

Can efficient provision of business development services bring better results for SMEs?: Evidence from a networking project in Thailand

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Abstract

While impact evaluation literature of business development services (BDS) on SMEs consistently finds positive effects, SMEs' BDS usage is still very low.

Possible reasons suggested are lack of information about BDS, shortage of credits, and limited availability of BDS. However, most of the existing literature focuses on impacts of demand-side interventions, and empirical evidence about BDS providers is still lacking.

We focus on the supply-side constraints of BDS. We take a case of Thailand in which the government, in collaboration with the Japan International Corporation Agency, implemented a project to establish a formal network among the existing BDS providers with an aim to enhance their effectiveness in supporting the SMEs. Using the primary data of SMEs and BDS providers, we find that the BDS providers in project provinces increased their interaction with SMEs and improved their BDS practices. SMEs' network and interaction with BDS providers also increased. We also find some positive evidences on SMEs in having more contracts and more certified products and in raising profits and percentage of domestic sales in some provinces. These together suggest that networking BDS providers improves performances of both BDS providers and SMEs. A policy implication follows that an efficient delivery of public services can bring tangible results.

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1. Introduction

Impact evaluations of SME development programs have been proliferated since the late 2000s (McKenzie & Woodruff, 2012; Cho & Honorati, 2014; Grimm & Paffhausen, 2015; Cravo & Piza, 2016). SME development programs are largely divided into financial and non-financial services (i.e., business development services or BDS), and the latter includes various types of support ranging from management training, financial training, vocational skill training, human resource development, marketing assistance, technical advices, information provision, accounting, and legal services, among others (Sievers & Vandenberg, 2007). Following the success of microfinance programs and low quality of BDS in the early stage, financial supports to SMEs have become a dominant form of SME development assistance from the 1980s. However, as more impact evaluation studies of microfinance have been conducted, it was recognized that providing finance and BDS together yields better results on the SMEs relative to the case of providing finance alone (McKernan, 2002; Sievers & Vandenberg, 2007; Grimm & Paffhausen, 2015). This trend along with the increasing recognition on the important role of managerial capital in firms' performance gave rise to the strand of literature that examines the impact of business training on SMEs since the mid-2000s (Bloom & Van Reenen, 2007, 2010; Bruhn, Karlan, & Schoar, 2010; Bloom *et al.*, 2012).

These studies have examined not only the impacts of training on SMEs' performances, but also other factors that influence the results (Klinger & Schündeln, 2011; Mano, Iddrisu, Yoshino, & Sonobe, 2012; Bruhn, Karlan, & Schoar, 2013). For example, some studied whether to provide with credit or not in addition to training (Karlan & Valdivia, 2011; de Mel, McKenzie, & Woodruff, 2014; Karlan, Knight, & Udry, 2015), impacts of targeting the potential entrepreneurs (de Mel *et al.*, 2014), heterogeneous effects of training for female entrepreneurs (Bruhn & Zia, 2013), effects of different types of trainings (Drexler, Fischer, & Schoar, 2014; Higuchi, Vu, & Sonobe, 2015; Suzuki, Vu, & Sonobe, 2014; Valdivia, 2015), whether initial condition matters (Fossen & Büttner, 2013), and peer effects on performance (Field *et al.*, 2016). As summarized by McKenzie & Woodruff (2012), the managerial trainings mostly have positive effects on SMEs' performances, almost always in changing the business practices. Based on their systemic literature review, Grimm & Paffhausen (2015) also quantitatively shows that BDS activities bring positive effects in increasing employment opportunities and raising competitiveness of SMEs.

Despite the positive impacts found consistently across different cases, a question remains as to why the rate of BDS usage by SMEs remains low in many

developing countries. Even if the SMEs are offered chances to participate in these trainings free of charge, the take-up rate is typically about 65% (McKenzie & Woodruff, 2012). Potential reasons behind may be lack of information about BDS among SMEs, lack of knowledge about the impacts of BDS (Suzuki, Vu, & Sonobe, 2014), and shortage of credit to participate in training. However, existing studies are all focused on the interventions of demand-side, i.e., SMEs, and not capturing the constraints on the supply-side. Examples of supply-side constraints are limited availability of BDS programs, costly transaction costs to find a suitable BDS program, or simply the low quality of services. While these problems are discussed, to our knowledge, studies that quantitatively examined the effects of supply-side constraints do not exist.

This paper therefore attempts to examine the impact of removing one of the supply-side constraints of BDS programs, high search cost to find an appropriate BDS, on the performances of SMEs as well as on BDS providers. We take a case of a project conducted by the government of Thailand assisted by Japan International Cooperation Agency (JICA), in which BDS providers are connected via a formal network for the purpose of reducing transaction costs for SMEs to receive appropriate services. The project was conducted in four provinces since 2013 and the BDS providers in these provinces, which are mostly public organizations in Thailand, got together to learn about their services among themselves and developed activity plans to be more demand-oriented in delivering their services. Further, one general consultation counter was installed in each province where the SMEs can be introduced to appropriate BDS providers. We collected data from BDS providers and SMEs in the treatment and control provinces in 2015 and estimated the impacts of the project on the performances of BDS providers as well as that of SMEs, based on OLS, propensity-score matching, and inverse-propensity score weighting regressions to correct for the possible selection bias.

Overall, we find that establishing a formal network among BDS providers indeed improves their own as well as SMEs' performances. We find that in project provinces, BDS providers increased the number of SMEs which they assisted and referred to other BDS providers relative to control provinces. Their BDS practice score has also improved, particularly on factors relating to external relations. We also find that SMEs enhanced their network with BDS providers in most of the project provinces, and demand for BDS has increased particularly on marketing issues. SMEs' interaction with BDS providers also increased in some project provinces, and several indicators of business performances, such as receiving production contracts, having the products certified, are also positively affected by the project. We also find some

evidence that the increase in the profit between the year before and after the implementation of the project was larger in some project provinces relative to others. Further, we find that the percentage of direct export to decrease while that of indirect export and domestic sales increased in some provinces due to the project. To our knowledge, this is the very first rigorous quantitative study which focused on removing the supply-side constraints of BDS providers in improving SME performance. We also contribute in providing evidence on the effects of BDS from a South East Asian country while most of other literature is on Latin America and Africa (Grimm & Paffhausen, 2015). As most of BDS providers are governmental organizations in Thailand, we can also infer from our results that enhancing the effectiveness of public service delivery can bring tangible results for SMEs.

Next section describes our research questions in details. Section 3 explains about the project and data collection. Section 4 presents estimation methods employed and the results are discussed in Section 5. A conclusion follows in Section 6.

2. Research Questions

Our analyses are on two groups of agents, BDS providers and SMEs. The project, as will be detailed in the next section, has two components: 1) establishing a formal network among BDS providers and 2) setting up a general consultation counter within the province where an SME can be introduced to an appropriate BDS provider. Through the network, the BDS providers were assigned to develop their own activity plans to improve their BDS activities and regularly hold meetings to exchange information. The information about BDS providers in the province was consolidated in one database.

We are interested in examining three research questions. First is whether networking of BDS providers improves their own performance. We can think of at least three mechanisms how this is feasible. One is learning from each other. By being connected to other BDS providers, they learn how others are implementing the BDS activities. They may learn good practices, which can be adopted in their own activities. Secondly, by enhancing communication in the network, they become aware of what types of services are offered by other BDS providers, making it easy to refer SMEs to other BDS providers when they cannot assist the SMEs. As BDS providers are typically specialists on a few aspects, such as marketing, technical knowledge, or legal issues, it is likely that they cannot solve all the problems that SMEs have. Thus, making a referral system can be considered an effective way to increase opportunities for BDS providers to interact with SMEs. Thirdly, through the discussion of their

activity plans among the BDS providers, they will consider SMEs' constraints and how they may assist to solve their problems in detail. This experience is expected to make them more demand-oriented. Through these channels, forming a network is expected to bring positive effects on BDS providers' own performances.

Second question is whether using BDS actually improves performances of SMEs in general. This is a basic question to examine as otherwise it is not of interests for SMEs to use BDS. Third question is on the impact of the project, i.e., whether the effect of BDS usage is larger if the BDS providers are connected via a formal network. We can consider two channels how this may be possible. First is by the reduction of transaction cost, particularly the search cost of finding an appropriate BDS provider. As the information about BDS providers are integrated and a common counseling counter is installed, it takes much less time for SMEs in the project provinces to seek for advices from BDS providers. Because the search cost is reduced, their demand for BDS activities, which used to be suppressed due to high transaction cost, is expected to shift outward, increasing the quantity of BDS activities purchased/used at the market. Thus, more SMEs are expected to receive BDS activities and their performance is expected to improve. Secondly, because the BDS providers connected by the project supposedly have improved their activities via the aforementioned channels, the SMEs can be assisted well and may perform better than the SMEs which use BDS in other provinces. We examine whether these are true for a case of a JICA project in Thailand.

3. Details of the networking project and data collection

3.1 SMEs and BDS Providers in Thailand

SMEs account for a large share of Thailand's economy in common with other developing and advanced countries. At the end of 2014, there are 2.7 million of SMEs, 99.7 percent of the total number of enterprises in the whole country, and they have 10.5 million of employees, 80.3 percent of the total number of employees (Office of Small and Medium Enterprises Promotion, 2015). However, the contribution of SMEs to Gross Domestic Product and export is limited to 39.6 and 26.3 percent, respectively. Since recent business environment in Thailand is worsening because of an increase in labor costs accompanied by national economic growth (the so-called middle-income trap), and intensified competition due to the establishment of ASEAN Economic Community, it is urgently necessary for the government of Thailand to enhance the productivity and competitiveness of SMEs through BDS for them.

Most of the BDS providers in Thailand are public organizations. The main providers are provincial branch offices of ministries such as Ministry of Industry and

Ministry of Commerce, governmental agencies such as National Science and Technology Development Agency and SME Development Bank, business associations such as Chamber of Commerce and Federation of Thai Industries, universities, and private companies. Types of BDS activities include the consultation and training workshops about startups, production technology, product quality management, business administration, and accounting, and the assistance for introduction of new products, marketing, loans, and credit guarantee (JICA & UNICO International, 2011).¹ Conventionally, there was little cooperation and communications between these organizations and each BDS provider was operating independently. This lack of communication across BDS providers may partly reflect the government's vertically segmented administrative system. As most of them are government branches, each organization was providing BDS activity based on the mandate given by the central government and within the frame of annual budget which was transmitted from the central government. It was not in their culture to refer SMEs to other BDS providers when they know that they cannot support the SMEs which came to request assistance. In other words, BDS providers were very much supply-driven. Thus, when managers of SMEs felt the need for support, they were supposed to diagnose the cause of their problems by themselves and search for the BDS providers which can solve their problems. Information about available types of BDS was not collected in one place. Accordingly, search cost to find an appropriate BDS provider was very high for SMEs, reducing the demand for BDS.

3.2 RISMEP Project

Recognizing the above situation, the government of Thailand decided to implement a project that established a formal network of BDS providers, assisted by JICA, an organization in charge of bilateral development assistance of Japan. This was a part of the results of assistance delivered by the government of Japan and JICA in formulating the policies for SME promotion, which has been conducted since the Asian financial crisis. After a pilot project, the Thai government implemented a project entitled "Project for Enhancing Regional Integrated SME Promotion (RISMEP) Mechanism in the Kingdom of Thailand (hereinafter referred to as RISMEP or RISMEP project)." It was conducted in Nakhon Ratchasima, Suphanburi, Chiang Mai, and Surat Thani from May 2013 to May 2016 (Figure 1). The project consisted of two components: one is

¹ The original definition of BDS does not include financial services as explained above. However, the government of Thailand calls the service of lending and credit guarantee as BDS so that we adopt this broader definition of BDS, following the context of Thailand.

the establishment of a cooperation network of existing BDS providers and the other is the installment of a general consultation counter where SMEs can be introduced to appropriate BDS providers based on integrated information of the BDS providers (JICA & UNICO International, 2016). In the project provinces, each Industrial Promotion Center (IPC), a regional office of the Department of Industrial Promotion, Ministry of Industry, took the initiative in organizing the project activities with the support of Japanese experts dispatched by JICA. In more details, each network firstly examined the needs of SMEs and the contents of BDS available in a province, and then developed an activity plan. Examples of these activities include regular meetings to strengthen the connection of the members, development of the database of the members' services, training for staffs of the members, and public relations of the network for SMEs. Under the second component of installing a general consultation counter, the BDS providers in each province collectively prepared a procedure manual and a guidebook of BDS and conducted trainings of a SME counselor who works at the counter. During our interviews, BDS providers mentioned that through the RISMED project they were able to introduce a SME to other more suitable BDS providers when they found it difficult to meet the request and to increase the number of participants in their training workshops by using the SME list shared in the network. In addition, each network disseminated information on the cases of successful support to SMEs in this project to SMEs to increase the awareness of the contents and effects of BDS. In this way, the RISMED mechanism was successfully put into practice in the four provinces, and as a result, the government of Thailand decided to expand this mechanism to seven other provinces first from October 2015 and to the whole country in near future.

3.3 Data Collection

As aforementioned, the objective of this study is to examine the effects of this networking project on manufacturing SMEs and BDS providers in the project and non-project provinces based on primary data. In Thailand, manufacturing SMEs are defined to be enterprises which have less than 200 employees or with assets up to 200 million Thai Baht (about 5.6 million USD). Our surveys of SMEs and BDS providers were conducted in a local language by hired local consultants from November 2015 to February 2016 and were funded by JICA. In order to prepare for the surveys, in September 2015, we visited one of the project provinces, Suphanburi, and a non-project province, Ratchaburi, and examined the results of the project, the actual circumstances of BDS providers and the usage of BDS, and the characteristics of SMEs through interviewing staffs of the IPC in Suphanburi and BDS providers, SME managers, and

the Japanese experts. After the visit, we finalized our questionnaires for SMEs and BDS providers and determined the details of the surveys.

First of all, we selected the following provinces for our surveys of SMEs: all project provinces and four non-project provinces, Khon Kaen, Phitsanulok, Ubon Ratchathani, and Trang (Figure 1). The non-project provinces were selected based on their similarity with the project provinces in such factors as the existence of IPC, Gross Provincial Product (GPP) per capita, the share of manufacturing sector in GPP, the number of SMEs, and industrial structure². In selecting, we relied on national statistics summarized in Table 1 as well as expert advices from the officials of the Department of Industrial Promotion.

Secondly, we set the target sample size of SMEs as 500 and divided it into project provinces and non-project provinces. Among the former, we set 100 SMEs who had used BDS since October 2014 (hereinafter referred to as “BDS users”) and 125 SMEs who had not used BDS since October 2014 (“BDS non-users” hereafter), totaling 225 firms. Among the latter, we set 125 BDS users and 150 BDS non-users, totaling 275 firms. In defining a BDS user in this study, we added the condition of “since October 2014” as the network of BDS providers was established in all project provinces by around this time although the project started in May 2013. Among the project provinces, each number of BDS users and non-users selected from each province was proportional to the ratio of the number of SMEs in the respective province relative to the total number of SMEs in all the project provinces. The same rule was applied to non-project provinces.

Thirdly, we used two lists of SMEs to identify BDS users and BDS non-users. For BDS users, we relied on the list of SMEs provided by each IPC, which includes SMEs that had used BDS in each province. For BDS non-users, we used the list of manufacturing SMEs in the database of the Department of Industry Works, Ministry of Industry. As all firms are required to register their factories with the Ministry of Industry, this list can be considered as a comprehensive list of manufacturing SMEs except for the very small cottage-type of household industry. From each list, we randomly selected the sample BDS users and BDS non-users. When making appointments for the interview, we confirmed with SME managing directors on the phone whether or not they had used BDS since October 2014, and classified them into BDS-users and BDS non-user depending on their answers.³ We conducted the

² The IPC is not located in Trang, but in Songkhla in the region. We changed from Songkhla to Trang for security reason.

³ Another potential method to select SMEs was to rely on the Ministry of Industry’s database only and classified samples into BDS users and BDS non-users based on their answers on the phone.

face-to-face interview for SME managing directors.

As for the survey of BDS providers, we added two more provinces, Udon Thani and Lampang, to the non-project provinces because we expected it difficult to secure the sufficient number of BDS providers in the non-project provinces with the four provinces specified above. In project provinces, we targeted all of the network members, 94 BDS providers in total, and obtained 68 respondents (Table 2). In non-project provinces, since the list of BDS providers did not exist, we began with making the list of existing BDS providers referring to the names of BDS providers in the project provinces. As a result, we obtained the list of 110 BDS providers in total in non-project provinces and obtained 69 respondents for our survey. The survey of BDS providers was conducted on the phone after sending the questionnaire via e-mail or fax in advance.

To sum, Table 2 shows the number of sample SMEs and BDS providers by the project and non-project provinces, “Treatment” and “Control” groups hereafter. The actual sample size of SMEs, 518 in total, exceeded our original target number, whereas the actual sample size of BDS providers was limited to 137 in total. In addition, we found after interviewing with BDS non-users that some of them had actually participated in training workshops or received consultation services from October 2014 to September 2015 so that the final number of actual BDS users is 303, increasing from 235, and that of final actual non-users is 215, decreasing from 283, in our dataset. In the following estimation, we used the actual status of BDS usage.

4. Estimation Strategy

In order to examine the questions raised in section 2, we analyze two sets of data, one on the BDS providers and the other on the SMEs. Firstly we examine whether the RISMED project had impacts on improving the performance of the BDS providers. In the simplest form, we are interested in estimating:

$$y = \beta_0 + \beta_1 \text{RISMED} + \mathbf{X}' \boldsymbol{\beta} \quad (1)$$

where y indicates various indicator of BDS providers' performances, RISMED is a dummy variable which is equal to one if the BDS provider is located within the RISMED provinces, and X are other covariates relating to the characteristics of BDS providers (years of operation, types of organization, types of services offered, total

However, since the share of BDS users is low nationally, this method would likely give us very few number of BDS users. Due to the importance of securing a good number of BDS users to achieve our objective, we relied on the two lists as mentioned. We control for the self-selection bias in our estimation.

number of permanent workers in 2013, and number of workers with university or above degrees) and of the managing directors (age, gender, ethnicity, years of education, years of BDS experience). We first run OLS regressions on this model. However, a dummy variable RISMEDP may be considered endogenous to the model as the four provinces (Chiang Mai, Nakhon Ratchasima, Suphanburi, and Surat Thani) are selected as the target provinces by the government. The government may have selected places where the BDS providers are operating more actively than other provinces and thus may bring better results. In order to deal with this issue and given non-availability of pre-program data, we employ propensity-score matching method (PSM) and inverse propensity score weighting regressions (IPSWR).

Under PSM, we first estimate the probability that each BDS providers is selected as the RISMEDP provinces based on the characteristics of the organization, particularly the years of operation and the types of organization. Note that the characteristics of managing directors are not included because the majority of the BDS providers are government organizations and their location (and thus the status of being treated or not) is not up to judgement of the current managing directors. Managing directors are usually dispatched from the central ministries and thus do not influence whether the BDS provider first decided to locate themselves in that province. We match the observations based on the propensity of being under the RISMEDP projects. For matching, we tried several methods (Nearest Neighbor, Caliper, Kernel, and Local Linear Regression Matching) and selected Kernel matching, which creates hypothetical observations using the information from the control group to match with the observation in the treatment group, based on the balancing tests conducted (ref. Appendix 1).

While PSM removes systematic observable differences between the treatment and control groups, it reduces efficiency in estimation (Hahn, 1998; Heckman, Ichimura, & Todd, 1998). Thus, we also use an inverse propensity-score weighting regression (IPSWR), which was originally proposed by Robins and Rotnitzkey (1995) and developed further by Hirano, Imbens, & Ridder (2003) among others. In this method, the inverse of the propensity score is used as weights to run regression of the outcome variable. This is also known as a “doubly-robust” estimator because only one of the models (treatment or outcome) needs to be correctly specified to achieve consistency in estimation (Wooldridge, 2007). As our aim is to estimate the treatment effects on the treated, we use the weight which is equal to one for treated observations and $ps(x)/(1-ps(x))$, where ps stands for propensity score, for control observations (Hirano & Imbens, 2001). Further, in order to guarantee a sufficient overlap in

propensity scores of the two groups, we also use trimmed samples for analyses in addition to using the full sample.⁴ For trimming, we compute the optimal cut-off points based on the method developed by Crump *et al.* (2006), which yielded the optimal range of [0.212, 0.787] for the BDS provider samples⁵. For the BDS provider analyses, we employ robust standard errors in OLS and IPSWR while bootstrapped standard errors are computed for the PSM analyses.⁶

In order to examine the impact of the project on SMEs, we estimate the model:

$$y = \beta_0 + \beta_1 \text{RISMEP} + \beta_2 \text{BDSuser} + \beta_3 \text{BDSuser} \times \text{RISMEP} + \mathbf{X}' \boldsymbol{\beta} \quad (2)$$

where y indicates various performance indexes for SMEs, BDSuser is a dummy variable indicating 1 if the SME used BDS since October 2014, and \mathbf{X} includes the characteristics of the managing directors (age, gender, ethnicity, years of education, whether succeeded the business) and of the organizations (domestic ownership, years of operation, whether it is registered, whether belong to any business associations, total number of permanent workers in 2013), industrial type dummies (ISIC codes), and urban area dummy. BDS user is defined as 1 if the SME has used the BDS providers' consultation services or participated in trainings offered by them since October 2014. As explained earlier, this was the time when the network of BDS providers was formed under RISMEP project.

We conduct OLS regressions on equation (2) firstly, treating RISMEP and BDS user dummies as exogenous. However, as these variables may be endogenous, we employ the same estimations methods as the BDS provider analyses, i.e., PSM and IPSWR. Here we estimate the propensity to use BDS or the propensity to be located in the RISMEP provinces as the weights, depending on the model specification. The control variables used in the propensity score estimations are characteristics of the managing directors (age, gender, years of education, ethnicity, whether succeeded a family business) and those of the company (domestic ownership, years of operation, whether registered, whether belong to business associations, total number of permanent workers in 2013, urban dummy, and industrial classification codes). As with the BDS provider analyses, we tried various matching methods and chose Caliper matching for

⁴ We report the estimation results based on trimmed samples for brevity, but full sample yielded very similar results.

⁵ While there are various ways to "trim" the samples, such as using minima-maxima criterion or based on density distribution in two groups (Caliendo & Kopeinig, 2008), we rely on Crump *et al.* (2006) as their method is derived based on a rigorous theory. Other studies such as Chen, Mu, & Ravallion (2009) or Deininger & Liu (2013) rely on this trimming method.

⁶ Due to the small number of clusters for the BDS provider survey, we used robust standard errors rather than cluster-robust standard errors.

all sample analyses and Kernel matching for user-sample only analyses based on the balancing tests results (Appendix 1). Further, we also conducted the IPSWR estimation and used trimmed samples based on the optimal trimming method as aforementioned. We also perform the same analyses using a sub-sample of the BDS users only. In these models, we show whether the BDS users are systematically different between the RISMED provinces and the control provinces. The optimal range for the all SME samples was [0.122, 0.878] while it was [0.192, 0.808] for the sub-sample of BDS users. For all OLS and IPSWR estimations, cluster-robust standard errors are used at the district (*Amphoe*) level, while for PSM models, bootstrapped standard errors are used. The level of cluster was determined considering the tradeoff between the minimum number of clusters required to satisfy the asymptotic assumption and variance within the cluster (Cameron and Miller 2014). The number of cluster is 94 for all SME sample while it is 72 for the BDS user-only sample.

5. Estimation Results

5.1 Descriptive Statistics

Table 3 summarizes the characteristics of BDS providers by the status of intervention. We find that the years of operation is longer in non-RISMED provinces. For the types of organization, as we mentioned earlier, government is the most dominant among them, followed by university or research institute. There are some statistically significant differences in the types of organization between project and non-project provinces. As for the types of BDS provided, consultation start-ups, technical consultation, and product quality management are most common. On average, these BDS providers employ about 10 permanent workers and most of them have university or above degree. Managing directors of these BDS providers tend to be in their late forties with about 17 years of education and 16 years of BDS experiences. Overall, differences between RISMED and non-RISMED provinces do not seem very large, but we control for these characteristics in our estimations.

Table 4 shows the characteristics of SMEs by each category. In the total sample, we observe that younger managing director with more education tend to use BDS. Among the users, percentage of female managing directors is high relative to the non-user samples. From the company's characteristics, we see that on average it is younger firms with more permanent workers which use BDS. On average, our sample SMEs hire about 20 to 30 permanent workers. Percentage of registration is higher for BDS non-users than BDS users and the percentage belonging to business association is higher for BDS users. Sub-samples of RISMED provinces and non-RISMED provinces

show very similar trend. We also observe that some characteristics, such as age, ethnicity, and education of managing directors, and operation years and size of companies, are different between BDS users in RISMED and non-RISMED provinces. In the following analyses, we control for these observable differences.

5.2 Effects on BDS Providers

Tables 5 to 7 show the effects of RISMED on the performances of BDS providers. Table 5 presents the results of OLS, PSM, and IPSWR on the effect of BDS providers' network. We find that all of the coefficients are insignificant, indicating that with the RISMED projects, the number of BDS providers that each BDS provider knows or has contacted have not increased. This may be surprising given that it is a networking project. However, as most of the BDS providers in Thailand are governmental organizations which have been operating for the average of 25.4 years, it is understandable that the BDS providers have already known each other by names at least.

However, when we examine deeper in the interaction between BDS providers and SMEs, we find a different picture. Table 6 reports the impact of RISMED on the changes in BDS providers' SME support activities. The dependent variables are differences of respective variables between one year before and one year after the establishment of network in the RISMED project. We find that while the budget used for the SME support activities, the number of SMEs contacted by, and the number of SMEs supported without fees have not changed in any of the estimations, the number of SMEs supported with fees, the number of SMEs the BDS provider introduced to other BDS providers, and the number of SMEs which were introduced by other BDS providers increased significantly. Particularly, the number of SME supported with fees increased significantly both in OLS and IPSWR models (column (4)). Finding no change in the budget is as expected as most of the BDS providers work on the resource sent from central ministries, but it is striking to observe that the number of SMEs assisted with fees increased for the RISMED provinces. This may be suggesting that BDS providers in the project provinces are trying to change their convention of operating only on their own budget to more market-oriented approach of collecting necessary fees for their services to expand their business. This seems to show that the BDS providers are becoming more demand-oriented relative to the traditional supply-driven approach. Findings in columns (5) and (6) show that in the RISMED provinces, the BDS providers are actively exchanging information and introducing SMEs among each other. This result quantitatively confirms our findings during our

qualitative interviews to BDS providers. Many of the BDS providers mentioned that while they knew the names of other BDS providers, they were not aware of what kind of supports that other BDS providers are providing to the SMEs before the project. This had limited their capacity to refer SMEs to other BDS providers when they found that they could not support SMEs for particular problems that SMEs raised. However, after the launch of the project, they exchanged information about what type of services that they are offering. The project made brochures of BDS providers in the province and the list of services offered. Further, regular BDS provider meetings enhanced social interactions among the officers who provide SME supports in these BDS providers, lowering barriers and reducing psychological costs to introduce SMEs among each other. Thus, although the number of BDS providers' acquaintances has not changed, the quality of network seems to have been enhanced due to the project. As the average number of SMEs introduced to other BDS providers in 2013 was 108.3, being in the RISMED project increased the number by 163.1, which is a 2.5 fold increase relative to the base figure. For the number of SMEs introduced by other SMEs, it is a 1.2 fold increase.

Table 7 presents the effects of RISMED on the practices that each BDS provider conducts. In our interview, we asked BDS providers about 12 practices which are considered to be positive aspects for BDS activities and made a score based on them.⁷ We divided them into two categories, one is on the internal management score of BDS providers to support SMEs and the other is on the external relation activities. Each score consists of six aspects and the details are presented in Appendix 2.

We find that coefficients on RISMED variable are positive in all models, suggesting that practices of BDS in the RISMED provinces are better than their counterparts in control provinces. The external relation score of the OLS and IPSWR models are also statistically significant. In magnitude, being in the project provinces tends to increase the external relation score by 9.7% (column (2)). The BDS providers in project provinces seem to have made efforts in expanding the extent to reach SMEs by accepting online consultations and having websites (Appendix 2). However, we could not observe statistically significant impacts of the project on the internal capacity scores of BDS providers. This may be because the main focus of the project is on enhancing the network and not on improving the management or consultation capacity

⁷ While these answers are mostly subjective, we tried to minimize these effects by asking follow-up questions whenever possible. For example, for a question "Do you have specific plans about your services in the next five years?," if the answer is yes, we asked them to explain the plan in detail. These types of scores have been commonly used in managerial training literature.

of each BDS provider.

5.3 *Effects on SMEs*

From above analyses, the RISMED project seems to have had some positive impacts on the BDS providers in the project provinces. Now we investigate whether these positive impacts are actually transmitted to SMEs to benefit their activities. Tables 8 to 11 report the estimation results on the impacts on SMEs. While the panel A presents results using all SME samples, the panel B uses the subsample of SMEs which use BDS (“BDS users”) only.

We first examine whether the SMEs network with BDS providers have expanded due to the project (Table 8). In panel A, we find that BDS-users know a greater number of BDS providers in all models. However, the variable which shows the impact of the project on SMEs, i.e., the interaction term between the RISMED dummy and the User dummy, are insignificant in OLS and IPSWR models (columns (2) and (7)). In order to examine the impacts in more details, we introduce interaction terms between treatment and province dummies in columns (3) and (8). The base province is Chiang Mai, and it shows that while the project had a negative impact in Chiang Mai, in other provinces, the number of BDS providers that SMEs know increased and they are statistically significant. For instance, in Surat Thani, it shows that the number of BDS providers that an SME knows increased by about 1.1 (=2.648-1.574). Thus, it seems that BDS providers’ efforts to increase their presence among the SMEs have worked in many of the project provinces.

In panel B, we use the sub-sample of BDS-users only to see whether the BDS users are different between the treatment and control provinces. In PSM and IPSWR models, we use the propensity to be in the RISMED provinces to correct for the possible endogeneity of the variable. We again see that the RISMED variable is insignificant in models (1), (4), and (6), where we examine the average impact of the project, but once we break down the project impact to province levels, we observe that it had positive impacts in Surat Thani, Nakhon Ratchasima, and Suphanburi provinces but not in Chiang Mai. It may be because Chiang Mai is the most developed provinces among the treatment provinces, and thus the BDS providers are already well-known among the SMEs.

To examine the SMEs’ problem-solving mechanism, we asked SMEs whom they would consult first when they face certain kinds of problems. Specifically, we asked about problems in general, in start-ups, in credit constraint, in legal issues, in technological issues, in marketing issues, and in human resource management issues.

We created dummy variables that are equal to one if the SME's answer was BDS provider and zero otherwise and used this as dependent variables in Table 9.⁸ We observe that while for general issues, BDS providers are not the first ones to be consulted by the SMEs, for specific problems, SMEs do recognize the importance of BDS providers. Particularly, the user dummies are positive and statistically significant in credit, technology, and human resources, indicating that SMEs which have used BDS providers understand that the BDS providers are helpful in solving these kinds of problems. Further, it is notable that we observe a positive and statistically significant impact of the RISMED project in increasing the demand from SMEs to rely on BDS providers on marketing issues (columns (9) and (10), panels A and B). This may be reflecting the fact that the BDS providers which offer marketing advices to SMEs (i.e., Provincial Commerce Office under the Ministry of Commerce) played a major role in enhancing the network among BDS providers in RISMED project. In magnitude, if SMEs used BDS in RISMED provinces, the probability that this SME wishes to consult BDS providers first for the marketing issues will increase by 6-7%. We also examine the heterogeneous impacts of the project across provinces. We find that the demand to rely on BDS providers for marketing issues is higher in Chiang Mai relative to other provinces (columns (10)).

In Table 10, we examine whether there has been any changes in the SMEs' interaction with BDS providers due to the RISMED project. The dependent variables are the differences between the respective status before and after the launch of the project. We find that interaction terms between RISMED variable and User dummies are insignificant in all models, suggesting that on average, the frequency of BDS usage by SMEs have not changed in RISMED provinces. However, when we examine the provincial differences, we do find that in Surat Thani, the frequency of BDS usage by SMEs increased relative to the pre-RISMED period in all three dependent variables of contacting BDS providers, receiving their services, and participating in their trainings. The same is found for the BDS-user only samples of panel B. In magnitude, the number of times that i) SMEs contact BDS providers increased by 2.46 to 3.80, ii) that SMEs received BDS providers' services increased by 0.96 to 1.06, and iii) that SMEs participated in BDS providers' training increased by 1.83 to 2.05 in a year in Surat Thani.

Finally, we move on to examine whether the increased linkages and interactions between SMEs and BDS providers in RISMED provinces shown thus far

⁸ OLS and PSM estimations, which show consistent results with the presented IPSWR, are not shown for brevity but are available upon request.

have yielded any results in improving SMEs' performances (Table 11). We report only the IPSWR results for brevity, but other estimations show consistent results.

Management score tends to be higher in RISMED provinces in panel A, and we also find that BDS users in RISMED provinces perform better than BDS users in control provinces in panel B (columns (1)-(2)). In magnitude, they tend to score about 1.2 point higher out of the total of 9 points. However, the interaction terms between RISMED and User dummies are insignificant, suggesting that the higher management scores in RISMED provinces are not necessarily due to the project. The detailed break-down of the management score is presented in Appendix 3 and we observe similar trend.

We find that RISMED project had positive effects in having SMEs have their products certified and receive production contracts from outside. In magnitude, the RISMED project increased the probability that a SME has their products certified by 26% and that a SME receives an external production contract by 18.1% (columns (3) and (5)). This is most likely be due to the BDS providers' efforts in assisting SMEs to connect to their customers using their list of SMEs within the province and in supporting them in the application processes to have their products certified. In our fieldwork, we heard that many SMEs are not even aware of these product certifications although their products are eligible, and thus BDS providers in the project provinces were putting efforts in recommending them to apply.

We examine the effects on financial performance of sales and profit. Note that due to a high refusal rate of the respondents to offer financial information, the number of observations decreased from 479 to 217 (about 45%) for these models. Thus, we need to be careful in interpreting these results as this possibly introduces some self-selection bias. But we did confirm that the proportion of the sample reduction is very similar between the RISMED and non-RISMED provinces. We find that the RISMED project is insignificant in explaining the log of change in sales over years between before and after the launch (column (7)). However, when we examine the provincial differences among the treatment area, we find that it is positive and statistically significant for Nakhon Ratchasima. For the log of change in the profit over the same two years, the project impact is again insignificant on average, but when we examine the heterogeneous impacts across provinces, we find that it is positive in Surat Thani and Nakhon Ratchasima. In magnitude, the change in sales was by 0.5 to 2.9% in Nakhon Ratchasima and the change in profit was by 0.5-1.6% in Suphanburi and by 0.3-2.1% in Nakhon Ratchasima.

To understand how these provincial differences in the outcomes have occurred,

we examine the SMEs' marketing behaviors in columns (11) to (16). In column (11), we observe that the project had negative impact in increasing the probability of exporting directly. Provincial heterogeneous model in column (12) confirms that this was a consistent trend across RISMEDP provinces. When we examine the percentages of indirect export via agents and domestic sales, we observe differences across provinces. In Surat Thani, the percentage of indirect export increased by 12% points while in Nakhon Ratchasima and Suphan Buri, the percentage of domestic sales increased by 12 to 14 % points. These show that the RISMEDP project seem to have changed SMEs' marketing channels, probably because BDS providers are actively connecting buyers and sellers within the same provinces. SMEs in Surat Thani tended to increase indirect export in expanding their profits while those in Nakhon Ratchasima tended to increase domestic sales in expanding their profits.

6. Conclusions

This paper examined the effects of establishing a formal network among the BDS providers on the performances of the BDS providers and SMEs, taking a case of a JICA project in Thailand. This project provides a rare opportunity to examine the effects of releasing one of the supply-side constraints of BDS activities to assist SMEs in developing countries, particularly the high transaction costs in finding an appropriate BDS provider for SMEs.

Based on the data collected from BDS providers and SMEs both in project and non-project provinces, we find positive effects both on BDS providers and SMEs. In particular, due to the enhanced communication among the BDS providers, they increased the numbers of SMEs to refer to other BDS providers and the number of SMEs which they supported with fees more than the BDS providers in non-project provinces. The latter finding suggests that the BDS providers are becoming more demand-oriented while they used to work within the extent to which the public budget allows them to assist SMEs. We also find that the BDS practice scores related to external outreach is higher for the BDS providers in the project provinces.

For SMEs, we find that the number of BDS providers that a SME knows is higher among the BDS users and in most of the project provinces. BDS users are more likely to consult BDS providers first for specific problems than BDS non-users, and that effect is particularly strong for marketing issues in project provinces. These indicate that once a SME starts using BDS and learns its benefit, they increase their demand to receive BDS from BDS providers. The number of times that a SME contacts BDS providers and participates in training organized by the BDS providers is also higher in

some project provinces. We also find positive evidence of the project on outcomes of receiving production contracts and having certified products and on profit in some project provinces. We found that the RISMEP project increased the percentage of domestic sales and indirect export through agents while reducing the percentage of direct export.

Overall, we find positive effects both on BDS providers and SMEs. Note that our results capture only the short-run effects as our data collection was conducted only after one year since the network is formed in all the provinces. Given the short period, it is notable that we find the positive evidence of forming a network among the existing organizations. As the networking does not involve constructions of major organization or infrastructure, this is much less costly than creating some organization from scratch. This advantage is of further importance when we consider the sustainability of the project and its expansion to other provinces after the donor's withdrawal from the project because development projects often become unsustainable after project completion due to the shortage of resources. However, intervention on the software such as this case is more likely to be sustained if there is a cooperative attitude and motivation of BDS providers. In this regard, we observed that the incentive for BDS providers to cooperate was high in the study site because they shared a common concern about the very low usage of BDS. The decision by the Thai government to expand of the RISMEP approach to other areas before the conclusion of the project also reflected their high demand for more efficient supports to SMEs. From this project, we can also infer that making the delivery of public services more efficient can indeed bring tangible results as most of the BDS providers in Thailand are public organizations. Considering the typical vertically-segmented administrative system in government in many countries, establishing a formal network across organizations may be the first step to bring a change to the rigid system.

References

- Bloom, N., Eifert, B., Mahajan, A., McKenzie, D., & Roberts, J. (2012). Does Management Matter? Evidence from India. *The Quarterly Journal of Economics*, 128(1), 1-51.
- Bloom, N., & Van Reenen, J. (2007). Measuring and Explaining Management Practices across Firms and Countries. *The Quarterly Journal of Economics*, 122(4), 1351-1408.
- Bloom, N., & Van Reenen, J. (2010). Why Do Management Practices Differ across Firms and Countries? *Journal of Economic Perspectives*, 24(1), 203-224.
- Bruhn, M., Karlan, D., & Schoar, A. (2010). What Capital is Missing in Developing Countries? *The American Economic Review*, 100(2), 629-633.
- Bruhn, M., Karlan, D., & Schoar, A. (2013). The Impact of Consulting Services on Small and Medium Enterprises: Evidence from a Randomized Trial in Mexico. *World Bank Policy Research Working Paper*, 6508.
- Bruhn, M., & 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.
- Caleindo, M. & Kopeinig, S. (2008). Some Practical Guidance for the Implementation of Propensity Score Matching. *Journal of Economic Surveys*, 22, 31-72.
- Cameron, A.C. & Miller, D.L. (2014). A Practitioner's Guide to Cluster-Robust Inference. *Journal of Human Resources*, 50, 317-372.
- Chen, S., Mu, R., & Ravallion, M. (2009). Are there Lasting Impacts of Aid to Poor Areas? *Journal of Public Economics*, 93, 512-528.
- Cho, Y., & Honorati, M. (2014). Entrepreneurship programs in developing countries: A meta regression analysis. *Labour Economics*, 28, 110-130.
- Cravo, T. A., & Piza, C. (2016). The Impact of Business Support Services for Small and Medium Enterprises on Firm Performance in Low- and Middle-Income Countries A Meta-Analysis. *World Bank Policy Research Working Paper*, 7664.
- Crump, R. K., Hotz, V. J., Imbens, G. W., & Mitnik, O. A. (2006). Moving the Goalposts: Addressing Limited Overlap in the Estimation of Average Treatment Effects by Changing the Estimand. *NBER Technical Working Paper*, 330.
- Deininger, K., & Liu, Y. (2013). Economic and Social Impacts of an Innovative Self-Help Group Model in India. *World Development*, 43, 149-163.
- de Mel, S., McKenzie, D., & 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.

- Drexler, A., Fischer, G., & Schoar, A. (2014). Keeping It Simple: Financial Literacy and Rules of Thumb†. *American Economic Journal: Applied Economics*, 6(2), 1-31.
- Field, E., Jayachandran, S., Pande, R., & Rigol, N. (2016). Friendship at Work: Can Peer Effects Catalyze Female Entrepreneurship? *American Economic Journal: Economic Policy*, 8(2), 125-153.
- Fossen, F. M., & Büttner, T. J. M. (2013). The returns to education for opportunity entrepreneurs, necessity entrepreneurs, and paid employees. *Economics of Education Review*, 37, 66-84.
- Grimm, M., & Paffhausen, A. L. (2015). Do interventions targeted at micro-entrepreneurs and small and medium-sized firms create jobs? A systematic review of the evidence for low and middle income countries. *Labour Economics*, 32, 67-85.
- Hahn, J. (1998). On the Role of the Propensity Score in Efficient Semiparametric Estimation of Average Treatment Effects. *Econometrica*, 66, 315-331.
- Heckman, J., Ichimura, H., & Todd, P. (1998). Matching as an Econometric Evaluations Estimator. *Review of Economic Studies*, 65, 261-294.
- Hirano, K. & Imbens, G. W. (2001). Estimation of Causal Effects using Propensity Score Weighting: An Application to Data on Right Heart Catheterization. *Health Services and Outcomes Research Methodology*, 2, 259-178.
- Hirano, K., Imbens, G. W., & Ridder, G. (2003). Efficient Estimation of Average Treatment Effects Using the Estimated Propensity Score. *Econometrica*, 71, 1161-1189.
- Higuchi, Y., Vu, H. N., & Sonobe, T. (2015). Sustained impacts of Kaizen training. *Journal of Economic Behavior & Organization*, 120, 189-206.
- JICA & UNICO International, (2011). Taikoku Chushokigyo Shinko Seido no Kakuritsu Keikaku Chosa Saishuhokokusho (The Study on the Strengthening Mechanisms for the Regional SME Promotion and Consultancy Service Quality Development in the Kingdom of Thailand Final Report), Tokyo: JICA.
- JICA & UNICO International, (2016). Project for Enhancing Regional Integrated SME Promotion (RISMEP) Mechanism in the Kingdom of Thailand: Project Completion Report (Second Phase), Tokyo: JICA.
- Karlan, D., Knight, R., & Udry, C. (2015). Consulting and capital experiments with microenterprise tailors in Ghana. *Journal of Economic Behavior & Organization*, 118, 281-302.
- Karlan, D., & Valdivia, M. (2011). Teaching Entrepreneurship: Impact of Business Traing on Microfinance Clients and Institutions. *The Review of Economics and*

- Statistics*, 93(2), 510-527.
- Klinger, B., & Schündeln, M. (2011). Can Entrepreneurial Activity be Taught? Quasi-Experimental Evidence from Central America. *World Development*, 39(9), 1592-1610. doi: 10.1016/j.worlddev.2011.04.021
- Mano, Y., Iddrisu, A., Yoshino, Y., & Sonobe, T. (2012). How Can Micro and Small Enterprises in Sub-Saharan Africa Become More Productive? The Impacts of Experimental Basic Managerial Training. *World Development*, 40(3), 458-468.
- McKenzie, D., & Woodruff, C. (2012). What Are We Learning from Business Training and Entrepreneurship Evaluations around the Developing World? *World Bank Policy Research Working Paper*, 6202.
- McKernan, S.-M. (2002). The Impact of Microcredit Programs on Self-Employment Profits: Do Noncredit Program Aspects Matter. *The Review of Economics and Statistics*, 84(1), 93-115.
- National Statistical Office of Thailand. (2014). *Statistical Yearbook Thailand 2014*. Accessed July 19, 2016. http://web.nso.go.th/en/pub/e_book/esyb57/index.html
- Office of the National Economic and Social Development Board. (2015). *Gross Regional and Provincial Product*. Accessed July 19, 2016. http://www.nesdb.go.th/nesdb_en/main.php?filename=national_account
- Office of Small and Medium Enterprises Promotion. (2014). *White Paper on Small and Medium Enterprises of Thailand in 2015: Executive Summary*. Accessed July 19, 2016. <http://www.sme.go.th/eng/index.php/data-alert/alert/report-smes-year/136-cat-white-paper-old>
- Office of Small and Medium Enterprises Promotion. (2015). *White Paper on Small and Medium Enterprises of Thailand in 2015: Executive Summary*. Accessed July 19, 2016. <http://www.sme.go.th/eng/index.php/data-alert/alert/report-smes-year/report-year>
- Robins, J., & Rotnitzky, A. (1995). Semiparametric Efficiency in Multivariate Regression Models with Missing Data. *Journal of the American Statistical Association*, 90, 122-129.
- Sievers, M., & Vandenberg, P. (2007). Synergies through Linkages: Who Benefits from Linking Micro-Finance and Business Development Services? *World Development*, 35(8), 1341-1358.
- Suzuki, A., Vu, H. N., & 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.
- Valdivia, M. (2015). Business training plus for female entrepreneurship? Short and medium-term experimental evidence from Peru. *Journal of Development Economics*, 113, 33-51.

Wooldridge, J. M. (2007). Inverse Probability Weighted Estimation for General Missing Data Problems. *Journal of Econometrics*, 141, 1281-1301.

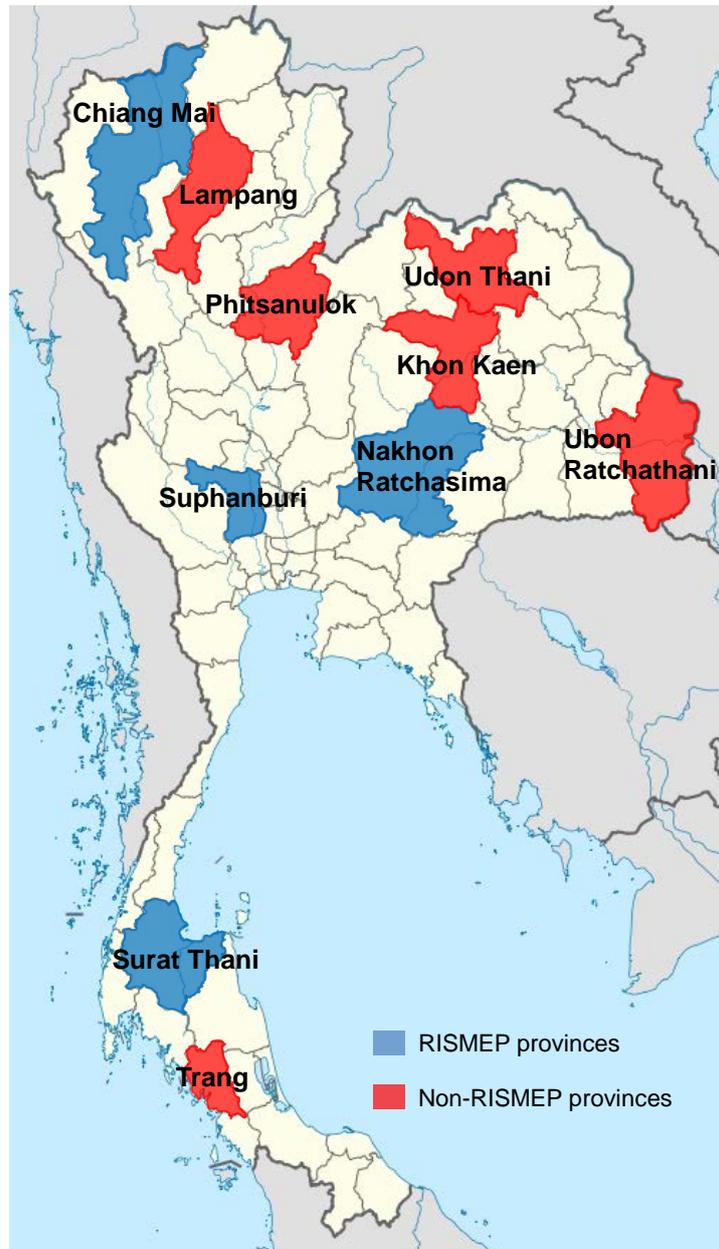


Figure 1: Location of Sample Provinces

Table 1: Characteristics of Sample Provinces

	Area size (km ²)	Population (1,000 persons)	GPP per capita (Baht)	Share of manufacturing sector of GPP	Number of SMEs	IPC
	(1)	(2)	(3)	(4)	(5)	(6)
<i>RISMEP provinces</i>						
Nakhon Ratchasima	20,494	2,508	96,690	27.1%	77,605	Yes
Suphanburi	5,358	854	94,932	14.4%	21,657	Yes
Chiang Mai	20,107	1,726	106,707	9.5%	93,785	Yes
Surat Thani	12,891	1,029	157,360	14.8%	54,567	Yes
<i>Non-RISMEP provinces</i>						
Khon Kaen	10,886	1,742	109,556	38.8%	79,293	Yes
Phitsanulok	10,816	906	102,060	6.3%	30,377	Yes
Ubon Ratchathani	15,745	1,730	65,478	11.5%	51,603	Yes
Trang	4,918	613	111,219	14.1%	27,822	No
Udon Thani	11,730	1,274	81,419	14.8%	37,822	Yes
Lampang	12,534	742	86,417	11.7%	29,017	No

Source: Column (1) from National Statistical Office of Thailand “Statistical Yearbook Thailand 2014,” Column (2) and (3) from Office of the National Economic and Social Development Board, “Gross Regional and Provincial Product,” and Column (4) and (5) from Office of Small and Medium Enterprises Promotion, “White Paper on Small and Medium Enterprises of Thailand in 2014.” Each figure in the column (2)-(5) is that as of 2013.

Table 2: Sampling

	Treatment	Control	Total
BDS user			
Actual #	134	169	303
(Targeted #)	(103)	(132)	(235)
SMEs			518
BDS non-user			
Actual #	99	116	215
(Targeted #)	(130)	(153)	(283)
BDS providers	68	69	137

Table 3: Summary Statistics of BDSPs

	Total (137) (1)	RISMEP (68) (2)	Non-RISMEP (69) (3)	diff (4)
<i>Organizational Characteristics</i>				
Years of operation	25.4 (17.96)	20.2 (12.84)	30.4 (20.64)	***
Types of organization				
Gov't	65.7 (47.65)	58.8 (49.58)	72.5 (45.00)	*
Private biz	8.0 (27.27)	10.3 (30.61)	5.8 (23.54)	
Private biz association	2.9 (16.90)	0 (0)	5.8 (23.54)	**
Univ/research institute	15.3 (36.16)	20.6 (40.74)	10.1 (30.41)	*
Private bank	1.5 (12.04)	2.9 (17.02)	0 (0)	
Public bank	2.2 (14.69)	4.4 (20.69)	0 (0)	*
Others	4.4 (20.54)	2.9 (17.02)	5.8 (23.54)	
Types of BDS provided				
Consultation startup	19.0 (39.36)	23.5 (42.73)	14.5 (35.46)	
Technical consultation/training	16.1 (36.85)	16.2 (37.10)	15.9 (36.87)	
Product quality mgt	13.9 (34.69)	19.1 (39.62)	8.7 (28.38)	*
Introduction of new prod	6.5 (24.87)	5.9 (23.70)	7.2 (26.12)	
Managerial consultation/ training	12.4 (33.09)	8.8 (28.57)	15.9 (36.87)	
Accounting consultation/ training	2.9 (16.90)	2.9 (17.02)	2.9 (16.90)	
Marketing assistance	8.0 (27.27)	5.9 (23.70)	10.1 (30.41)	
Legal info	6.6 (24.69)	4.4 (20.69)	8.7 (28.38)	
Others	14.6 (35.44)	13.2 (34.14)	15.9 (36.87)	
# permanent workers employed in 2013	10.1 (12.97)	8.9 (11.11)	11.2 (14.56)	
# workers with university + degree in 2013	9.2 (11.24)	8.2 (10.29)	10.3 (12.08)	
<i>Managing Director's Characteristics</i>				
Age of manager	48.3 (8.25)	47.6 (8.40)	48.9 (8.11)	
Gender of manager (% male)	61.3 (48.88)	60.3 (49.29)	62.3 (48.81)	
Nationality (% Thai)	100	100	100	
Ethnicity Thai	97.1 (16.90)	98.5 (12.13)	95.7 (20.54)	
Thai Chinese	2.9 (16.90)	1.5 (12.13)	4.3 (20.54)	
Years of education	17.7 (1.65)	17.6 (1.90)	17.7 (1.37)	
Years of BDS experience	16.1 (10.12)	14.0 (10.03)	18.2 (9.85)	**

Table 4: Summary Statistics of SMEs

		Total (518)			RISMEP (233)			Non-RISMEP (285)			RIS- U vs NRI S-U D
		U (308)	NU (210)	D	U (136)	NU (97)	D	U (172)	NU (113)	D	
<i>Managing Directors' Characteristics</i>											
Age		45.4 (11.25)	49.0 (11.84)	***	46.7 (10.10)	48.8 (11.65)		44.4 (12.01)	49.2 (12.05)	***	*
Male (%)		57.1 (49.57)	69.0 (46.34)	***	54.4 (49.99)	66.0 (47.62)	*	59.3 (49.27)	71.7 (45.26)	**	
Nationality: Thai (%)		98.7 (11.34)	99.0 (9.78)		97.8 (14.74)	97.9 (14.28)		99.4 (7.62)	100.0 (0.00)		
Ethnicity (%)	Thai	94.2 (23.50)	96.2 (19.19)		95.6 (20.61)	95.9 (19.99)		93.0 (25.55)	96.5 (18.56)		
	Thai Chinese	4.5 (20.86)	2.4 (15.28)		2.2 (14.74)	2.1 (14.28)		6.4 (24.54)	2.7% (16.15)		*
	Malay	0.3 (5.70)	0.0 (0.00)		0.7 (8.57)	0.0 (0.00)		0.0 (0.00)	0.0 (0.00)		
	Other	0.6 (8.05)	1.4 (11.89)		1.5 (12.08)	2.1 (14.28)		0.0 (0.00)	0.9 (9.41)		
Years of education		14.6 (3.51)	13.2 (4.11)	***	15.3 (2.93)	13.4 (3.90)	***	14.0 (3.82)	13.0 (4.29)	**	***
<i>Company's Characteristics</i>											
Domestic ownership		97.4 (15.93)	98.6 (11.89)		94.9 (22.18)	96.9 (17.40)		99.4 (7.62)	100.0 (0.00)		**
Succeeded family business		28.2 (45.09)	33.8 (47.42)		28.7 (45.39)	29.9 (46.02)		27.9 (44.99)	37.2 (48.54)		
Years of operation		19.0 (13.92)	22.8 (14.20)	***	20.1 (14.15)	22.5 (16.07)		18.1 (13.70)	23.1 (12.43)	***	
Permanent workers (2013)		31.61 (66.33)	19.99 (40.59)	**	40.0 (80.70)	18.7 (26.42)	**	25.0 (51.61)	21.1 (49.82)		*
Registration (%)		88.3 (32.18)	93.8 (24.16)	**	90.4 (29.51)	89.7 (30.57)		86.6 (34.13)	97.3 (16.15)	***	
Belonging to biz association (%)		48.1 (50.04)	20.5 (40.45)	***	52.2 (50.14)	24.7 (43.38)	***	44.8 (49.87)	16.8 (37.57)	***	

Table 5: Effects of RISMED on BDS Providers' Network among Themselves

	Total # BDSPs you know	Total # BDSPs you contacted	Total # individual providers you know	Total # individual providers you have contacted
	(1)	(2)	(3)	(4)
<i>OLS</i>				
RISMED	4.366 (0.997)	2.932 (0.674)	2.371 (0.392)	1.707 (0.449)
<i>PSM</i>				
RISMED	-0.283 (0.049)	-1.801 (0.305)	-8.626 (0.804)	-3.975 (0.704)
<i>IPSWR</i>				
RISMED	3.918 (0.750)	2.612 (0.502)	1.899 (0.384)	2.24 (0.541)

Note) Reported in parentheses are absolute values of robust t statistics. Other covariates included but not reported are: Organization's Characteristics (Years of operation, Dummies for types of organization, Dummies for types of BDS offered, Total number of permanent workers in 2013 and Numbers of workers with university or above degrees) and Managing Director's Characteristics (Age, Gender, Ethnicity, Years of education, Years of BDS experience). PSM relies on Kernel matching with bootstrapping standard errors. Inverse propensity score weighting regression models (IPSWR) use trimmed samples with trimming thresholds calculated by the optimal trimming method by Crump et al. (2006).

Table 6: Effects of RISMED on Changes in BDS Providers' SME Support Activities

	In(Change in budget used for BDS)	Change #SMEs contacted by	Change in #SMEs supported without fees	Change in #SMEs supported with fees	Change in #SMEs you introduce to other BDSP	Change in #SMEs introduced by other BDSP
	(1)	(2)	(3)	(4)	(5)	(6)
<i>OLS</i>						
RISMED	1.343 (1.015)	88.018 (0.957)	-54.682 (1.277)	59.732** (2.381)	176.556* (1.781)	16.907** (2.175)
<i>PSM</i>						
RISMED	2.103 (1.53)	72.984 (0.934)	-18.164 (0.503)	40.366 (1.593)	116.569 (1.468)	10.527* (1.683)
<i>IPSWR</i>						
RISMED	1.455 (1.028)	62.039 (0.587)	-67.091 (1.130)	49.715* (1.889)	163.094 (1.512)	11.098 (1.471)

Note) Reported in parentheses are absolute values of robust t statistics. Other covariates included but not reported are: Organization's Characteristics (Years of operation, Dummies for types of organization, Dummies for types of BDS offered, Total number of permanent workers in 2013 and Numbers of workers with university or above degrees) and Managing Director's Characteristics (Age, Gender, Ethnicity, Years of education, Years of BDS experience). PSM relies on Kernel matching with bootstrapping standard errors. Inverse propensity score weighting regression models (IPSWR) use trimmed samples with trimming thresholds calculated by the optimal trimming method by Crump et al. (2006). *: significant at 10% level, **: significant at 5% level, and ***: significant at 1% level.

Table 7: Effects of RISMEP on BDS Providers' Practices in Supporting SMEs

	Internal Capacity Score (6 max) (1)	External Outreach Score (6 max) (2)	Total Score (12 max) (3)
<i>OLS</i>			
RISMEP	0.434 (1.203)	0.626* (1.847)	1.06 (1.699)
<i>PSM</i>			
RISMEP	0.212 (0.506)	0.433 (1.241)	0.645 (0.931)
<i>IPSWR</i>			
RISMEP	0.266 (0.633)	0.581* (1.779)	0.847 (1.27)

Note) Reported in parentheses are absolute values of robust t statistics. Other covariates included but not reported are: Organization's Characteristics (Years of operation, Dummies for types of organization, Dummies for types of BDS offered, Total number of permanent workers in 2013 and Numbers of workers with university or above degrees) and Managing Director's Characteristics (Age, Gender, Ethnicity, Years of education, Years of BDS experience). PSM relies on Kernel matching with bootstrapping standard errors. Inverse propensity score weighting regression models (IPSWR) use trimmed samples with trimming thresholds calculated by the optimal trimming method by Crump et al. (2006). *: significant at 10% level, **: significant at 5% level, and ***: significant at 1% level.

Table 8: Effects of RISMED on SMEs' Network with BDS Providers

	# any BDSPs you know							
		<i>OLS</i>		<i>PSM</i>		<i>IPSWR</i>		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A: ALL SAMPLE								
RISMED	-0.363 (0.611)	-0.154 (0.152)	-0.138 (0.137)	-0.186 (0.415)		-0.407 (0.694)	-0.082 (0.085)	-0.092 (0.095)
User		2.062 ^{***} (2.893)	2.024 ^{***} (2.873)		1.943 ^{***} (2.768)		2.264 ^{***} (3.026)	2.234 ^{***} (3.013)
RISMED x User		-0.13 (0.132)	-1.562 (1.476)				-0.181 (0.180)	-1.574 (1.475)
RISMED x User x ST			3.080 ^{***} (5.169)					2.648 ^{***} (3.745)
RISMED x User x NR			1.918 ^{***} (3.16)					2.063 ^{***} (3.405)
RISMED x User x SB			2.205 ^{***} (2.679)					2.374 ^{***} (2.94)
B: USER SAMPLE ONLY								
RISMED	-0.311 (0.549)		-1.785 ^{***} (3.036)	-0.262 (0.465)		-0.213 (0.337)		-1.631 ^{**} (2.539)
RISMED x ST			2.823 ^{***} (3.072)					2.993 ^{**} (2.151)
RISMED x NR			2.374 ^{***} (3.524)					2.250 ^{***} (2.883)
RISMED x SB			1.860 ^{**} (2.381)					1.357 (1.567)

Note) Reported in parentheses for OLS and IPSWR are absolute values of cluster-robust t statistics at district (Amphoe) level. Other covariates included but not reported in OLS and IPSWR are: Age, Gender, Ethnicity, Years of education, Whether domestic ownership, Whether succeeded family business, Years of operation, Whether registered, Whether belong to any business associations, Total permanent workers in 2013, Urban dummy, and ISIC codes. Bootstrapped standard errors are reported for PSM models. PSM in Panel A relies on Caliper matching while that in Panel B relies on Kernel matching based on the balancing tests. IPSWR models use trimmed samples with trimming thresholds calculated by the optimal trimming method by Crump et al. (2006). Weights used in IPSWR of Panel A are based on the propensity to use BDS while those of Panel B are based on the propensity to be under RISMED project. *: significant at 10% level, **: significant at 5% level, and ***: significant at 1% level.

Table 9: Effects of RISMEP on SMEs' Demand for BDS Providers in Problem-Solving

	Consult BDSPs first for:											
	Start-ups		Credit		Legal issues		Technology		Marketing		HR	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
A: ALL SAMPLE												
RISMEP	-0.022	-0.021	0.035	0.035	-0.01	-0.01	-0.032	-0.032	-0.003	-0.001	0.006	0.006
	(0.559)	(0.542)	(1.216)	(1.214)	(0.337)	(0.323)	(1.423)	(1.414)	(0.110)	(0.057)	(0.245)	(0.268)
User	0.009	0.009	0.058***	0.058***	0.003	0.002	0.098***	0.099***	0.042	0.044	0.111***	0.110**
	(0.315)	(0.338)	(3.096)	(3.099)	(0.129)	(0.099)	(3.572)	(3.575)	(1.464)	(1.505)	(2.635)	(2.611)
RISMEP x User	0.003	0.03	-0.063	-0.046	-0.026	-0.049	0.057	0.091	0.064	0.139**	-0.08	-0.101
	(0.067)	(0.517)	(1.498)	(0.818)	(0.712)	(1.230)	(1.169)	(1.376)	(1.419)	(2.112)	(1.499)	(1.614)
RISMEP x User x ST		-0.041		-0.032		0.077		-0.105		-0.227***		0.058
		(0.438)		(0.870)		(1.38)		(1.178)		(3.888)		(0.991)
RISMEP x User x NR		-0.058		-0.013		0.009		-0.04		-0.136*		0.001
		(1.343)		(0.284)		(0.224)		(0.576)		(1.950)		(0.033)
RISMEP x User x SB		-0.011		-0.057*		0.057		-0.031		0.048		0.092
		(0.127)		(1.846)		(0.506)		(0.274)		(0.393)		(0.84)
B: USER SAMPLE ONLY												
RISMEP	-0.023	-0.02	-0.004	0.026	-0.025	-0.04	0.036	0.078	0.071*	0.129*	-0.048	-0.047
	(0.642)	(0.361)	(0.225)	(0.904)	(0.834)	(0.974)	(0.751)	(1.083)	(1.861)	(1.894)	(1.081)	(0.771)
RISMEP x ST		0.037		-0.045*		0.039		-0.144		-0.196**		0.012
		(0.468)		(1.703)		(0.577)		(1.565)		(2.382)		(0.16)
RISMEP x NR		-0.017		-0.044		-0.003		-0.04		-0.092		-0.027
		(0.310)		(1.093)		(0.055)		(0.527)		(1.129)		(0.561)
RISMEP x SB		-0.039		-0.067*		0.082		-0.028		0.064		0.046
		(0.375)		(1.924)		(0.783)		(0.200)		(0.429)		(0.375)

Note) IPSWR are used in estimation. Reported in parentheses are absolute values of cluster-robust t statistics at district (Amphoe) level. Other covariates included but not reported are: Age, Gender, Ethnicity, Years of education, Whether domestic ownership, Whether succeeded family business, Years of operation, Whether registered, Whether belong to any business associations, Total permanent workers in 2013, Urban dummy, and ISIC codes. Bootstrapped standard errors are reported for PSM models. PSM in Panel A relies on Caliper matching while that in Panel B relies on Kernel matching based on the balancing tests. IPSWR models use trimmed samples with trimming thresholds calculated by the optimal trimming method by Crump et al. (2006). Weights used in IPSWR of Panel A are based on the propensity to use BDS while those of Panel B are based on the propensity to be under RISMEP project. *: significant at 10% level, **: significant at 5% level, and ***: significant at 1% level.

Table 10: Effects of RISMED on SMEs' Interaction with BDS Providers

	Change in number of times in:											
	Contacting BDSP				Receiving BDSP's services				Participating BDSPs' training			
	OLS		IPSWR		OLS		IPSWR		OLS		IPSWR	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
A: ALL SAMPLE												
RISMED	0.456	0.491	-0.105	-0.083	-0.105	-0.094	-0.085	-0.08	-0.014	0.01	-0.061	-0.044
	(0.702)	(0.749)	(1.268)	(1.342)	(1.291)	(1.145)	(1.206)	(1.105)	(0.062)	(0.045)	(0.492)	(0.363)
User	0.942	0.951	0.336**	0.297**	0.361**	0.361**	0.469***	0.459***	0.754**	0.750**	0.728***	0.701**
	(1.393)	(1.344)	(2.462)	(2.254)	(2.476)	(2.442)	(4.022)	(4.004)	(2.045)	(2.027)	(2.714)	(2.62)
RISMED x User	-0.74	0.037	0.609	0.229	0.311	0.239	0.298	0.048	-0.132	-0.086	0.055	-0.366
	(0.484)	(0.051)	(1.534)	(0.589)	(0.897)	(1.262)	(0.872)	(0.21)	(0.210)	(0.180)	(0.117)	(0.877)
RISMED x User x ST		2.427*		3.572***		0.832***		0.922**		1.915***		2.411***
		(1.811)		(3.128)		(2.738)		(2.503)		(3.229)		(5.622)
RISMED x User x NR		-3.569		-0.336		-0.38		0.081		-1.382		-0.138
		(1.154)		(0.827)		(0.461)		(0.098)		(1.137)		(0.192)
RISMED x User x SB		-0.039		-0.354		0.518		0.716		0.735		0.841
		(0.040)		(0.904)		(0.92)		(1.205)		(1.033)		(1.315)
B: USER SAMPLE ONLY												
RISMED	-0.096	0.593	-0.418	-0.076	0.22	0.174	0.27	0.062	-0.146	-0.149	-0.228	-0.297
	(0.138)	(1.13)	(0.364)	(0.114)	(0.707)	(0.758)	(0.834)	(0.25)	(0.290)	(0.313)	(0.374)	(0.487)
RISMED x ST		2.081		2.799*		0.824**		1.200***		1.872**		2.047**
		(1.616)		(1.901)		(2.33)		(3.24)		(2.447)		(2.438)
RISMED x NR		-3.08		-2.872		-0.373		-0.113		-1.078		-1.196
		(1.207)		(1.070)		(0.412)		(0.122)		(0.877)		(0.884)
RISMED x SB		0.246		1.36		0.408		0.542		0.655		1.156
		(0.173)		(0.554)		(0.656)		(0.739)		(0.761)		(0.937)

Note) Reported in parentheses for OLS and IPSWR are absolute values of cluster-robust t statistics at district (Amphoe) level. Other covariates included but not reported in OLS and IPSWR are: Age, Gender, Ethnicity, Years of education, Whether domestic ownership, Whether succeeded family business, Years of operation, Whether registered, Whether belong to any business associations, Total permanent workers in 2013, Urban dummy, and ISIC codes. IPSWR models use trimmed samples with trimming thresholds calculated by the optimal trimming method by Crump et al. (2006). Weights used in IPSWR of Panel A are based on the propensity to use BDS while those of Panel B are based on the propensity to be under RISMED project. *: significant at 10% level, **: significant at 5% level, and ***: significant at 1% level.

Table 11: Effects of RISMEP on SMEs' Performances

	Management Practice Score (9 max)		Have certified products		Receive production contracts		ln(change in sales)		ln(change in profit)		Export directly		Ratio of export via agents		Ratio of domestic sales	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
A: ALL SAMPLE																
RISMEP	1.250*** (3.311)	1.249*** (3.293)	-0.197** (2.576)	-0.195** (-2.558)	-0.076 (1.130)	-0.077 (1.149)	2.135 (0.991)	2.092 (0.973)	1.785 (1.491)	1.818 (1.518)	0.191*** (3.381)	0.192*** (3.434)	-2.368 (0.629)	-2.324 (0.611)	-4.893 (1.123)	-5.028 (1.139)
User	0.458 (1.266)	0.457 (1.262)	0.043 (0.66)	0.043 (0.667)	-0.018 (0.420)	-0.017 (0.410)	2.227 (1.352)	2.312 (1.379)	1.03 (1.015)	1.149 (1.102)	0.137*** (3.932)	0.138*** (4.017)	1.75 (0.556)	1.662 (0.521)	-8.493* (1.966)	-8.401* (1.918)
RISMEP x User	-0.237 (0.573)	-0.149 (0.343)	0.260*** (2.824)	0.284*** (2.7)	0.181** (2.567)	0.190** (2.087)	-1.255 (0.573)	-2.035 (0.903)	-1.302 (0.870)	-2.959** (2.085)	-0.142** (2.180)	-0.046 (0.591)	-0.589 (0.128)	-1.601 (0.331)	5.351 (0.866)	2.835 (0.418)
RISMEP x User x ST		0.14 (0.268)		-0.07 (0.495)		-0.078 (0.739)		1.536 (0.611)		3.422*** (3.206)		-0.037 (0.363)		12.507** (2.025)		-18.708** (2.190)
RISMEP x User x NR		-0.089 (0.314)		-0.104 (1.187)		0.041 (0.479)		2.536** (2.06)		3.226** (2.618)		-0.174** (2.543)		-2.088 (1.040)		11.895** (2.39)
RISMEP x User x SB		-0.668** (2.111)		0.175 (1.23)		-0.079 (0.828)		-3.804 (1.156)		-3.061 (1.180)		-0.269** (2.480)		-2.714 (0.868)		13.566** (2.072)
B: USER SAMPLE ONLY																
RISMEP	1.168*** (4.778)	1.234*** (3.943)	0.066 (1.115)	0.074 (0.966)	0.05 (1.145)	0.068 (1.083)	-0.559 (0.487)	-1.785* (1.863)	0.243 (0.253)	-1.561 (1.481)	0.044 (1.076)	0.178*** (3.149)	-2.048 (0.862)	-2.451 (1.017)	-0.556 (0.169)	-4.853 (1.205)
RISMEP x ST		0.126 (0.247)		0.002 (0.014)		-0.153 (1.549)		-3.42 (1.188)		3.165** (2.11)		-0.248** (2.496)		9.456* (1.678)		-5.985 (0.664)
RISMEP x NR		0.003 (0.011)		-0.106 (1.122)		0.033 (0.432)		4.666*** (4.253)		3.627*** (2.895)		-0.197*** (2.912)		-3.52 (1.560)		12.473*** (2.822)
RISMEP x SB		-0.843** (2.072)		0.248 (1.577)		-0.011 (0.097)		-2.104 (0.778)		-2.957 (1.240)		-0.239* (1.897)		-1.319 (0.478)		12.094* (1.704)

Note) IPSWR are used in estimatoin. Reported in parentheses are absolute values of cluster-robust t statistics at district (Amphoe) level. Other covariates included but not reported are: Age, Gender, Ethnicity, Years of education, Whether domestic ownership, Whether succeeded family business, Years of operation, Whether registered, Whether belong to any business associations, Total permanent workers in 2013, Urban dummy, and ISIC codes. IPSWR models use trimmed samples with trimming thresholds calculated by the optimal trimming method by Crump et al. (2006). Weights used in IPSWR of Panel A are based on the propensity to use BDS while those of Panel B are based on the propensity to be under RISMEP project. *: significant at 10% level, **: significant at 5% level, and ***: significant at 1% level.

Appendix 1: Balancing Test Results

		# sig. variables	Pseudo R2	P-value LR test	Mean Bias
<i>BDSP</i>					
RISMEP	Before matching	2	0.092	0.007	30.9
	Caliper	0	0.029	0.504	11.1
	Kernel	0	0.005	0.944	5.6
	Nearest Neighbor	0	0.016	0.674	9.7
<i>SME: ALL SAMPLE</i>					
RISMEP	Before matching	3	0.047	0.001	12
	Caliper	0	0.002	1	2.4
	Kernel	0	0.003	1	2.7
	Nearest Neighbor	0	0.015	0.738	7.3
USER	Before matching	7	0.133	0	20.8
	Caliper	0	0.004	0.997	3.8
	Kernel	0	0.006	0.969	4.4
	Nearest Neighbor	0	0.015	0.506	7.7
<i>SME: USER SAMPLE ONLY</i>					
RISMEP	Before matching	6	0.108	0.01	12.5
	Caliper	0	0.019	1	5.7
	Kernel	0	0.005	1	2.8
	Nearest Neighbor	2	0.049	0.807	8.3

Appendix 2: Effects of RISMED on BDS Providers' Practices in Supporting SMEs

	Internal Capacity Score (6)						External Outreach Score (6)						Total Score (12 max)
	Have systematic tools to analyze problems	File records of consultations	Keep customers' evaluation	Have a training program for workers	Have a mechanism to share customers' voices among workers	Have specific plans in the next five years	Follow up on the SMEs after consultations	Accept consultations via email	Maintain a list of external individual consultants	Keep lists of SMEs which contacted	Have a website	Have advertised services to SMEs	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
OLS													
RISMED	0.11	0.168**	0.108	-0.009	-0.085	0.142	0.111	0.184	0.082	0.005	0.140*	0.103	1.06
	(0.964)	(2.75)	(0.91)	(0.086)	(0.998)	(1.149)	(1.24)	(1.485)	(1.587)	(0.065)	(1.742)	(1.195)	(1.699)
PSM													
RISMED	0.159**	0.134	0.006	-0.011	-0.144*	0.068	0.08	0.123	0.079	-0.023	0.146*	0.027	0.645
	(2.051)	(1.261)	(0.054)	(0.115)	(1.824)	(0.554)	(1.1)	(1.248)	(0.633)	(0.310)	(1.792)	(0.316)	(0.931)
IPSWR													
RISMED	0.107	0.149	0.066	-0.049	-0.096	0.09	0.088	0.206**	0.08	0.006	0.111	0.09	0.847
	(1.00)	(1.346)	(0.635)	(0.470)	(1.209)	(0.776)	(1.08)	(2.129)	(0.841)	(0.073)	(1.461)	(0.934)	(1.27)

Note) IPSWR are used in estimatoin. Reported in parentheses are absolute values of cluster-robust t statistics at district (Amphoe) level. Other covariates included but not reported are: Age, Gender, Ethnicity, Years of education, Whether domestic ownership, Whether succeeded family business, Years of operation, Whether registered, Whether belong to any business associations, Total permanent workers in 2013, Urban dummy, and ISIC codes. IPSWR models use trimmed samples with trimming thresholds calculated by the optimal trimming method by Crump et al. (2006). Weights used in IPSWR of Panel A are based on the propensity to use BDS while those of Panel B are based on the propensity to be under RISMED project. *: significant at 10% level, **: significant at 5% level, and ***: significant at 1% level.

Appendix 3: Effects of RISMED on SMEs' Management Practices

	Separate biz and household expenses	Keep business records	Summarize biz perform once per month+	Have mechanism to monitor product quality	Have mechanism to hear customers' voices	Share customers' voices among workers	Have sales or profit target for the year	Have plans for growth for next 5 years	Share the goal with all workers	TOTAL SCORE (max 9)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
A: ALL SAMPLE										
RISMED	0.240*** (3.538)	0.172*** (2.786)	-0.01 (0.099)	0.073 (0.815)	0.079 (0.856)	0.072 (0.791)	0.289*** (3.639)	0.158* (1.687)	0.171* (1.69)	1.249*** (3.293)
User	0.083 (1.184)	0.029 (0.567)	-0.121* (1.757)	-0.056 (0.590)	-0.022 (0.263)	0.063 (0.759)	0.089 (1.164)	0.225** (2.618)	0.161** (2.404)	0.457 (1.262)
RISMED x User	-0.265*** (2.673)	-0.128* (1.912)	0.155 (1.22)	0.07 (0.64)	0.142 (1.378)	0.004 (0.039)	-0.144 (1.277)	-0.072 (0.675)	0.099 (0.942)	-0.149 (0.343)
RISMED x User x ST	0.1 (1.22)	0.171*** (2.964)	0.141 (1.272)	-0.011 (0.097)	-0.062 (0.645)	-0.078 (0.684)	-0.017 (0.131)	-0.055 (0.505)	-0.05 (0.532)	0.14 (0.268)
RISMED x User x NR	0.1 (1.4)	0.041 (0.653)	0.1 (1.375)	-0.130* (1.747)	-0.274*** (3.227)	-0.01 (0.157)	0.118* (1.717)	0.072 (0.887)	-0.109* (1.680)	-0.089 (0.314)
RISMED x User x SB	0.163** (2.162)	0.102 (0.932)	-0.128 (1.001)	0.045 (0.576)	-0.045 (0.442)	0.052 (0.524)	-0.250** (2.402)	-0.356*** (2.693)	-0.259*** (2.775)	-0.668** (2.111)
B: USER SAMPLE ONLY										
RISMED	-0.033 (0.478)	0.011 (0.185)	0.106 (1.558)	0.146** (2.048)	0.296*** (3.269)	0.154** (2.218)	0.124** (2.065)	0.109 (1.381)	0.322*** (5.23)	1.234*** (3.943)
RISMED x User x ST	0.011 (0.123)	0.190*** (3.08)	0.187 (1.431)	0.002 (0.02)	-0.07 (0.639)	-0.11 (0.868)	0.03 (0.256)	0.016 (0.142)	-0.131 (1.158)	0.126 (0.247)
RISMED x User x NR	0.166** (2.113)	0.120* (1.739)	0.103 (1.486)	-0.109 (1.431)	-0.330*** (3.549)	-0.017 (0.235)	0.184*** (2.759)	-0.001 (0.016)	-0.112 (1.593)	0.003 (0.011)
RISMED x User x SB	0.169** (2.086)	0.155 (1.337)	-0.085 (0.653)	0 (0.004)	-0.122 (1.036)	-0.081 (0.701)	-0.229* (1.927)	-0.347** (2.280)	-0.303*** (2.896)	-0.843** (2.072)

Note) IPSWR are used in estimation. Reported in parentheses are absolute values of cluster-robust t statistics at district (Amphoe) level. Other covariates included but not reported are: Age, Gender, Ethnicity, Years of education, Whether domestic ownership, Whether succeeded family business, Years of operation, Whether registered, Whether belong to any business associations, Total permanent workers in 2013, Urban dummy, and ISIC codes. IPSWR models use trimmed samples with trimming thresholds calculated by the optimal trimming method by Crump et al. (2006). Weights used in IPSWR of Panel A are based on the propensity to use BDS while those of Panel B are based on the propensity to be under RISMED project. *: significant at 10% level, **: significant at 5% level, and ***: significant at 1% level.