

Are Firm Capabilities Holding Back Firms in Mozambique?

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Abstract

Firm capabilities—the abilities and practices to operate and innovate—are considered important drivers of firm performance. While the analysis of their importance is well established in developed countries, its study in the African context is more recent. The paper uses a new representative sample of enterprises in Mozambique comprising data on management and organizational practices, as well as skills, to study the importance of firm capabilities in Mozambique. The analysis suggests that the private sector in Mozambique scores below other developing countries in all dimensions of firm capabilities. Enterprises engaging in more contractual

relationships demonstrate stronger firm capabilities. Firm capabilities are key drivers of performance; controlling for other input factors, firms in Mozambique with better firm capabilities perform better. The relationship is robust to various measures of performance and to including various firm and manager characteristics. The analysis finds that for smaller firms, non-exporters, and female-owned enterprises, their gap in business performance can be explained by differences in management practices. The results suggest Mozambique should explore mechanisms of expanding firm capabilities in targeted types of firms.

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Are Firm Capabilities Holding Back Firms in Mozambique?

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1 Introduction

Firm capabilities are key drivers of productivity. Firm capabilities include both managerial and organizational practices, as well as innovation competencies. They include the skills that workers and managers bring to the firm. They are elements of the production process that cannot be bought “off the shelf” (Sutton 2012).

There is widespread evidence from across low, medium and high-income countries that firm capabilities are associated with higher productivity. Better worker skills increase productivity as well as generate productivity spillovers (Syverson 2011, Moretti 2004); firms that are better managed can leverage their technology, capital and workforce more effectively and achieve higher levels of production (Bloom & Van Reenen 2007, Bloom et al. 2014). Bloom, Sadun & Van Reenen (2016) argue that about a third of the observed differences in GDP across countries are related to differences in management practices.

Mozambique has seen two decades of continued positive GDP growth, mostly driven by gains in productivity. However, little of this growth in productivity was due to firms becoming more productive. Decompositions of labor productivity show that most of the gain in aggregate productivity in the last decade was due to on-going structural transformation, the movement of workers and factors of production from agriculture to higher value-added manufacturing and especially to services activities (World Bank 2018). Productivity improvements (also called “within” productivity growth, see Olley & Pakes 1996, Melitz & Polanec 2015) contributed to only a tenth of aggregate productivity growth in the manufacturing sector in Mozambique. In the services sector, the average firm productivity even declined in the period, contributing negatively to overall productivity growth (World Bank 2018).

Mozambique, just like many other developing countries, experiences a high degree of heterogeneity in productivity. The 2018 Enterprise Survey data shows that a formal firm (with five or more employees) in the 75th percentile of productivity is between 6 to 12 times more productive – as measured by sales per employee – than a formal firm in the 25th percentile. The corresponding figure in higher income economies is much lower. In the United States, a firm in the 75th percentile is less than twice as productive than a firm in the 25th percentile (Syverson 2004). The figure in Mozambique is also higher than the dispersion found in India or China (Hsieh & Klenow 2009). Taking into account that many enterprises in Mozambique operate in the informal sector and are

expected to be less productive (e.g., La Porta & Shleifer 2008), the actual dispersion is likely several times higher.¹

In this context, understanding mechanisms of expanding within productivity growth can be critical for Mozambique's economic development, and a strategy that can complement well the continuation of policies to promote investment and economic transformation. Specifically, for policy, learning about the role firm capabilities can have in raising within sector productivity is important to potentially identify new drivers of growth for Mozambique.

Early studies showed that Mozambique scores low in measures of firm capabilities. It is ranked 137 out of 138 in the World Economic Forum's Global Competitiveness Index (GCI), mostly due to low scores on weak higher education and training and limited business sophistication, and is ranked 148 out of 157 in the World Bank's Human Capital Index, which measures the relative productivity of today's generation based on their educational and health attainments. In an international comparison of management practices across 34 countries, firms in Mozambique reported the lowest adoption of business practices (Lemos & Scur 2014).

This paper uses new firm-level data on management and organizational practices, and firm-level skills, that was collected in 2018 as part of the World Bank's Enterprise Survey to better understand the relationship between firm capabilities and firm performance in Mozambique. It expands from an early study about management practices (Lemos & Scur 2014) by covering also skills and training, and a wide range of sectors and locations in the country, in the context where Mozambique is facing a more difficult economic environment than in the high-growth period of 2000-2015. It also explores the importance of competition, contract enforcement and transaction costs in explaining differences in firm capabilities. Finally, it studies for the first time the relationship between firm capabilities and performance in Mozambique.

We find that larger firms, male-owned, with relationship with international markets (exporters, buying inputs from outside, with licensed technology), and those using internet, are more likely to have better firm capabilities. Measure of competition, captured by Herfindahl-Hirschman Index (HHI), however, does not have significant effect on firm capability in Mozambique, contrary to

¹ On average, informal firms in Mozambique are 14 times less productive than micro formal firms. See also Aga et al. 2019.

expectation that more competitive sectors tend to have firms with better capabilities. Firm capabilities are positively correlated with performance of enterprises in Mozambique. Concretely, one standard deviation change in management practices is associated with 63 percent increase in sales per employee.

This paper is organized as follows. Section 2 discusses the definitions of management practices and skills, demonstrating studies on the topic in Mozambique. Section 3 explores the data used for analysis. Section 4 describes the methodology for analysis. Section 5 presents the characteristics of the formal private sector in Mozambique. Section 6 presents a description of firm capabilities in Mozambique, including on factors that can shape those practices and abilities. Section 7 analyzes the relationship between firm capabilities and performance in Mozambique. Section 8 discusses the policy implications of the results and concludes.

2 Background

Management practices

There is a growing understanding that firm capabilities are crucial for a firm's productivity and can explain some of the observed gaps across and within countries. For a developed setting like the United States, Bloom et al. (2018) estimate that management practices alone account for about 22 percent of the productivity gap between a firm in the 10th and the 90th productivity percentile, comparable to the contribution of Research & Development (R&D) and more than the contribution of human capital and ICT.² Firm capabilities in general (human capital, technology and management practices jointly) explain almost half (44 percent) of the observed dispersion of productivity in the U.S. (Bloom et al. 2019).

In African countries, Bloom et al. (2014) describes a significant gap to more advanced economies in terms of both management practices and productivity, and a strong relationship between the two. It also documents a more prevalent presence of a left tail of badly managed firms, often associated to a lack of exit of underperforming enterprises. An assessment of the importance in smaller firms in developing countries including Ghana, Kenya and Nigeria (McKenzie and Woodruff, 2017) shows that business practices explain as much of the variation in performance in microenterprises as in larger enterprises. Panel data in some of the countries shows that better

² In their analysis, human capital is measured by the share of the workforce with a college degree.

business practices predict higher survival rates and faster sales growth (McKenzie and Woodruff, 2017).

Several channels have been suggested to explain how management and organizational practices lead to higher productivity. Workforce management through supervision and the setting of appropriate incentives can encourage higher levels of effort from workers. For example, basing pay on output instead of paying a fixed rate by the hour increased productivity by 44 percent in a windshield installation firm in the US (Lazaer 2002). In cases where output is not directly measurable or contractable, good workforce management can still increase effort: Baker, Gibbons & Murphy (2002) and Gibbons & Henderson (2013) argue that good managers are able to establish relationship of trusts and that through these “relational contracts” with their workers, employees exert higher levels of effort knowing that this will be reciprocated in some form in the future. Nevertheless, setting incentives can be tricky. Badly-aligned incentives can create a barrier to firms adopting more productive technologies, as Atkin et al. (2017) showed with soccer-ball producers in Pakistan, or can undermine worker moral, as Breza, Kaur & Shamdasani (2018) showed with performance pay in a manufacturing plant in India.

Other channels contributing to higher levels of productivity include careful monitoring, measurement and recording of performance output, allowing for rapid adjustments if necessary (e.g., continuous improvement). Better recruitment and training practices can lead to both better hires as well as increased interaction and better problem-solving by employees (Gant, Ichniowski, and Shaw, 2002; Ichniowski, and Shaw, 2009).

Skills

Human capital is a key driver of productivity in both low- and high-income countries. Growth accounting decompositions and comparisons of regional income data suggest that about half of the differences in income levels between countries can be explained by education (Acemoglu & Dell 2010, Mankiw, Romer & Weil 1992).

The skills that workers bring to the firm influence productivity and performance. Gennioli et al. (2013) use Enterprise Survey data of 20 countries – including Mozambique – to estimate that an additional year of education of an employee leads to a 6-7 percent return in productivity. Moretti (2004) finds that American firms in cities with more college-educated inhabitants are more

productive. Better workforce skills are crucial for firms to employ more efficient technologies, produce more sophisticated and higher quality products and services (e.g., Verhoogen 2008) and make the implementation of managerial and organizational practices more effective (Bloom & Van Reenen 2010).

Productivity returns to the education of managers are even higher. Many studies show a clear link between the education of a manager and firm performance in both industrialized countries (see Van der Sluis et al. 2008 for a review) and in low income countries (see e.g., Van der Sluis et al. 2005). Gennaioli et al. (2013) estimate that the return to productivity is close to 30 percent for an extra year of education of a manager. One source of these productivity gains is that more highly educated managers are also more likely to adopt better management practices (Bloom & Van Reenen 2010), suggesting that they are either more aware of what good management practices are or are more effective in adopting them. Informality is also strongly associated with education: according to the 2018 Enterprise Survey, less than five percent of owners of informal firms in Mozambique have completed tertiary education, against 45 percent of owners of formal firms, in line with results from other countries (La Porta & Shleifer 2014).

Interventions to improve capabilities

While the importance of business practices on firm performance is well established (McKenzie and Woodruff, 2017; Bloom & Van Reenen, 2007), there is not enough evidence on how to change business practices effectively. A wide range of interventions aiming to improve firm capabilities of firms through business skills trainings have had at best mixed results (McKenzie & Woodruff 2013; McKenzie et al. 2020; McKenzie 2020). Grover, Medvedev & Olafsen (2018) review 15 randomized controlled trials (RCTs) of business trainings (none in Mozambique), and find that 8 of them had significant and positive impacts on sales, while the remaining 7 had insignificant impacts. Most of these studies targeted micro-sized firms with an average size between 1 and 2 employees. Most of these trainings include components on accounting, financial planning, pricing and costing and separating household and business financing. More encouraging mechanisms of building capabilities include developing non-cognitive skills of managers to have an entrepreneurial mindset (Batista & Seither 2018).

Other interventions have provided consulting instead of or in addition to training. The evidence is more positive for this type of interventions, especially for larger firms. For example, Bloom et al. (2013) provided consultancy services to large Indian textile firms (with an average size of 273 employees) to improve management practices. Doing so increased productivity by 17 percent in the first year and many of these improvements lasted even after nine years (Bloom et al. 2018). Bruhn, Karlan & Schoar (2018) show a similar result of improving management practices as the result of consulting with 432 small and medium enterprises in Mexico (with an average size of 13.7 employees). There have been few consulting interventions with smaller enterprises. Karlan, Knight & Udry (2015) provided consulting services to microenterprises, which improved management practices, but did not lead to higher profits. Additional sets of interventions targeting improvements in management practices and skills are promising but yet to be rigorously evaluated in developing economies. These include outsourcing and insourcing of talent³, improvements in mid-level operational management, improving mechanisms of identifying talent, among others.

Mozambique

Earlier evidence suggests that management practices are poor in Mozambique. Using 2014 data from manufacturing firms, the World Management Survey ranks Mozambique as the country with the lowest average score in the adoption of good management practices, lower than other African countries including Ethiopia, Tanzania, Ghana and Zambia (Lemos & Scur 2014: Figure 1).

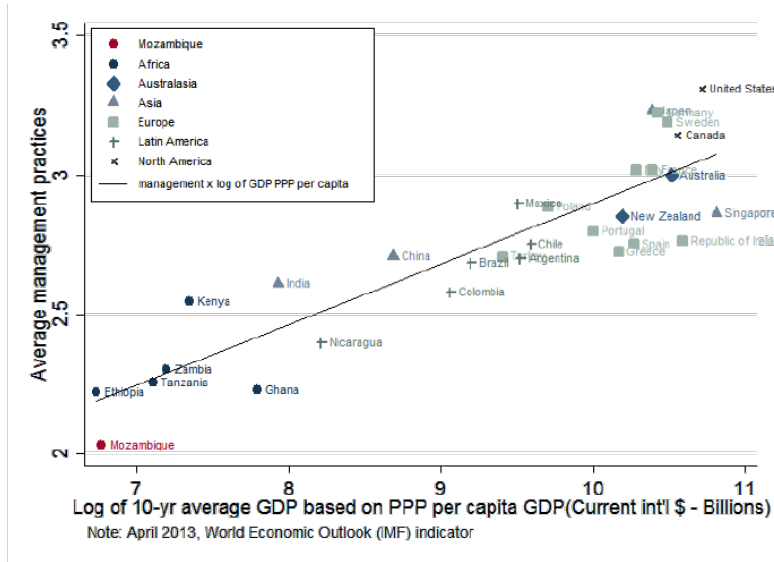
In comparison with countries with high management score - United States, Sweden, Japan, and Germany – we see that more than 75 percent of Mozambique's firms scored below the worst 10 percent firms from these countries (Figure 2). Less than 1 percent of Mozambique's firms reach the score of the top quartile of firms in these developed countries.

Manufacturing firms in Mozambique score particularly low when it comes to improving production processes (operations) (Figure 3), and score at similar levels as Ethiopia and Ghana on people management and target-setting. Nevertheless, there is a large degree of heterogeneity: firms with low management practices co-exist with those with better managerial practices. There are

³ Outsourcing refers to contracting certain services outside of the firm. Insourcing refers to implanting outside knowledge within the firm to better manage the firm.

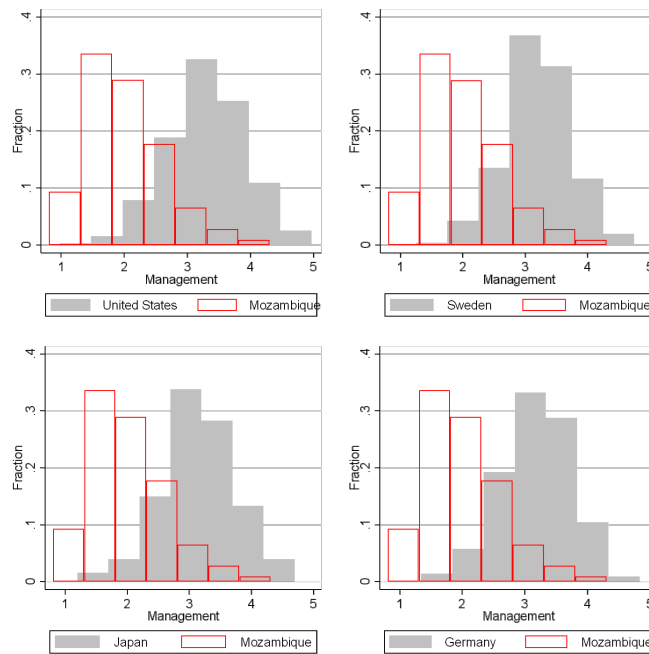
manufacturing firms with high quality practices, but 90 percent of the firms in this sector are within the range of the bottom quartile of firms in the more developed economies (Lemos & Scur 2014).

Figure 1. Management practices (Manufacturing) and GDP per capita



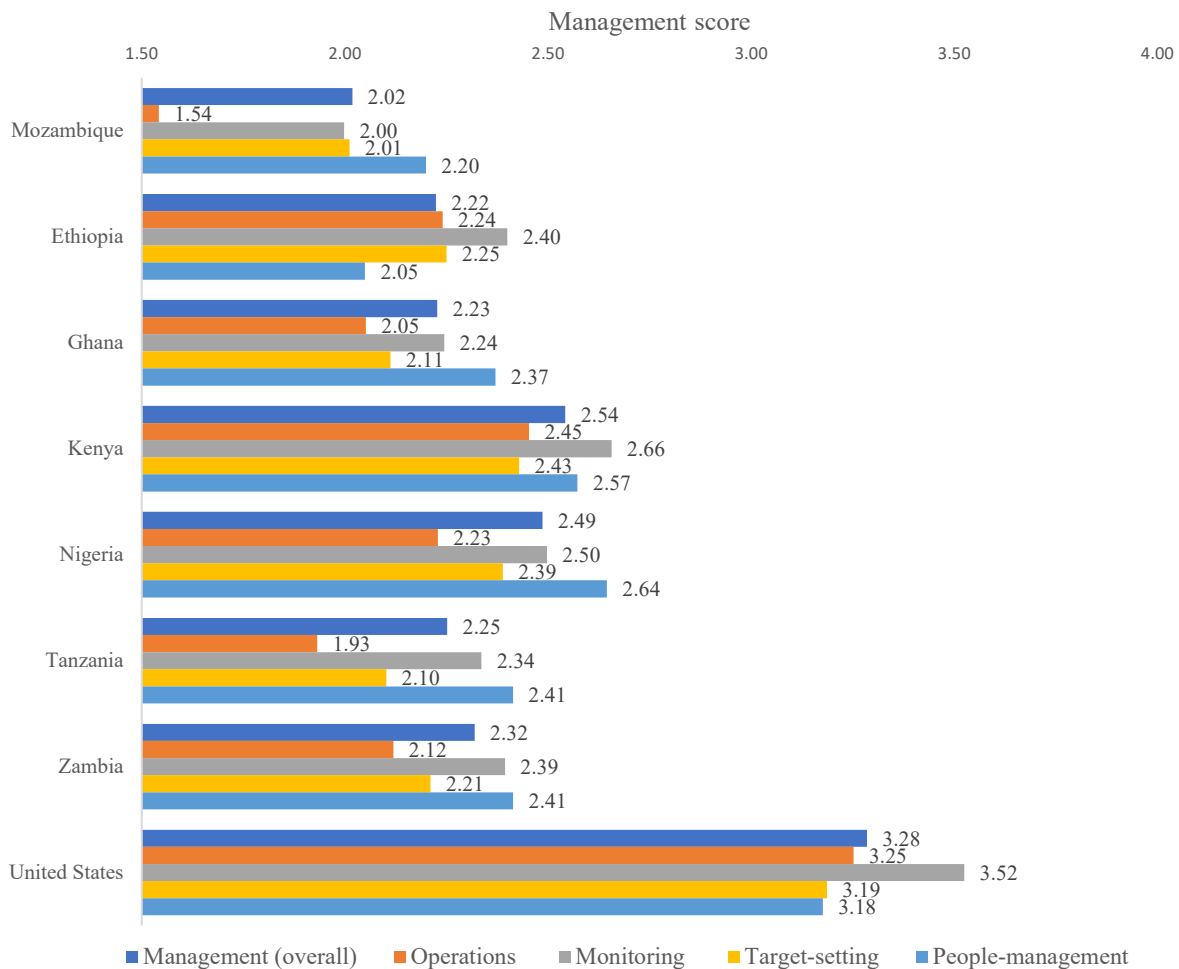
Source: Lemos & Scur, 2014, based on World Management Survey (WMS data).

Figure 2. Comparison of Mozambique with the US, Sweden, Japan and Germany



Source: World Management Survey (WMS). See also Lemos & Scur (2014).

Figure 3. Management practices by area (Manufacturing)



Source: World Management Survey. Adapted from Lemos & Scur (2014).

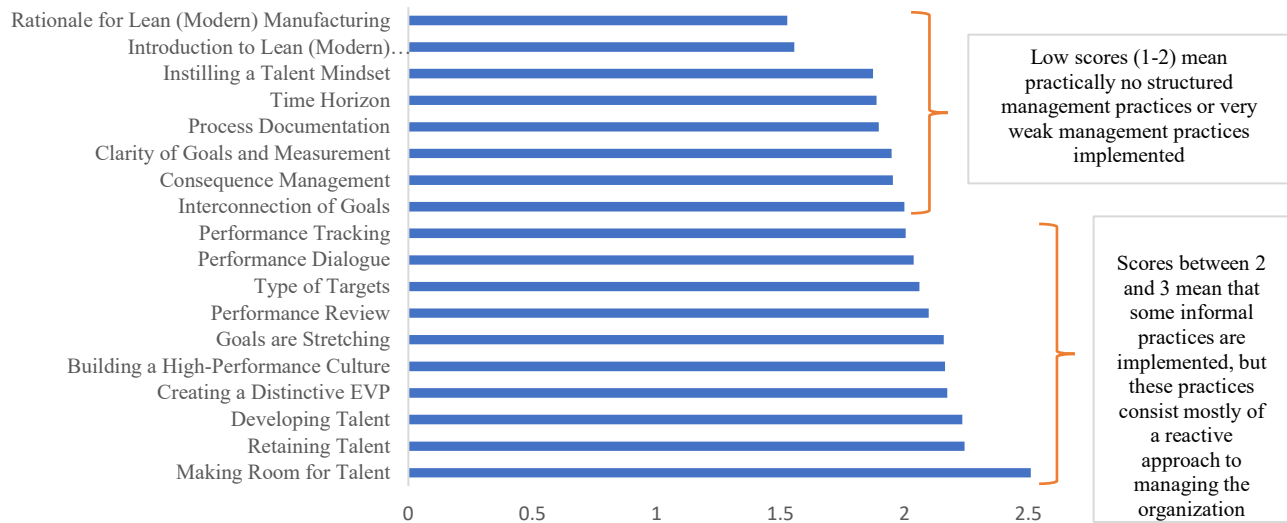
The weaker management practices implemented by Mozambique’s firms include lack of lean manufacturing, limited development of a talent mindset, lack of planning and targeting, and the limited use of documentation to capture lessons. The variability in relation to the mean in operations and monitoring practices is very large, in particular, for lean manufacturing. Higher scores are found for talent recruitment, retaining talent, and developing talent (Figure 4).

One important gap in Mozambique is the limited supply of consulting services in the areas of relevance for management practices. When those consulting services are available, they are often expensive because of their fixed costs, which is associated with the limited market and small

number of firms pursuing them. Consequently, companies often source consulting services from South Africa, Portugal, and other more advanced markets.

Furthermore, Mozambique has a significant skills gap. Compared to other countries in sub-Saharan Africa, the educational attainment in Mozambique is low. In 2010, less than half of adults were estimated to be literate, the result of Mozambique’s long civil war which – in the affected regions - prevented almost an entire generation from attending school. Only one-fourth of those above 30 years living in urban areas attended post-primary education. Nevertheless, there is some reason for optimism: the younger generation is significantly more likely to be literate and to have attended education beyond primary school (Lachler & Walker 2018).

Figure 4. Mozambique’s management practices scores



Source: Authors based on World Management Survey.

3 Data and measurement

The analysis relies on representative data of firms that was newly collected in 2018 by the *World Bank Enterprise Survey*, covering 650 formally registered non-farm firms with five or more employees.⁴ Of these firms, 222 were firms also interviewed as part of the 2007 Enterprise Survey, while the other firms were newly sampled. The 650 firms were randomly sampled from the

⁴ Additional surveys were conducted among 120 formally registered micro-enterprises (with fewer than five employees) and among 554 informal business entrepreneurs. For these enterprises instead of questions on management practices, questions on business practices were asked, based on the methodology by McKenzie & Woodruff (2017). Instead of only management practices, these questions focus on organizational practices more broadly, such as marketing, stock-keeping, record-keeping and financial planning. The evidence for these firms is discussed in Aga et al. (2019).

enterprise census compiled by the national statistical agency (*Instituto Nacional de Estatística*), stratifying by region (Cabo Delgado, Nampula, Zambézia, Tete, Manica, Sofala and Greater Maputo), firm size (5-19, 20-99, 100+) and industry (mining and quarrying, food and beverages, metals/machinery/computers/electronics, other manufacturing, tourism, retail and other services).⁵

Measuring management and organizational practices

In addition to the regular Enterprise Survey questions (see Appendix 1 for full set of modules used in the Enterprise Surveys), entrepreneurs were asked several questions on management practices, based on the *Management and Organizational Practices Survey (MOPS)*. The MOPS, which was designed by the US Census Bureau to be used as part of the Annual Survey of Manufacturers (ASM), has been used in a number of developing countries to measure business practices, including outside of manufacturing.

The MOPS is a closed question questionnaire consisting of 16 questions (Bloom et al., forthcoming). The survey scores firms across four broad areas: operations (e.g. improvement of production process), monitoring (e.g. measurement and tracking within the production process), target setting and people management (e.g. the use of incentives, promotion and reward strategies). Examples of the closed questions are “how many key performance indicators were monitored at this establishment?” (with answers varying between “1-2 key indicators” and “10 or more indicators”) and “who was aware of the production targets at this establishment?” (with answers varying between “only senior managers” and “all managers and most production workers”). For the Mozambique survey, a subset of 11 MOPS-based questions were included (see Table 1).

The management scores of the MOPS have been shown to be strongly correlated with scores given by the *World Management Survey (WMS)*, developed by Bloom & Van Reenen (2007), which has been the largest effort around the world to collect data on management practices. It relies on double-blind phone interviews conducted by a trained interviewer who scores a firm based on a set of open questions (e.g., “tell us how you monitor your production process”). The advantage of the double-blind approach is that firm managers are unaware that their management practices are scored, potentially reducing bias due to social desirability. The disadvantage of the WMS is that it is more difficult to incorporate in existing data collection efforts.

⁵ See enterprisesurveys.org for a detailed description of the sampling methodology.

Table 1. Management practices questions included in the survey

Area	Question	Answers
Operations	Over the last fiscal year, what best describes what happened at this establishment when a problem in the production process arose?	<ul style="list-style-type: none"> • We fixed it but did not take further action; • We fixed it and took action to make sure it did not happen again; • We fixed it and took action to make sure that it did not happen again, and had a continuous improvement process to anticipate problems like these in advance • No action was taken
Monitoring	Over the last complete fiscal year, did this establishment monitor any performance indicators? Over the last complete fiscal year, how many performance indicators were monitored at this establishment?	<ul style="list-style-type: none"> • Yes • No • 1-2 indicators • 3-9 indicators • 10 or more indicators
Target-setting	Over the last complete fiscal year, did this establishment have production targets? Examples of production targets are: production volume, quality, efficiency, waste, or on-time delivery. Over the last complete fiscal year, what best describes the time frame of production targets at this establishment? Over the last complete fiscal year, how easy or difficult was it for this establishment to achieve its production targets overall? Over the last complete fiscal year, who was aware of the production targets at this establishment?	<ul style="list-style-type: none"> • Yes • No • Main focus was on short term, less than one year • Main focus was on long term, one year or more • Combination of short-term and long-term targets • Achieved without much effort • Achieved with some effort • Achieved with normal amount of effort • Achieved with more than normal effort • Only achieved with extraordinary effort • Targets were not achieved • Only senior managers • Most managers and some production workers • Most managers and most production workers • All managers and most production workers
People management	Over the last complete fiscal year, did this establishment have performance bonuses for managers that were based on production targets? Over the last complete fiscal year, what were managers' performance bonuses mostly based on? Over the last complete fiscal year, what was the primary way non-managers were promoted at this establishment? Over the last complete fiscal year, when was an under-performing non-manager reassigned or dismissed?	<ul style="list-style-type: none"> • Yes • No • Their own performance • Their team performance • Their establishment's performance • Their firm's performance • Based solely on performance and ability • Based partly on performance and ability, and partly on other factors (for example, tenure or family connections) • Based mainly on factors other than performance and ability (for example, tenure or family connections) • Non-managers are normally not promoted • Within 6 months of identifying under-performance • After 6 months of identifying under-performance • Rarely or never

Measuring skills

To measure firm-level skills, entrepreneurs were asked questions on their own and their staff's education and training. These questions were based on the World Bank Enterprise Skills Survey, which has been conducted in Tanzania (Tan, Bashir & Tanaka 2016) and in Zambia (Cao and Saeki 2018). Table 2 presents the list of questions used for measuring skills in the main analysis. In addition, the survey complemented these with questions about the skills profiles and skills deficits of managers and workers.

Table 2. Survey questions on worker and management skills

Area	Question	Answers
Education and training	What is the highest level of education completed by this establishment's top manager?	<ul style="list-style-type: none">• No school• Primary School – First level• Primary School – Second level• High School- First level• High School- Second level• Professional School• Undergraduate Degree• Post-graduate degree
	What percentage or how many of the full-time permanent workers completed secondary school?	... %
	What percent of this establishment's permanent full-time employees employed at the end of the last complete fiscal year had a university degree?	... %
	Over the last complete fiscal year, did this establishment have formal training programs for its permanent, full-time employees?	<ul style="list-style-type: none">• Yes• No
	Referring to the training programs run over the last complete fiscal year, what percentage of permanent, full-time employees of the following categories received formal training?	... % (Separate answers for production and non-production employees)

4 Empirical strategy

To explore the relative importance of firm capabilities, we follow Bloom, Schweiger and Van Reenen (2012) estimating the following equation:⁶

$$Y_i = \alpha_0 + \alpha_1 l_i + \alpha_2 k_i + \alpha_3 n_i + \alpha_4 M_i + \alpha_5 S_i + \alpha_6 Z_i + \mu_i \quad (\text{Eq. 1})$$

where Y_i is a measure of firm performance, l_i is the logarithm of labor, k_i is the logarithm of capital (i.e. the logarithm of the total value of all assets - machinery, vehicles, and equipment - that are currently used by the business in their current condition regardless of whether the establishment

⁶ See Bloom, Schweiger and Van Reenen (2012) for a description of a similar approach.

owns them or not), and n_i is the logarithm of material inputs of firm i . The value of the capital stock is only available for manufacturing firms.⁷ M_i is the measure of management practices and S_i is the measure of skills. For these variables normalized scores (z-indices) are used. Z_i is a vector of all other controls that are predicted to affect firm performance, such as firm age, manager age, and a set of industry dummies and location variables. In addition, we estimate models with labor productivity as the dependent variable:

$$\frac{Y_i}{l_i} = \alpha_1 + \alpha_2 k_i + \alpha_3 n_i + \alpha_4 M_i + \alpha_5 S_i + \alpha_6 Z_i + \mu_i \quad (\text{Eq. 2})$$

To assess the importance of firm capabilities, we test the hypothesis that S_i and M_i are equally effective (or ineffective): $\alpha_4 = \alpha_5 = 0$. We use an F test to check whether S_i and M_i variables are jointly statistically significant. We see F as a measure of the relative increase in the sum of squared residuals (SSR) when moving from an unrestricted to a restricted model (Wooldridge, 2008). Nevertheless, this test does not provide information of partial effects on Y . Thus, we cannot use it to test differences in the effectiveness of the different capabilities' drivers.

The overall analysis does not allow to causally relate firm capabilities to performance, but it is an important step before promoting and testing individual policies. It allows to understand how high or low are Mozambique's levels compared to other countries, which types of firm capabilities seem more relevant for firms that were able to grow and perform in Mozambique, and for which types of enterprises firm capabilities helps to explain further differences in performance.

Estimating heterogeneous effects

To assess the heterogeneity of the findings by firm type (small versus large; young versus old; male versus female-owned; located in Maputo versus in other places; exporters versus non-exporters; foreign vs non-foreigner), we estimate the following model for formal firms with at least five employees:

⁷ In the Enterprise Survey questionnaire, capital stock is only available for manufacturing firms and not for services firms. As an alternative, some regressions use last year investment as a proxy for capital when estimating the results for all sectors.

$$\frac{Y_i}{l_i} = \alpha_1 + \alpha_2 k_i + \alpha_3 n_i + \alpha_4 O_i + \alpha_5 M_i + \alpha_6 Z_i +$$

$$\alpha_7 Type_i + \alpha_8 l_i * Type_i + \alpha_9 k_i * Type_i + \alpha_{10} n_i * Type_i +$$

$$\alpha_{11} M_i * Type_i + \alpha_{12} S_i * Type_i + \alpha_{13} Z_i * Type_i + u_i \quad (\text{Eq. 3})$$

To better understand the drivers behind performance gaps across types of firms (e.g. small vs large firms) we use the Oaxaca-Blinder (OB) decomposition (Fortin et al. 2011). Consider that small and large firms differ in their characteristics including management practices. These different characteristics contribute to the productivity gap between small and large firms. But also, the relationship between these characteristics and performance could differ between small and large firms (e.g. a small firm can benefit more from improving management practices compared to a large firm). The OB decomposition decomposes the gap into the part explained by large and small firms differing in observable characteristics including the level of management practices (the “endowment effect”) and the part explained by how these characteristics influence performance differently between large and small firms (the “structural effect”).

5 Summary characteristics

Table 3 summarizes the main characteristics of the non-farm formal firms in Mozambique used for the analysis. One percent are in extractives, 21 percent are in manufacturing⁸, 27 percent are in retail, and over half of the firms are in non-retail services.⁹ About 49 percent of the enterprises are concentrated in greater Maputo including Maputo Province and City. About one third are in Center Provinces and 19 percent are in Northern Provinces. The average number of total employees is of 46 workers, with about 8 percent of the firms with more than 100 workers. The formal enterprises in Mozambique are on average 15 years old with the oldest operating for more than 100 years.

⁸ Manufacturing includes firms from manufacture of food products and beverages subsector, metals, machinery, computer, and electronics, manufacture of tobacco products, textiles, leather, garments, wood, paper, publishing, printing and recorded media, refined petroleum products, chemicals, rubber and plastics, non/metallic mineral products. It also includes manufacture of fabricated metal products, except machinery and equipment, transport machines, furniture.

⁹ Services includes firms from hotel and restaurants, services of motor vehicles, wholesale, transport, and IT.

A proportion of 16 percent are exporters, and 24 percent are foreign-owned. In terms of financial inclusion, 83 percent have bank accounts, and 9 percent have loans. About 35 percent of firms report having introduced a new product or service in the past three years, and 16 percent of the companies introduced a new process in the same period. Only 8 percent of enterprises spend on research & development (R&D) activities.

For over 80 percent of the firms, the majority of the ownership is male. For 45 percent of firms, the main owner/manager has completed tertiary education. The average age of the business owner / manager is 48 years old.

Additionally, firms are different across a number of dimensions. Younger firms (those with up to five years in operation) have a younger manager than older enterprises. They are less likely to be in manufacturing, in Maputo, and to perform research and development. They are also smaller in terms of number of workers, but not in sales and profits.

Larger firms (those with at least 100 employees) are more likely to be in extractives and less likely to be in retail than smaller enterprises. The manager of a large firm is more likely to be older and have an university degree. Large firms are significantly more likely to be in Maputo, to export and to be foreign owned. Although their size in sales, profits and capital is larger than smaller firms, their (labor) productivity is not different.

Firms in Maputo have more workers than the national average but perform on par in terms of sales and profits. They are more likely to be in manufacturing than in other regions, they tend to be older, and are less likely to have introduced a new process in the past three years.

Among the most productive enterprises are the exporters and foreign-owned. Both of these groups of firms are more likely to have a manager with a university degree than respectively non-exporters and locally-owned enterprises. The foreign-owned are less likely to be in manufacturing and to be female-owned.

Table 3. Descriptive statistics

Variable	# obs.	Mean	Firms that are ≤ than 5 years old	Firms with ≥ 100 workers	Firms in Maputo	Firms in Manufacturing	Foreign-owned Firms	Exporters
Extractives	650	1.1	1.6	3.2**	0.9*	0.0***	1.6	2.6**
Manufacturing	650	20.8	15.6*	30.6	25.5***	100.0***	14.56**	24.8
Retail	650	26.6	30.1	12.7**	25.5	0.0***	29.1	18.7
Other services	650	51.5	52.8	53.5	48.1	0.0***	54.8	53.9
Maputo (Greater)	650	48.5	36.8**	68.9***	100.0***	59.5***	45.3	38.8
Northern Provinces (Cabo Delgado, Nampula)	650	19.1	11.1**	7.7***	0.0***	14.4***	12.7	17.9
Central Provinces (Zambézia, Tete, Manica, Sofala)	650	32.4	52.1***	23.4	0.0***	26.1***	42.0*	43.3
Firm's age (years)	647	14.9	3.5***	18.5*	18.6***	18.7***	15.1	13.1
Firm is exporter	650	15.6	18.0	41.5***	12.5	18.6	25.3**	100.0***
Foreign owned	648	23.7	28.7	40.4*	22.1	16.6**	100.0***	38.3**
Business has current or savings account	650	82.9	79.8	86.7	76.3***	79.4	85.7	93.4***
Business has a loan from financial institution	650	9.6	10.1	16.7	11.6	12.6	13.5	14.4
Has to give gifts, informal payments or bribes	650	8.1	12.2	4.2	6.7	10.7	11.0	9.2
Annual sales (USD, win 95%)	650	742,218	542,752	4,384,771***	844,555	689,145	1,270,101**	1,993,157***
Annual profits (USD, win 95%)	614	245,592	257,339	1,264,655***	169,172	265,889	575,801**	731,612**
Capital (USD, win 95%)	300	1,131,824	815,523	3,196,868***	857,452*	1,053,126**	2,954,450***	2,408,024**
Number of total employees	650	45.7	23.5**	356.0***	66.8**	64.0	72.6	73.9**
Firm with 100 or more employees	650	8.3	5.3	100.0	11.8**	12.3	14.2*	22.2***
Introduced new products/services last 3 years	650	34.6	28.3	37.3	38.1	37.0	32.9	45.2
Introduced new or improved processes last 3 years	650	15.5	20.2	14.0	11.6**	15.7	15.6	16.2
Does R&D	650	7.5	2.4***	24.0*	10.2	10.4	7.7	13.5
Manager or owner age (years)	650	47.7	42.0***	53.8***	50.5***	51.0***	46.1	46.3
More than the 50% of owners are female	646	17.6	20.5	8.7	16.3	13.0	7.0***	18.1
University is the highest level of education of top manager or owner	642	44.7	45.2	82.6***	47.2	36.6*	56.1**	67.6***

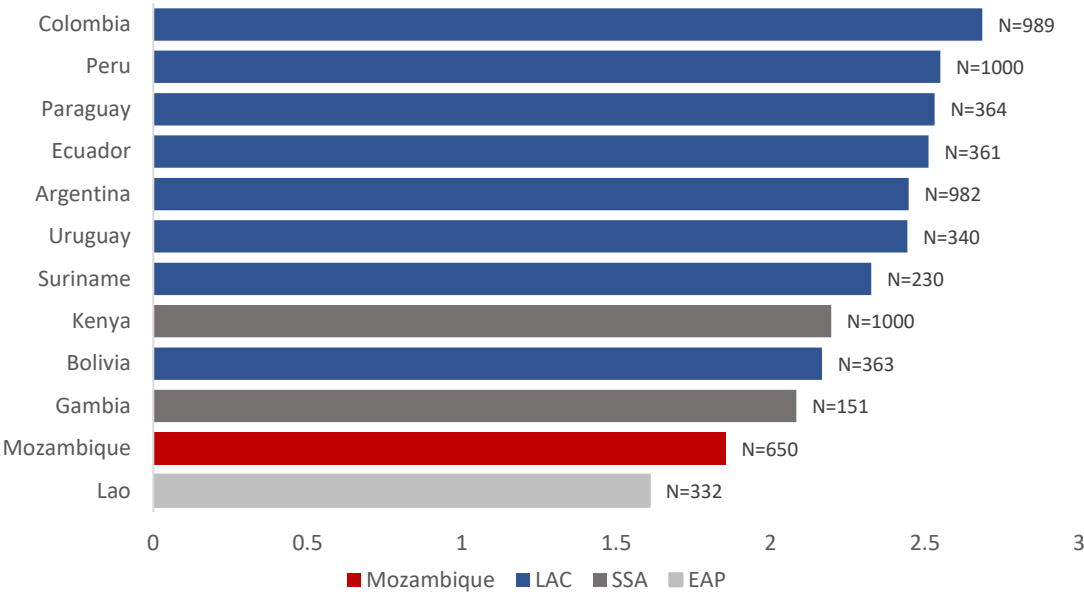
Note: All percentages, otherwise stated. All means, otherwise stated. *** p<0.01, ** p<0.05, * p<0.1 significant difference with the complement group (firm's age larger than 5, less of 100 workers, firm's located elsewhere, non-manufacturing, domestic ownership, non-exporter). Win 95%: winsorized at 95%. Workers measured by total employees (total employees includes permanent and temporary employees, temporary employees are weighted by length of period worked).

6 Firm capabilities in Mozambique

Using the 2018 Enterprise Survey data, the analysis suggests that the firm capabilities in Mozambique are weak. When compared with other countries with Enterprise Surveys tracking management practices¹⁰, Mozambique’s overall management practices are 16 percent below firms in Kenya, and 11 percent below those in Gambia, after accounting for size of the firm (Figure 5). The gap to more developed Latin American countries is even larger. These results go in line with the assessment done in 2014 in the manufacturing sector for Mozambique (Lemos and Scur, 2014).

Mozambique’s average management practices mask still significant differences in the distribution of enterprises (Figure 6). Compared to countries with higher income and management practices (like Colombia), where the proportion of firms with “bad” management practices is relatively low, Mozambique has a high concentration of enterprises with weak management practices.

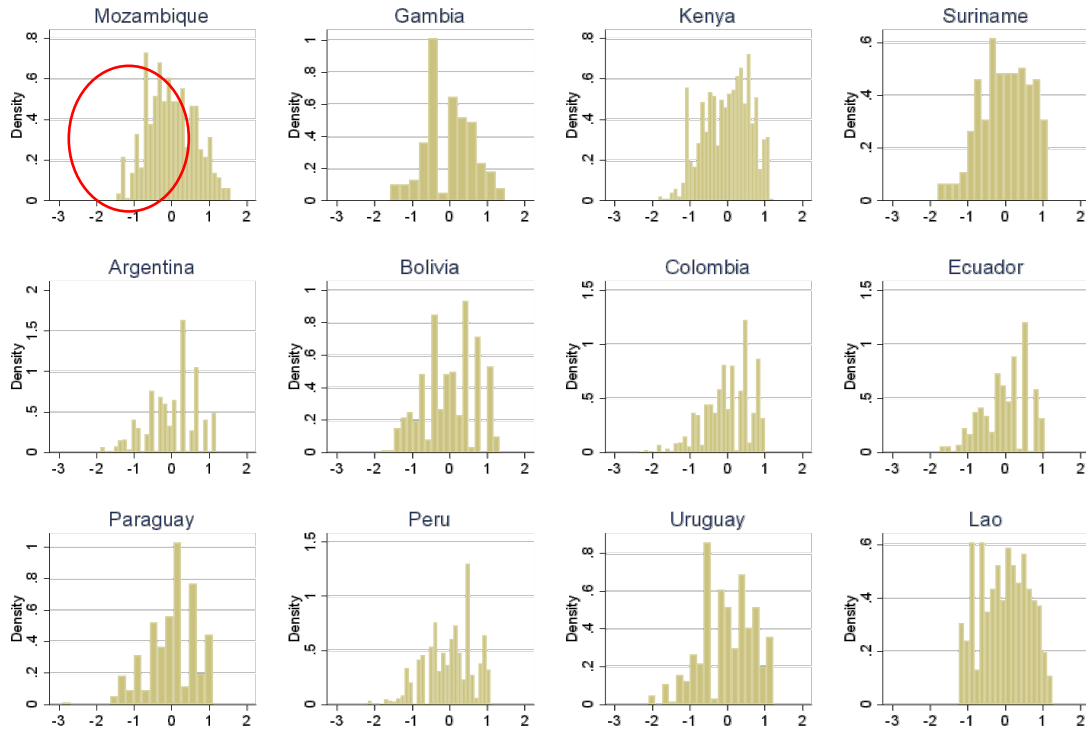
Figure 5. Average management practices scores, controlled by number of employees



Source: Enterprise Survey data, authors

¹⁰ This is preliminary and will be updated with more countries when compared with the World Management Survey.

Figure 6. Distribution of Firm-Level Management Practices



Note: Sample of each country unweighted.

Source: Enterprise Survey data, authors

Among the enterprises that score lower in management practices in Mozambique are the smaller enterprises between five and ten workers, those in extractives, firms in the Central region, and enterprises with female majority ownership (Table 4). For the latter, it is worth reemphasizing that the standard Enterprise Survey is already a subset of formal firms with at least five workers, where only 18% are majority female-owned. The significant difference in management practices between male and female-owned firms suggests that underlying gender constraints may be limiting the access to those practices.

Firms that export directly (not through an intermediary), firms using foreign inputs and firms with a website also adopt better management practices. Otherwise, and perhaps surprisingly, there is no significant difference in management practices between firms in Maputo and elsewhere in Mozambique when accounting for other explanatory factors, as well as between foreign and local enterprises, or between old and young firms.

Table 4. Factors associated with Firm Capabilities in Mozambique

Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)
	Management practices	Management practices	Management practices	Skills	Skills	Skills
	All firms	All firms	All firms	All firms	All firms	All firms
Firm 5 years old or less	-0.193 [0.193]		-0.106 [0.152]	0.031 [0.109]		0.050 [0.092]
10 to 49 workers		0.528*** [0.162]	0.482*** [0.149]		0.218** [0.107]	0.129 [0.106]
50 to 99 workers		1.301*** [0.230]	0.843*** [0.188]		0.500*** [0.155]	0.176 [0.174]
100 or more workers		0.958*** [0.289]	0.546* [0.290]		0.550*** [0.161]	0.305* [0.174]
Manufacturing	0.145 [0.128]	0.128 [0.123]	0.152 [0.132]	-0.119 [0.097]	-0.131 [0.096]	-0.173** [0.079]
Extractives	-0.192 [0.195]	-0.456** [0.204]	-0.332 [0.212]	0.089 [0.139]	-0.021 [0.150]	0.038 [0.160]
Retail	0.194 [0.151]	0.246 [0.149]	0.125 [0.135]	0.129 [0.120]	0.156 [0.119]	0.014 [0.106]
Maputo	0.023 [0.152]	0.037 [0.146]	0.110 [0.134]	-0.092 [0.124]	-0.104 [0.120]	-0.027 [0.113]
Northern Provinces	0.349** [0.167]	0.389*** [0.142]	0.306** [0.146]	0.083 [0.167]	0.084 [0.161]	0.019 [0.143]
Foreign-owned			-0.071 [0.154]			-0.197* [0.118]
Female majority in ownership	-0.416*** [0.157]	-0.368*** [0.139]	-0.301** [0.126]	-0.149 [0.095]	-0.127 [0.093]	-0.086 [0.080]
Direct exporter			0.495*** [0.182]			-0.019 [0.151]
Indirect exporter			-0.244 [0.154]			-0.086 [0.136]
Foreign material inputs or supplies			0.259* [0.142]			0.363*** [0.113]
Business uses computer			-0.120 [0.157]			0.213** [0.105]
Business uses Internet			0.180 [0.139]			-0.057 [0.124]
Business has website			0.481*** [0.153]			0.298** [0.117]
Business uses licensed technology from abroad (excl. office software)			0.151 [0.167]			0.473** [0.229]
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	636	639	635	636	639	635
R-squared	0.108	0.213	0.320	0.329	0.358	0.455
Adjusted R ²	0.095	0.200	0.298	0.319	0.347	0.437

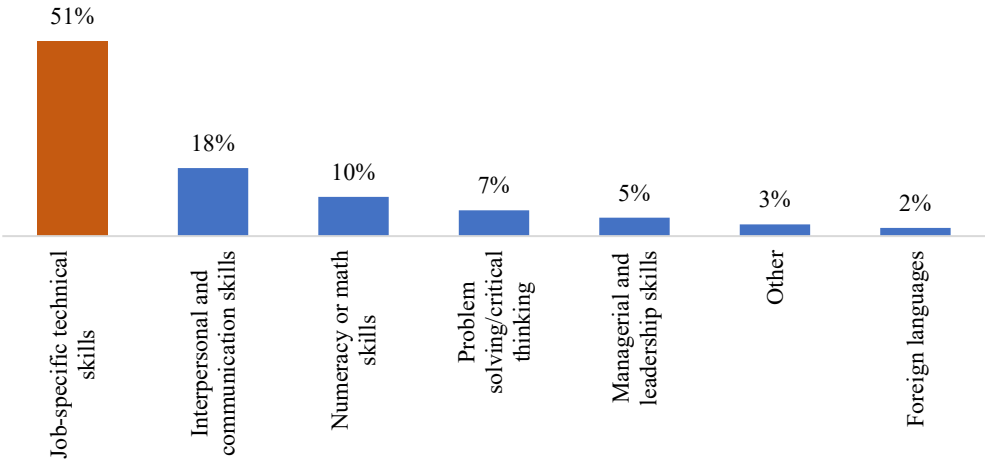
Note: controls include manager or owner age and highest level of education is university. Standard errors in brackets. Management practices and skills are reported as normalized scores (z-indices). *** p<0.01, ** p<0.05, * p<0.1. Excluded categories for non-binary variables are: firms older than 5 years; firms with 5-10 employees; services sector outside of retail, which is composed of, among others, wholesale, transportation, hotels and restaurants, etc; central provinces.

The Mozambican enterprises present relatively small differences in firm-level skills, which include workers and managers education and access to training (Table 4). Larger firms are more likely to employ more skilled workers and managers and/or provide additional training. Firms that use computers, rely on the Internet, use licensed technology, and use foreign materials have higher skills. But there are no significant differences for younger firms, across sectors, regions, for exporters, and by business ownership.

Most firms consider technical skills when contracting technicians and support services (e.g., plant and machine operators and assemblers, clerical support, service and sales, etc.). Few firms consider other type of skills relevant when deciding to hire technicians (Figure 7). Even when hiring professionals, only 11% of firms consider interpersonal and communication skills as important for deciding who to hire, and 14% of companies consider problem solving/critical thinking as important in that decision.

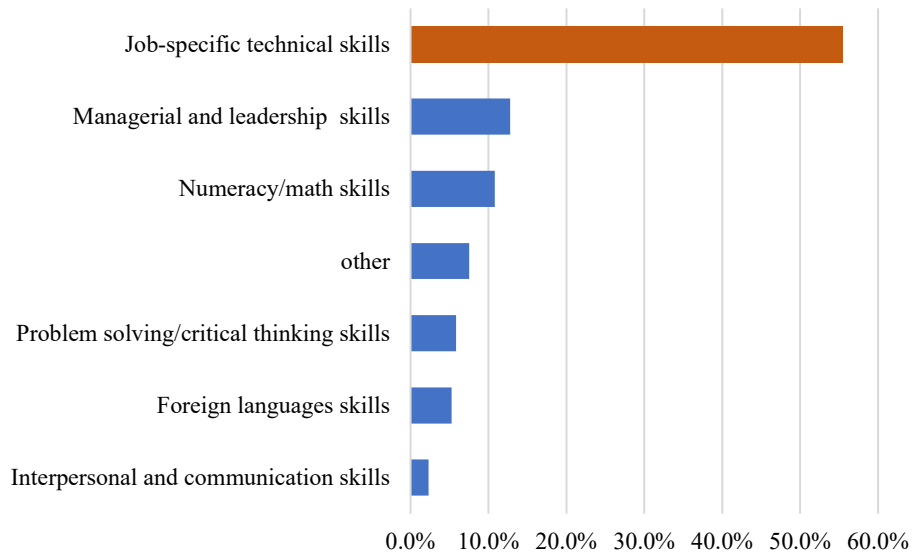
In addition, only 20% of formal enterprises have formal training programs for their permanent, full-time employees. About 55% of the firms with completed trainings, only do them in-house. Of the remaining, 25% of the firms do both in-house and external training, and 20% do only external training. Just 12% of the permanent, full-time employees, in formal companies have received formal training. The majority of the training has been conducted on job-specific technical skills, with just over 10% of it on managerial and leadership skills, and in numeracy/math skills.

Figure 7. Percentage of firms who consider the skill important in deciding to hire technicians



Source: Enterprise Survey data, authors

Figure 8. Skills developed in training (among firms with training programs)



Source: Enterprise Survey data, authors

Shaping factors of firm capabilities

The dynamics on firm capabilities are often shaped by underlying structural factors, especially in differences by industry, location and type of firm. Bloom and Van Reenen (2010) point to the importance of competition in shaping management practices. They hypothesize that in a competitive economy, firms with low management practices would be outcompeted by more productive firms with higher levels of firm capabilities. It is therefore expected that in sectors/locations with higher degrees of competition, higher levels of firm capabilities are found.

For Mozambique, our analysis does not find evidence for this relationship between competition and firm capabilities (see also McKenzie and Woodruff, 2017, for similar finding in developing countries). Table 5 shows regressions of management practices and skills on the Herfindahl-Hirschman Index (HHI)¹¹, a measure of market concentration, calculated at the nationwide industry level, province-industry level and district-industry level. There is little evidence for a negative relationship between market concentration and management practices: most of the coefficients are positive and insignificant. This lack of significant relationship does not necessarily

¹¹ The Herfindahl Hirschman Index (HHI) is a commonly used measure of market concentration, among others (Syverson 2019). It is calculated by taking the sum of squared market shares of a firm in a particular market ($HHI = s_1^2 + s_2^2 + \dots + s_n^2$) and takes a value between 0 and 1. A value close to zero means low market concentration, while a value close to one means a high degree of market concentration.

imply that competition does not shape firm capabilities, but could mean other factors are more important. It could also be a reflection of low nationwide competition and of selection of high-capability firms into markets with low competition.

A second factor shaping firm capabilities is contract enforcement. Firms operating in markets with better contract-enforcement mechanisms can in theory develop more complex models of operation (Nunn, 2007), which leads to more contracting with suppliers and customers. Firms relying on outsourcing and other types of contracts are also expected to adopt better management practices because of their more complex business models. Firms operating in markets with more limited contract-enforcement mechanisms compared typically buy/sell directly or integrate non-core services in-house. Contracting requires a high degree of professionalism from management, e.g., acquiring the legal expertise to write contracts or investing in establishing and maintaining supplier and customer relationships. Contracting also allows for further specialization. In Mozambique, the firms that engage in some form of contracting (e.g. have contracts with other firms or outsource IT or R&D) are more likely to adopt better management practices than those that do not use contracts.¹² The relationship may reinforce each other, but it is important to point to it for possible entry points in policy.

Finally, firm capabilities can be shaped by transaction costs, chiefly the importance of infrastructure. All else equal, enterprises with larger access to infrastructure can have management to be more specialized and productive. In Mozambique, transaction costs – as measured by whether firms see transportation as a major obstacle – do not have a significant relationship with management practices and skills.¹³ This non-result may reflect that the location decision of firms is endogenous, in the sense that firms avoid locating in areas where transportation barriers are high.

¹² The contracting variable is a dummy variable that takes the value of 1 if the firm sells to government, sells to oil/gas companies, sells to other establishments, exports, outsources engineering services, or outsources IT services.

¹³ The coefficient is positive, but not significant. A positive coefficient suggests that firms that report transport being an obstacle have better management practices. This could reflect other factors, e.g. firms that locate in difficult to reach areas have better coping strategies to deal with difficult access or firms that report that transport is an obstacle could also be more likely to rely on transporting goods for their production (which might be positively correlated with the adoption of management practices).

Table 5. Market Concentration, Contract Enforcement, and Transaction Costs

Dependent variable	(1) Mgmt. practices All firms	(2) Mgmt. practices All firms	(3) Mgmt. practices All firms	(4) Mgmt. practices All firms	(5) Skills All firms	(6) Skills All firms	(7) Skills All firms	(8) Skills All firms
HHI (industry)	0.524 [0.517]				1.083* [0.576]			
HHI (industry-provincial)		0.415 [0.317]		0.314 [0.302]		0.865 [0.574]		0.815 [0.586]
HHI (industry-local)			-0.219 [0.293]				-0.148 [0.209]	
Has contracts				0.263** [0.117]				0.343*** [0.110]
Transportation is severe obstacle?				0.592*** [0.156]				0.209 [0.141]
Industry dummies	N/A (collinear)	No	No	No	N/A (collinear)	No	No	No
Provincial dummies	Yes	No	No	No	Yes	No	No	No
Age control (>= 5)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Size controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ownership control (foreign owned)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Female ownership	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	639	626	556	626	639	626	556	626
R-squared	0.200	0.188	0.192	0.246	0.169	0.167	0.152	0.231
Adj R ²	0.189	0.179	0.182	0.235	0.157	0.157	0.141	0.213

Note: Standard errors in brackets. Management practices and skills are reported as normalized scores (z-indices). *** p<0.01, ** p<0.05, * p<0.1.

7 Firm capabilities and performance in Mozambique

Table 6 shows that enterprises in Mozambique with better firm capabilities perform better. A one standard deviation increase in management practices is associated with 63 percent¹⁴ increase in sales per employee after accounting for standard controls: sector of operations, location, firm's age, and manager's age. A one standard deviation in skills is associated with 38 percent larger sales per employee when accounting for similar factors. These differences are statistically different from zero at various measures of performance and productivity. Although the coefficient on management practices is larger than the one on educational skills, we cannot reject that it is not larger.

¹⁴ The coefficients in Table 6 represent logarithmic percentages. A coefficient of 0.490 (49.0 "log" percent) corresponds to $e^{0.490} - 1 = 63.2$ percent.

For manufacturing firms where information is available on the stock of capital investment and inputs, column 5 shows that the association between management practices and performance is less pronounced, although still positive and statistically significant. When accounting for capital stock and inputs, management practices of manufacturing firms are no longer associated with higher sales and value added. Conversely, manufacturing firms with better skills (workers and managers) are much more likely to perform better, even when controlling for capital, skills, and inputs (Table 6, columns 6 and 7). Jointly, firm capabilities are positively associated with performance for manufacturing firms.

Table 6. Associations of firm capabilities with firm performance

Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	(Log) Sales per employee	(Log) Sales per employee	(Log) Sales per employee	(Log) Sales	(Log) Sales	(Log) Sales	(Log) Value added
	All firms	All firms	All firms	All firms	Manufacturing only	Manufacturing only	Manufacturing only
Management practices	0.490*** [0.106]		0.444*** [0.114]	0.457*** [0.119]	0.205* [0.108]	-0.099 [0.087]	0.066 [0.120]
Skills		0.324*** [0.103]	0.137 [0.113]	0.146 [0.124]	0.317 [0.241]	0.231** [0.109]	0.361* [0.209]
Log employees				0.956*** [0.127]	0.941*** [0.299]	0.583*** [0.161]	0.729** [0.330]
Log capital invest. (last year)				-0.000 [0.024]			
Log capital (stock)						0.042 [0.044]	0.206*** [0.052]
Log cost of inputs						0.481*** [0.072]	
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	647	647	647	644	286	232	221
R-squared	0.138	0.082	0.142	0.484	0.520	0.750	0.552
Adjusted R ²	0.128	0.072	0.132	0.476	0.510	0.741	0.537
P-value: Management practices = Skills=0			0.000	0.000	0.084	0.087	0.137
P-value: Management practices > Skills			0.951	0.952	0.333	0.016	0.133

Note: Standard errors in brackets. Standard controls include sector, location, firm's age, and owner's age. *** p<0.01, ** p<0.05, * p<0.1

Furthermore, as shown in table 7, firm capabilities are positively associated with other measures of performance including number of employees, the likelihood of having innovative practices such as developing new products and processes, exports and profits. Increasing the workers and managers skills is also associated with larger and more innovative firms, suggesting that jointly better firm capabilities are common in more productive and innovative enterprises in Mozambique.

Table 7. Associations of firm capabilities with measures of success

Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)
	(Log) Total employees	(Log) Capital	New products	Z-score innovation	Exports	Annual profits winsorized at 95th
	All firms	Manufacturing	All firms	All firms	All firms	All firms
Management practices	0.347*** [0.075]	0.157 [0.299]	0.107*** [0.034]	0.172** [0.069]	0.043* [0.025]	111,137** [55,037]
Skills	0.345*** [0.081]	-0.021 [0.237]	0.082* [0.043]	0.295*** [0.092]	0.022 [0.028]	-41,847 [56,307]
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	647	256	647	647	647	611
R-squared	0.306	0.324	0.116	0.147	0.106	0.213
Adjusted R ²	0.297	0.308	0.104	0.135	0.0938	0.201
Adjusted R ² considering strata	0.295	0.300	0.099	0.131	0.090	0.197
P-value: Management practices = Skills=0	0.000	0.871	0.000	0.000	0.096	0.112
P-value: Management practices > Skills	0.506	0.676	0.655	0.176	0.694	0.938

Note: Controls: (log) employees (except in column 1), sector of activity, Maputo, firm's age, manager's age. Standard errors in brackets.

Heterogeneous effects

Table 8 shows the interaction of management practices and skills with different groups of firms. The analysis suggests that the relationship between firm capabilities and business performance is present across the spectrum of enterprises, but the interaction terms are by and large statistically insignificant. The exception is firms exporting status, where the relationship between management practices and performance is stronger for exporters compared to non-exporters.

Table 8. Heterogeneous effects

Dependent variable	Log sales per employee	Log sales per employee	Log sales per employee	Log sales per employee	Log sales per employee
Interaction	Large (100+)	Old (>5)	Female majority	Exporter	Foreign
Reference	Small	Young	Male majority	Non- exporter	Non- foreign
Management practices	0.484*** [0.125]	0.612*** [0.169]	0.443*** [0.137]	0.328** [0.128]	0.452*** [0.131]
Management practices Interaction	-0.309 [0.357]	-0.226 [0.206]	0.009 [0.244]	0.602** [0.278]	-0.042 [0.290]
Skills	0.106 [0.123]	0.179 [0.264]	0.063 [0.120]	0.084 [0.123]	0.198 [0.122]
Skills Interaction	0.154 [0.303]	-0.044 [0.279]	0.376 [0.350]	0.186 [0.297]	-0.266 [0.276]
Controls	Yes	Yes	Yes	Yes	Yes
Obs	650	647	646	650	648
R ²	0.145	0.146	0.146	0.165	0.145
Adjusted R ²	0.131	0.132	0.132	0.152	0.132
Adjusted R ² considering strata	0.127	0.128	0.128	0.147	0.128

Note: ES sample weighted. Controls include sector (extractive, retail, services, manufacturing), location, manager's age. Standard errors in brackets. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Can differences in the adoption management practices explain performance gaps seen between different groups of firms? An Oaxaca-Blinder decomposition, presented in Table 9, confirms that – apart from exporters versus non-exporters – confirms the finding from the regression with interaction terms that the *returns* to management practices are similar across different groups of firms, implying that the productivity gap that can be attributed to management practices is mostly driven by differences in adoption. In other words, small, young or majority female-owned firms are not less productive because management practices affect performance in these firms differentially, but mainly because they adopt fewer management practices than larger, older or majority male-owned firms. The exception is among exporting firms: adopting management practices has higher returns in terms of productivity for exporters than for non-exporters.

Interestingly, firm capabilities do not explain the differences in performance by age of firm (no gap to start with), location (not presented in the table), and especially between foreign and local ownership. For the latter, the gap in business performance is large - the largest difference of all the categorizations explored in this table - but neither the management practices nor the skills explain the difference between foreign and local firms.

Table 9. Oaxaca-Blinder decompositions

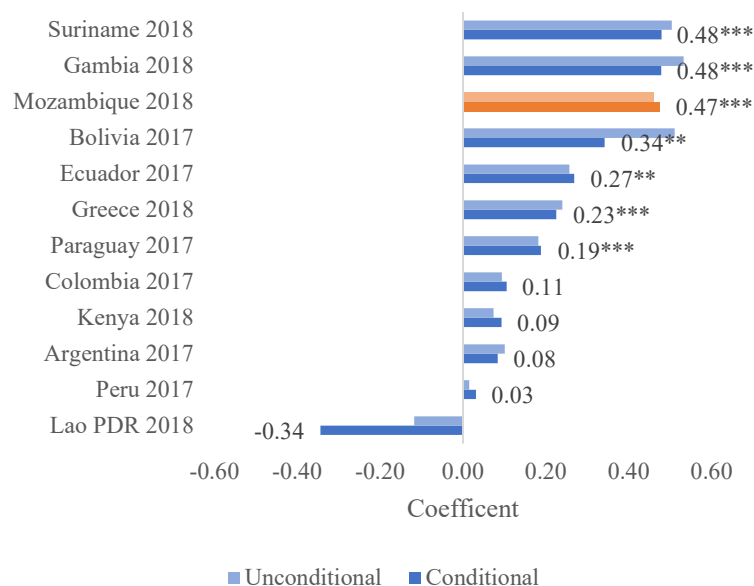
	(1)		(2)		(3)		(4)		(5)	
Dependent variable	Log sales per employee (USD) - gap by size		Log sales per employee (USD) - gap by firm age		Log sales per employee (USD) - gap by gender		Log sales per employee (USD) - gap by exporting		Log sales per employee (USD) - gap by foreign	
Group 1	Large (100 or more workers)		Young (5 years old or less)		Non-female majority		Exporter		Foreign	
<i>Overall</i>	9.059*** [0.339]		8.638*** [0.113]		8.691*** [0.114]		8.762*** [0.264]		9.363*** [0.178]	
Group 2	Small		Old		Female majority		Non-exporter		Non-foreign	
<i>Overall</i>	8.574*** [0.102]		8.526*** [0.202]		8.223*** [0.183]		8.587*** [0.100]		8.381*** [0.120]	
Difference	0.485 [0.354]		0.112 [0.231]		0.468** [0.217]		0.174 [0.280]		0.982*** [0.221]	
Explained	0.381*** [0.137]		0.128 [0.115]		0.166* [0.099]		0.229* [0.126]		0.162 [0.099]	
Unexplained	0.104 [0.366]		-0.016 [0.217]		0.302 [0.200]		-0.055 [0.244]		0.821*** [0.219]	
	explained	unexplained	explained	unexplained	explained	unexplained	explained	unexplained	explained	unexplained
Management practices	0.278** [0.131]	-0.288 [0.194]	0.110 [0.084]	0.042 [0.050]	0.192** [0.086]	-0.029 [0.067]	0.265*** [0.101]	0.237* [0.124]	0.098 [0.073]	0.014 [0.024]
Skills	0.086 [0.079]	0.034 [0.197]	-0.008 [0.016]	-0.006 [0.016]	0.018 [0.023]	0.083 [0.070]	0.062 [0.053]	0.098 [0.081]	0.026 [0.032]	-0.061 [0.054]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	647	647	649	649	647	647	648	648	647	647

Note: Controls: (log) employees (except in the decomposition by size, column 1), sector of activity, Maputo, firm's age (except in the decomposition by age, column 2), manager's age. Standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1

Comparison with other countries

The next question is how this relationship between the adoption of management practices and firm performance differs from the pattern found in other countries. The Enterprise Survey has collected similar management practices adoption data in 15 other countries and territories.¹⁵ Figure 9 repeats the regression of Column 1 of Table 6, showing the (partial) correlation between firm performance, measured by log sales per employee, and the management practices score (normalized within each country), from both a conditional regression with controls and a unconditional regression without controls. Most countries, with the exception of Lao PDR, report a positive coefficient. The coefficient from Mozambique is among the highest, at a similar level as Gambia and Suriname, but higher than most Latin American countries as well as Kenya.

Figure 9. Unconditional and conditional regression coefficients of a regression of log sales per employee on management practices, by country.



Note: The reported coefficient is from a regression of log sales on management score¹⁶, with the conditional regression including controls on sector of activity, city and firm's age. The coefficients should be interpreted as log percentages. The management score is been normalized for each country separately. *** p<0.01, ** p<0.05, * p<0.1

¹⁵ Besides Mozambique, the Enterprise Survey includes questions on the adoption of management practices in the following countries: Argentina, Belarus, Bolivia, Colombia, Cyprus, Ecuador, Gambia, Greece, Kenya, Lao PDR, Paraguay, Peru, Suriname, Uruguay and West Bank & Gaza.

¹⁶ The management scores were calculated with a subset of questions that are common for all countries. Some questions asked in Mozambique were not asked in other countries, leading to a slightly different management score for Mozambique (and therefore a slightly different coefficient than found in Column 1 of Table 6).

This higher coefficient found in Mozambique points towards higher returns of management practices in Mozambique, but can also be the result of omitted variables that are related to both management practices and firm performance (e.g., use of capital, adopting more efficient technologies). Similar results also hold when using a common scale of management practices across countries, instead of using a normalized score within each country (see Appendix Tables 1 and 2).

8 Conclusion and policy implications

In this paper, we review the management and organizational practices, as well as training and education of workers and managers in Mozambique. We find that the private sector in Mozambique has significant gaps in firm capabilities. Firms with improved management practices and better skills perform better.

A few questions are important at this stage: is the association between firm capabilities and performance causal for Mozambique? Why are firms not investing in these capabilities? Are there structural issues in the economy limiting access to skills and others or are these specific to certain types of firms or individual-level decisions in the companies? Can these firm capabilities be improved in Mozambique? How? What would be the impact on productivity?

Mozambique's private sector development work has recently combined attempts to improve the business environment, reduce the gap in infrastructure, improve the sustainability and reach of the financial sector, and develop sectorial – mostly agribusiness – work in targeted locations of economic development.

The findings from this study suggest that Mozambique should test and evaluate more intensive ways of increasing the within productivity in targeted firms and sectors. The importance of information constraints, lack of risk-sharing mechanisms to cover a possible low return from capabilities upgrading, coordination problems, and lack of available services to support that upgrading, should be taken into account when designing interventions in this space. Learning from

the best evidence in the region on what works for the specific targeted enterprises should guide the upgrading of firm capabilities.

The opportunity for Mozambique in enhancing management practices and firm-level skills is particularly important. The discovery of large offshore natural gas (LNG) deposits in the Rovuma basin, in the north of the country, has catalyzed large foreign interest. An important untapped opportunity is the linkage of large-scale oil and gas and mining with local suppliers when competitive to serve that market in terms of quality of service, consistency of delivery, and pricing, all areas that depend on strong firm capabilities. The government of Mozambique in its National Development Strategy recognized the need to ensure a greater link between mineral resources and other sectors of the economy.

Among areas with potential to expand firm capabilities, it is important to distinguish between supply side and demand side interventions.

Among the supply-side interventions, Mozambique interventions should include (i) improving operations; (ii) expanding skills in mid and technical levels; and (iii) expanding the complementary value of technology and innovation. The first set of interventions can build on consulting programs to improve operations practices and management of teams and resources (following Bloom et al. 2018; Iacovone, Maloney & McKenzie 2019), as well as insourcing of talent to the firms to improve their skills set. The second set may include promoting a wider set of mid-level and technical-level skills. As discussed above, few firms conduct formal training programs and these concentrate on learning about technical skills for now. The third set includes developing ways of increasing adoption of complementary technology in specific sectors, as well as supporting the adoption of efficient processes in new sectors/locations (as per Cirera & Maloney 2017).

Among the demand-side interventions, Mozambique should pursue linkages to more productive sectors/companies that can demand (and lead to improved) quality standards and capacity to be effective and efficient (following Atkin, Khandelwal & Osman 2014). This may include both regular meetings with potential buyers (Cai & Szeidl 2018) and developing online systems for business to business networking. The interventions would comprise both matchmaking and nudging large firms/public sector to procure from the targeted groups, including through the disclosure of requirements, wider information sharing about opportunities, preferential clauses, and other incentives. This type of interventions can promote sectors with wider contract

enforcement, which were identified in this study to be associated with better management practices.

To complete both types of interventions, it may be important to start with the enterprises where the gaps in firm capabilities are large and where firm capabilities are identified to likely contribute to widening the gap in business performance. One such group identified in this study is of female-owned enterprises. Given the importance for other aspects of the country's economic development of this and other priority groups of firms (e.g., SMEs), adequate targeting can serve multiple objectives of policy.

References

- Acemoglu, D., & Dell, M. (2009). Productivity Differences between and within Countries. *American Economic Journal: Macroeconomics*, 2(1), 169–188. <https://doi.org/10.1257/mac.2.1.169>
- Aga, G., Campos, F., Conconi, A., Davies, E., & Geginat, C. (2021). *Informal firms in Mozambique: status and potential*.
- Atkin, D., Chaudhry, A., Chaudry, S., Khandelwal, A. K., & Verhoogen, E. (2017). Organizational Barriers to Technology Adoption: Evidence from Soccer-Ball Producers in Pakistan. *Quarterly Journal of Economics*.
- Atkin, David, Amit Khandelwal, and Adam Osman. (2014). *Exporting and Firm Performance: Evidence from a Randomized Trial*. CEPR Discussion Paper (10276).
- Baker, G., Gibbons, R., & Murphy, K. (2002). Relational Contracts and the Theory of the Firm. *Quarterly Journal of Economics*, 117(1), 39–84. <https://doi.org/10.1162/003355302753399445>
- Bandiera, O., Barankay, I., & Rasul, I. (2005). Social preferences and the response to incentives: Evidence from personnel data. *Quarterly Journal of Economics*, 120(3), 917–962. <https://doi.org/10.1162/003355305774268192>
- Batista, C. and J. Seither. (2018). Reference Points and Entrepreneurship: Evidence from a Field Experiment on Aspirations, Goal Setting, and Business Skills. *Mimeo*.
- Bloom, N., & Van Reenen, J. (2007). Measuring and Explaining Management Practices Across Firms and Countries. *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.
- Bloom, N., Brynjolfsson, E., Foster, L., Jarmin, R., Patnaik, M., Saporta-Eksten, I., & Van Reenen, J. (2019). What Drives Differences in Management Practices? *American Economic Review*, *Forthcoming*.
- Bloom, N., Eifert, B., Mahajan, A., McKenzie, D., & Roberts, J. (2013). Does management matter? Evidence from India. *The Quarterly Journal of Economics*, 128(1), 1–51. <https://doi.org/10.1093/qje/qjs044>. Advance
- Bloom, N., Lemos, R., Sadun, R., Scur, D., & Van Reenen, J. (2014). JEEA-FBBVA Lecture 2013: The new empirical economics of management. *Journal of the European Economic Association*, 12(4), 835–876. <https://doi.org/10.1111/jeea.12094>

- Bloom, N., Mahajan, A., McKenzie, D., & Roberts, J. (2018). Do Management Interventions Last? Evidence from India. *NBER Working Paper*, No. 24249.
- Bloom, N., Sadun, R., & Reenen, J. Van. (2012). The Organization of Firms Across Countries. *Quarterly Journal of Economics*, 1663–1705. <https://doi.org/10.1093/qje/qje029.Advance>
- Bloom, N., Sadun, R., & Van Reenen, J. (2016). Management as Technology. *Mimeo*.
- Bloom, N., Schweiger, H., & Van Reenen, J. (2012). The land that lean manufacturing forgot? Management practices in transition countries. *Economics of Transition*, 20(4), 593–635. <https://doi.org/10.1111/j.1468-0351.2012.00444.x>
- Breza, E., Kaur, S., & Shamdasani, Y. (2017). The Morale Effects of Pay Inequality. *Quarterly Journal of Economics*.
- Bruhn, M., Karlan, D., & Schoar, A. (2018). The Impact of Consulting Services on Small and Medium Enterprises: Evidence from a Randomized Trial in Mexico. *Journal of Political Economy*, 126(2), 635–687.
- Cai, J. & Szeidl, A. (2018). Interfirm relationships and business performance. *The Quarterly Journal of Economics*, 133 (3), 1229-1282
- Cao, X. and Saeki, H. (2018) Evidence from structural equation modeling of a skills demand model Vol. 2 of Enterprise skills and firm performance in Zambia. Washington, D.C., World Bank Group
- Cirera, X., & Maloney, W. (2017). The Innovation Paradox: Developing-Country Capabilities and the Unrealized Promise of Technological Catch-Up. Washington, DC: World Bank.
- Fortin, N., Lemieux, T., & Firpo, S. (2011). Decomposition methods in economics. In *Handbook of Labor Economics*. Elsevier, pages 1-102.
- Gant, J., Ichniowski, C., & Shaw, K. (2002). Social capital and organizational change in high-involvement and traditional work organizations. *Journal of Economics and Management Strategy*, 11(2), 289–328. <https://doi.org/10.1162/105864002317474576>
- Gennaioli, N., Porta, R. La, Lopez-De-Silanes, F., & Shleifer, A. (2013). Human Capital and Regional Development. *Quarterly Journal of Economics*, (May), 105–164. <https://doi.org/10.1093/qje/qjs050>
- Gibbons, R., & Henderson, R. (2013). What Do Managers Do ? Exploring Persistent Performance Differences among Seemingly Similar Enterprises. In R. Gibbons & J. Roberts (Eds.), *The Handbook of Organizational Economics*.
- Grover, A., Medvedev, D., & Olafsen, E. (2019). *High-Growth Firms. Facts, Fiction, and Policy Options for Emerging Economies*.

- Hall, R. E., & Jones, C. I. (1999). Why do some countries produce so much more output per worker than others? *Quarterly Journal of Economics*, 114(1), 83–116. <https://doi.org/10.1162/003355399555954>
- Hsieh, C., & Klenow, P. (2009). Misallocation and Manufacturing TFP in China and India. *The Quarterly Journal of Economics*, Volume 124, Issue 4, November 2009, Pages 1403–1448.
- Iacovone, L., Maloney, W., & McKenzie, D. (2019). Improving Management with Individual and Group-Based Consulting: Results from a Randomized Experiment in Colombia. *World Bank Policy Research Working Paper*, (8854).
- Ichniowski, C., & Shaw, K. L. (2009). Insider Econometrics Empirical Studies of How Management Matters.
- Karlan, D., Knight, R., & Udry, C. (2015). Consulting and capital experiments with microenterprise tailors in Ghana. *Journal of Economic Behavior & Organization*, 118, 281–302. <https://doi.org/10.1016/j.jebo.2015.04.005>
- Porta, R. La, & Shleifer, A. (2014). Informality and Development. *Journal of Economic Perspectives*, 28(3), 109–126.
- Lachler, U., & Walker, I. (2018). *Jobs Diagnostic Mozambique*. World Bank.
- Lazear, Edward. (2000). “Performance Pay and Productivity.” *American Economic Review* 90: 1346–1361
- Lemos, R. & Scur, D. (2014). *Management Practices in Manufacturing in Mozambique*. International Growth Center. F-36108-MOZ-1
- Weil, D. N., Mankiw, G., & Romer, D. (1992). A contribution to the empirics of economic growth. *Quarterly Journal of Economics*, 107(2), 407–437.
- McKenzie, D. & Woodruff, C. (2013). What Are We Learning from Business Training and Entrepreneurship Evaluations around the Developing World? *World Bank Research Observer*. 29(1): 48-82.
- McKenzie, D. & Woodruff, C. (2017). Business practices in small firms in developing countries. *Management Science*, 63 (9): 2967-81.
- McKenzie, D. (2020). Small Business Training to Improve Management Practices in Developing Countries: Reassessing the Evidence for “Training Doesn'T Work”. World Bank Policy Research Working Paper, (9408).
- McKenzie, D., Woodruff, C., Bjorvatn, K., Bruhn, M., Cai, J., Gonzalez Uribe, J., Quinn, S., Sonobe, T., & Valdivia, M. (2020). Training Entrepreneurs. *VoxDevLit*, 1(1).

- Moretti, E. (2004). Workers' Education, Spillovers, and Productivity: Evidence from Plant-Level Production Functions. *American Economic Review*, 94(3), 656–690. <https://doi.org/10.1257/0002828041464623>
- Nunn, N. (2007). Relationship-Specificity, Incomplete Contracts, and the Pattern of Trade. *Quarterly Journal of Economics* 122 (2), 569-600.
- Olley, S. & Pakes, A. (1996). *The Dynamics of Productivity in the Telecommunications Industry*. *Econometrica*, Vol.64, pp. 1263–1298.
- Porta, R. La, & Shleifer, A. (2014). Informality and Development. *Journal of Economic Perspectives*, 28(3), 109–126.
- Sutton, J. (2012). *Competing in capabilities: the globalization process*. Oxford University Press.
- Syverson, C. (2004). “Product Substitutability and Productivity Dispersion.” *Review of Economics and Statistics* 86: 534–550.
- Syverson, C. (2011). What Determines Productivity? *Journal of Economic Literature*, 49(2), 326–365. <https://doi.org/10.1257/jel.49.2.326>
- Syverson, C. (2019). Macroeconomics and Market Power: Facts, Potential Explanations and Open Questions. *Journal of Economic Perspectives* 33 (January): 23–43.
- Van der Sluis, J., Van Praag, M., & Vijverberg, W. (2008). Education and entrepreneurship selection and performance: A review of the empirical literature. *Journal of Economic Surveys*, 22(5), 795–841. <https://doi.org/10.1111/j.1467-6419.2008.00550.x>
- Van der Sluis, J., van Praag, M., & Vijverberg, W. (2005). Entrepreneurship selection and performance: A meta-analysis of the impact of education in developing economies. *World Bank Economic Review*, 19(2), 225–261. <https://doi.org/10.1093/wber/lhi013>
- Verhoogen, E. (2008). Trade, Quality Upgrading, And Wage Inequality in the Mexican Manufacturing Sector. *Quarterly Journal of Economics*, (May), 489–530.
- Wooldridge, J.M. (2008). *Introductory Econometrics: A Modern Approach*.
- World Bank. (2018). *Mozambique Economic Update. Shifting to More Inclusive Growth*.

Appendix 1. Enterprise Survey questions overview

Three forms of the Enterprise Surveys have been conducted in Mozambique: the “regular” Enterprise Survey, covering formal firms with five or more employees, a survey of formal micro-enterprises and a survey of informal enterprises. The questionnaire is based on the global World Bank Enterprise Survey questionnaire, with the addition of country-specific questions. The Table below highlights the different modules included in the survey. The full questionnaires as well as data can be obtained from the World Bank Enterprise Survey website (www.enterprisesurveys.org).

This paper is based on data from the formal survey, covering firms with five or more employees.

Enterprise Surveys in Mozambique		
>= 5 employees (formal)	Micro-enterprises (formal)	Informal firms (of all sizes)
Location, legal status, sector, year of start	Location, legal status, sector, year of start	Location, legal status, sector, year of start
Ownership, foreign/local, female ownership	Ownership, foreign/local, female ownership	Ownership, female ownership
Electricity, water, website, Internet	Electricity, water, website, Internet	Electricity, water, Internet
Land and permits	Land and permits	
Main products and services	Main products and services	Main products and services
Capacity	Capacity	
Workers: number and composition	Workers: number and composition	Workers: number and composition
Sales, costs, material inputs, profits	Sales, costs, material inputs, profits	Sales, costs, material inputs, profits
Assets	Assets	Assets
Finance	Finance	Finance
Exports and imports	Exports (small version)	
Degree of competition	Degree of competition	
Views on business environment	Views on business environment	Interest in registering
Business-Government relations, including government arrears	Business-Government relations	
Crime, theft and corruption	Crime, theft and corruption	Crime and corruption
Management organizational practices	Business Practices	Business Practices
Innovation	Innovation	
Experience of manager	Experience of manager	Experience of owner
Skills: employees’ education, years of experience, skills profile, hiring needs, external skills, outsourcing, and training	Skills (short version)	Skills (short version)
		Household characteristics

Appendix 2. Comparison with other countries

Appendix Table 1. Unconditional regression of log sales per employee on management practices by country

Dependent variable	Mozambique 2018	Argentina 2017	Bolivia 2017	Colombia 2017	Ecuador 2017	Gambia 2018	Greece 2018	Kenya 2018	Lao PDR 2018	Paraguay 2017	Peru 2017	Suriname 2018	Total twelve countries
	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
<i>Panel A. Country-specific scale</i>													
Management practices	0.460*** [0.107]	0.101* [0.058]	0.511*** [0.159]	0.094 [0.069]	0.257** [0.124]	0.532*** [0.140]	0.240*** [0.088]	0.074 [0.103]	-0.118 [0.158]	0.182*** [0.070]	0.015 [0.051]	0.504*** [0.107]	
Controls	No	No	No	No	No	No	No	No	No	No	No	No	No
Observations	650	858	297	949	361	149	328	894	301	316	842	173	
R-squared	0.069	0.009	0.074	0.008	0.039	0.138	0.085	0.002	0.008	0.022	0.000	0.123	
Adjusted R ²	0.067	0.007	0.071	0.007	0.036	0.132	0.082	0.001	0.005	0.018	-0.001	0.117	
Adjusted R ² considering strata	0.067	0.007	0.070	0.007	0.036	0.132	0.081	0.001	0.004	0.018	-0.001	0.117	
<i>Panel B. Global scale</i>													
Management practices	0.464*** [0.106]	0.117* [0.066]	0.468*** [0.169]	0.112 [0.086]	0.294** [0.138]	0.543*** [0.142]	0.274*** [0.100]	0.066 [0.101]	-0.102 [0.134]	0.246*** [0.091]	0.030 [0.059]	0.487*** [0.105]	0.346*** [0.042]
Controls	No	No	No	No	No	No	No	No	No	No	No	No	No
Observations	650	858	297	949	361	149	328	894	301	316	842	173	6118
R-squared	0.069	0.009	0.069	0.007	0.040	0.132	0.091	0.002	0.009	0.023	0.001	0.121	0.057
Adjusted R ²	0.067	0.008	0.066	0.006	0.038	0.126	0.088	0.001	0.006	0.020	-0.001	0.115	0.057
Adjusted R ² considering strata	0.067	0.008	0.066	0.006	0.037	0.126	0.087	0.000	0.005	0.020	-0.001	0.115	0.057

Note: Log correspond to natural logarithm. Standard errors in brackets. The management score is normalized by subtracting the mean and dividing by the standard deviation. For Panel A, normalization is conducted by country, while for Panel B the normalization is done for all twelve countries (allowing the use of a common scale). *** p<0.01, ** p<0.05, * p<0.1

Appendix Table 2. Conditional regression of log sales per employee on management practices by country

Dependent variable	Mozambique 2018	Argentina 2017	Bolivia 2017	Colombia 2017	Ecuador 2017	Gambia 2018	Greece 2018	Kenya 2018	Lao PDR 2018	Paraguay 2017	Peru 2017	Suriname 2018	Total twelve countries
	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD	(Log.) Sales per employee in USD
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
<i>Panel A. Country-specific scale</i>													
Management practices	0.473*** [0.107]	0.084 [0.057]	0.342** [0.173]	0.105 [0.066]	0.268** [0.123]	0.478*** [0.137]	0.225*** [0.081]	0.093 [0.097]	-0.344 [0.212]	0.188*** [0.070]	0.031 [0.048]	0.479*** [0.113]	
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	647	855	296	945	361	138	328	886	299	316	838	170	
R-squared	0.123	0.031	0.229	0.110	0.060	0.192	0.152	0.104	0.118	0.062	0.098	0.111	
Adjusted R ²	0.114	0.026	0.216	0.105	0.047	0.168	0.139	0.099	0.103	0.047	0.093	0.089	
Adjusted R ² considering strata	0.112	0.025	0.214	0.105	0.045	0.168	0.135	0.098	0.099	0.046	0.092	0.087	
<i>Panel B. Global scale</i>													
Management practices	0.473*** [0.106]	0.098 [0.064]	0.318* [0.177]	0.125 [0.082]	0.306** [0.137]	0.496*** [0.141]	0.259*** [0.088]	0.082 [0.094]	-0.298* [0.179]	0.250*** [0.091]	0.048 [0.055]	0.462*** [0.110]	0.326*** [0.040]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	647	855	296	945	361	138	328	886	299	316	838	170	6079
R-squared	0.122	0.032	0.229	0.109	0.062	0.190	0.158	0.104	0.121	0.063	0.099	0.108	0.094
Adjusted R ²	0.114	0.026	0.215	0.104	0.048	0.166	0.145	0.099	0.106	0.048	0.093	0.087	0.094
Adjusted R ² considering strata	0.111	0.025	0.213	0.104	0.046	0.166	0.142	0.097	0.102	0.047	0.093	0.084	0.094

Note: Log correspond to natural logarithm. Standard errors in brackets. Controls include regression including controls on sector of activity, city and firm's age. The management score is normalized by subtracting the mean and dividing by the standard deviation. For Panel A, normalization is conducted by country, while for Panel B the normalization is done for all twelve countries (allowing the use of a common scale). *** p<0.01, ** p<0.05, * p<0.1