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Managerial Practices and the Performances of Small and Medium-sized Enterprises: Evidence from Burkina Faso

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Abstract

Managerial practices are seen as key drivers of productivity differences across firms. However, they are generally considered as unobserved and assimilated to firms' individual fixed effects. Using survey data collected in Burkina Faso, this study analyzes the relationship between managerial practices and the development of Small and Medium-sized Enterprises (SMEs). Considering the management skills as technology that can be adopted, the empirical results show a positive and significant association between managerial practices and firms' performances. The estimation by firms' size also provides evidence that the linkage between management score and performances is particularly stronger for larger firms. Policy implications are then drawn to inform initiatives aiming at promoting governance and expansion of SMEs in developing countries.

Keywords: Small and Medium-sized Enterprises, Managerial Practices, Production, Burkina Faso

JEL Codes: D22, L23, O14

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1. Introduction

The universe of private enterprises in low-income countries is dominated by Small and Medium-sized Enterprises (SMEs) which contribute to about 15.5% of Gross Domestic Product and 17.5% of total employment (Ayyagari, Beck, & Demirgüç-Kunt, 2003). Aside the low survival rate among SMEs, most of these enterprises are characterized by low level of productivity and growth as well as limited innovation in management and organizational practices. Difference in firm performances are usually explained by differences in access to physical and financial capitals as well as differences in idiosyncratic shocks they face (Aiello, Pupo, & Ricotta, 2015; Aiello & Ricotta, 2016; Yang & Huang, 2005). However, these factors alone are not sufficient in explaining the observed high heterogeneity in firm performances within industries and across countries. The endogenous economic growth model initially developed by Romer (1990) and (Lucas, 1993) recognize the importance of knowledge and technological innovations such as investment in Research & Development, and information technologies as important factors of productivity growth.

Recent studies showed that differences in firms' performances persist even after controlling for these conventional factors and cannot be reduced to measurement errors of innovation technology as it has often been assumed (Atkin, Chaudhry, Chaudry, Khandelwal, & Verhoogen, 2017). This calls for a wider definition of technology that should encompass managerial and organizational systems. However, empirical studies that assess the extent to which management practices influence firms' performances are still limited. The existing work generally shows that better management practices can have both direct and indirect effects on firm productivity and growth (Nicholas Bloom, Eifert, Mahajan, McKenzie, & Roberts, 2013; Nicholas Bloom & Van Reenen, 2010; Bruhn, Karlan, Schoar, Bartelsman, & Haltiwanger, 2010; Chong & Rundus, 2004).

Studies that consider management as capital or technology highlight the direct effect of management practices on firm performances. Considered as capital or technology, good management practice can raise production like any other production factor such as labor and physical capital. For instance, Bloom et al. (2016) showed that, in developing countries, management practices account for about 30% of differences in total factor productivity across countries. Lemos et al. (2016) found a similar magnitude of influence of management on firm performances in Pakistan. Evidence in Indian textile firms using randomized control trial showed that increasing management scores by one standard deviation causes 10% increase in Total Factor Productivity (Nicholas Bloom et al., 2013). Manufacturing firms that adopt better management practices are also associated with better performances in Australia (Agarwal, Brown, Green, Randhawa, & Tan, 2014).

Indirectly, better management raises firm performances by improving the marginal productivity of other factors such as capital and labor but also affects the level of investment in physical capital (Bruhn et al., 2010). They also found that technology is more efficient for firms with good managerial and organizational systems. In addition, managerial quality influences production by increasing firm ability to cope with worker productivity shocks. This prediction was tested by Adhvaryu et al. (2016) in the context of the Indian garment industry. The authors found that lines supervised by better managers are more likely to diagnose and mitigate the deleterious impact of worker productivity shocks.

The quality of firms' management is not always found by empirical studies as a driver of firm performance. Bloom et al. (2016) showed that management may have differential effects depending on the environment in which firms are operating. Management may have more significant effect for firms evolving in highly competitive markets which require high efficiency

to gain market share. Larger firms that hire more labor may also require more structural management system to increase productivity.

In many sub-Saharan African countries (SSA), several projects have been implemented to reduce unemployment rate and promote decent jobs for the youth and women. In Burkina Faso, for instance, various public initiatives provide financial support for the creation and expansion of SMEs. However, most SMEs are still characterized by low performances and low survival rate. A survey undertaken on private enterprises in Burkina Faso by the World Bank estimated that over 40% of firms identified financial constraints and tax rate as the main obstacles of growth (World Bank, 2009). However, in addition to limited access to finance, technology, energy and poor transportation conditions, SMEs operate under weak managerial and organizational systems. Limited number of studies exist on the relationship between management practices and performances of firms in SSA. Most of the existing studies have been conducted in developed countries where economic environment is characterized by high level of competition and technological change. Thus, understanding the barriers and drivers of growth of SMEs in SSA is important to guide policies and the promotion of private sector development. This study contributes to the literature on enterprise development by providing empirical investigation on the relationship between management practices and firms' performance in SSA.

The objective of this paper is to analyze the relationship between managerial practices and the performances of SMEs. Specifically, the study assesses the quality of managerial practices and examines the extent to which managerial practices explain differences in the level of production, value added and profit of SMEs in Burkina Faso. This investigation is undertaken using survey data collected in 2018-2019 in the two largest cities of Burkina Faso: Ouagadougou and Bobo-Dioulasso. During the survey, we used recall questions collect data on both the current and past

situations of the SMEs, that is for the years 2012 and 2017. The structural questionnaire used is built on the Management and Organizational Practices Survey (MOPS) developed by the US census bureau (Buffington, Foster, Jarmin, & Ohlmacher, 2017). Management practices encompass three components that are monitoring, setting targets and incentives. Based on these components, a score of management practices is computed for each enterprise and the empirical results indicate that better management practices are positively associated with the level of sale, profit and value added of SMEs. These relationships remain strong for especially larger enterprises where there is more hired labor.

The next section develops the theoretical framework. The third section describes the empirical strategy, including the data collection and sampling procedure and the econometric method of estimation. We present and discuss the results in the fourth section and, provide a conclusion and policy implications in the fifth section.

2. Theoretical Framework of the relationship between managerial practices and firms' productivity

Endogenous growth model present technological progress as the key driver of productivity growth across countries and industries (Romer, 1990). Innovation driven by the level of firms' investment in R&D is seen as key explanatory factor of the observed heterogeneity in productivity. However, empirical investigation highlights that productivity differences persist after all measures of technology have been controlled for, and the effect of technology on productivity across firms and countries is heterogeneous (Syverson, 2004). The difference in managerial ability, considered as unobservable fixed effect in panel data estimation, is seen as a plausible explanation of the heterogeneous effect of innovation on productivity (Lucas, 1978).

We present in this study a theoretical framework where managerial practices appear as an explanatory factor of firm performances and a technology that can be adopted and improved by

entrepreneurs. Following Bloom et al. (2016), the relationship between management practices and firm performances can be expressed in the production function as:

$$Y = F(A, K, L, M) \quad (1)$$

Where Y represents the level of production, A is an efficiency term, L represents the labor, K is physical capital and M , the managerial technology.

Considering management as technology, it can be established a positive and direct relationship between management and performance. This means that higher quality of management practices is expected to yield higher level of performance. We consider a Cobb-Douglas production model, as in Bloom et al. (2016), and specify Equation 1 as follow:

$$Y_i = A_i K_i^\alpha L_i^\beta G(M_i) \quad (2)$$

Where $G(M_i)$ is a function that explains the change of management practices related to entrepreneurs' choice to adopt new or better management practices.

This model considers that firm performance is an increasing function of the level of management quality (Nicholas Bloom et al., 2016; Nick Bloom & Van Reenen, 2006). Since $G(M_i)$ is increasing in M_i , for simplicity, we can write

$$G(M_i) = M_i^c \quad (3)$$

Therefore, the function (2) can be re-written as follow:

$$Y_i = A_i K_i^\alpha L_i^\beta M_i^c \quad (4)$$

In this model, difference in management practices will simply be reflected in firm efficiency. The empirical investigation of this study on the relationship between managerial practices and firm performance allows us to highlight how in the context of sub-Saharan African, especially in Burkina Faso, management practices may foster firm contribution to economic growth.

3. Empirical methods

3.1. Estimation strategy

Based on the theoretical framework and following Bloom and Van Reenen (2007), we specify the empirical model as an augmented Cobb-Douglas production function. The trans-log specification is expressed as:

$$\ln(Y_{it}) = \alpha \ln(K_{it}) + \beta \ln(L_{it}) + cM_{it} + \delta X_{it} + \omega_i + \varepsilon_{it} \quad (5)$$

Y_{it} measures the performances of enterprise i at time t . M is the score of management practices, L indicates the number of permanent workers, K the level of capital, X is a set of control variables that include the logarithm of the number of non-permanent workers, the logarithm of operating costs, the firm age and the education level of non-managers employees. ω_i is the firms individual fixed effect and ε_{it} represent the errors terms.

We measure firms 'performances in three ways: the value of sale, the value added and the amount of profit. However, due to the existence of negative profit for some enterprises, we compute the logarithm of the profit using the Inverse Hyperbolic Sine Transformation. Therefore, the logarithm of the profit is calculated as follow:

$$\ln(\text{Profit}_{it}) = \ln(\text{Profit}_{it}) + (1 + \text{profit}_{it}^2)^{0.5} \quad (6)$$

Production functions relate productive inputs (e.g. capital, labor) to outputs. The major econometric issue associated with the estimation of production functions is the possibility that there are determinants of production that are unobserved by the econometrician but observed by the firm. If this is the case, and if the observed inputs are chosen as a function of these determinants (as will typically be the case for a profit-maximizing or cost-minimizing firm), then there is an endogeneity problem and OLS estimates of the coefficients on the observed inputs will be biased.

In addition, the management is likely to be endogenous because of simultaneity and measurement errors. In fact, management can influence firm sales and level of profitability. It is also likely that firms with higher level of sales and profitability present more ability to upgrade their level of management (Nicholas Bloom et al., 2016; Nicholas Bloom & Van Reenen, 2006). Therefore, the Ordinary Least Square (OLS) may not provide unbiased estimates. In this context, we use the Fixed Effect (FE) estimator to assess the relationship between managerial practices and firms' production, value added and profit.

3.2.Data collection and sampling procedure

Small and Medium-sized Enterprises (SME) play an important role in both developed and developing countries. They are characterized by a high heterogeneity in terms of employment and growth rate and can be found in various sectors of activities. SMEs contribute to over the half of formal employment in the world and provide efficient solution in various sector such as energy, water supply, industries, health and education (World Bank, 2009). However, there is no common definition of what SME is. The definition of SME varies by country and is usually based on the number of employees, the value of sales and/or value of assets. The most used variable to define SMEs is the number of employees. Thus, in European Union and in many OECD countries, SMEs are enterprises that do not employ more than 200 to 250 workers. In USA, this upper limit of employees for SMEs is set at 300.

In Burkina Faso, the statistical definition of SMEs is based on both the number of employees and the annual level of sale. Thus, SME is defined as a formal enterprise employing less than 100 permanent workers with a value of sale estimated at less than one billion CFA per year (which represent about two million dollars (2 000 000USD)). This definition is therefore used throughout this study. Among the SMEs, there are micro-enterprises that are establishment with

less than 10 permanent workers and an annual sale estimated at less than 15 million of FCFA. In this section, we describe the process of sample selection and the data collection.

3.2.1. Study areas and sampling procedure

The Management and Organizational Practices Survey was conducted from August to December 2018 in Ouagadougou and Bobo Dioulasso which are the two biggest cities of Burkina Faso. The choice of these towns is motivated by their importance in the national economy and by the fact that headquarters of most enterprises can be found in these cities. In fact, among the 66 044 formal enterprises recorded by the chamber of Trade and Industry in 2010, about 80% are established in Ouagadougou, the capital of the country and only 11% are established in Bobo Dioulasso (Institut National des Statistiques de la Démographie (INSD), 2010). We therefore surveyed 800 enterprises whose 75% are chosen in Ouagadougou and 25% in Bobo Dioulasso. We purposely decided to over-sample the enterprises established in Bobo to increase their representativeness in the final sample. After the cleaning, the final data set contains 652 enterprises with 27% from Bobo and the remaining 73% from Ouagadougou (Table 1). The final sample retains enterprises that have sufficient information to compute our key variables of interest. The test for selection bias in the final dataset is conducted and there is no evidence of systematic bias in the likelihood for being selected in the final sample (Gansonré & Ouédraogo, 2022).

Within each city, the number of enterprises assigned has been randomly chosen based on a list obtained from the Direction of Small and Medium Enterprises. The enterprises surveyed were randomly selected within four sectors of activities that are 1) Manufacturing industry, 2) Buildings and Civil Engineering (B&CE), 3) Intellectual service providers, 4) General trade. The survey was designed to consider the importance of each sector in the economy. The distribution of the sample per location and per sectors of activities is showed in Table 1.

Table 1: Distribution of the sample per activity branch.

	Bobo-Dioulasso	Ouagadougou	Total
Manufacturing	18	49	67
Services	52	110	162
Building and CE	19	72	91
Trade	64	180	244
Total	153	411	564

To observe the change in the variables over the years, the questionnaire is designed to collect data on both the current and past situations of the enterprises, that is, for the years 2012 and 2017. Therefore, we used recall questions to interview the respondents. Thus, only enterprises that are established before 2012 are retained in the sample. To reduce the recall bias, interviewers were asked to use 2014, that is, the period of the insurrection in Burkina as year of reference and to consider the situation before and after this event¹.

3.2.2. Management and Organizational Practices Survey (MOPS)

The MOPS that we conducted is inspired by the questionnaire developed in Buffington et al. (2017) and also used by Lemos et al. (2016) in Pakistan. Sixteen (16) questions are developed to assess three main aspects of management practices that are monitoring, target setting and incentives. The first five questions which concern the monitoring aspects, seek to understand how firms collect data to monitor and improve production processes. The following three questions concern the setting of targets. They assess the accuracy, the realism and the transparency of targets set by firms. Finally, the eight questions on incentives describe the practices of bonus, promotion, reassignment, and dismissal in the firms. The response of each management question is normalized to be on a scale of 0 and 1 and the results are then aggregated into a single measure of management practices. Therefore, the structural

¹ The use of this method to collect recall data gives a reference to the respondents making easier the comparison between the past and the current situations. Lemos et al. (2016) adopted similar method in their study in Pakistan.

management score is computed as the average of the score of each of the 16 questions. The score is scaled from 0 to 1 with 0 representing the lowest quality of management practices of firm in terms of monitoring, targets, and incentives and 1 representing the best practices. This means that a score close to 1 indicates good quality of management practices of the firm.

4. Results and Discussion
4.1.Descriptive statistics

There is no significant difference in management quality between SMEs in Bobo Dioulasso and those established in Ouagadougou (Figure 1.b). The average management score is estimated at 0.39 for enterprises surveyed in Ouagadougou and 0.38 for enterprise surveyed at Bobo Dioulasso. However, the management practice score is slightly higher in the sector of service (0.406) and commerce (0.409) than in the sector of Building (0.38) and Manufacturing (0.389) (Figure 1a. and Table 2). As the enterprises in building, and manufacturing sectors are generally more oriented to public procurement, it is therefore likely that enterprises in these sectors invest more in networking than in improving management practices.

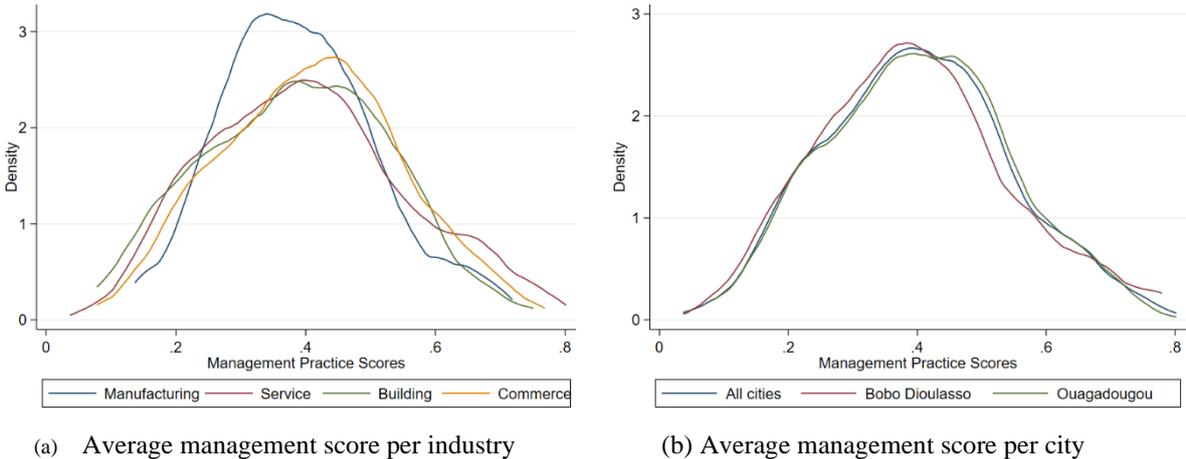


Figure 1. Average management score per city and sector

The incentive component of management practices remains the lowest among the tree component of management (Figure 2). This is followed by monitoring and then target setting. This result suggests that the more the adoption of management practices is costly, more

enterprises are unwilling to adopt it. Thus, the incentive component captures the financial motivation such as bonus and promotion which is costly than setting target to be achieved. In addition, monitoring the various activities necessitates also human and financial resources. This situation tends to be in line with the management as design model, where the adoption is seen as costly for many entrepreneurs. Thus, some components of management may be difficult to adopt by some SMEs as regard to the skills, education level and financial costs that it may involve.

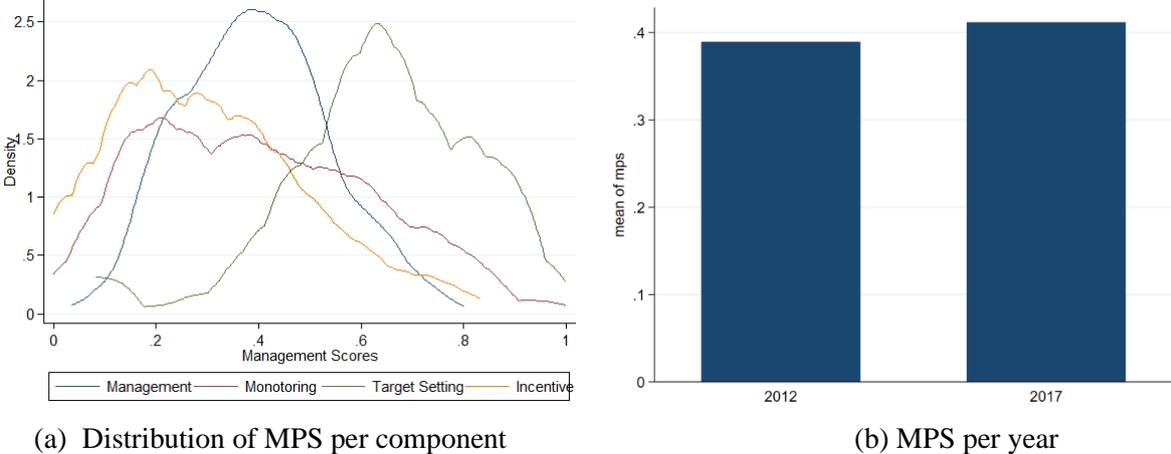


Figure 2: Distribution of management practice score

The average management practice score (MPS) of the sample is estimated at 0.38 in 2012 and 0.41 in 2017. This corresponds to an increase of 0.03 points, that is, a growth of roughly 8% (Figure 2b). This management score is similar to the score found by Lemos et al. (2016) in a study on Pakistan’s firms. They found that between 2005 and 2010, management score increases from 0.43 to 0.45 in Pakistan corresponding to an increase of 0.02 point (i.e. 4.65%). The lower level of management practices among SMEs in Burkina Faso can be explained by the low competition in the environment (Gansonré & Ouédraogo, 2022). Furthermore, adoption of management practices may be difficult for entrepreneurs with a low education level as it is the case in Burkina Faso.

The additional benefit of adopting better management practices may not sufficiently outweigh the costs to stimulate an upgrading of management systems in many SMEs. This may explain the low change in the management practice between 2012 and 2017. For instance, if a higher share of sale for some enterprises is from public procurement obtained through bribery, this practice distorts the market and lowers the market share of other firms regardless of their level of management.

Table 2: Descriptive statistics

	Manufacturing	Services	B&CE	Commerce &Others	Total
Managers	4.722 (4.836)	3.211 (3.388)	3.782 (2.581)	2.786 (3.533)	3.306 (3.599)
Full time Employees	24.51 (37.78)	7.920 (13.72)	16.17 (22.49)	16.91 (85.42)	15.11 (58.69)
Capital	213.3 (855.1)	30.28 (98.46)	171.4 (483.8)	67.53 (377.6)	91.20 (440.5)
Sales	622.1 (1396.6)	151.1 (405.5)	498.1 (1724.5)	528.2 (2570.9)	425.3 (1899.3)
Education level of employees	6.237 (3.694)	8.260 (4.671)	7.056 (4.121)	7.240 (4.103)	7.384 (4.275)
Profit	400.3 (1211.7)	119.1 (365.7)	409.6 (1693.3)	390.5 (2250.4)	315.9 (1687.7)
Value added	427.9 (1232.8)	136.8 (381.9)	448.2 (1718.0)	429.1 (2369.7)	347.1 (1763.2)
Firm Age	9.897 (9.299)	9.064 (7.421)	8.994 (7.753)	10.51 (10.28)	9.772 (9.030)
Experience of Respondent	8.905 (5.756)	9.411 (6.305)	8.109 (4.974)	9.205 (6.163)	9.052 (5.990)
Management Scores	0.389 (0.115)	0.406 (0.154)	0.380 (0.140)	0.409 (0.138)	0.401 (0.141)

Notes: Standard deviations are in parentheses. Capital, sale value, profit and value added are in millions of FCFA.

The descriptive statistics, reported in Table 2, show that the average experience of respondents is 9 years in the sample. This suggests that the respondents have sufficient knowledge about the enterprise to give accurate answers to the questions asked during the interview. The average number of full-time employees is about 15, and the average sale value is estimated at 425 million of FCFA. In addition, the average capital is evaluated at 91 million of FCFA on average. Manufacturing sector appears to have a higher level of full-time employees. They also have the higher value of sale, followed by firms in Trade and in Building and construction. However, education level of workers estimated at 7.3 years is very low. These represent the characteristics of business environment in Burkina Faso and in many developing countries that is still dominated by owners with limited education level. This situation may partly be a constraint to upgrade managerial skills in the SMEs.

4.2. Empirical analysis of the relationship between managerial practices and firms' performances

This section presents the empirical results of the relationship between management and firm performances. The sale, profit and value added are used as indicators of performances. For each dependent variable, we successively estimate the model without control variables and with control variables. As discussed in the previous section, the fixed effect estimation removes the time-invariant individual characteristics and provides more robust estimates. For robustness check, the section also presents how each component of management influences the performances of SMEs and the relationship per enterprises' size.

4.2.1. Management practices and Performances

The estimation results show a positive and significant relationship between management and performances (profit, sale and value added) (Table 3). The inclusion of additional explanatory variables in the regression reduces the value of the coefficient. However, the relationship is still significant at 5%. The coefficient associated with the management practice score in the profit

equation is 2.1 meaning that a one unit change in the standard deviation of management practices results in 35.34% increase in the level of profit². Similarly, one standard-deviation change in management score is associated with 21.07% increase in the level of sale. As to the value added, one standard-deviation improvement in management score results in an increase of 37%.

This positive relationship may be explained by increase in market share that good management may provide to enterprises. Well managed firms are more likely to gain higher market shares, realize more profit add more value to the economy. This value added is important for economic growth and job creation. Therefore, these results suggest that good management practices represent key drivers of firms' contribution to the overall growth. Enterprises that set targets at beginning of each year and develop tools to frequently evaluate the evolution of the indicators are more likely to experience higher level of sale, profit and value added. The combination of managerial efforts has therefore the potential to strengthen the growth of SMEs in Burkina Faso and to increase their contribution to overall economic growth.

Table 3: Management practices and firms' performances

VARIABLES	(1) Profit	(2) Profit	(3) Sales	(4) Sales	(5) Value added	(6) Value added
Management Scores	3.2962*** (1.246)	2.1616** (1.070)	2.5054*** (0.816)	1.3659** (0.689)	3.0221*** (1.042)	2.2491** (1.037)
Capital		0.6282*** (0.135)		0.4484*** (0.084)		0.5264*** (0.100)
Full time Employees		0.3703** (0.166)		0.3046*** (0.085)		0.5188** (0.228)
Constant	2.0211*** (0.455)	0.4329 (0.565)	3.0654*** (0.292)	1.2733*** (0.368)	2.5094*** (0.382)	0.5894 (0.748)
Control variables	NO	YES	NO	YES	NO	YES
Observations	1,134	1,134	1,134	1,134	1,134	1,134
R-squared	0.068	0.154	0.184	0.438	0.091	0.191
Number of id	577	577	577	577	577	577

Notes : *** indicates significance at the 1% level; ** significance at 5%, * significance at 10%. Standard errors in brackets are clustered at the firm level. Control variables include firm age, operating costs, number of part-time employees and education level of non-managers employees

² As the standard deviation is 0.14, the marginal effect is computed as $\exp(\text{coef} * \text{sd}) - 1 = \exp(2.162 * 0.14) - 1 = 0.3534$.

These findings corroborate the results of most recent empirical studies on management practices. Bloom and Van Reenen (2010) estimated at 21.3% the magnitude of one standard deviation change of management score on productivity of enterprises in developed countries and Lemos et al. (2016) found 21.8% for the case of Pakistan. In India garment industry, management investment has positive relationship with firm performances (Nicholas Bloom et al., 2013). These findings that represent one of the rare studies in Sub-Saharan Africa highlight that despite the difference in the environment of African firms compared to firms operating in Asian or European and American countries in terms of technological gaps, the management remains an important factor of performances. SMES of developing countries are generally operating in inefficient conditions due to market imperfections and asymmetric access to information. Better management practices can help overcome these constraints and increase the ability and the incentive to adopt good technology which improve efficiency and market shares. Thus, the evidence shows a strong positive relationship between management and performance, even if the extent of the relationship may vary across countries. This positive relationship is in line with the model of management as technology discussed in Bloom et al. (2016).

In addition, the results show that capital and labor positively influence the level of sale, profit and value added confirming the traditional determinants of growth. This is also in line with studies that identify the difficult access to finance as a major constraint to the growth of SMEs in Burkina and in Sub-Africa in general. A survey of the World Bank showed that entrepreneurs in Burkina Faso identify the financial constraints as the main barriers of their performance (World Bank, 2009).

4.2.2. Components of management score and Performances

We successively estimate in this section the relationship between each component of management score (Target, monitoring, and incentive) and the indicators of performances to

establish the link between performances and each component of management. Considering the targeting score, the results indicate a positive but not significant relationship with performances (Table 4). A similar result is also found for the monitoring score when the model controls for other explanatory variables (Table 5). This suggests that setting target in terms of objective to achieve is not sufficient to induce positive change in the performances of the SMEs. In addition, frequent monitoring of the enterprises activities does not alone yield a significant change in firms' sale and profit, all things being all.

However, the estimation conducted with the incentive score of management practices shows a positive and significant relationship with all the indicators of firms' performances (Table 6). Thus, the incentive component of management practices appears to be the most important factors to fuel enterprise expansion. This means that providing bonus and other forms of incentives may stimulate workers and ensure their full participation in the achievement of the goals of the SMEs. These findings reveal that even all components of managerial practices are jointly influencing the performance indicators, some components taken individually may not show strong correlation. Combining a set of management strategies is more likely to yield a positive result for SMEs than adopting a unique action.

Table 4: Management and targeting scores

VARIABLES	(1) Profit	(2) Profit	(3) Sales	(4) Sales	(5) Value added	(6) Value added
Targeting Scores	0.2208 (0.504)	0.0885 (0.474)	0.4738 (0.336)	0.2618 (0.282)	0.8338 (0.562)	0.7790 (0.548)
Capital		0.6251*** (0.138)		0.4491*** (0.085)		0.5320*** (0.100)
Full time Employees		0.4080** (0.168)		0.3255*** (0.084)		0.5481** (0.230)
Constant	3.0848*** (0.306)	1.0753* (0.559)	3.6990*** (0.211)	1.5658*** (0.338)	3.1238*** (0.349)	0.8794 (0.756)
Control variables	NO	YES	NO	YES	NO	YES
Observations	1,134	1,134	1,134	1,134	1,134	1,134
R-squared	0.054	0.148	0.160	0.431	0.079	0.186
Number of id	577	577	577	577	577	577

Notes : *** indicates significance at the 1% level; ** significance at 5%, * significance at 10%. Standard errors in brackets are clustered at the firm level. Control variables include firm age, operating costs, number of part-time employees and education level of non-managers employees

Table 5: Monitoring scores and management

VARIABLES	(1) Profit	(2) Profit	(3) Sales	(4) Sales	(5) Value added	(6) Value added
Monitoring Scores	1.5094* (0.856)	0.5461 (0.720)	1.0922** (0.537)	0.2519 (0.422)	1.2127** (0.613)	0.4351 (0.601)
Capital		0.6229*** (0.137)		0.4452*** (0.085)		0.5211*** (0.100)
Full time Employees		0.3904** (0.170)		0.3206*** (0.087)		0.5444** (0.234)
Constant	2.6807*** (0.314)	0.9700** (0.486)	3.5861*** (0.189)	1.6389*** (0.322)	3.1743*** (0.219)	1.1857* (0.624)
Control variables	NO	YES	NO	YES	NO	YES
Observations	1,134	1,134	1,134	1,134	1,134	1,134
R-squared	0.061	0.149	0.168	0.431	0.081	0.184
Number of id	577	577	577	577	577	577

Notes : *** indicates significance at the 1% level; ** significance at 5%, * significance at 10%. Standard errors in brackets are clustered at the firm level. Control variables include firm age, operating costs, number of part-time employees and education level of non-managers employees

Table 6: Incentives and Performances

VARIABLES	(1) Profit	(2) Profit	(3) Sales	(4) Sales	(5) Value added	(6) Value added
Incentives Scores	2.4098** (1.078)	1.9219* (0.985)	1.6633** (0.709)	1.1451* (0.623)	1.9100** (0.822)	1.6265** (0.768)
Capital		0.6246*** (0.136)		0.4460*** (0.085)		0.5225*** (0.100)
Full time Employees		0.3918** (0.166)		0.3188*** (0.083)		0.5446** (0.232)
Constant	2.5170*** (0.328)	0.6308 (0.547)	3.4908*** (0.208)	1.4162*** (0.344)	3.0503*** (0.252)	0.8911 (0.654)
Control variables	NO	YES	NO	YES	NO	YES
Observations	1,134	1,134	1,134	1,134	1,134	1,134
R-squared	0.067	0.156	0.177	0.440	0.086	0.191
Number of id	577	577	577	577	577	577

Notes : *** indicates significance at the 1% level; ** significance at 5%, * significance at 10%. Standard errors in brackets are clustered at the firm level. Control variables include firm age, operating costs, number of part-time employees and education level of non-managers employees

4.2.3. Management and Performances: Estimation by firm size

The relationship between management and performances may vary by the size of the firms. We split the sample into two to verify this assumption: the smaller firms as SMEs whose number of employees is less than the median in the sample and the larger firms constituted with SMEs having the number of employees higher than the median.

The relationship between management score and performance is positive but not significant for smaller firms (Table 7). Smaller firms usually operate in a subsistence basis and use generally more family labor which may require less structural management.

Table 7: Management practices and performances of smaller firms

VARIABLES	(1) Profit	(2) Profit	(3) Sales	(4) Sales	(5) Value added	(6) Value added
Management Scores	0.9059 (2.345)	0.4505 (2.289)	1.4707 (1.614)	1.0554 (1.468)	1.4981 (1.776)	1.0075 (1.716)
Capital		0.6070** (0.240)		0.5385*** (0.140)		0.5314*** (0.178)
Full time Employees		0.3003 (0.290)		0.2416 (0.187)		0.4206* (0.245)
Constant	1.6723** (0.755)	0.8485 (1.077)	2.3858*** (0.521)	0.8177 (0.565)	2.0484*** (0.573)	1.1701 (0.840)
Control variables	NO	YES	NO	YES	NO	YES
Observations	536	536	536	536	536	536
R-squared	0.113	0.206	0.199	0.475	0.163	0.298
Number of id	314	314	314	314	314	314

Notes : *** indicates significance at the 1% level; ** significance at 5%, * significance at 10%. Standard errors in brackets are clustered at the firm level. Control variables include firm age, operating costs, number of part-time employees and education level of non-managers employees

Table 8: Management practices and performances of smaller firms

VARIABLES	(1) Profit	(2) Profit	(3) Sales	(4) Sales	(5) Value added	(6) Value added
Management Scores	4.9042*** (1.788)	3.4344** (1.335)	3.0843*** (0.981)	1.7883** (0.782)	3.0388*** (1.141)	2.1757* (1.167)
Capital		0.4873** (0.230)		0.2517* (0.148)		0.3828** (0.159)
Full time Employees		0.4729 (0.343)		0.3196*** (0.110)		0.7573 (0.534)
Constant	2.6468*** (0.720)	0.9860 (1.101)	4.0293*** (0.394)	2.3328*** (0.652)	3.6103*** (0.446)	0.9793 (1.639)
Control variables	NO	YES	NO	YES	NO	YES
Observations	515	515	515	515	515	515
R-squared	0.050	0.096	0.185	0.320	0.054	0.126
Number of id	263	263	263	263	263	263

Notes : *** indicates significance at the 1% level; ** significance at 5%, * significance at 10%. Standard errors in brackets are clustered at the firm level. Control variables include firm age, operating costs, number of part-time employees and education level of non-managers employees

However, the results indicate a positive and significant association between management score and performance for the larger firms (Table 8). Larger firms employ more labor from market which requires a more structural management process to improve efficiency. As found by Adhvaryu et al. (2016), lines supervised by better managers are more likely to cope with productivity shocks. In addition, these firms are also competing in some formal market such as

public procurement which require good management to be efficient. In this case, the better managed firms may be able to provide a cost-effective offer and have a higher market share.

5. Conclusion

Managerial skills play an important role in growth and survival of business. In economic literature, although management ability is seen as a driver of difference in productivity among firms, it has been generally treated as unobserved heterogeneity. Recent empirical studies that attempt to assess the level of management practices of enterprises and the extent to which they affect productivity, consider management as a form of capital or technology that can be adopted and accumulated. However, most of empirical research was conducted for enterprises established in developed countries where the environment is highly competitive. In Sub-Saharan African, adoption of new technology is sometime costly, exacerbated by lack of information and the low education level of many SMEs managers. Environment is also less competitive which impedes the innovation and adoption of better management practices. Therefore, this study contributes to the existing literature by analyzing the relationship between management practices and SMEs in Burkina Faso, considering management practices as a form of technology that the entrepreneurs can adopt.

The study uses survey data collected in 2018-2019 over a sample of 800 SMEs selected in two cities of the country that are Ouagadougou and Bobo-Dioulasso. The results of the empirical estimation showed a positive and significant relationship between management practices and the level of profit, sale and value added. Thus, Management practices are key factors of firm expansion in developing countries. This relationship is particularly stronger for larger SMEs where there is more hired labor employed. In addition, results showed that the incentive component of management is particularly important to increase firms' performances.

These empirical findings provide important policy implications for the promotion of vibrant private enterprises in sub-Saharan Africa. The various initiatives supporting enterprises (including start-ups) should go beyond financial grants and support entrepreneurs to improve managerial skills. This has the benefit of raising the performance of enterprises and, therefore, their contribution to reducing unemployment. Public institutions that support the promotion and the creation of small and medium-sized enterprises should provide adequate training on various aspects of management to the SMEs owners.

Aside the finance and management constraints, firms in African countries also face a low level of innovation which is important to remain competitive. Even if management can be seen as a soft technology, it may have a crucial influence on the adoption of hard technology. Therefore, further research should focus on how the quality of management can affect innovation and increase the benefit of new technology among SMEs.

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Appendix

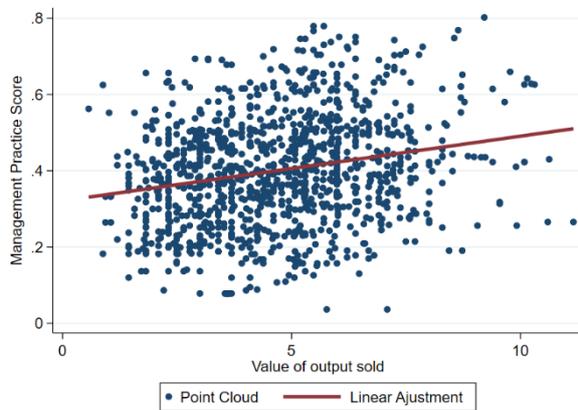
Table 9: Descriptive Statistics of all the variables used

	Manufacturing	Services	B\&CE	Commerce \&Others	Total
Managers	4.722 (4.836)	3.211 (3.388)	3.782 (2.581)	2.786 (3.533)	3.306 (3.599)
Full time Employees	24.51 (37.78)	7.920 (13.72)	16.17 (22.49)	16.91 (85.42)	15.11 (58.69)
Part-time Employees	15.47 (18.30)	5.816 (14.01)	18.67 (24.42)	6.688 (32.81)	9.431 (26.01)
Capital	213.3 (855.1)	30.28 (98.46)	171.4 (483.8)	67.53 (377.6)	91.20 (440.5)
Sales	622.1 (1396.6)	151.1 (405.5)	498.1 (1724.5)	528.2 (2570.9)	425.3 (1899.3)
Wage	27.54 (56.97)	17.66 (33.91)	38.61 (126.5)	38.58 (189.6)	31.15 (136.7)
Education level of employees	6.237 (3.694)	8.260 (4.671)	7.056 (4.121)	7.240 (4.103)	7.384 (4.275)
Profit	400.3 (1211.7)	119.1 (365.7)	409.6 (1693.3)	390.5 (2250.4)	315.9 (1687.7)
Value added	427.9 (1232.8)	136.8 (381.9)	448.2 (1718.0)	429.1 (2369.7)	347.1 (1763.2)
Operating costs	194.2 (771.0)	14.27 (33.91)	49.92 (196.4)	99.12 (693.1)	78.22 (535.3)
Applied for credit (YES/NO)	0.444 (0.499)	0.445 (0.498)	0.461 (0.500)	0.462 (0.499)	0.455 (0.498)
Number of Competitors	54.06 (45.19)	72.70 (41.00)	76.52 (37.28)	72.91 (49.28)	71.12 (45.10)
Firm Age	9.897 (9.299)	9.064 (7.421)	8.994 (7.753)	10.51 (10.28)	9.772 (9.030)
Proportion of female employees	0.269 (0.496)	0.215 (0.217)	0.514 (3.572)	0.280 (0.274)	0.297 (1.456)
Experience of Respondent	8.905 (5.756)	9.411 (6.305)	8.109 (4.974)	9.205 (6.163)	9.052 (5.990)
Management Scores	0.389 (0.115)	0.406 (0.154)	0.380 (0.140)	0.409 (0.138)	0.401 (0.141)

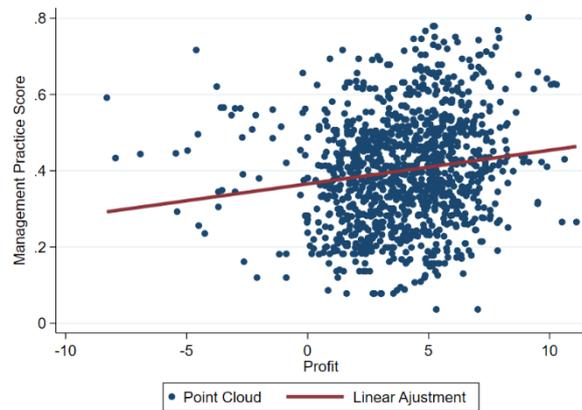
Notes: Standard deviations are in parentheses. Capital, sale value, labor costs, operating costs, profit, value added, and credit received are in millions of FCFA.

Table 10: Results of T-test

	2012	2017	Diff. (2012- 2017)	S.E.	Obs.
Full time Employees	2.510	2.753	-0.243***	(0.057)	1134
Capital	2.898	3.321	-0.423***	(0.102)	1134
Sales	4.464	4.884	-0.421***	(0.112)	1134
Operating costs	2.092	2.334	-0.242**	(0.105)	1134
Wage	24.571	34.590	-10.019	(7.737)	1134
Education level of employees	7.351	7.362	-0.011	(0.253)	1134
proportion of permanent female employees	0.337	0.249	0.088	(0.083)	1134
Management Scores	0.389	0.412	-0.022***	(0.008)	1134



Management score and Production



Management score and Profit

Figure 1: Management score and Performances

These graphs show the relationship between the score of management practices and the indicators of firms' performances that are the value of sale, and the profit of the SMEs. These two graphs show positive link between the management and performances.