Research Article

Underdeveloped but essential: Findings from a survey of private pharmaceutical firms in South Sudan

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ABSTRACT

Introduction: Private pharmaceutical firms are important for access to essential medicines. Unreliable access to medicines contributes to avoidable deaths and was most evident during the COVID-19 pandemic in South Sudan. A better understanding of the private pharmaceutical sector would help inform approaches to health systems strengthening in South Sudan.

Method: A survey was conducted of private, for-profit pharmaceutical firms in South Sudan, adopting the World Bank Enterprise Survey 2014. Outcomes of interest included firm characteristics that impact innovation – such as firm's age, size, employees' skillset, manager's gender, ownership, and quality certification. Comparators were drawn from all private firms in South Sudan and firms across sub-Saharan Africa.

Results: Nineteen firms were included in the analysis, with the average private pharmaceutical firm proving older than a private sector comparator in South Sudan. However, firms were smaller than the average for the country and sub-Saharan Africa. Ten times more pharmaceutical firms had quality certification, compared with other firms in South Sudan, but they had less foreign ownership and fewer skilled personnel. None of the pharmaceutical firms manufactures, and medium-sized pharmaceutical firms had female majority ownership, even though none had a female top manager.

Conclusion: Findings reflect evidence in the literature. They reveal the need for supportive regulations and investments for a sustainable pharmaceutical sector in South Sudan.

Keywords: South Sudan, pharmaceutical firm, healthcare effectiveness, health services planning, essential medicines.

Introduction

Private pharmaceutical firms comprise an essential capability. Shortages of pharmaceuticals, overstocking and wastages are prevalent in South Sudan,[1,2] with availability of medicines averaging 50.4% in Juba.[3] This deficiency was pronounced during the COVID-19 pandemic and contributes to ineffective

healthcare, which is responsible for five million deaths annually in low and middle-income countries.[4] Although prices are marked up at 215% in private pharmacies in Juba,[3] global evidence suggests 35% of over-pricing is attributable to stockouts in public facilities.[5] This underscores the complementary role of the private pharmaceutical sector.

In recent times, capabilities in the private sector have been reflected in the COVID-19 pandemic response. Australia, for instance, enlisted local logistics firms and mobilised the workforce across private health services.[6] In India, the steel industry repurposed industrial oxygen for medical supply.[7] Similarly, domestic firms in Kenya supported disease screening and monitoring, information management, vaccines storage, and delivery.[8] The lack of similarly established firms limited South Sudan's response.[9] Private pharmaceutical firms are a microcosm of private health sector capabilities. So, limited evidence on these firms impairs policy decisions.[10] Previous studies on pharmaceuticals in South Sudan have focused on both public and private suppliers,[3] public facilities,[1] or areas supplied by donor agencies.[11]

This study presents characteristics of private pharmaceutical firms in South Sudan. A firm's formality or informality is a continuum and lacks a universal definition.[12] However, self-reported formality or informality maps to varied levels of productivity and innovation and varies with firm's age and size.[13] This study uses specifications in the literature for a firm's formality and potential for innovation, including a firm's size (number of employees), age (years), and entrepreneur's sex, as well as manager's education level and workforce.[14]

Method

Study Sample

This study surveyed private, for-profit pharmaceutical firms in South Sudan. A simple random sample was surveyed through the Pharmaceutical Society of South Sudan. There were 21 respondents which comprised 58% of all registered private pharmaceutical firms (n = 36) (Personal communication). This excludes private, not-for-profit pharmaceutical firms, such as humanitarian or faith-based organisations. Respondents were identified through the Pharmaceutical Society of South Sudan.

Survey

This study administered the World Bank's Enterprise Survey (WBES) 2014 (https://doi.org/10.48529/363k-gc79)[15] via an online survey tool (Qualtrics), between July and September 2021. This comprised 54 questions previously used for studying private firms in South Sudan, allowing for comparison with the private sector in South Sudan and sub-Saharan Africa. It required informed consent and explored ten categories, including workforce (5 questions), innovation (5 questions), finance (7 questions), firm performance (5 questions), infrastructure (7 questions), other constraints (3 questions), other firm characteristics (7 questions), ownership status (4 questions), legal and export status (8 questions), and sectors in which the firm operates (3 questions). This article presents data on workforce, finance, other firm characteristics, legal and export status, and sectors in which firms operate.

Outcome

Firms were characterised by age, size (number of employees), skillset among employees, manager's gender, ownership (domestic and foreign), and quality (internationally-recognised quality certificate). Percentage comparators were drawn for the private sector in South Sudan and sub-Saharan Africa, based on findings from the WBES 2014.

Analysis

Three out of 19 respondents included in the analysis omitted one question each: a question on employee training, one on investment in research and development, and a question on a product or service that was new to the firm's main market. Descriptive statistics were used for characterisation.

In South Sudan, firm size is categorised by the Directorate of Private Sector Development within the Ministry of Justice and Constitutional Affairs. This reserves 31% ownership for South Sudanese in majority foreign-owned medium-sized or large firms.[16] Analysis in this study adopts categories used in the WBES 2014: small-sized firms were those with 1-19 employees, medium-sized firms had 20-99 employees, and large firms were those with >99 employees.[15]

Results

Descriptive statistics and comparators are presented in Table 1. The average pharmaceutical firm was older than the average firm in South Sudan. But they were smaller than the average other type of firm in South Sudan or an average firm in sub-Saharan Africa. Similarly, there were

Table 1. Characteristics of private pharmaceutical firms in South Sudan and comparators

Firm characteristic	Private pharmaceutical firms in South Sudan† (n = 19)	All other firms in South Sudan‡ (n = 738)	Firms in sub-Saharan Africa‡ (multi-year regional comparator)
Age (years), *m*	13.6	4.2	15.1
Size (number of workers), *m*	10.3	12.3	32.1
Purchased fixed assets (% of firms)	57.9	38.1	38.1
Internationally-recognized quality certification (% of firms)	26.3	2.6	9.8
Skilled workers (% of all production workers)	53.3	69.8	77.4
Firms with formal training to employees (% of firms)	16.7	17.1	27.5
Firms with female top managers (% of firms)	10.5	9.5	16.2
Foreign ownership (% of firms)	38.9	42.7	16
Sole proprietorship (% of firms)	10.5	37.7	58.2

Source: †Author's own. ‡World Bank (2015).

Note: m: mean.

ten times more pharmaceutical firms with internationally recognised quality certificates, compared with other firms in South Sudan. However, there was less foreign ownership of the pharmaceutical firms (Table 1).

The proportion of skilled workforce employed by the pharmaceutical firms (53.3%) was lower than for average firms in South Sudan and sub-Saharan Africa. However, pharmaceutical firms were similar to other firms in offering formal training to employees and purchasing fixed assets (Table 1).

Overall, there were limited capabilities in manufacturing: none of the private pharmaceutical firms engaged in manufacturing, while only 11% offered retail services and none exports. In addition, the majority of these firms were partnerships (84.4%), especially limited partnerships (79%) with firms that traded shares comprising 68.4% (Table 2).

Figure 1 presents workforce characteristics of the pharmaceutical firms by firm-size. There were no large firms (>99 employees). There were fourteen small-sized firms (1-19 employees) and five medium-sized firms (20-99 employees). Small-sized firms employed the majority (66.7%), representing 130 out of 195 employees. The rest of the workforce (65 employees) were employed

Table 2. Legal status and sectors in which the private pharmaceutical firms operate

Legal status (n = 19)	Total n (%)
Sole proprietorship	2 (10.5)
Shareholding company with traded shares	13 (68.4)
Shareholding company with non-traded shares	2 (10.5)
Partnerships	16 (84.4)
Limited partnerships	15 (79)
Other type of company	1 (5.3)
Sectors (n = 19)	
Exports	0 (0)
Manufacturing	0 (0)
Retail	2 (10.5)
Other services	8 (42.1)

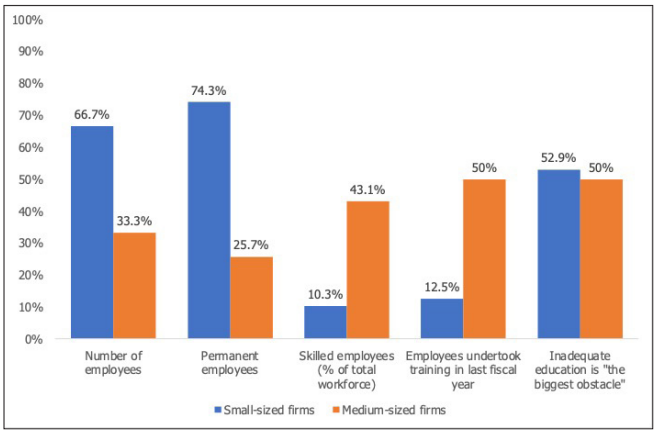

Figure 1. Workforce characteristics by firm size.

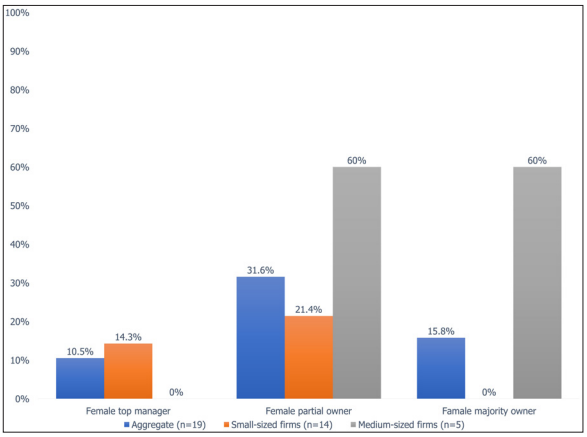

Figure 2. Female management and ownership by firm size

by medium-size firms. Small-sized firms also had a greater proportion (74.3%) of permanent staff (101 employees), compared with medium-sized firms (25.7%) which employed 35 permanent staff. However, a greater proportion of the skilled workforce (43.1%) was employed by medium-sized firms (84 employees), with small-sized firms employing only 20 skilled personnel. Likewise, few of those employed by small-sized firms (12.5%) had undertaken training in the preceding fiscal year. This is compounded by inadequate education, with 52.9% of small-sized firms reporting inadequate education as the biggest obstacle.

Firms also varied in their composition of female owners and top managers. Although medium-sized firms had greater proportions of female majority owners (60%) or female partial owners (60%), none of the medium-sized firms had female top managers. Conversely, 14.3% of small-sized firms had female top managers, which is above the average of 10.5%, even though only 21.4% of small-sized firms had female partial owners, which is below the average of 31.6% for private pharmaceutical firms with female partial owner (Figure 2).

Discussion

Findings in this study generally reflect those in the literature. Although this study included 19 private pharmaceutical firms, a smaller cohort by regional and global standards, it is representative of the private pharmaceutical sector in South Sudan. For instance, a study by Deng and colleagues,[3] included 18 private pharmacies in Juba County, the most populous. Moreover, the older age but small size of an average pharmaceutical firm suggests undercapitalisation despite early investor interest. This may reflect capital flight due to fragility.[17]

Structural constraints appear greater for private pharmaceutical firms. They were more limited in skilled workforce and formally-trained employees, relative to other types of private firms in South Sudan. In addition, predominance of small-sized firms threatens sustainability in this sector. Larger firms can leverage cluster scale and pool negotiating power for favourable outcomes, or transact among themselves, thereby supporting firm-level innovation.[14]

Moreover, a smaller proportion of foreign ownership and sole proprietorship suggest limited domestic capital and foreign direct investment. Fragile and conflict-affected states like South Sudan experience capital flight, low foreign direct investments and lack economies of scale.[17] However, it is unclear how foreign investment is impacted by the legally-mandated 31% domestic ownership[16] and South Sudan's 2017 Labour Act which prioritises South Sudanese for managerial jobs.[18]

Firms must innovate to survive the foregoing constraints. Evidence in the literature suggests gender and firm-size, among other factors, impact innovation.[13] The slightly higher proportion of female entrepreneurs among pharmaceutical firms, compared with other private firms in South Sudan, is promising for innovation and sustainability. However, the generally low proportion of female top managers confirms similar findings in the literature on sub-Saharan Africa.[19] In this study, paucity of small-sized firms with female majority owners, and

the lack of female top managers among medium-sized firms, may also suggest inequity in a sector where female ownership appears greater among small-sized firms. In addition, a higher proportion of international quality certification among pharmaceutical firms suggests they could advance the quality frontier in the health sector. Cost is often a concern with private services. However, settings with mixed health systems – whereby healthcare is provided by public and private services – benefit from improvements in both private and public capabilities.[20]

This study has limitations. Large firms (>99 employees) were absent, and a larger sample would have allowed for category-specific analysis and strengthen comparison between firms. Nonetheless, this study included a broad range of variables on individual firms and highlights a sector that remains understudied in South Sudan.

Conclusion

This study examined private pharmaceutical firms as potential vehicles for health systems strengthening in South Sudan. Further studies aimed at a greater understanding of constraints would inform sector-specific policies. Considering the dominance of international donors in South Sudan, thriving local firms may be a sustainable path to a reliable pharmaceutical sector.

Declarations

Ethics approval and consent to participate: Ethics approval for the survey was granted by the Australian National University (Protocol: 2021/272). Additional approval was obtained from South Sudan's Ministry of Health (Protocol: *32/07/2021 – MOH/RERB/AF/33/2021*). Participation was voluntary and anonymous, and no personally identifying information was collected. Except for the informed consent, respondents could skip questions and submit a partially completed survey. This offered flexibility while preserving anonymity.

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