

Analysis of monitoring data on business development support to small and medium enterprises (2013-2014) - PUM

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Impact evaluation of private sector support is vital to ensure effectiveness and continuous learning.

All Dutch Private Sector Development (PSD) organisations are responsible for evaluating the effects of their work. While impact evaluations are most often commissioned for accountability purposes, it is also a tool for learning about the effects of interventions. Real-time monitoring data helps managers and stakeholders to understand how and why effects are, or are not, realised and helps to refine intervention strategies.

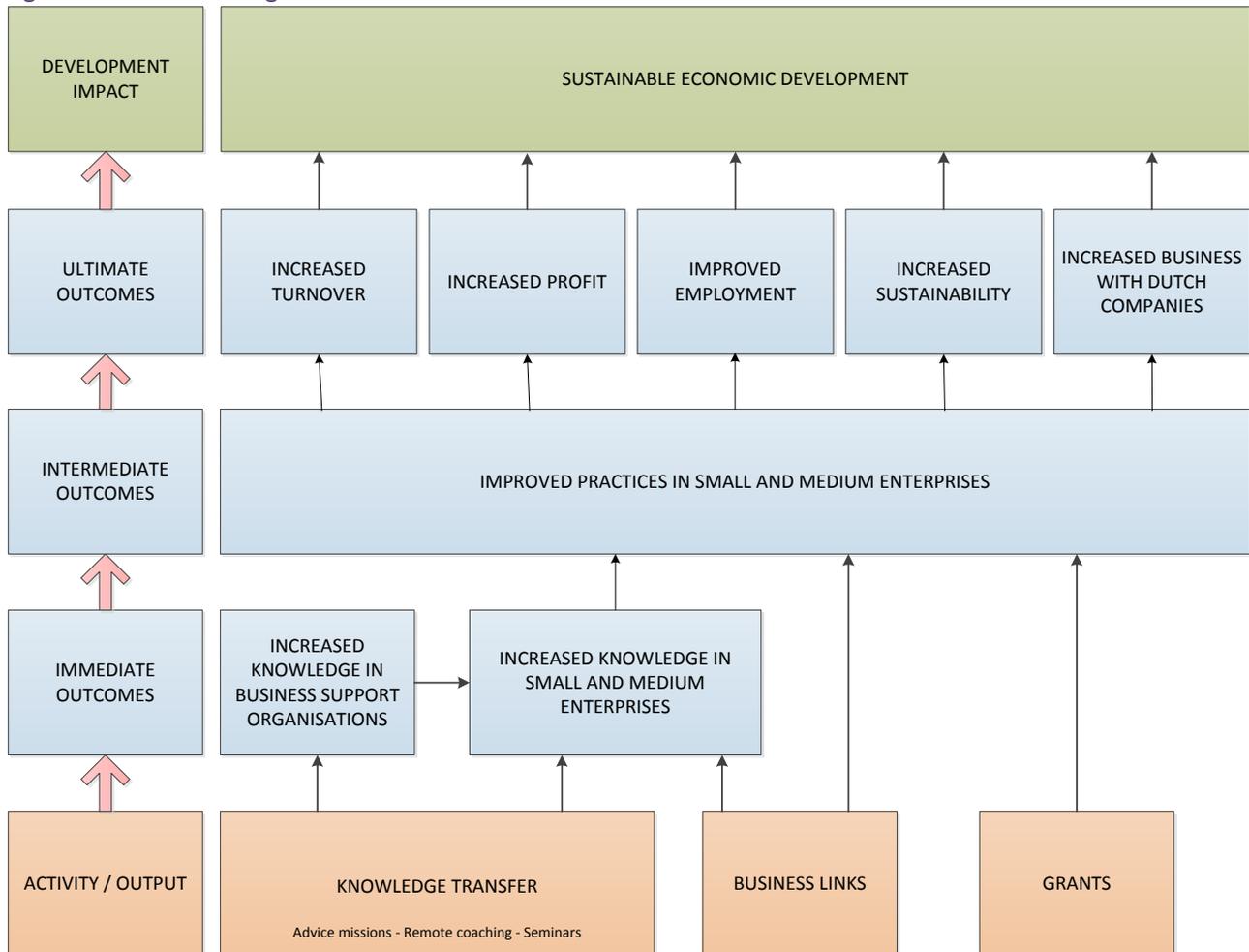
PRIME has developed an approach to evaluate private sector support that is useful for accountability and learning.

The Centre for the Promotion of Imports from Developing Countries (CBI), the Foundation Netherlands Senior Experts (PUM), the Agricultural Economics Research Institute (LEI Wageningen UR) and the Erasmus School of Economics (ESE) have developed a joint programme to pioneer impact evaluation methods of support to small and medium enterprises in developing countries. PRIME's yearly monitoring of outcomes in all supported companies is complemented by quantitative and qualitative research in six countries.

PRIME collects time-series data through PUM's monitoring and evaluation system.

Time-series datasets are constructed with data on the key indicators of firm clients in order to verify key assumptions in PUM's intervention logic (Figure 1). The selection of indicators is harmonised as much as possible with other studies and kept to a minimum. These time-series datasets will enable us to compare the firm before and after the support has started. Of course, the observed differences in outcomes in each firm cannot be directly attributed to PUM. Other external factors, such as economic and political circumstances, may influence issues such as the uptake of new firm practices or the realisation of profits. Only with several years of data collection in successive cohorts of supported firms we will have data that permits to compute attributable average effects of CBI support. Meanwhile, however, this yearly information on the changes in indicators in (groups of) firms can be used to understand differences and heterogeneity of effects and, doing so, enable "real-time monitoring" to improve the support interventions. As such PRIME generates data for both accountability and learning.

Figure 1: Intervention logic PUM



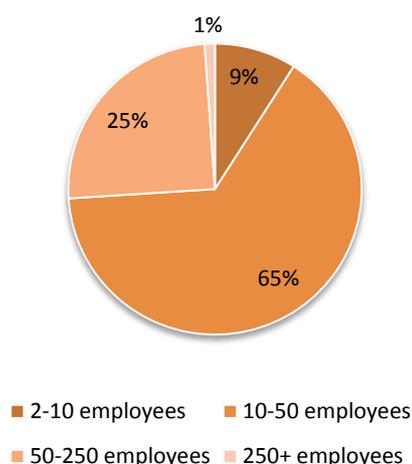
PUM’s M&E system is being updated to collect additional information. Nevertheless, the data currently available already provide insight into the characteristics of supported firms.

In this research brief, we make use of the M&E data that PUM had already collected on supported firms. The analyses is explorative and gives an overview of the characteristics of firms that received support. For PUM, we used a dataset including 2,370 unique firms that received missions in 2013 (49%) and/or 2014 (51%). One of PRIME’s key questions is to identify what works, for whom, and under which conditions. Indicators used to characterise the SMEs include **region, sector of operation, gender of business owner**, final goods produced, model of operation, **legal status, year of foundation**, access to finance and **number of employees**. Those marked in bold are already in PUM’s M&E system in some form. The others are currently being collected through online surveys.

The majority of PUM-supported firms are small-sized firms (10-50 employees).

The size of PUM-supported firms varies greatly: from two employees to 700. While the average firm size in 2013 is slightly higher than in 2014 (average of 47 employees versus 48), the size or distribution of firms across categories does not differ significantly between that same period. The majority of supported firms can be defined as small – having between 10 and 50 employees. This is not surprising given PUM’s application criteria, which requires firms to have between 10 and 250 employees. What is surprising, however, is that 9% of supported firms indicate that they have less than 10 employees. Size of firm is an important characteristic to take into account when analysing the effect of the private sector support. In fact, the academic literature (e.g. Bloom & van Reenen, 2007¹; and McKenzie &

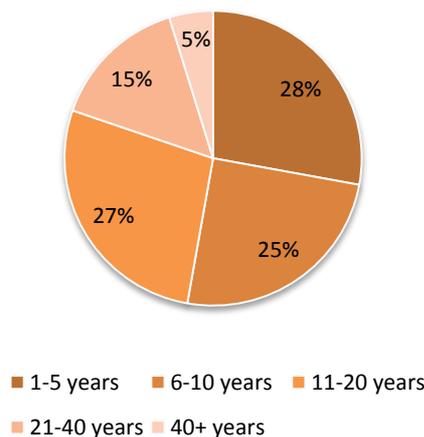
¹Bloom, N., van Reenen, J. (2007). “Measuring and Explaining Management Practices Across FIRMS and Countries.” *Quarterly Journal of Economics*, 122 (4): 1351-1408.



Woodruff, 2015²) show that larger firms, on average, have better business skills. This raises the question of whether PUM's support is more effective for smaller firms whose baseline levels of business skills are lower, or for slightly larger firms that might already have somewhat better business skills to begin with. On the one hand, smaller firms might benefit more from PUM advisory services because they may need to learn more. On the other hand, larger firms could be better positioned to integrate the newly-obtained insights into their business practices. It could even be that the relation between firm size and programme effectiveness is non-linear.

The majority of PUM-supported firms were established less than 10 years ago, with 25% being founded less than five years ago.

On average, PUM-supported firms were established 14.5 years ago (the age of firms ranges from just two years to more than 100 years). While this average is quite high, the majority of PUM-supported firms are relatively young with 53% of firms being less than 10 years old and 28% having been established less than five years ago. So while PUM's policy is not to support start-ups, the supported firms do still seem in early phases of their business. Firm age is an important variable to take into account in the cohort analysis: because younger firms typically grow more quickly (Nichter & Goldmark, 2009). The statistical analyses that will be applied in the cohort analysis will control for firm-age and so get a better understanding of the causal effect of PUM support on firm performance.



More than half of PUM-supported firms are fully or partially male-owned.

The majority of PUM-supported firms are male owned (51%). A significant portion is female-owned (19%). These figures are in line with the gender distribution in firm ownership across the developing countries (World Bank enterprise surveys³). The academic literature suggests that women in developing countries are often drawn into entrepreneurship due to the lack of opportunities for other income-generating activities (Nichter and Goldmark, 2009). Furthermore, women in developing countries have typically enjoyed lower levels of education than their male counterparts, which can make it more challenging for them to efficiently operate firms, as reflected by the lower sales and profitability for female-owned firms in developing countries (Bardasi et al, 2011⁴). Since 2011, PUM has a strategy group on gender to help it better reach more female-owned and female-managed firms. PUM uses various ways to reduce barriers of reaching these women, for example, by increasing the number of female experts and local representatives. Interestingly, we see a strong and statistically significant increase of female-owned supported firms during the period 2013 to 2014 (from 9% to 15%). The points about gender and firm ownership raise the key questions about whether PUM support has – on average – added more value for female enterprises. This is a question that will be addressed in the future when we have time series data in the cohort study.

The majority of firms are owned through limited liability or individually.

² McKenzie, David, and Christopher Woodruff. (2015). "Business Practices in Small SMEs in Developing Countries." *NBER working paper*

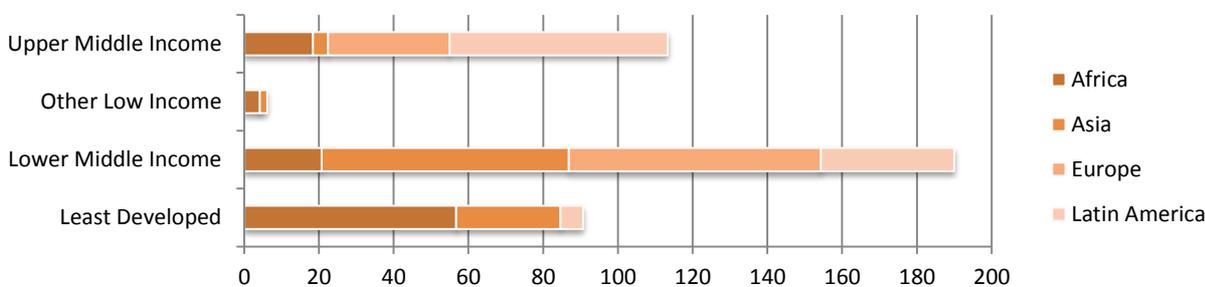
³ <http://www.enterprisesurveys.org/data/exploretopics/gender>

⁴ Bardasi, Elena, Shwetlena Sabarwal, and Katherine Terrell. "How do female entrepreneurs perform? Evidence from three developing regions." *Small Business Economics* 37.4 (2011): 417-441.

More than 50% of PUM-supported firms are limited liability companies. Another third are individually owned while 11% are joint stock owned. The formation of a joint-stock company often requires capital; something not necessarily accessible and/or relevant for smaller and medium-sized firms. While there are small differences in ownership between 2013 and 2014, these differences are not significant.

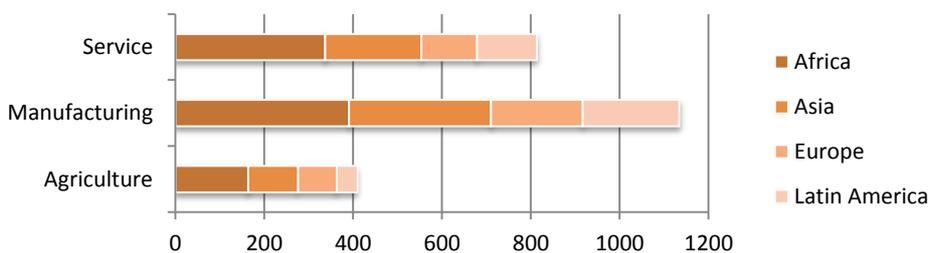
Most support is in Lower Middle Income countries, shifting slightly to LDCs.

Most PUM clients are based in Africa (40%) and Asia (28%), while fewer firms are supported in Latin American and European countries. The distribution of firms over the regions is similar for 2013 and 2014. Some 30% of the supported firms are from Least Developed Countries (LDCs). Most PUM support is concentrated in the Lower Middle Income countries (44%) and Upper Middle Income countries (24%). In 2014 the support shifted more towards LDCs (from 28% to 33%) and away from Lower Middle Income (from 47% to 41%). In Asia, 66% of support is concentrated in Lower Middle Income countries, while 42% is classified as Lower Middle Income. In Latin America, relatively more missions were implemented in Upper Middle Income countries (58% of support, while 45% of countries are classified as such).



Almost half of PUM support is concentrated in the manufacturing sector.

PUM supports firms in a wide range of sectors; yet almost half of those firms (48%) operate in the manufacturing sector. Another third (35%) operate in the service sector, while 17% of the supported firms are active in the agricultural sector. Between 2013 and 2014, we see a small but significant shift towards the service sector (from 33% to 36%) and away from manufacturing (50% to 46%). The share of clients in each continent is quite equally spread. These figures are in line with the global sectoral distribution of firms. The effects of PUM support might differ by sector. Manufacturing and agriculture firms typically have more scope to substitute labour for capital than service sector firms.



Most firms (87%) heard about PUM via the local representatives.

PUM’s selection procedures are meant to attract the firms that will benefit most from PUM support. The idea behind this is that firms know how to find PUM when they need it. The majority of PUM-supported firms know about PUM through the local representatives. From 2013 to 2014 the percentage decreased only slightly from 89% to 86%. Only around 15% find out about PUM through other sources (including the website, the Dutch embassy or through advertisements). The latter group is particularly interesting; firms that actively look for PUM by themselves may be even more committed or able to implement the knowledge and practices learnt during the mission. In addition, it is a group of firms not reached through local representatives. In PRIME, we will explore whether programme effects indeed differ according to the way firms gained access to PUM support.

One fifth of firms receive more than one support mission from PUM.

PUM generally provides two-week missions during which it shares knowledge and gives practical recommendations. While PUM policy is shifting towards a more project-guided support, the majority of support is still based on a single mission. Of those missions that started in 2013, 15% received a follow-up mission and 5% more than one follow-up mission. Firms that started getting support in 2013 received more than one mission significantly more often. In the impact evaluation, PRIME will take into account the number of missions received (in addition to the other variables) when assessing the effectiveness of support.

Contact before the mission leaves room for improvement.

The number of experts indicating that the contact before the mission had been informative increased significantly from 2013 to 2014. Some 11% and 33% of experts indicated that the contact before the mission was not or only partly informative. Contact before, during and after the mission offer good proxies for measuring the enthusiasm, commitment and positive expectations about PUM support. As these factors might also affect the likelihood that a mission is successful.

Region, legal status and gender of the owner seems to be related to certain support characteristics.

To analyse how support is related to firm characteristics, we estimate the correlation between support characteristics and PUM beneficiary characteristics: firm size, age, gender of the owner, employment, and legal status. We control for sector and region in all of our estimations (see table 1). The results show that only few variables are significantly related to the support characteristics. These results are in line with PUMs approach to give very company specific support.

Table 1: Business characteristics that are significantly correlated to support received

Characteristics	Whether the firm got in touch with PUM without involvement of the local representative	Whether the firm received more than one expert mission	Whether the expert mostly focused on knowledge sharing and coaching only	Whether the expert mostly focused on practical recommendations only	Whether contact before missions was considered fully useful
Significantly more support received by firms that are:	Less individual	Larger firms	More female/male-owned	More female-owned, less female/male-owned	Less in Latin America
	Less in Europe	Older firms	Less in Africa and Latin America	More in Africa	Less in LDCs
	More in 2014	More female/male owned	More in 2014	Less in LDCs and Upper Middle Income	More in C4

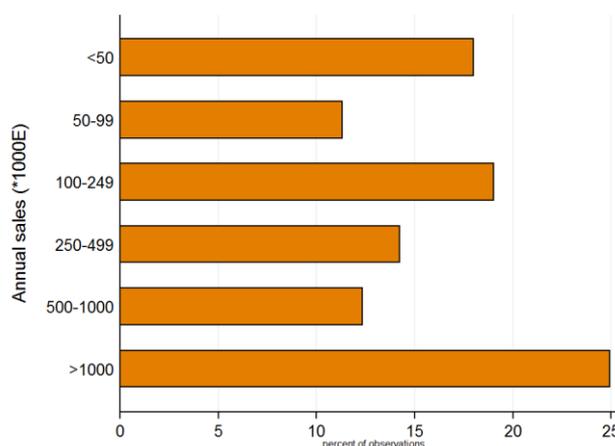
We have already seen that a small portion of PUM clients are not reached through the local representatives. This relation is even more pronounced in Europe and slightly less among individually-owned firms. Larger and older firms are more likely to receive more than one mission. In female-owned firms experts are more likely to indicate that they mostly focus on practical recommendations only. This focus on practical recommendations only is also higher in Africa and lower in LDCs and Upper Middle Income countries. Finally, experts that visited firms in Latin America and LDCs were less likely to indicate that contact prior to the mission was very useful.

PRIME measures immediate, intermediate and ultimate outcomes.

In line with the literature on firm support effectiveness, we distinguish between immediate and intermediate outcomes on the one hand, and ultimate outcomes on the other. Immediate and intermediate outcomes refer to changes in knowledge and practices within the firm, whereas ultimate outcomes refer to the subsequent effect on firm performance, typically captured by sales, profit and/or employment. Most data on firm performance, at this stage, is summarised in categorical questions where the expert is asked to list the type of results achieved through PUM directly after the mission. For now, we report data on **perceived mission achievements, firm sales, perceived mission success and links created with Dutch firms**. To analyse how outcomes are related to firm characteristics we estimated the correlation between the outcomes discussed above and the characteristics of the PUM beneficiary, i.e. firm size, age, owner gender, employment, and legal status. We control for sector and region in all of our estimations). Only a few variables are significantly related to the characteristics of the support.

The quality of sales data needs to be improved.

The majority of firms have annual sales of less than €500,000 and approximately 25% of firms have annual sales above €1 million. The average sales numbers do not differ significantly between 2013 and 2014. As PUM targets mainly firms in developing countries, this high maximum sales figure and difference between median and maximum sales implies that our data includes extreme values and that distribution of the sales is not distributed but skewed to the left. For this reason, we will use median values and the logarithm of sales in our future analysis. The online data collection asks respondents to report sales for certain periods – during last year, the year before, and two years prior – in their own local currency.



The majority of missions are considered successful by experts.

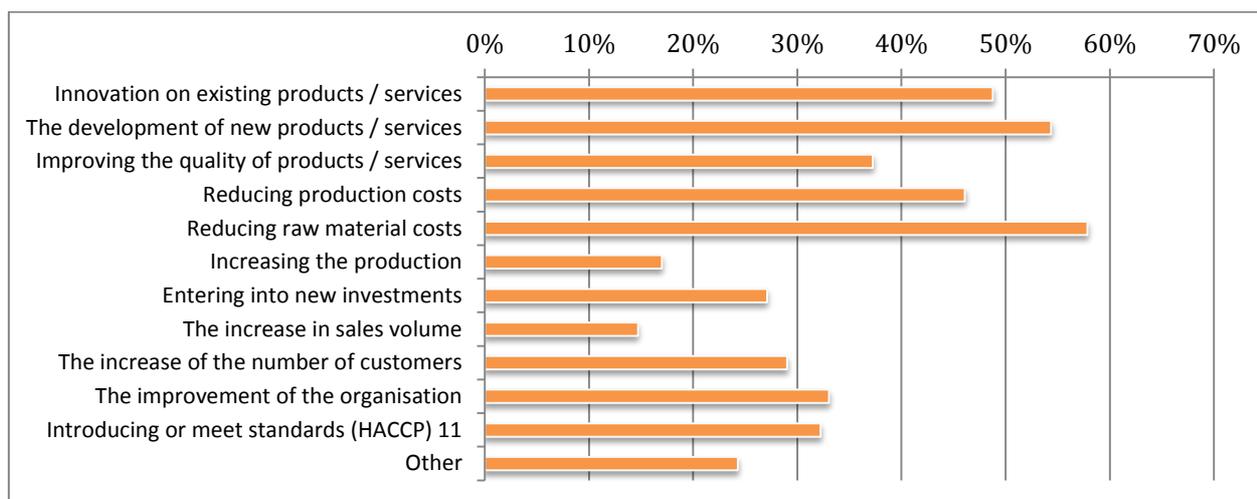
Some 64% of experts indicate they achieved the objective of their mission as specified beforehand; 32% indicate it was partly achieved, while 4% indicate it was not achieved at all. The figures do not differ significantly between the two years. We find that the likelihood of experts indicating a mission was a success is less in Europe, in Africa (compared to Asia) and in the service sector (compared to manufacturing). The likelihood of indicating the mission as unsuccessful is also higher for older firms.

Business links are being created.

The majority of experts indicate not to have formed a business link between the firm they visited and any Dutch firm. At the same time, more than one third indicated to have partly developed a business link, while 6% indicated to have actually established a business link. The exact nature of these business links is a topic of the online data collection that is currently ongoing. Creating business linkages is more likely among older firms and less likely in the service sector; firms with limited liability status, as well as firms in Europe, are also less likely to have formed a business link.

Cost reduction and innovation of new or existing products is most often one of the perceived achievements.

Reducing raw material costs is indicated as the main achievement by more than half of the experts (58%). The development of products (54%), innovation on existing products (49%) and reduction of production costs (46%) are other perceived major achievements. These achievements indicate the need to measure PUM outcomes at the level of practices, rather than business performance (e.g. profit) only. There are no significant differences in the perceived results between 2013 and 2014.



The relation between business and sector characteristics and achievements is ambiguous.

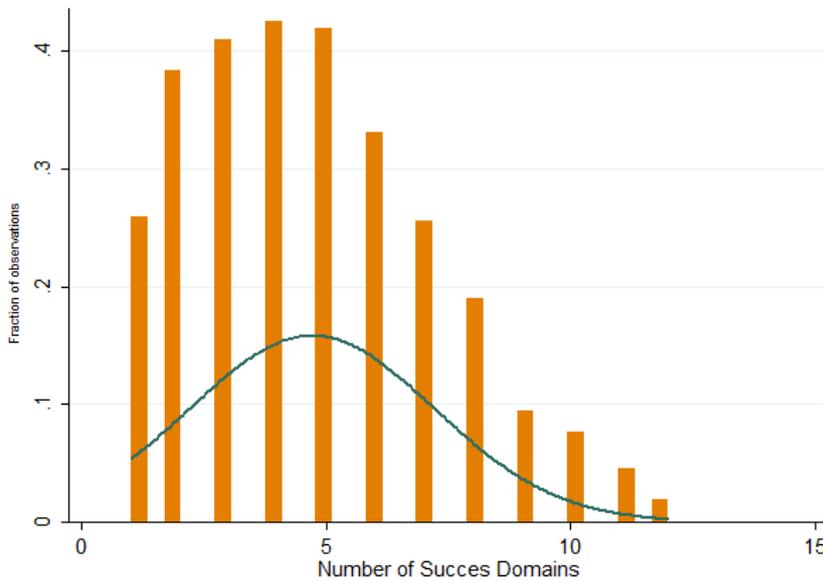
We summarise the results of the relation between perceived results and business characteristics. The role of firm size is ambiguous; innovation and new investments are more likely, while reduction of production costs and introducing new standards are less likely. Various results are perceived higher in the case of female- or female/male-owned firms. Legal status is not significantly correlated to perceived results. With respect to region, we find that various perceived results are less likely in Europe (compared to Asia) and Upper Middle Income (compared to Lower Middle Income) countries. In Latin America, improving quality of products or services is indicated significantly more often, while introducing new standards is indicated less often. With respect to sector, we find that most results are less likely in the service sector (compared to manufacturing) except for the introduction of new standards. For agriculture the same is true, except for the increase in new customers. Business and sector characteristics may determine the areas on which experts focus on improving the business performance. In the PRIME cohort analysis, this will be taken into account.

Experts generally identified between two and five domains in which the mission was successful

	business characteristics	region and OESODAC	sector
Innovation on existing products/services	↑ firm size, ↓ firm age		
The development of new products/services			↓ agriculture, ↑ service
Improving the quality of products/services		↑ Latin America	↓ service
Reducing production costs	↓ firm size	↓ in Upper Middle Income	↓ agriculture & service
Reducing raw material costs		↓ in Europe & Upper Middle Income	
Increasing production			↓ service
Entering into new investments	↑ firm size		↓ service
Increasing the sales volume		↓ in Europe	↓ agriculture & service
Increasing the number of customers		↓ in Europe	↑ agriculture ↓ service
The improvement of the organization			
Introducing or meet standards (HACCP)	↓ firm size	↓ in Latin America	↓ agriculture, ↑ service

Another analysis of the determinants of perceived mission success is executed by constructing a variable that is the sum of the yes/no (0/1) success in the various domains described in the previous section. For example, if an expert filled out that a mission was successful in seven domains, the “mission success score” for this firm would be seven.

The graph below reflects the distribution of these scores: for most firms the experts have identified between two and five domains in which the mission was successful, although for a substantial number of firms more than five success areas were listed.



Facilitating the disaggregation of conclusions by finding regularities in business characteristics.

The descriptives above illustrate that firms supported by PUM can be characterised according to different dimensions; while PUM supports very different types of firms, support seems more common among certain types (e.g. small firms, young firms and manufacturing firms). While this by itself is interesting, it would be particularly useful to know whether PUM support is more effective for these firms. This means we need to find regularities in characteristics in the type of companies supported, and eventually the type of support received. We used Principal Component Analysis to reduce the twelve achievement areas into two overarching sets: one factor ranks the firms on their achievements related with the internal organisation, and a second factor ranks them on the achievements that are more related with the external organisation of the firms. We performed a similar analysis on CBI’s audit scores, which is indicative of the average starting conditions of the SMEs.

CBI Audit scores	"Marketing strategies"	"Internal organisation"	PUM Achievement areas	"Marketing strategies"	"Internal organisation"
Supply chain	0.43	0.57	Development of new products	0.65	0.27
Logistics	0.47	0.56	Innovation on existing products	0.48	0.46
Marketing	0.73	0.10	Improving the quality of products	0.24	0.13
Sales	0.74	0.14	Reducing production costs	-0.19	0.51
Pricing	0.51	0.44	Reducing raw material costs	0.36	0.41
Entrepreneurship	0.57	0.48	Increasing the production	0.66	0.00
Exports	0.78	0.25	Entering into new investments	0.64	-0.07
R&D	0.18	0.76	Increase in sales volume	0.23	-0.07
Finance	0.19	0.75	Increase of number of customers	0.66	0.11
Communication	0.15	0.66	Improvement of the organisation	0.21	0.71
Management	0.18	0.82	Introducing quality systems (HACCP)	-0.02	0.81
Human resources	0.31	0.74			
CSR	0.43	0.42			

Cluster analysis is a method used to combine the different firm characteristics into meaningful groups.

To deepen this analysis, and compare PUM data with CBI data, we used cluster analysis. We used size of the firm (micro, small, medium or large), the sector the firm operates in (services, manufacturing, agriculture), and firm age (< 5 years, 5-10 years, 10-20 years, 11-20, 20-40, 40+). We identify four meaningful groups (out of eight groups

generated by the software). The regional distribution of the clusters is similar, except for Europe, where only larger firms are involved in the support activities.

- Type A: the normal target group of firms
- Type B: tiny, young firms
- Type C: older and larger firms
- Type D: new start-up firms

Cluster	Latin			
	Asia	Europe	America	Africa
A	40%	39%	49%	45%
B	14%	4%	18%	13%
C	23%	33%	19%	27%
D	20%	21%	13%	12%
Others	3%	3%	2%	4%

Cluster	Sector		
	Agriculture	Manufacturing	Services
A	24%	43%	33%
B	30%	25%	45%
C	22%	49%	29%
D	25%	37%	38%
Others	33%	43%	21%

Comparing the clusters on the two factors that group CBI audit scores and PUM achievement, we see an interesting pattern. In Cluster A and C, the self-assessed achievements of the PUM experts are highest in areas where the SMEs appear to be weaker, according to the CBI audit scores. This pattern is different for the group of young small start-ups (Cluster D) which are relatively strong on marketing strategy already, but still benefit from PUM support. The group that is weakest according to the CBI audit is the group of tiny young firms (group B) which benefit especially from organisational strengthening support but where the achievements in the area of marketing strategies are relatively weak.

Cluster	PUM supported firms		Starting situation of the SME				Self-assessed effectiveness of business coaching	
			Mean firm age	Mean number of employees	CBI audit scores on "Marketing strategies"	CBI audit scores on "Internal organisation"	PUM achievements	PUM achievements
							"Marketing strategies"	"Internal organisation"
A	919	41%	16	25	+	--	+/-	+
B	312	14%	9	8	--	--	--	+
C	572	26%	18	108	--	++	++	--
D	351	16%	3	22	++	+/-	+	+
Others	79	3%						
Total	2233	100%	14	55				

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