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Policy Study No. 25

IMPACT EVALUATION OF THE PROGRAM FOR TRAINING AND MENTORING OF DOMESTIC SMALL AND MEDIUM-SIZED ENTERPRISES TO INCLUDE IN THE VALUE CHAINS OF MULTINATIONAL COMPANIES OPERATING IN NORTH MACEDONIA

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1. INTRODUCTION

The objective of this analysis is to evaluate – in a rigorous quantitative manner – the program for training and mentoring of domestic small and medium-sized enterprises who intend to include into the value chain of the multinational companies operating in North Macedonia. The project is conducted by Finance Think – Economic Research and Policy Institute – Skopje, within the grant scheme for implementation of projects for increasing the competitiveness of the beneficiary country - National Programme for Transition Assistance and Institutional Building 2013, Instrument for Pre-Accession Assistance (IPA), Lot 1: Supporting networking and value chain supply among domestic SMEs and multinational companies matching in line with the key competitiveness reforms in the country.

For so doing, 83 companies applied on an open call. Then, all of them were supposed to obtain trainings on soft skills and technological readiness, while some of them (ideally chosen randomly by the conductor of the training) continued with mentorship support, which came in two forms: twinning with a MNC in North Macedonia and consultancy support for elevating the technological standardization. Companies' drop-outs from the training programs (largely driven by individual circumstances like prevention to participate in the training on the particular days of occurrence) and self-selection in the mentorship program (again, prevalently driven by individual decisions and reluctance to spare time for such activity), prevented full randomization of the experiment, but provided grounds for forming a suitable control group with apparently similar unobservables (like the motivation to engage with the MNCs). However, we were still able to compare the differences in outcomes between the treated and the control group assuming reasonable randomness and testing for the similarity of the samples on observables. Moreover, since we are relying on the difference-in-difference technique, strict randomization is even not necessary.

This report is structured as follows. Section 2 reviews some relevant literature on the topic of inclusion of dSMEs into the value chains of MNCs. Section 3 presents the characteristics of the treated group with training and mentoring, as well highlights the comparability of the treated groups with the control group. Section 4 describes the methodology used. Section 5 presents the results of the impact evaluation. Section 6 concludes and provides a policy recommendation.

2. OVERVIEW OF THE LITERATURE ON INCLUSION OF DOMESTIC ENTERPRISES IN THE VALUE CHAINS OF MNCS

Foreign Direct Investments is one of the most followed economic indicators, leading some governments to go above and beyond to attract such investments. Considering that FDI implies investing money and conducting operations in said country, it is the ultimate vote of confidence in the host country by the investor. While attracting FDI has usually positive political impact, in economic terms, the views on FDI's impact are not as uniform. There are three prevailing worldviews: The Enthusiastic View (also known as "The Washington Consensus"), Academic Skepticism and Dirigisme (Moran et al. 2005).

The enthusiastic view holds that FDI can lead to host country development and to that avail a country should try and attract FDI. On the other hand, academic skeptics claim that a foreign investment is not much different from other kind of investments, therefore it is unnecessary to devote scarce resources to attract FDI. The third view is a combination of the two. Dirigisme claims that FDI can be successful, only in so far as the state intervenes and imposes performance requirements - such as setting a certain percentage of input to be sourced from domestic suppliers (Moran et al. 2005).

The view that holds FDI to be beneficial for the economy believes that firms who invest in the host country have higher level of capabilities, and through their contact with domestic firms, the latter would learn, leading to transfer of knowledge. This phenomenon manifests itself in two ways: through vertical and horizontal spillovers. Vertical spillovers occur when knowledge is transferred to the domestic small and medium-sized enterprises (dSMEs), either through supplying the foreign multi-national companies (MNCs) or, alternatively, through sourcing components from the MNC. Horizontal spillover on the other hand, occurs when sSMEs in the same industry benefit from the MNCs.

It has been previously suggested that emerging market SMEs lack the necessary capabilities to absorb knowledge to benefit from horizontal spillages (Aitken et al. 1997; Blalock and Gertler, 2008; Javorcik, 2004). For example, domestic SMEs do not have financial prowess to compete for MNC's trained labor, nor do they have the scale and technology level to cater to the same clientele. Vertical spillovers, on the other hand, are more likely to occur. As MNCs would strive to decrease costs and gain leverage by increasing the number of suppliers, it is in their interest too, to provide knowledge to dSMEs. This happens solely with the dSMEs that are integrated in their supply chains. To that avail, governments have sought to integrate dSMEs into the Global Value Chains (GVCs) of MNCs.

2.1. Global Value Chains integration and linkages

The concept of a value chain was first introduced and described by Porter (1985), who provided a seminal input in examining the competitive advantages of firms through their role in value chains. He describes that examining the activities that a firm performs and the interactions of said activities, can help a firm achieve better performance, through offering a more effective or cheaper way to perform these activities in a value chain than its competitors, or by significantly differentiating their actions from the ones of their competitors. The value chain also shows how activities in a firm's chain are linked to each other and to the activities of its suppliers, channels and buyers, differentiating between the scope of a value chain and an overall value system in an economy.

Making a distinction between supply chains versus value chain, Feller et al. (2006) highlight the need for synchronizing the flows of supply and value as a way to optimize the performance of small and medium-sized enterprises. In those terms, supply chains represent the flow of goods chain from the source to the customer, while value chains show the process of satisfying the need for value by consumers and include an exchange of product / service for some form of payment. Among many aspects for the growing interest in value chains (such as increasing competition, evolving governance models and extended enterprises), Feller et al. (2006) explain that the globalization of supply and production has had a crucial role, a role which has led to a need to model global value chains as the predominant mode of business in many industries.

Sturgeon (2001) defines global value chains, as the entire range of activities required to bring a particular set of products or service to the market and to the final customers. He explains that studying GVCs has a significant impact in revealing the concrete actors in the global economy, as well as identifying the connections between firms and subsidiaries operating in different locations. In that way, GVCs can help determine the impact that local and national companies have on a country's economic development and understand how and why the cross-border organizational patterns in different industries may vary. Furthermore, Sturgeon highlights the importance of the spatial scale in GVCs and its production networks, and identifies the network of value chains actors as a hierarchy of firms, beginning with component suppliers at the bottom, followed by turn-key suppliers, a lead firm, and ending with retailers and integrated firms at the top of the chain.

Lim and Kimura (2010) analyze the internationalization of dSMEs through their integration in GVC. They explain GVCs as evolving tiered structures where the main role is played by a lead firm - the manufacturer of the final product - who is further supported by a first tier of suppliers, who are supported by smaller suppliers and so on. Such a tiered network is easier to enter as a lower-tier supplier, however, a low-supplier position can also be easily replaced by the competition, making it unstable. In that view, the challenge of achieving progression within a GVC is equally important as entering the chain on its own, due to the fact that moving up among the chain tiers can bring added value to the company's activities and specialization.

In terms of integrating SMEs in GVCs, globalization and regional integration demand stable and sustainable SMEs that have space for development in the region. An important support to these SMEs can be given by governments and relevant institutions, through governance improvement, ensuring enforcement of contracts and intellectual property rights, as well as, standards certification (World Development Report, 2020).

Value chains can be referred to as 'global' in the case when their constructing activities are physically dispersed across borders to locations of multiple countries. The importance of integrating dSMEs into global and regional value chains is analyzed by Abonyi (2005), who explains that GVCs are a product of two interrelated processes that have transformed the international economy: the process of 'production internationalization' and the process of 'activities reorganization'. The author further summarizes the key characteristics in GVCs literature that firms wishing to access these chains should consider: governance or the strategies of lead firms, upgrading and innovation as a way to strengthen competitive performance, standards that should be complied with by the companies, and the emerging key global suppliers in the market.

In an UNIDO working paper, Kaplinsky and Readman (2001) focus on the challenges that SMEs in developing countries face towards their upgrading and integration in GVCs, and provide a framework for actions that policymakers and relevant institutional actions should take to enable sustainable income growth in these countries. As most developing countries are on a path of liberalizing their trade policies, the issues they face are not seen in whether to participate in the global economy, but how to achieve this participation. The authors explain that

lessons from global value chains show that firms need to enhance their capacity to upgrade and to meet changing process and product standards in the global business environment. As producers have to be linked to appropriate final markets, they outline four major channels to achieve this linkage - by "selling into final markets on an arms-length basis; as clusters of producers with similar levels of power; by feeding into value chains where an unrelated party coordinates global production networks; and as part of a transnational corporation-family". However, they explain that as MNCs have become more buyer rather than production focused they have, like governments and relevant agencies, taken a role in improving the capabilities of their SME suppliers. The upgrading of SMEs should be initiated and should include two basic sets of policies, where the first are specifically targeted at SMEs, while the second are aimed at large firms such as MNCs. Finally, they explain that specialized agencies and multinational organizations, such as UNIDO, can have an important role in creating targeted efforts as an answer to the signals and incentives for SMEs development received by the markets, which can design and implement industry-specific development programs.

Apart from capital flows, FDI involves transfer of other important assets of MNC, such as organizational expertise, production processes and management techniques, which are commonly close to the best practices in individual industries, but also demonstrate the gaps that SMEs have to overcome in their linkage with MNCs. Altenburg (2000) discusses the development potential of various types of linkages and spillovers between MNCs and SMEs, while also presenting case studies of successful linkages in developing countries. Five types of linkages are analyzed, starting from backward linkages with suppliers, meaning that MNCs connect with and open new markets for SMEs, followed by forward linkages with customers, especially demonstrated through marketing outlets and common industrial buyers, then linkages with competitors as a driver for accelerated improvement in SMEs, linkages with technology partners initiated by MNCs for joint projects with SME partners, and other spillover effects such as shared know-how and human capital spillovers. As successful policies to enhance linkages between MNCs and local SMEs three groups are determined – the first aiming to improve the general performance of SMEs, the second to attract FDI and third to upgrade local SMEs already linked to MNCs. Developing countries should also focus on three crucial elements to generate domestic linkage effects. Firstly, they should formulate a vision of technological upgrading and target FDI to this aim, secondly create and promote a positive image of the location / country and, finally, improve advanced specialized factors in accordance with the country's technological goals.

Hansen et al. (2009) introduce a range of MNCs attraction strategies used to develop relevant policy recommendations. They discuss the development effects of FDI, stating that "FDI without linkages produces fewer direct and indirect effects on host countries, which are less sustainable", while also hypothesizing that the creation of jobs among local linkage partners can fall as MNCs pursue more global integration strategies. Their findings suggest that FDI promotion policies should be differentiated in attracting locally or globally oriented MNCs, basing on the principle that different policies can influence different types of strategies.

2.2. Gaps hindering cooperation, with reference to North Macedonia

MNCs and dSMEs operate in different markets or they cater to different clients - MNCs largely in advanced countries and dSMEs in emerging markets. Catering to different clientele means that their capabilities differ too. In development economics, in addition to object gaps, there is a growing body of research dealing with the idea gaps that prevail between firms in advanced and emerging markets (Romer, 1993). The object gaps are thought to be mainly tangible matters such as infrastructure, facilities, raw materials etc. Romer (1993) defines ideas as *"the innumerable insights about packaging, marketing, distribution, inventory control, payments systems, information systems, transactions processing, quality control, and worker motivation".*

For there to be a convergence in the gap between MNCs and dSMEs, the latter should pose the capabilities to learn from the former. As the firm operates in the marketplace and not in a vacuum, it needs to learn and adapt to fit ever changing environment.

Before dSMEs learn from MNCs, however, there should be a contact between the two. There is an ambiguity between the causality, whether MNCs work with capable dSMEs (i.e. cooperating only with dSMEs that are already capable) or if dSMEs learn from MNCs after cooperating.

Following a study conducted by FinanceThink (Trajkovska & Petreski, 2018) on the cooperation between dSMEs and MNCs in North Macedonia, only 37% of dSMEs had cooperated with MNCs, with 19% more being in negotiation phase. Further 27% had never tried to cooperate with MNCs and 16% had failed upon trying. The cooperation was mostly done through dSMEs' provision of services to the MNCs. The second most significant level of cooperation was when dSMEs acted as raw material supplier. The least co-operation was in machinery and equipment supply.

Perhaps higher percentage in using services from dSMEs is that most services require physical presence to be delivered. MNCs stated that only 9% of services needed cannot be found in North Macedonia, however, 30% of them stated that the services were not up to a required standard. Furthermore, only 35% of MNCs stated that the services can be found easily. Only 30% of MNCs stated that they can source raw materials from Macedonian firms. 18% of MNCs felt that the quality or quantity of the raw materials is not satisfactory, with a further 13% stating that the domestic raw materials are more expensive than importing. Moreover, only 17% of MNCs stated that raw materials can be sourced easily in North Macedonia. More than 50% stated that sourcing raw materials from dSMEs is difficult.

The lowest cooperation occurs with machinery and equipment. Majority of MNCs (61%) stated that the equipment and machinery is not available for purchase in North Macedonia. A further 18% feel that these are not satisfied with their quality or their quantity, leaving a mere 22% that are of satisfactory quality or quantity. Only 9% of MNCs stated they can easily find machinery and equipment in North Macedonia. Bearing in mind that major part of MNCs require sophisticated cutting-edge technology, this number is not surprising.

The most important weakness as perceived by the MNCs that impeded cooperation was the insufficient technological development and readiness, closely followed by lack of standard and certificates and limited production capacity. Indicators imply that the most important gap between what is demanded by MNCs and what is supplied by dSME's is of technological nature. Poor structural organization, unqualified human capital and soft skills of dSMEs followed in importance for doing business with MNCs.

The perceived gaps in capabilities between dSMEs and MNCs have led domestic experts to brand MNCs that invest in North Macedonia as "extra-territorial", not solely because of their privileges, but because of the perceived distance between them and the dSMEs (Lazarevski, 2019). The challenge of bridging the distance between dSMEs and MNCs, however, is not exclusive to North Macedonia. FDIs, especially those done by MNCs, can be polarizing in many developing countries, as they are seen as exploiting low labor cost, and are uncommitted, in the sense that as soon as labor costs go up they leave the host country (Görg and Strobl, 2003), something which may disincentivize them not to embed within the local economy.

Enhancing the capabilities of dSMEs, therefore, would benefit all stakeholders involved. DSMEs would have larger revenue, MNCs would have suppliers on their doorstep. For said capabilities to be acquired and the aforementioned gaps to be closed, the knowledge obtaining process should be defined so the knowledge gaps can be identified and closed through that process. The issues identified by the MNCs are of diverse nature, falling in different knowledge categories.

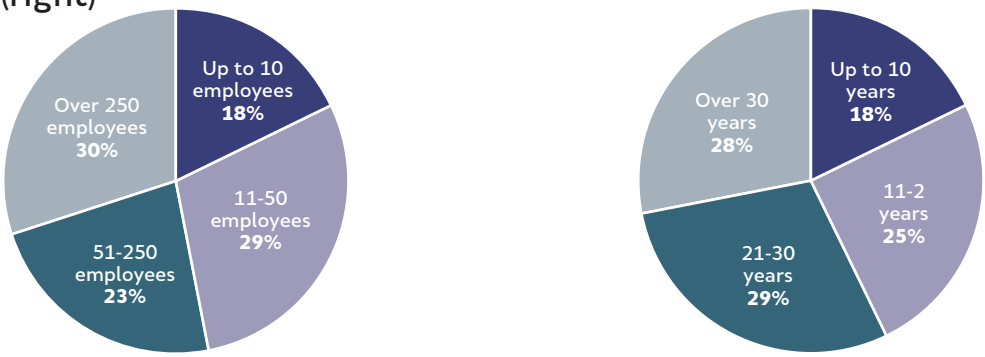
3. CHARACTERISTICS OF THE DOMESTIC SMALL AND MEDIUM-SIZED ENTERPRISES

3.1. Characteristics of the initial group of enterprises

For the project, a group of 83 companies – domestic small and medium-sized enterprises (dSMEs) has been formed, all enrolled on an open call for participation in training and mentoring program. This implies, that the group should be homogenous in terms of some unobservable characteristics, like motivation to apply and the desire to establish and/or increase its relationships with the multinational companies operating in North Macedonia (MNCs).

We present few observable characteristics of the sample of dSMEs. **Figure 1** (left) suggests that 18% of the sample is composed of micro-companies employing up to 10 workers, 29% are small companies, 23% are medium-sized companies and 30% are large companies. From this viewpoint, we have quite diverse set of companies on disposal. Similarly, **Figure 1** (right) suggests that the sample is diverse in terms of the existence of the sSMEs surveyed: 18% are young (below 10 years of existence), while 28% are old (over 30 years of existence).

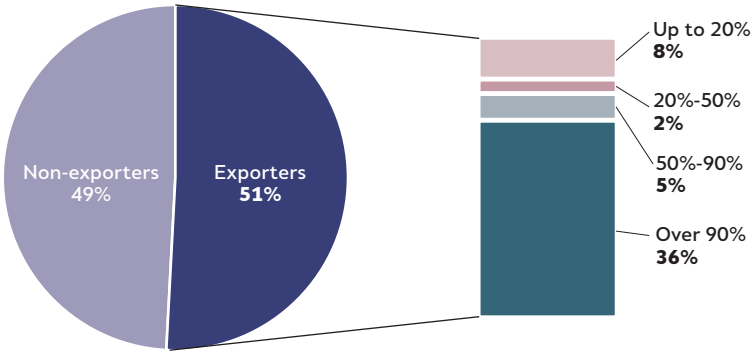
Figure 1 – Sample composition based on number of employees (left) and years of existence (right)



Source: Own baseline survey

Figure 2 presents the structure of our baseline survey based on whether dSMEs export or not, as well on the intensity of exporting. Approximately half of the sample are exporters, of which slightly above a third are almost full exporters (i.e. above 90% of their turnover comes from exports).

Figure 2 – Sample composition based on exporting



Source: Own baseline survey

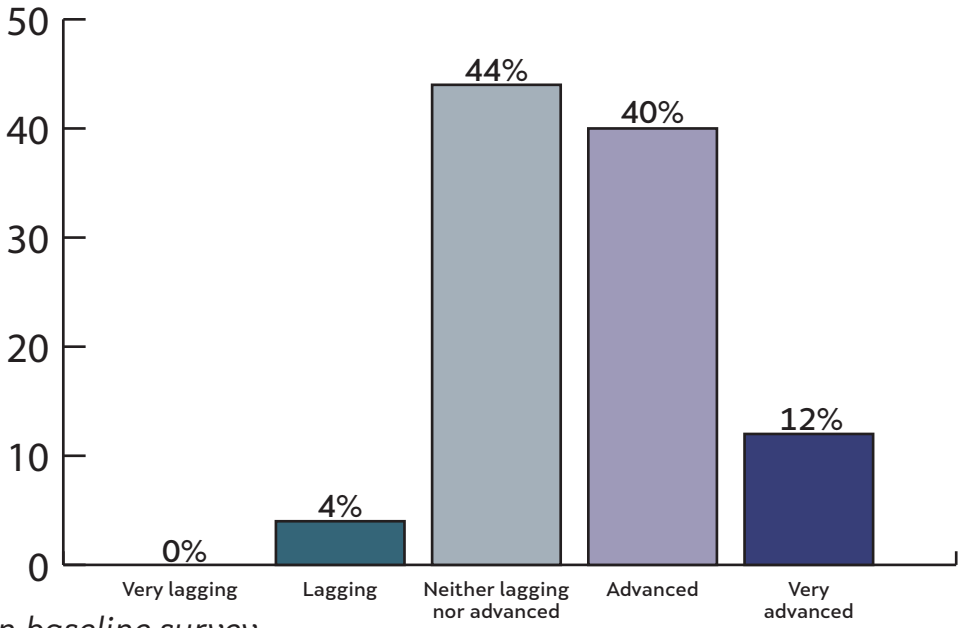
We turn to discussing few technological characteristics of our sample. **Figure 3** documents that 63% of dSMEs possess at least one technical standard (examples including a range of ISO standards, TUV, DOS etc.), while fewer, 45% possess at least one professional standard (examples also including a range of ISO standards, IATF, FSSC etc.).

Figure 3 – Sample composition based on possession of technical standards (left) and professional standards (right)

Source: Own baseline survey

Majority of the sample dSMEs (44%) reported to have the adequate technological setup, i.e. neither lagging nor advanced one. However, the number of those who reported advanced or very advanced technology is fairly high (52%) (**Figure 4**).

Figure 4 – How advanced or lagging is dSMEs current technology



Source: Own baseline survey

Based on several criteria measuring soft skills of dSMEs to establish contacts and communicate with the MNCs (**Table 1**), as well on those measuring technological preparedness of dSMEs (**Table 2**), the respondent dSMEs reported the following frequencies. As we are measuring only the short-run effects of the project results and implications (as the long-run ones could be measured in 1-2 years, at the earliest, after project finishes), we will be using the questions below to judge project's impact.

The short-run effects onto soft skills will be measured through six distinct features: potential and knowledge for cooperation; skill to identify potential collaborator; comfortability with self-presentation; presentation skills; communication skills; meeting comfortability; while onto technological preparedness through four distinct features: need; company's readiness; employees' readiness and management readiness, to implement a technical standard.

Table 1 – Soft skills to cooperate with a MNC (% of total respondents)

	How would you rate your potential and knowledge to establish cooperation with foreign companies? (1 = Very weak - 5 = Very strong)	How easily can you identify a potential collaborator from a foreign company? (1 = Very hard - 5 = Very easily)	If the opportunity arises, how comfortable do you feel to present your company and products to a foreign company? (1 = Very uncomfortable - 5 = Very comfortable)	How would you rate your own presentation skills for your products and company? (1 = Very low - 5 = Very high)	How often did you communicate with associates from foreign companies in the previous year? (1 = Never - 5 = At least 4 times a month)	How comfortable do you feel meeting multiple participants from multiple companies? (1 = Very uncomfortable - 5 = Very comfortable)
1	1.4%	2.8%	0.0%	0.0%	7.0%	0.0%
2	2.3%	6.5%	5.4%	4.3%	38.7%	4.6%
3	44.8%	48.7%	16.1%	40.0%	25.5%	48.5%
4	36.7%	32.7%	46.7%	30.6%	2.6%	32.3%
5	14.9%	9.3%	31.8%	25.1%	26.3%	14.6%

Source: Own baseline survey

Table 1 reports that potential and knowledge for cooperation; skill to identify potential collaborator; presentation skills; and meeting comfortability are fairly normally distributed, with majority of companies positioning themselves in the middle of the 1-5 scale, meaning neither strong nor weak. However, the prevalence of responses (5), meaning 'very strong' is quite more pronounced than the prevalence of responses (1), meaning 'very weak'. Comfortability with self-presentation, on the other hand, is heavily left-skewed, as 78.5% of the participants reported high or very high comfortability. Opposite distribution is followed by the communication skills (though potentially two-humped): 45.7% of the participants reported never or very occasional communication with the MNCs.

Table 2 – Preparedness to implement a technical standard (% of total respondents)

	How do you rate the need for implementing a technical standard in your company? (1 = Very low - 5 = Very high)	How do you rate the readiness of your company for implementing a technical standard? (1 = Very low - 5 = Very high)	How do you rate the readiness of your employees for implementing a technical standard? (1 = Very low - 5 = Very high)	How do you rate the readiness of the management for implementing a technical standard? (1 = Very low - 5 = Very high)
1	3.2%	3.2%	3.2%	3.2%
2	15.9%	4.4%	7.6%	7.9%
3	20.3%	42.9%	33.3%	31.7%
4	43.7%	34.7%	47.4%	42.3%
5	16.9%	14.8%	8.5%	14.8%

Source: Own baseline survey

Table 2 documents a strengthened need of dSMEs to implement a technical standard, as 60.6% of responding companies reported high or very high need. Likewise, the readiness of employees and the management is favorably judged as high or very high in 55.9% and 57.2% of the cases, respectively. While, the overall readiness of the company (mainly reflecting its current level of technological development) is judged more conservatively: 42.9% of the dSMES reported a 'neutral' stance about the technological readiness.

3.2. Treatment groups

The program has been composed of three components. The first component provided five-day training on communication, self-presentation and cooperation skills for dSMEs. 35% of the companies attended such a training. The reader should note that in many of the cases, more than one participant per company participated. To account for this, we use weights to downplay overrepresentation of particular (and possibly bigger) companies. Such weights are used all throughout the analysis. **Table 3** presents the impact of the training on the group of trained companies. Note that this is an assessment with itself, post-training versus pre-training. Results cannot be exclusively associated with the training since these companies might have been exposed to other influences in the meantime, working in the same or in opposite direction as our training. However, results are indicative and suggest that the training potentially positively affected potential and knowledge for cooperation, comfortability for self-presentation, presentation skills and meeting comfortability.

Table 3 – Changes in skills after training

	potential and knowledge for cooperation	skill to identify potential collaborator	comfortability with self-presentation	presentation skills	communication skills	meeting comfortability
Difference (after vs. before training)	0.589*	0.308	0.731**	0.525*	0.116	0.492*
Standard error	(0.316)	(0.311)	(0.308)	(0.288)	(0.285)	(0.286)

Source: Own after-training survey

*Note: The differences reported are measured on a 1-5 scale, though the estimates are based on an ordered probit regression and hence cannot be interpreted on such scale. *, ** and *** denote statistical significance at the 10%, 5% and 1% level, respectively.*

The second component provided five-day training on implementation and utilization of technical and professional standards by dSMEs. 26.7% of the companies attended this training. Despite the original intention has been to have as many as possible companies who attended both trainings, ultimately only 6.5% of the companies attended both. Therefore, later, we will be showing the impact of both sets of trainings separately. **Table 4** suggests that training on technical preparedness potentially did not change this attitude among the trained companies, as all pre- versus post-training differences are statistically insignificant.

Table 4 – Changes in technical preparedness after training

	need	company's readiness	employees' readiness	management readiness
Difference (after vs. before training)	-0.47	0.169	0.0126	-0.27
Standard error	(0.370)	(0.369)	(0.348)	(0.357)

Source: Own after-training survey

*Note: The differences reported are measured on a 1-5 scale, though the estimates are based on an ordered probit regression and hence cannot be interpreted on such scale. *, ** and *** denote statistical significance at the 10%, 5% and 1% level, respectively.*

The third component provided mentoring support to (part of) the companies who have undergone at least one set of the trainings. 20.7% of the companies got mentorship, either in the form of direct twinning with the MNCs or through consultancy mentoring on introducing the relevant technical standards. 37.5% of the companies who obtained training on soft skills continued to receiving mentoring support, while half of those who obtained training on technical standards did so. Of those who attended both trainings, 78% received mentoring support (despite such cases were very few).

Table 5 and **Table 6** present the pre- versus post-mentoring differences only for the mentored companies. The differences capture the effects of both trainings and mentoring. The difference in the case of soft skills intensify, suggesting that for these skills, the mentoring support added further value, particularly for potential and knowledge for cooperation, skill to identify potential collaborator; comfortability with self-presentation and presentation skills. While, mentoring support has not yet changed the results for the technological preparedness, as differences remain statistically insignificant even when the mentoring is added.

Table 5 – Changes in skills after training and mentoring

	potential and knowledge for cooperation	skill to identify potential collaborator	comfortability with self-presentation	presentation skills	communication skills	meeting comfortability
Difference (after vs. before training)	1.217***	0.772*	0.763*	0.619*	-0.273	0.638
Standard error	(0.382)	(0.415)	(0.429)	(0.345)	(0.382)	(0.403)

Source: Own after-training survey

Note: The differences reported are measured on a 1-5 scale, though the estimates are based on an ordered probit regression and hence cannot be interpreted on such scale. *, ** and *** denote statistical significance at the 10%, 5% and 1% level, respectively.

Table 6 – Changes in technical preparedness after training and mentoring

	need	company's readiness	employees' readiness	management readiness
Difference (after vs. before training)	-0.28	0.346	0.107	-0.202
Standard error	(0.437)	(0.419)	(0.377)	(0.395)

Source: Own after-training survey

*Note: The differences reported are measured on a 1-5 scale, though the estimates are based on an ordered probit regression and hence cannot be interpreted on such scale. *, ** and *** denote statistical significance at the 10%, 5% and 1% level, respectively.*

In a conclusion, the training program on soft skills produced plausible results, which is not the case of the training program on technological standards. However, these results are only indicative, since they measure the pre- versus post-training difference, which could have been affected by other factors that affected all companies in the sample in the meantime.

3.3. Control group

Theoretical random selection of a control group of companies is fairly difficult. However, adequate control group has been achieved in the following manner. Companies were invited to apply for the trainings on an open call. Once the pool of those who applied was finalized, all applicants were invited to attend the training. This is because of the yet limited number of applicants, which constrained the space for random selection. However, given previous experience in similar contexts, some companies, despite notified of being selected, ultimately declined the invitation or simply did not show up on the training. 44.6% of the companies who applied hence did not attend any of the trainings. These were considered candidates for the control group.

The conditions that this control group needs to satisfy were set to two: 1) the reason for the drop-out to be unrelated to the training itself; and 2) the control and the treatment group to be similar on observables. The first condition was tested indirectly by asking the drop-outs (intended control group) for the reason of their drop-out. Responses mainly included inappropriate timing of the trainings given their availability and other duties, hence showing no relationship with the expected outcomes of the trainings. Such selection has one advantage in the sense that companies who applied on the call may be more homogenous in terms of their unobservable characteristics, primarily the intention, motivation and ambition to acquaint skills for cooperation with the MNCs. Therefore, we could say that the first condition for a proper control group has been satisfied.

The second condition will be tested through statistical means. Namely, we will compare the control group and all the treated on few of observable characteristics: number of employees, age of the company, whether it is exporter or not, and the share of exports in total turnover for exporters. We apply t-test, for each observable variable and Hotelling test, for the vector of the variables. The probabilities presented in **Table 7** are all well above the conventional threshold of 5%, suggesting that the null cannot be rejected. Therefore, the two samples are equal on observables.

Table 7 – Treated versus control

Variable	t-test (p-value) H0: Difference = 0
Number of employees	0.4805
Age of company	0.7047
Exporter or non-exporter	0.3758
Share of exports in turnover	0.8816
	Hotelling test **H0: Vectors of means are equal for the two groups**
All observables	0.4422

Source: Own calculations.

In conclusion, we will be relying on the control group of those who applied but did not show on the training or declined invitation, as they are equal on observables with those who continued the training.

4. IMPACT EVALUATION METHOD

The underlying method of this analysis is the difference-in-difference (DID) method. The technique originates in econometrics, but the logic underlying the technique has been used as early as the 1850's by John Snow and is called the 'controlled before-and-after study' in some social sciences. DID is typically used to estimate the effect of a specific intervention or treatment by comparing the changes in outcomes over time between a population that is enrolled in a program (the intervention group) and a population that is not (the control group). This is exactly what we did in this study: we measured some outcomes (soft skills and technical preparedness) before participants embarked on a program composed of training and mentoring support.

DID is a useful technique when randomization on the individual level is not possible. It requires data from pre-/post-treatment, such as cohort or panel data (individual level data over time) or repeated cross-sectional data (individual or group level). The approach removes biases in post-treatment comparisons between the treatment and control group that could be the result from permanent differences between those groups, as well as biases from comparisons over time in the treatment group that could be the result of trends due to other causes of the outcome (an issues that we warned about in Section 3.1).

DID is usually implemented as an interaction term between period and treatment group dummy variables in a regression model. Hence, we set the model as follows:

$$y_i = \beta_0 + \beta_1 * Period_i + \beta_2 * Treatment_i + \beta_3 * Period_i * Treatment_i + \varepsilon_i \quad (1)$$

Whereby y_i is our outcome variable, being defined through 10 distinct variables, divided in two groups: soft skills: potential and knowledge for cooperation; skill to identify potential collaborator; comfortability with self-presentation; presentation skills; communication skills; meeting comfortability; and technological preparedness: need; company's readiness; employees' readiness and management readiness, to implement a technical standard; all of company i. $\boldsymbol{Period_i}$ refers to the time dimension, which in our case boils down to two periods: the one before the treatment (baseline survey) and the one after the treatment (after survey), hence taking a value of zero for the former and 1 for the latter. $\boldsymbol{Treatment_i}$ takes a value of 1 for all persons who were exposed to treatment, and zero for the control group. Treatment in our case comes in three forms: treatment with training on soft skills; treatment with training on technological preparedness and mentorship treatment. Then, $\boldsymbol{Period_i * Treatment_i}$ considers the product of the period and the treatment, i.e. would take a value of 1 for all persons who were treated in the second period, and zero for the treated in the baseline period and for all controls. $\boldsymbol{\varepsilon_i}$ is the error term which is assumed to be well behaved.

$\boldsymbol{\beta_0}$ measures the baseline average; $\boldsymbol{\beta_1}$ gives the difference in outcomes between periods in the control group (given we control for the treatment group separately);

β_2 gives the difference in outcomes between the two groups before the treatment (given we control for the after period separately); and β_3 gives the difference in outcomes between the treated and controls in the second period (i.e. after the treatment). Our true interest lies in β_3. Actually, because we operate with a fairly small number of observations, obtaining all β_1,β_2 and β_3 would be too ambitious in terms of losing degrees of freedom. We therefore abstract from calculating the former two, and directly opt for β_3, which will provide us the difference in outcomes between the treated and controls in the second period, compared to all the others (i.e. the control group and the treated in the first period).

To estimate (1), we use an ordered probit approach, since our dependent variables are all measured on a scale from 1 to 5.

5. RESULTS AND DISCUSSION

Our key results are presented in **Table 8** and **Table 9**; the key result is presented in a greyed row. We decide to present the results divided by type of training, mainly because of our finding that only 6.5% of companies attended both training. With such small number of companies attending both, we refrain from calculation of any accrued effect, because such will be surrounded by a large margin of error.

Table 8 presents the results for the training on soft skills and the subsequent mentorship support. Results suggest that soft-skills component exhibited positive and fairly large effect onto the comfortability with self-presentation, the presentation skills and the comfortability with meeting business partners. Then, the mentorship support has been also found crucial, as it reinforced the training effect in the case of presentation skills (by a larger magnitude than the coefficient onto the training component), while has been solely significant for the skill to identify potential collaborator.

Table 8 – Results for the soft skills training and mentorship

	potential and knowledge for cooperation	skill to identify potential collaborator	comfortability with self-presentation	presentation skills	communication skills	meeting comfortability
	(1)	(2)	(3)	(4)	(5)	(6)
Post* Treatment Soft Skills	0.157	-0.18	0.562**	0.612*	-0.476	0.580**
	(0.291)	(0.358)	(0.272)	(0.325)	(0.327)	(0.295)
Post* Treatment Mentorship	0.118	0.556**	-0.275	0.829*	0.568	-0.407
	(0.361)	(0.122)	(0.451)	(0.444)	(0.462)	(0.352)
Constant cut1	-1.979***	-2.309***	-1.462***	-2.347***	-1.334***	-1.683***
	(0.283)	(0.415)	(0.284)	(0.328)	(0.237)	(0.215)
Constant cut2	-1.673***	-1.177***	-0.781***	-1.750***	-0.0786	0.136
	(0.212)	(0.217)	(0.192)	(0.237)	(0.178)	(0.166)
Constant cut3	-0.0928	0.266	0.482***	-0.152	0.520***	1.157***
	(0.178)	(0.176)	(0.181)	(0.166)	(0.174)	(0.197)
Constant cut4	1.016***	1.382***		0.640***	0.678***	
	(0.228)	(0.254)		(0.178)	(0.183)	
Observations	74	73	73	72	72	74

*Source: Own calculations. *,** and *** refer to statistical significance at the 10, 5 and 1% level respectively. Standard errors provided in parentheses.*

Table 9 presents the results for the training on technological capabilities and the subsequent mentorship support. Results suggest that the training has been insignificant for the technological readiness of the companies. Such finding could well correlate with the finding that a high share, two thirds, of the trained companies have already had implemented a technical standard. However, the mentoring support made quite a difference, as in two out of the four outcomes it produced plausible results with a fairly high magnitude. Namely, the mentorship support significantly strengthened the need of the companies for technological upgrade, as well management readiness for technological upgrade.

Table 9 – Results for the technological readiness training and mentorship

	need	company's readiness	employees' readiness	management readiness
	(1)	(2)	(3)	(4)
Post*Treatment Technological Readiness	-0.467	0.196	0.058	-0.243
	(0.449)	(0.467)	(0.491)	(0.464)
Post*Treatment Mentorship	0.813*	0.312	0.046	0.652*
	(0.472)	(0.477)	(0.517)	(0.352)
Constant cut1	-1.664***	-1.694***	-1.751***	-1.763***
	(0.264)	(0.261)	(0.267)	(0.274)
Constant cut2	-0.968***	-1.184***	-1.116***	-1.172***
	(0.196)	(0.205)	(0.205)	(0.208)
Constant cut3	-0.166	0.0488	-0.0194	-0.271
	(0.169)	(0.169)	(0.163)	(0.170)
Constant cut4	1.010***	1.231***	1.234***	0.990***
	(0.193)	(0.216)	(0.194)	(0.194)
Observations	74	73	73	72

*Source: Own calculations. *,** and *** refer to statistical significance at the 10, 5 and 1% level respectively. Standard errors provided in parentheses.*

Despite the results in the case of the technological readiness may not seem entirely satisfactory, one needs to consider the fact that these are short-term outcomes, while technological awareness, needs' assessment and confronting it with the potential and readiness for upgrade is a process that could occur only over the medium to a long haul. Therefore, the early signs identified with this impact evaluation should be considered rather overly satisfactory.

6. CONCLUSION AND RECOMMENDATION

The objective of this study was to quantitatively evaluate the impact of the program for training and mentoring of a group of companies willing to enter the value chain of MNCs in North Macedonia. 83 dSMEs applied to undergo trainings for soft skills and for technological readiness advancement. 37 dSMEs did not adept the invitation or dropped-out, the primary reason being unrelated to the training itself. Hence, they became the control group. Then, out of the 46 trained dSMEs, 17 were selected to undergo a mentorship program. Decisions on the mentoring program were dependent on availability of peer MNCs and willingness to be mentored. Hence, non-randomization at this point should be born in mind when considering results. To overcome the problem of insufficient randomization, we conducted the impact evaluation through the difference-in-difference method, which does not require random assignment. The method is actually considering the difference in the difference in outcomes after the treatment versus before the treatment, hence not being concerned with the levels.

Results suggest that soft-skills component exhibited positive and fairly large effect onto the comfortability with self-presentation, the presentation skills and the comfortability with meeting business partners. Then, the mentorship support has been also found crucial, as it reinforced the training effect in the case of presentation skills, while has been wholly significant for the skill to identify potential collaborator. The training has been insignificant for the technological readiness of the companies, though the mentoring program produced plausible results with a fairly high magnitude in two out of the four outcomes. Namely, it significantly strengthened the need of the companies for technological upgrade, as well management readiness for technological upgrade.

Overall, the project produced positive and considerably significant results for both soft skills and technological readiness of the included dSMEs. The training component has been particularly powerful in the case of elevating soft skills to be used for smoother establishing of cooperation between dSMEs and MNCs, while the mentoring support has been found important for both soft skills and technological upgrade, though the results has not been unanimous among the outcomes. It should be noted that the results for the elevation of the technological readiness may take more time to work than the ones related to soft-skills upgrade.

Yet, the results provide a decent space for recommending the program for scale up, within other initiatives and/or, more favorably, within the government institutions relevant for the attraction of FDIs and their sections for aftercare. More specifically, results recommend that the government should engage in elevating the soft skills and technological readiness of dSMEs so as to assist in their attempt to engage into the value chains of the MNCs operating in North Macedonia.

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Policy Study No. 25

IMPACT EVALUATION OF THE PROGRAM FOR TRAINING AND MENTORING OF DOMESTIC SMALL AND MEDIUM-SIZED ENTERPRISES TO INCLUDE IN THE VALUE CHAINS OF MULTINATIONAL COMPANIES OPERATING IN NORTH MACEDONIA

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