18)
After CL	0.0087	0.042*		0.012	0.0011	
	(0.13)	(1.96)		(0.18)	(0.06)	
After OS	-0.070	0.026	354.1	0.096	0.0053	-226.2
	(-1.04)	(1.22)	(0.49)	(1.42)	(0.24)	(-0.70)
2yrsAfter	-0.040		-204.6	0.36***		-617.6*
	(-0.37)		(-0.40)	(4.36)		(-1.66)
Number of observations	610	459	459	634	476	477
Number of IDs	153	153	153	159	159	159

Notes: The participation status for the classroom training is instrumented by invitation status. Columns 1 and 4 use data for four points; before the training, soon after the class room training, soon after the on-site training and 2 years after the training. Columns 2 and 5 use data for three points; before the training, soon after the class room training and soon after the on-site training. Columns 3 and 6 use data for three points; in 2008, in 2010 and in 2012. The data for the knitwear cluster in 2008 is the average of 2008 and 2009. t statistics are in parentheses and standard errors are robust to heteroskedasticity. ***, **, and * indicate the 1%, 5%, and 10 percent level of statistical significant, respectively.

Table 5.6: Heterogeneous impacts of the training on *Kaizen* adoption (FE-IV)

Characteristics interacted	(1) *Ex ante* WTP	(2) Years of education	(3) Risk taking	(4) Patience	(5) *Ex ante Kaizen* score
Panel A: Steel cluster					
Characteristics * Classroom	-1.27	-0.089	-0.090	-0.029	-1.14***
	(-1.59)	(-0.49)	(-0.97)	(-0.15)	(-3.85)
Characteristics * On-site	-0.87	-0.15	0.032	0.095	-0.23
	(-1.33)	(-1.46)	(0.30)	(0.68)	(-1.48)
Classroom	2.36***	2.85**	2.51***	2.28**	9.38***
	(4.05)	(2.02)	(3.60)	(2.51)	(4.60)
Omn-site	1.51***	2.34***	1.20***	1.01*	2.84***
	(5.22)	(3.28)	(2.70)	(1.77)	(2.65)
Number of observations	304	304	300	300	304
Number of IDs	152	152	150	150	152
Panel B: Knitwear cluster					
Characteristics * Classroom	0.22	0.11	0.19**	0.22**	-0.27***
	(0.42)	(1.46)	(2.50)	(2.12)	(-3.07)
Characteristics * On-site	-0.95*	-0.21***	-0.16**	-0.32***	-0.61***
	(-1.77)	(-2.64)	(-2.21)	(-2.82)	(-10.94)
Classroom	2.13***	1.24*	1.55***	1.22***	2.98***
	(6.60)	(1.89)	(3.16)	(2.75)	(6.42)
Omn-site	3.15***	4.52***	3.39***	4.05***	5.30***
	(12.04)	(7.96)	(8.38)	(10.80)	(15.72)
Number of observations	316	314	310	310	316
Number of IDs	158	157	155	155	158

Notes: The participation status for the classroom training is instrumented by invitation status. The training variables are interacted with 2yrsAfter dummy. The table use data before the training and 2 years after the training. 2yrsAfter dummy is controlled although not reported. t statistics are in parentheses and standard errors are robust to heteroskedasticity. ***, **, and * indicate the 1%, 5%, and 10 percent level of statistical significant, respectively.

Table 5.7: Percentage of sales over production (Knitwear cluster)

Panel A: Descriptive statistics

	(1) Group TT mean (s.d.)	(2) Group TC mean (s.d.)	(3) Group CT mean (s.d.)	(4) Group CC mean (s.d.)
% sales / production	99.9	97.9	100.0	92.8
	(0.57)	(5.36)	(0.00)	(13.85)
Number of observations	31	53	16	46

Panel B: Regression result (IV)

	(1)
Outcome variable	% sales / production
Classroom * 2yrsAfter	0.065**
	(2.37)
On-site * 2yrsAfter	0.033***
	(3.67)
Number of observations	146

Notes: The participation status for the classroom training is instrumented by invitation status. The data in 2012 is used and the characteristics of owners are controlled although not reported. t statistics are in parentheses and standard errors are robust to heteroskedasticity. ***, **, and * indicate the 1%, 5%, and 10 percent level of statistical significant, respectively.

Appendix Table A5.1: List of questions to construct *Kaizen* score

Based on the enumerators' observation
The enterprise has a designed area for each production/activity within the workshop.
The enterprise has a fixed place where major tools are stored.
The storage of tools is put in order by kinds.
The enterprise has a fixed place where raw materials are stored.
The raw materials are stored separately from the scrap.
The work flow line is determined.
The defectives of raw materials and finished products are clearly segregated from good ones.
Based on the owners' response
The scraps are removed and the floor is cleaned every day.
The enterprise has machines that have been unused more than a year in the place of production.
The workers maintain machines every day.
The enterprise holds meeting in which all workers participate.
The proprietor knows how long each production process takes.

Appendix Table A5.2: Descriptive statistics of enterprises with no production in 2012

	(1) Group TT	(2) Group TC	(3) Group CT	(4) Group CC	(5) Total	
Panel A: Steel cluster Number of observations	1	14	4	6	25	
Kaizen score (0-11)						
before training	9.0	7.0	7.0	5.2	6.6	[7]
soon after the classroom training	10.0	7.1	7.0	5.3	6.8	[7]
soon after on-site training	11.0	7.1	7.5	5.3	6.9	[7]
WTP						
before training	1.0	0.14	0.50	0	0.20	[0]
soon after the classroom training	1.0	0.14	0.50	0	0.20	[0]
soon after on-site training	1.0	0.14	0.50	0	0.20	[0]
Value added (mil. VND)						
in 2008	6,380	1,673	2,603	709	1,779	[1,260]
in 2010	-11,660	3,583	7,688	1,115	3,038	[1,926]
Panel B: Knitwear cluster Number of observations	1	4	0	7	12	
Kaizen score (0-11)						
before training	3.0	3.3	N.A.	4.9	4.2	[3.5]
soon after the classroom training	3.0	5.3	N.A.	4.9	4.8	[4]
soon after on-site training	6.0	5.5	N.A.	4.9	5.2	[4.5]
WTP						
before training	0	0.50	N.A.	0	0.17	[0]
soon after the classroom training	0	0.50	N.A.	0	0.17	[0]
soon after on-site training	0	0.50	N.A.	0	0.17	[0]
Value added (mil. VND)						
in 2008	1,934	840	N.A.	3,558	2,517	[1358]
in 2010	2,941	811	N.A.	2,730	2,108	[685]

Note: Median is in bracket.

Appendix Table A5.3: Impacts of the training (FE-IV)

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	Steel	Steel	Steel	Knitwear	Knitwear	Knitwear
Outcome variable	*Kaizen*	WTP	Value	*Kaizen*	WTP	Value
Classroom training * After CL	0.89***	0.37***		1.23***	0.40***	
	(2.66)	(2.71)		(5.95)	(4.17)	
Classroom training * After OS	0.75**	0.37***	4525.7	1.15***	0.40***	796.0
	(2.20)	(2.71)	(1.21)	(5.60)	(4.06)	(1.06)
Classroom training * 2yrsAfter	1.30**		523.5	2.68***		1276.5
	(2.21)		(0.20)	(10.76)		(1.46)
On-site training * After CL	-0.057	-0.029		-0.074	-0.019	
	(-0.22)	(-1.11)		(-0.24)	(-0.37)	
On-site training * After OS	0.41*	-0.029	4169.0*	2.85***	0.11	193.4
	(1.77)	(-1.11)	(2.40)	(9.50)	(1.37)	(0.25)
On-site training * 2yrsAfter	0.69**		-726.7	3.39***		2041.9*
	(2.03)		(-0.54)	(9.69)		(2.27)
Both training * After CL	0.61	-0.17		0.68	0.19	
	(1.05)	(-1.04)		(1.20)	(1.24)	
Both training * After OS	2.00***	0.027	-7705.3*	0.58	0.15	-678.0
	(3.60)	(0.16)	(-1.69)	(1.04)	(0.82)	(-0.53)
Both training * 2yrsAfter	1.97**		1144.9	-1.36**		-2880.8*
	(2.31)		(0.34)	(-2.20)		(-1.89)
After CL	0.057	0.029		0.074	0.019	
	(0.84)	(1.11)		(1.41)	(1.11)	
After OS	0.086	0.029	-255.7	0.15***	0.019	-287.5
	(1.26)	(1.11)	(-0.27)	(2.80)	(1.10)	(-0.77)
2yrsAfter	0.11		-114.0	0.24***		-878.0**
	(0.90)		(-0.17)	(3.54)		(-2.06)
Number of observations	610	459	459	634	476	477
Number of IDs	153	153	153	159	159	159

Notes: The participation status for the classroom training and both training is instrumented by invitation status. Columns 1 and 4 use data for four points; before the training, soon after the class room training, soon after the on-site training and 2 years after the training. Columns 2 and 5 use data for three points; before the training, soon after the class room training and soon after the on-site training. Columns 3 and 6 use data for three points; in 2008, in 2010 and in 2012. The data for the knitwear cluster in 2008 is the average of 2008 and 2009. t statistics are in parentheses and standard errors are robust to heteroskedasticity. ***, **, and * indicate the 1%, 5%, and 10 percent level of statistical significant, respectively.

Appendix Table A5.4: Differences in *Kaizen* score and value added by the changes in WTP

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	Steel	Steel	Steel	Knitwear	Knitwear	Knitwear
Change in willingness to pay before and after the training	N -> N	N -> Y	Y -> Y	N -> N	N -> Y	Y -> Y
	mean	mean	mean	mean	mean	mean
Kaizen score (0-11)						
before the training	6.2	6.3	7.6	3.6	3.7	4.4
	[6]	[6]	[8]	[3]	[3]	[4]
Soon after the classroom training	6.3	7.7	8.2	3.8	5.1	5.2
	[6]	[8]	[9]	[3]	[5]	[4.5]
soon after the on-site training	6.6	8.5	8.5	4.4	6.5	6.7
	[7]	[9]	[9]	[4]	[7]	[7]
2 years after the training	6.8	8.8	8.4	4.7	7.4	7.1
	[7]	[9]	[8]	[4]	[8]	[8]
Value added (mil. VND)						
in 2008	1,521	1,739	4,316	952	804	1,897
	[990]	[1,065]	[3,075]	[395]	[721]	[993]
in 2010	2,148	4,492	7,335	843	856	2,033
	[1,437]	[2,354]	[7,286]	[407]	[587]	[1,309]
in 2012	1,426	2,541	3,745	432	1,075	2,171
	[670]	[1,184]	[957]	[250]	[581]	[601]
Number of observations	121	19	13	97	32	30
Of those without operation in 2012	20	0	5	10	0	2

Note: Median is in bracket.

Appendix Table A5.5: Correlates of the participation decision to the classroom training (Probit)

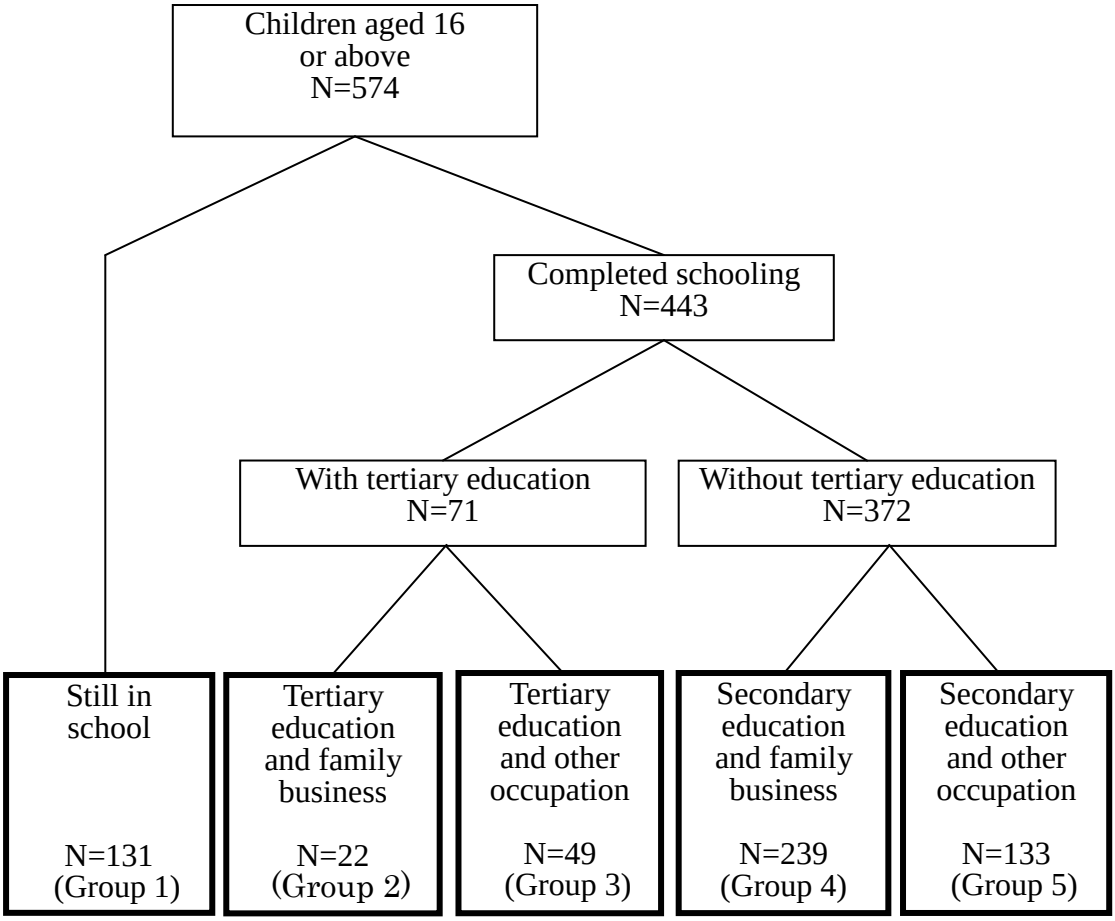
	(1)	(2)	(3)
Sample	Both	Steel	Knitwear
Outcome variable	=1 if participated		
Age	0.0021	-0.0031	0.037
	(0.02)	(-0.02)	(0.21)
Age squared	-0.00027	-0.00014	-0.00090
	(-0.20)	(-0.06)	(-0.44)
Male	0.17	-0.23	0.66*
(yes = 1)	(0.85)	(-0.77)	(1.85)
Years of education	0.0100	0.035	-0.036
	(0.23)	(0.58)	(-0.54)
Past training experience	0.28		0.13
(yes = 1) [a]	(0.73)		(0.30)
Risk taking in business	0.079**	0.043	0.086*
	(2.22)	(0.83)	(1.66)
Patience	0.085	0.080	0.032
	(1.64)	(1.09)	(0.39)
Willingness to compete	0.25	0.24	-0.042
(yes = 1)	(1.13)	(0.87)	(-0.10)
Cognitive ability	-0.0077	-0.12	0.19
	(-0.09)	(-1.09)	(0.90)
# of relatives in the sample	0.19**	0.26**	0.15
	(2.55)	(1.98)	(1.62)
Ex ante WTP	1.35***	1.61***	1.32***
	(3.86)	(3.07)	(3.08)
Ex ante Kaizen score	0.0026	-0.093	0.11
	(0.03)	(-0.86)	(0.81)
Steel cluster dummy	-0.22		
	(-0.67)		
Number of observations	194	105	87

Notes: The estimation includes only enterprises that were invited to the classroom training, i.e., groups TT and TC. t statistics are in parentheses and standard errors are robust to heteroskedasticity. ***, **, and * indicate the 1%, 5%, and 10 percent level of statistical significant, respectively. a. This variable is dropped in column (2) because all of the 2 enterprises with past training experience participated in the training.

Appendix Table A5.6: Impacts of the classroom training (PSM-DID)

	(1)	(2)	(3)	(4)
Sample	Steel	Steel	Knitwear	Knitwear
On-site training	Y	N	Y	N
	Groups	Groups	Groups	Groups
	TT / CT	TC / CC	TT / CT	TC / CC
Kaizen score				
Difference between before the training	2.57***	1.69***	0.39	2.68***
and 2 years after the training	(4.89)	(4.97)	(0.63)	(12.05)
WTP				
Difference between before the training	0.42***	0.47***	0.36*	0.38***
and soon after the on-site training	(3.35)	(4.12)	(2.01)	(3.76)
Value added				
Difference between 2008 and 2012	962.7	754.5	-660.9	235.8
	(0.92)	(0.96)	(-0.70)	(0.52)
Number of observations	42	111	48	111
Of those participated in the training	20	21	22	30

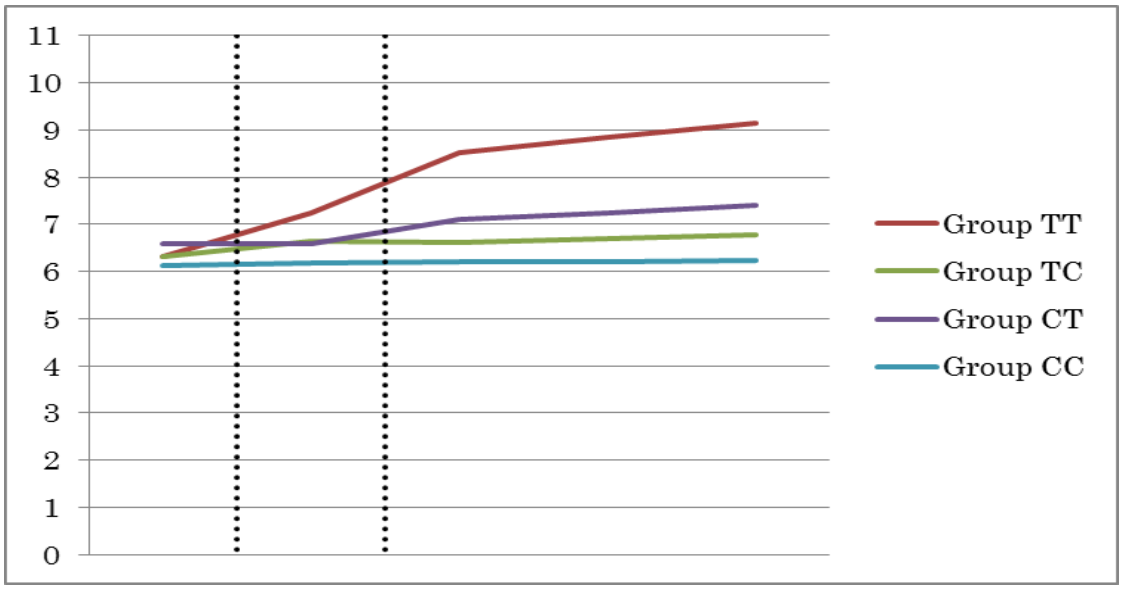
Figure 4.1: Classification of the sample children into five education-occupation groups



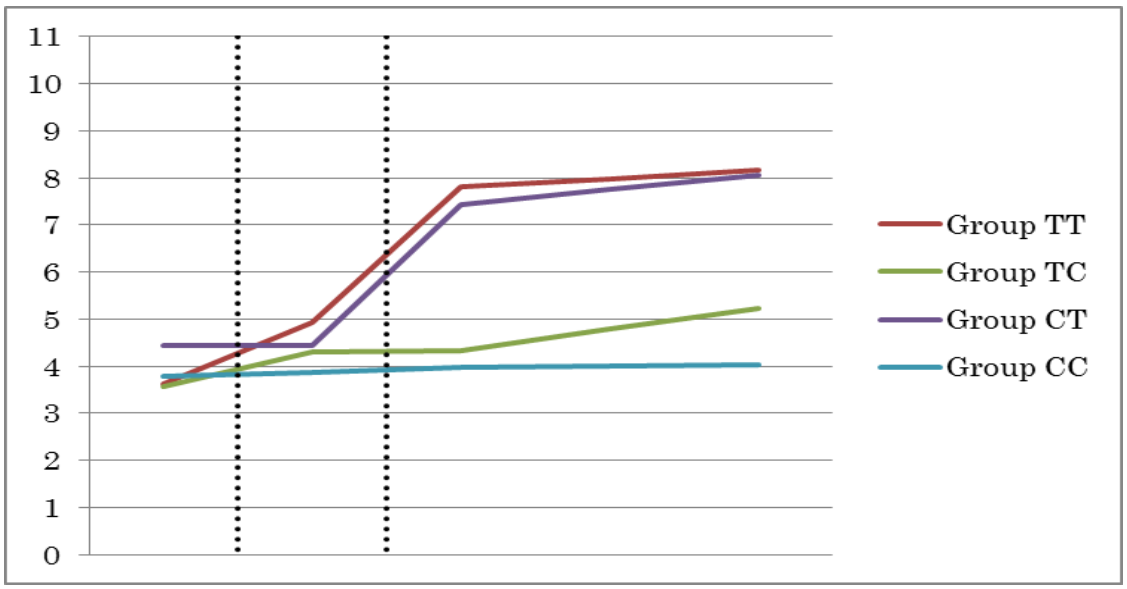
Note: Pearson's chi-squared for the independence between educational and occupational choices is 27.25 with the corresponding p-value of 0.000. The Pearson's chi-squared is calculated by creating two-by-two matrix of educational and occupational choices, that is, groups 2 to 5, and against the null hypothesis that the rows and columns in the matrix are independent.

Figure 5.1: *Kaizen* score before and after the training

Panel A: Steel cluster



Panel B: Knitwear cluster



Annex

Questionnaire for Data Collection

Enterprise ID:_____ GPS ID (X-axis):_____ (Y-axis):_____

Interviewer:_____ 1 / 12

3rd POST-PROGRAM SURVEY ON INDUSTRIAL DEVELOPMENT IN HA TAY, VIETNAM

January 2013/ Knitwear Manufacturer

All information to be furnished in this form is ***CONFIDENTIAL*** and cannot be used for purposes of taxation, investigation or regulation.

A: General information

A0.Name of interviewee: _____/ Name of owner: _____

(Please find an owner for our interview. Owner is the one who can make decisions in the workshop.)

A0-1. Are you the same interviewee as our last survey in March 2011?: 1. Yes 2.No, please find the one who responded last time.

A0-2. Please make sure that the interviewee is the same person by checking his/her name, age and gender with our data.

A1. Date of interview: Date_____ Month_____

A3. Name of workshop (or factory):_____

A3-1. Address of workshop:_____

A3-2. Is the venue of workshop same as in March 2011? : 1. Yes, skip A3-3. 2.No.

A3-3. If the venue of workshop is changed, what is the reason for moving to a new venue?:

_____

A7. How many plots of land do you own or rent in? Please include those plots that you are renting in or renting out. :_____ *(Please add columns to the following table if owner has more than six slots.)*

	a.	b.	c.	d.	e.	(CODE)
A7-1-1: Land use						1= Residence 2= Business (incl. renting out) 3= Other, specify
A7-1-2: If for business, which business?						1= Knitwear 2= Food processing 3= Other, specify
A7-2-1: Who owns this plot?						1= Self 2= Parents 3= Other, specify
A7-2-2: How did you obtain it?						1= Purchased 2= Inherited 3= Rented in 4= Other, specify
A7-2-3: In which year did you obtain it?						(year)
A7-2-4: If you purchase it, how much did it cost then?						(million VND)
A7-3. Who is or will be using this plot?						1= Self 2= A child now 3= A child in future 4= Other, specify
A7-4. Size						(square meter)
A7-5. For how much would you be willing to sell the plot now?						(million VND)

B: Profile of the owner* and his/her family

(**Owner is defined as the one who can make decisions in the workshop.*)

B8. Number of Vietkieu relatives living abroad. _____

B10. How many children do you have? :_____

B11. Children's status *(Please add columns to the following table if owner has more than six children.)*

	a. first child	b. second child	c. third child	d. fourth child	e. fifth child	(CODE)
B11-1. Age						(ask also grade if still in schooling)
B11-2. Sex						1= male, 2= female
B11-3. Has s/he finished schooling?						1= Yes, 2= No, go to next column.
B11-4. Years of schooling						(years)
B11-5. Is s/he married?						1= Yes, 2= No
B11-6. Is s/he working in rolled steel industry?						1= Yes 2= No, go to next column
B11-7. How many years has s/he worked in knitwear industry?						(years)
B11-8. Where does s/he work?						1= Your enterprise, go to next column 2= His/her own enterprise 3= His/her spouse's enterprise 4= Other villager's enterprise, go to next column 5= Other, specify
B11-9. How much have you financially supported her/his business?						(million VND)

B12. Suppose that your **son** gets married and wants to start up a new enterprise in knitwear industry, what percentage of initial investment (including fixed and working capital) would you be willing to support?: _____%

B13. Suppose that your **daughter** gets married and wants to start up a new enterprise in knitwear industry, what percentage of initial investment (including fixed and working capital) would you be willing to support?: _____%

B8-1. Number of family members working in your enterprise including yourself: _ _____

B14. Working responsibility and working hours of your family members *(Please add columns if more than six family members work for your business.)*

	a. You	b.	c.	d.	e.	(Code)
B14-1. Who	1					1= You, 2= Your spouse 3= Your mother 4= Your father 5= Your children 6= Other, specify
B14-2. Responsibility (multiple choice)						1= General manager 2= Production manager 3= Purchase of raw material. 4= Sales. 5= Accounting or keeping record. 6= Transporting. 7= Other, specify

B14-3. Weekly hours of work in your business in **a typical busy month.**						(hours/week)
B14-3. Weekly hours of work in your business in **a normal operating month.**						(hours/week)

NEW Questions

Please answer the following questions as honestly as you can:

NQ 1 (Willingness to take risks)

How do you see yourself? I am going to ask two sets of questions about your attitude toward risks. One is about your attitude to risks related to your knitwear business. The other is about your attitude toward risks in things other than your business, such as risks related to health, sports, and motor cycle driving.

NQ1.1. Are you a person who tends to be prepared to take risks in running your knitwear business? Or do you try to avoid taking risks? Please circle a number on the scale below, where the value 0 means that you are "not willing to take even the slightest risk," the value 5 means that you are precisely "risk neutral," and the value 10 means that you are "very willing to take risks."

Not at all willing to take risks *Risk neutral* *Very willing to take risks*

0	1	2	3	4	5	6	7	8	9	10

NQ1.2. Are you a person who tends to be prepared to take risks related to health, sports, and motor cycle driving? Or do you try to avoid taking risks? Please circle a number on the scale below, where the value 0 means that you are "not willing to take even the slightest risk," the value 5 means that you are precisely "risk neutral," and the value 10 means that you are "very willing to take risks."

Not at all willing to take risks *Risk neutral* *Very willing to take risks*

0	1	2	3	4	5	6	7	8	9	10

NQ2 (Willingness to compete)

Suppose that you would be paid for your work in one of the following two ways. In the first way, your pay depends only on the quantity and quality of your work. It is independent of other people's performance. So, this pay system is based on absolute evaluation. The second way of payment is based on relative evaluation. In this system, your performance is compared with other people's performance. Only a few top prize winners are paid large amounts of money and the others receive small amounts of money.

Which pay system do you prefer? 1 (Absolute), 2 (Relative).

NQ4 (Cognitive ability)

I now ask you to answer the following five mathematical questions in 10 minutes, **without using a calculator**. If you accept this request, we will give you a **100,000 VND telephone scratch card** as a token of thanks.

Q4.1. Suppose that you use a truck to transport 461 boxes from your workshop to a destination. If the truck can carry at most 70 boxes at one time, how many trips does the truck have to make to finish transporting the 461 boxes to the destination?

Q4.2. To buy a book for 20,000 VND, Mr. Nam spent 40 % of the money he had. How much had he had initially?

Q4.3. Ms. Nguyen bought a 12,000 VND toy at a 20% discount. How much did he pay for the toy?

Q4.4. A small pond in a garden has trees on its rim. The trees are planted at 5-meter intervals. There are 105 trees on the rim of the pond. How long is the perimeter of the pond?

Q4.5. 45 + 89 – 23 – 11 = ?

Q4.1	Q4.2	Q4.3	Q4.4	Q4.5

Thank you very much. Here are scratch cards.

We wanted to hold a lottery using the telephone scratch card to provide you an opportunity to earn some money by answering the following questions. However, we heard that lottery or gambling is banned here and thus we decided not to hold it. Although the following questions do not involve real money, we appreciate if you could answer as honestly as you can.

I will ask two sets of questions. Please answer which option in each row you prefer.

NQ 5 (Time preferences)

NQ5.1. Suppose that you receive an amount of money as a gift and that you can choose between receiving a smaller amount now or a larger amount with three months delay. Which do you prefer in each of the following cases?

	OPTION A	OPTION B	Please fill A or B
(1)	1,000,000 VND now	1,100,000 VND 3 months later?	_____
(2)	1,000,000 VND now	1,200,000 VND 3 months later?	_____
(3)	1,000,000 VND now	1,350,000 VND 3 months later?	_____
(4)	1,000,000 VND now	1,500, 000 VND 3 months later?	_____
(5)	1,000,000 VND now	2,000,000 VND 3 months later?	_____

NQ5.2. Now let's consider a different situation. Suppose that you can choose between receiving a smaller amount in 3 months or a larger amount in 6 months. Which do you prefer in each of the following cases?

	OPTION A	OPTION B	Please fill A or B
(1)	1,000,000 VND in 3 months	1,100,000 VND 6 months later?	_____
(2)	1,000,000 VND in 3 months	1,200,000 VND 6 months later?	_____
(3)	1,000,000 VND in 3 months	1,350,000 VND 6 months later?	_____
(4)	1,000,000 VND in 3 months	1,500, 000 VND 6 months later?	_____
(5)	1,000,000 VND in 3 months	2,000,000 VND 6 months later?	_____

NQ6. Now, I will present you with a number of activities. I would like you to indicate how likely you would engage in that activity if you were faced with such a situation. Please circle a number on the scale below, where the value 0 means that you are "Very unlikely" that you would engage in the activity, the value 5 means that you are "Not sure" if you would engage in the activity, and the value 10 means that you are "Very likely" that you would engage in the activity.

NQ6-1. How likely are you to invest 10% of your annual income in purchasing machine in a year for business expansion?

Very unlikely *Not sure* *Very likely*

0	1	2	3	4	5	6	7	8	9	10

NQ6-2. How likely are you to bet a day's income at gamble?

Very unlikely *Not sure* *Very likely*

0	1	2	3	4	5	6	7	8	9	10

NQ6-3. How likely are you to invest 10% of your annual income in purchasing land in a year for business expansion?

Very unlikely *Not sure* *Very likely*

0	1	2	3	4	5	6	7	8	9	10

NQ7. Again, I will present you with a number of activities. This time, I would like you to indicate how risky you think the activity is. Please circle a number on the scale below, where the value 0 means that the activity is "Not at all risky", the value 5 means that the activity is "Moderately risky," and the value 10 means the activity is "Very risky."

NQ7-1. How risky do you perceive investing 10% of your annual income in purchasing machine in a year for business expansion to be?

Not at all risky *Moderately risky* *Very risky*

0	1	2	3	4	5	6	7	8	9	10

NQ7-2. How risky do you perceive betting a day's income at gamble to be?

Not at all risky *Moderately risky* *Very risky*

0	1	2	3	4	5	6	7	8	9	10

NQ7-3. How risky do you perceive investing 10% of your annual income in purchasing land in a year for business expansion to be?

Not at all risky *Moderately risky* *Very risky*

0	1	2	3	4	5	6	7	8	9	10

NQ8. Suppose that you have an opportunity to expand your business by establishing joint enterprise with one of the villagers. How much level of profit you would expect to establish joint enterprise instead of running your own enterprise? Please choose which of the following options you would prefer.

OPTION A OPTION B Please fill A or B

(1) Current profit with your own enterprise or Establishing joint venture to earn 10% additional profit for your share _____

(2) Current profit with your own enterprise or Establishing joint venture to earn 20% additional profit for your share _____

(3) Current profit with your own enterprise or Establishing joint venture to earn 50% additional profit for your share _____

(4) Current profit with your own enterprise or Establishing joint venture to earn 100% additional profit for your share _____

D: General information of the workshop

D6. Do you use internet in business? 1. Yes 2. No

D7. Do you export your products? 1. Yes 2. No, go to D10.

D7-1. If yes, since when have you started exporting? Since Year_____

D7-2. Do you export your products through internet? 1. Yes 2. No

D10. Do you sell to the domestic market? 1. Yes 2. No

D11. Are you a subcontractor? 1. Yes 2. No, go to D12.

D11-1. How many contractors do you supply to? _____

D12. Do you contract out part of your business? 1.Yes 2. No

D12-1. To how many enterprises do you contract out? _____

D13. What support for your business do you need most now? (singular): 1. None. 2. Managerial knowledge. 3. Technical knowledge. 4. Finance. 5. Other, specify.

J Marketing channels (%)

	J1. Domestic market					J2. Export market		
	1. Own shops	2. Retailer	3. Wholesaler	4. Contractor	5. Exhibition	1. Exporter	2. Exhibition	Total
2012								100%

E: Business practice (1): accounting, marketing

E1. Do you separate business and household expenses? 1. Yes 2. No

E2. Do you keep following records?

	a. sales	b. materials	c. inventory	d. wage payment	e. debt and its repayment	code
1. Record transactions						1. Yes 2. No
2. Since when (year)						
3. Who records?						1. Myself 2. Other, specify
4. How often for individual transaction?						1. Per transaction 2. Daily 3. Weekly 4. Monthly 5. Other, specify

	a. sales	b. materials	c. inventory	d. wage payment	e. debt and its repayment	code
6. Do you use it for future business plan?						1. Yes 2. No

E3. Sales promotion

E3-1 Expenses in advertisement (e.g. newspaper, radio, internet) in 2010 _____ (mil.VND)

E3-2 Any signboards in front of the workshop? 1. Yes 2. No

E3-3 How many signboards do you have in the vicinity of the workshop? _____

E3-4 Issue invoices/receipts? 1. Yes, with workshop's name or phone number
2. Yes, but without workshop's name and phone number 3. No

E3-5 Give customers a discount? (multiple) 1. Always 2. Usually not 3. For repeaters
4. For who purchases in bulky 5. Other, specify_____

E3-6 Other sales promotion activities, specify_____

E5. Can you estimate the value of your current inventory of raw materials (if you must purchase the same amount of raw materials in stock today)? 1. No. 2. Yes, I know the exact amount now.
3. Yes, I can know by referring to the record. 4. Yes, I can guess the amount. _____

E5-1. How much value of final products does the enterprise currently have in inventory (if the enterprise can sell all of final products in stock today)? _____ (mil.VND)

[*Check by an enumerator*] E5-2. Is the owner able to answer the plan clearly?: 1= Clearly. 2= Vaguely. 3=Unsuccessfully.

E5-3. Do you adjust production quantity based on inventory amount of final product?: 1= Yes. 2= No.

E5-4. How often do you fail to accept an order from your customer due to lack of inventory of raw material or final product? 1=Never. 2=A few times a year. 3= A few times a month. 4= More frequently.

E6. Do you have your own brand name? 1. Yes 2. No _____

E7. Do you receive any support from your primary customers? 1. Yes 2. No _____

E7-1. If yes, which of the following supports do you mainly receive? [1=marketing information; 2=product design, 3=quality standard; 4=others (specify)] _____

E8. Do you receive any supports from traders you work with (input suppliers)? 1. Yes 2. No _____

E8-1. If yes, which of the following supports do you mainly receive? [1=marketing information; 2=product design, 3=quality standard; 4=others (specify)] _____

E9. Do you cooperate with other enterprises in the knitting sector? 1. Yes 2. No _____

E9-1. If yes, in which of the following aspects do you cooperate? (multiple)
[1=sharing market information; 2=passing on work, 3=sharing equipments and machines; 4=labor borrowing (exchange); 5=others (specify)] _____

F: Business Practice (2): quality inspection, strategy

F1. Does anyone (in your workshop) inspect the quality of the products before selling them? 1. Yes 2. No, go to F2

F1-1. Who ? 1. Only the worker who produced it, go to F2
2. Owner 3. Other, specify _____

F1-2. What criteria? (multiple) 1. Occasionally 2. Only when workers request inspection and guidance
3. For all products 4. Only for randomly selected products 5. Only for specific products
6. Other, specify _____

F2. Do you keep record of quality defects? 1. Yes 2. No

F4. Do you tell workers the discovered quality defect? 1. No

2. Yes, tell the worker who produced it 3. Yes, tell all workers

4. Yes, and provide a description of the defect 5. Other, specify _____

F5. Do you record customers' complaints about the products you sold? 1. Yes 2. No 3. Never happened, go to F6

F5-2 Do you tell workers about the customer complaints? 1. No,

2. Yes, tell the worker who produced it 3. Yes, tell all workers

4. Yes, provide a description of the defect 5. Other, specify _____

F6-1. Do you store the pattern or other description of the design of product? 1. Yes 2. No

F10. Do you keep attendance record of workers? 1. Yes 2. No

F11. [***Open question***] What kinds of customers buy your products?

[***Supervisor's evaluation based on the answer from the respondent***]

F11-1 The answer includes customers' characteristics of (multiple) 1. Nationality/ethnicity 2. Occupation 3. Income level 4. Gender 5. Age group 6. Place of living 7. Family structure 8. Other, specify_____

F11-2 The characteristics are described : 1. Clearly 2. Vaguely 3. Unsuccessfully

F12. [***Open question***] Why do your customers buy your products, rather than neighbor workshops'?

[***Supervisor's evaluation based on the answer from the respondent***]

F12-1 The answer includes (multiple): 1. Cheaper price 2. Attractive design 3. Durable 4. Good after-care service 5. Good relationship with customers 6. Location 7. Advertisement 8. Other, specify_____

F12-2 The strength of the workshop is described: 1. Clearly 2. Vaguely 3. Unsuccessfully

F13. [***Open question***] How do you determine the prices of products?

[***Supervisor's evaluation based on above responses***]

F13-1 The answer includes (multiple): 1. Production cost 2.Price of similar products in the workshop 3. Price of similar products in other workshops 4. Guess of customers' valuation 5. Other, specify_____

F13-2 The pricing approach is described 1. Clearly 2. Vaguely 3. Unsuccessfully

F14. Does the owner have the sales target or the profit target in this year? 1. Yes 2. No, go to F15

F14-1 [***Open question***] How much is the sales target or the profit target in this year?

[***Supervisor's evaluation based on above responses***]

F14-2 The answer includes (multiple): 1. Numerical amount 2. Percentage target 3. Description

F14-3 The financial target is: 1. Clearly 2. Vaguely 3. Unsuccessfully

F15. Does the owner have specific plans for growth of the workshop in five years from now? 1. Yes 2. No, go to KA0

F15-1 [***Open question***] What are specific plans for growth of the workshop in five years from now?

[***Supervisor's evaluation based on above responses***]

F15-2 The answer includes (multiple): 1. Seek for new customers 2. Strengthen the relations with existing customers 3. Improve materials 4. Improve design 5. Improve quality 6. Invest in machines 7. Improve human resources 8. Other, specify _____

F15-3 The plan is: 1. Clearly 2. Vaguely 3. Unsuccessfully

KA. Business practice (3): KAIZEN

For the questions below, an enumerator rates the current status based on his/her observation

KA0. There is a designated area for each production/activity within the workshop. 1. Yes 2. No (go to KA1)

KA0-1. That division of areas is clearly known to the workers. 1. Yes 2. No

KA0-2. There is a workshop layout map. 1. Yes 2. No

KA1 There is a fixed place where major tools are stored (e.g., in a box, room or on the wall)

1. Yes, in a place that can be locked with a key

2. Yes, in a place that is not locked 3. No (go to KA2)

KA1-1. The storage is put in order so that workers can easily find them (multiple)

1. Yes, by labeling the place for storing each tool

2. Yes, by arranging the tools tidily (e.g., by the kind or size of tools) 3. No

KA2. There is a fixed place where raw materials are stored 1. Yes 2. No (go to KA3)

KA2-1. Raw materials are stored separately from scrap 1. Yes 2. No

KA2-2. Different kinds of materials are stored separately

1. Yes 2. No 3. Only a single kind of material is stored

KA15. There is a fixed place where finished products are stored. 1. Yes 2. No.

KA16. Finished products are stored by types. 1. Yes, all of them 2. Yes, somewhat 3. No.

KA17. Baskets/mats/sheets are used to pile the finished products (to avoid these products to get dirty). 1. Yes 2. No

KA18. Finished products and unfinished products are stored separately. 1. Yes 2. No

KA3. There are scraps of knitting materials scatterred around the floor

1. Yes, they are all around the floor 2. Yes, there are some scraps 3. No

KA10. The work flow line is clearly determined. 1. Yes, very efficiently 2. Yes, somewhat 3. No

KA11. Defectives (materials and finished goods) are clearly segregated from good ones. 1. Yes 2. No

For the questions below, an enumerator asks the respondent about the practice exercised in the enterprise

KA5. There are machines that have been unused more than a year in the place of production in your workplace.

1. Yes 2. No 3. Do not know

KA6. The enterprise regularly removes scraps and cleans the floor of the workplace

1. Daily 2. Weekly 3. Monthly 4.When you find it needed 5 .No 6. Others, specify

KA7. Workers regularly maintain the machines by adding oils/greases and checking whether they work properly

1. Daily 2. Weekly 3. Monthly 4.When you find it needed 5 .No 6. Others, specify

KA8. The enterprise determines who are in charge of maintenance of each of machines

1. Yes for all machines 2. Yes for major machines 3. Yes for some machines 4.Not determined

KA9. The meeting in which all the workers participate are held

1. Daily 2. Weekly 3. Monthly 4.When you find it needed 5 .No 6. Others, specify

KA12. The manager knows how long each production process takes. 1. Yes 2. No

KA20. The enterprise has monthly plans of production. 1= Yes. 2= No, skip KA20-1 – KA20-3.

KA20-1. How much did the enterprise plan to produce last month?: _____ tons

[*Check by an enumerator*] KA20-2. Is the owner able to answer the plan clearly?: 1= Clearly. 2= Vaguely. 3=Unsuccessfully.

KA20-3. Does the owner write down the production plan or just have it in his/her mind?: 1= The owner writes it down. 2= The owner just has it in his/her mind.

G. Operating months and Employment

G0. Which months did you operate and which months were busy months in 2012?

(1= operated, 2= operated and busy, 3= No production)

	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
2012												

G0-1. In a typical busy month, how many days do you operate?: _____days/ month

G0-2. In a normal operating month, how many days do you operate?: _____ days/ month

G0-3. How many days did you have to give up production because of troubles such as breakdown of machine or casualty of workers in 2012?: _____days

G1. Employment

	G1. Permanent Workers (Annual, 2012)	G2. Temporary Workers (Annual, 2012)
1.Total number of workers		
2. Working days/month		
3. Number of months worked		

G3. Suppose that one of your employees from outside the village wants to get independent to start up a new business in knitwear industry, what kind of support would you be willing to provide? (possibly multiple): 1. None. 2. Advice on business. 3. Introduction of customers. 4. Loan. 5. Provide money. 6. Other, specify.

H. Products, Sales revenue, Materials and Costs

Item code for H questions: 1. Áo len (Sweaters) 2. Quần len (Trousers) 3. Mũ len (Caps) 4. Khăn len (Scarf) 5. Bít tất (Socks) 6. Găng tay (Gloves) 7. Sản phẩm khác (Others)

H1. Products you are producing now (use code). _____

H3. Production & revenue from exported products

Item code	H31. Annual, 2012			
	a. Qty produced	b. Qty received orders	c.Qty sold	d. Price/unit
1				
2				
3				
4				
5				
6				
7				

H4. Production & revenue from domestically sold products

Item	H41. Annual, 2012			
	a. Qty	b. Qty received	c.Qty sold	d. Price/unit

	produced	orders		
1				
2				
3				
4				
5				
6				
7				

H15. Was the owner able to separate their answers in quantities clearly? 1. Clearly 2. Vaguely 3. Unsuccessfully.

H5. Revenue from subcontracted products

	Annual, 2012	
Items	H51. Quantity	H52. Price/unit
1. Áo len		
2. Quần len		
3. Mũ len		
4. Khăn len		
5. Bít tất		
6. Găng tay		
7. Sản phẩm khác		

H6. Expenses on material inputs

	Annual, 2012	
	H61. Weight	H62. Price/unit
1. Wool		
2. (if any)		

H7-13: Other Expenses

	Annual, 2012
H7. Payment to Subcontractors (mil. VND)	
H8. Wage payment	
H8-1. Permanent worker (mil. VND/mo./worker)	
H8-2. Seasonal workers (mil. VND total for seasonal workers)	
H9. Monthly electricity cost (100,000 VND/mo.)	
H10. Monthly telephone cost (100,000 VND/mo.)	
H11. Transport cost (mil. VND)	
H12. Tax payment (100,000 VND)	
H13. Other expenses (mil. VND)	

K. Finance

	a. Before delivery	b. On delivery	c. After delivery (within a month after delivery)	d. After delivery (more than a month after delivery)	Total

K1. Sales revenue paid					100%
K2. Expenses on materials paid					100%

K3. How much working capital do you use for your business in 2012? : _____ million VND

L: Stock and investments in fixed capital (machinery)

L1. Number and purchase cost of machinery and equipment (except hand-tools)

	a. Total # of functional machines	b. # machines purchased in:		c. Total purchase cost (mil. VND) in:		d. Reason for purchase 1= machine broken, 2= to expand production		e. Source of fund (%)				
		2011	2012	2011	2012	2011	2012	a. Own assets	b. Borrowing from family	c. Borrowing from bank	d. Other, specify _	Total
1. Máy dệt												100
2. Máy khâu												100
3. Máy vắt sổ												100
4. Máy linking												100
5. Bình là												100
6. Bàn là												100

This is the end of the questionnaire. Thank you very much for your cooperation.