

Masenyetse, Rethabile; Manamathela, Malefu

**Article**

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# Firm growth, exporting and information communication technology (ICT) in Southern Africa

Rethabile Masenyetse\*  and Malefu Manamathela

\*Correspondence:  
[rethabile.masenyetse@gmail.com](mailto:rethabile.masenyetse@gmail.com)

Central Bank of Lesotho, Corner  
Moshoeshoe and Airport Road,  
Maseru, Lesotho

## Abstract

This paper examines the key determinants of firm growth in three Southern African countries of Eswatini, Lesotho and Namibia and assesses whether exporting activity and use of information communication technology play any role in growth of the firms. The paper uses data collected by the World Bank through enterprise surveys during the period 2014–2016. Employing the ordinary least squares, the results show that firm growth is determined by size of the firm, age, use of information communication technology, exporting activities, foreign ownership and the legal form of the firm. The result is robust even when controlling for industry and country differences. Overall, the results support industrial policy geared towards small firms through rolling out information communication technology infrastructure and promoting access to exporting markets.

**Keywords:** Firm growth, Exporting, Technology

**JEL Classification:** L25, F140, O31

## Introduction

The expansion of information communication technology and access to export markets presents an opportunity for small firms in developing countries to participate meaningfully to economic growth. Economic theory has established that adoption of technology and participation in exports markets have positive effects on economic activity. Technological progress tends to shift the economy production frontier by increasing efficiency of production. As such countries that embrace technology become more productive and grow faster. In fact, Hall and Jones (1999) observed that the differences in economic growth across countries can be explained by productivity. In a same way, exporting firms tend to be more efficient through learning and technological transfer from the international markets where they operate. However, empirical evidence on the existence of these relationships at the level of the firm in developing countries is still scanty. The bulk of the analysis in developing countries is done using aggregate data partly because of the unavailability of firm level data. This paper fills this gap by investigating the effect of exporting and use of Information Communication Technology (ICT) on firm growth.

In Southern Africa, there has been significant improvement in the adoption of information communication technology driven mainly by the introduction of internet and mobile phones. Based on data from the World Development Indicators, during the period 2000–2016, the indicators of information technology such as mobile cellular subscriptions, number of secure internet servers, individuals using the internet as a% of the population and fixed broadband subscriptions have shown phenomenal growth. For instance, in 2015 individuals using the internet as a% of the population was around 25% in the three countries. This is a significant increase compared to 2000 below 0.9% in Eswatini,<sup>1</sup> 1.64% in Namibia and 0.21% in Lesotho. However, significant differences on the growth of the indicators can be observed among countries. For instance, there is a strong growth in Namibia for mobile cellular subscriptions, secure internet servers and fixed broadband subscriptions while in Eswatini strong growth was observed in internet usage.

The contribution of exports to economic growth have also been increasing in the region. In 2015, the exports of goods and services measured as a% of gross domestic product (GDP) accounted for 39.7%, 48.2% and 44.1% in Lesotho, Eswatini and Namibia respectively. The growing importance of exports particularly from the non-primary sector has been partly explained by the increased access to international markets. The late 1990s was dominated by negotiations of trade arrangements for most countries resulting in increased access to markets for many developing countries. The three countries benefited from the introduction of African Growth Opportunities Act by the United States government in the early 2000.

This paper aims to investigate the main determinants of firm growth in three Southern African countries using employment as the measure of firm size and examine the role played by exporting companies and use of information communication technology in company growth. The paper uses the firm level data collected through the World Bank Enterprise Survey in 2014 and 2016. Fortunately, the enterprise surveys in Eswatini, Lesotho and Namibia were conducted around the same time which allows us to pool the data together and undertake more robust econometric analysis.

The countries of Eswatini, Lesotho and Namibia (ELN) make an interesting case study for a cross country analysis for a number of reasons. First, the three countries are the members of the common monetary area together with South Africa as such they have the similar financial systems which use the South African Rand. Second, they are also members of the Southern African Customs Union together with South Africa and Botswana. Thus firms in the three countries are subjected to similar external tariff structure. To a large extent the ELN economies have similarities and face the similar shocks.

The paper makes several important contributions to the economic literature. First, it adds to the industrial organization literature by using the cross country firm level panel data in developing economies hence contributes to scanty literature in developing countries. Most of the studies in developing countries using firm level data have been country specific because of lack of standardized cross country data. The World Bank Enterprise Survey data are standardized across developing countries and can be used to construct

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<sup>1</sup> Name changed from Swaziland in April 2018.

a panel. In the region the only study using cross country data that we are aware of is McPherson (1996). McPherson (1996) investigated firm growth in five Southern African countries (Botswana, Lesotho, South Africa, Eswatini and Zimbabwe) using survey data. The paper follows closely McPherson (1996). Second, the paper is being done at the opportune time when there are discussions about the common industrial policy among Southern African Customs Union countries. As such, it is contributing to the debate on industrial policy in the region. Last, by using employment as the measure of firm size the study contributes to the debates on the job creation propensities by different company sizes.

The rest of the paper is organized as follows; “Literature review” section discusses the literature review. “Empirical framework” section presents the empirical framework. “Data and variable description” section presents the data and descriptive analysis. “Empirical results” section is the empirical results. “Conclusion and policy implications” section is the conclusion and policy implications.

### **Literature review**

The neoclassical theory of the firm provides the natural starting point towards understanding the growth process of firms. The theory rests on a number of assumptions including that firms are profit maximising, perfect competition and constant returns to scale. According to the neoclassical theory there exists some equilibrium size for the firm. It is the level at which the firm can achieve the profit maximising goals. As such, a firm grows through the competitive process in search of this equilibrium size. Beyond the equilibrium point, there is no incentive to grow or shrink. The equilibrium size is determined as the bottom of the U-shaped average cost curve. This model implies that there is relatively faster growing smaller firms moving towards the minimum efficient size. Their minimum efficient size is where average variable costs are the lowest. The neoclassical view of firm growth has been seen as unsatisfactory as there is no evidence indicating such convergence towards the equilibrium size and alternative theories have been developed.

One such alternative model is the stochastic growth models which suggest that the determinants of firm growth rates, including product demand, managerial talent, innovation and government policy, are complex and determined by a range of factors and behaviour that make treating growth as a random shock on initial firm size. The stochastic growth model implies that all firms grow at the same rate proportionate to their sizes. It follows the Gibrat Law of Proportionate Effects which states that the growth of the firm is independent of its initial size. Basically, the law states that the probability distribution of growth rates was the same for all sizes of firms. Thus, over time, the size distribution will begin to be characterised by few large firms and many small ones. The distribution will be positively skewed, indicating increased concentration by firm. As it turned out most of the empirical work on firm growth has been dominated by testing the validity of the Gibrat law.<sup>2</sup> Despite it being the workhorse in industrial economics

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<sup>2</sup> Survey articles see Sutton, 1997, Coad (2009) and Santarelli et al., 2006

because of its tractability, it has been greatly criticized for its lack of theoretical underpinnings (Coad & Tamvada, 2008; Sutton, 1997).

Jovanovic (1982) developed the theoretical passive learning model which argues that, overtime, firms are able to adapt to the competitive environment and improve their efficiency. The passive learning model predicts that firm growth can be explained by both size and age of the firm. The model was later refined by Pakes & Ericson (1998) with the active learning model which observed that managers are different in the level of human capital that they possess. Managers that have extensive experience and qualifications are likely to steer their firms to grow faster than the ones with little experience.

There are other determinants of firm growth that have been proposed by different theories. They include use of technology, engaging on exporting, innovation, gender of the manager, legal form of the firm and location. The study focuses on whether the use of information technology and exporting play an important role in firm growth in the ELN countries. As suggested by the neoclassical theory, technology plays an important role in firm growth because it allows firms to gain some efficiency through simplified processes. This is likely to be significant in developing countries where technology use is still behind. As such firms that embrace technology are likely to experience higher growth compared to those that lag behind.

As relates to exporting, the role of exporting on firm performance has been the subject of theoretical and empirical testing (Bernard & Jensen, 1999). Exporting firms display better performance compared to non-exporters because they are able to incorporate their export markets experience into their local production. The linkage is normally referred to as learning by exporting. The result has been that companies that are globally engaged through exporting grow faster than those that are not (Coad & Tamvada, 2008).

Empirical evidence on the determinants of firm growth is limited in developing countries due to the scarcity of firm level data which has made it difficult to conduct such analysis. Our study is similar to Le (2022) who investigates the effect of exporting on firm growth in the case of Vietnam. The study finds that exporting firms grow faster than the non-exporters. The study included other control variables such as leverage, company structure, age, education and gender of the manager or owner. The available evidence in Africa is Dunne and Masenyetse (2014) for South Africa, McPherson (1996) for Lesotho, Eswatini, South Africa, Botswana and Zimbabwe, Gunning & Mengistae (2001) for Ethiopia and Teal (1998) for Ghana. Few studies have been conducted on cross country level. Mcpherson (1996) investigated firm growth in five Southern African countries including Lesotho and Eswatini. The study found that firm size, age, location and human capital embodied in the proprietor were important determinants of firm growth. Other studies include Ayyagari et al. (2011), Seker and Correa (2010), Fernandez et al. (2017). The studies include a variety of explanatory variables such as size, age, location, sector, exporting, ownership, innovation and technology.

### **Empirical framework**

In this section, the empirically estimatable model for firm growth is developed based on the number of theories of firm growth. Following Geroski (1999) and Harabi (2002) firm growth can be stated as follows,

$$\Delta S_i(t) = S_i^* + \beta S_i(t-1) + \mu_i(t) \quad (1)$$

where  $S_i(t)$  is the actual size of firm  $i$  at time  $t$ ,  $S_i^*$  is the long run steady state size of firm  $i$ ,  $\beta$  is the speed at which firm  $i$  converges towards  $S_i^*$ , when  $S_i \neq S_i^*$  and  $\mu_i(t)$  is normally distributed white noise process.  $S_i^*(t)$  can be defined by the following equation,

$$S_i^*(t) = c + \alpha X(t) + \eta_i(t) \quad (2)$$

where  $X_t$  is the set of observable exogenous drivers of  $S^*(t)$  and  $\eta_i(t)$  is the white noise error process. Substituting Eq. 2 into Eq. 1, we get the following estimatable equation,

$$\Delta S_i(t) = c + \alpha X(t) + \beta S_i(t-1) + v_i(t) \quad (3)$$

where  $v_i(t) \equiv \mu_i(t) + \eta_i(t)$ . Based on our literature review, the following variables can be included in the equation, age of the firm, engagement in exporting, technology use, location, market size, legal form and industry specific characteristics.

### Data and variable description

Data used in the paper was collected through the World Bank Enterprise surveys conducted in ELN countries in the years 2014 and 2016. Specifically, the Namibian survey was done in 2014 while that of Eswatini and Lesotho were conducted in 2016. The period in which these surveys were conducted is interesting for this paper since it allows for comparison across the three countries as they are not far apart. The enterprise surveys are nationally representative and are standardized across countries. They are an on-going initiative of the World Bank to benchmark investment climate in different countries across the world and to obtain data based on firms' experiences and perception of the environment they operate in. The sample of firms is stratified by sector, size and location. The three level stratification was used to select a sample of the firms to be included in the survey. Sector stratification involved selecting a sample from a population of firms in different sectors of the economy, for instance, manufacturing, construction, services, transport and others. Size stratification comprised a selection of firms by the number of full time employees; small firms (5–19 employees), medium firms (20–99 employees) and large firms (100 or more employees). Region stratification involved a selection of firms based on the centers of economic activity in the country. The resulting sample consists of a total number of 880 firms. This can be broken down into 580 firms in Namibia, 150 firms each in Eswatini and Lesotho.

Data is available to construct the variables that will be used in the empirical analysis. A key consideration in analyzing firm growth is the choice of the most appropriate measure of firm size. The literature is replete on measures that can best capture firm size. They include number of employees, sales, assets, equity, liabilities etc. The consensus is that while there is interchangeability between measures the suitability depends on the question being answered and the availability of data (Shalit & Sankar, 1977; Shanmugan & Bhaduri, 2002; Smyth et al., 1975). This paper uses number of employees as the main measure of firm size because the paper focuses on job creation. In addition, it is the well reported in the data and it helps to preserve the data points.

As expected the main variable of interest in the study is firm growth. In line with Coad & Tamvada (2008), firm growth ( $GROWTH_i$ ) is measured as the difference of logarithm

**Table 1** Descriptive statistics

Variables	Namibia			Eswatini			Lesotho			All		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
Growth	518	0.05	0.37	133	0.16	0.20	143	0.07	0.35	794	0.07	0.34
Lemployment	526	2.55	1.09	133	3.12	1.23	143	3.21	1.60	802	2.76	1.25
Lage	574	2.13	0.86	150	2.84	0.95	150	2.67	0.76	874	2.34	0.91
Exporting	580	0.17	0.38	150	0.23	0.42	150	0.15	0.35	880	0.18	0.38
Email	579	0.78	0.42	150	0.77	0.42	150	0.58	0.50	879	0.74	0.44
Website	576	0.44	0.49	150	0.66	0.47	149	0.20	0.40	875	0.44	0.49
Ownership	539	0.06	0.24	126	0.21	0.41	135	0.23	0.42	800	0.11	0.32
Legal	580	2.53	0.66	150	2.25	0.81	150	2.27	0.67	880	2.44	0.70
Femmanager	580	0.36	0.48	150	0.26	0.44	150	0.33	0.47	880	0.34	0.47
Industry	580	1.72	0.45	150	1.50	0.50	150	1.47	0.50	880	1.64	0.48

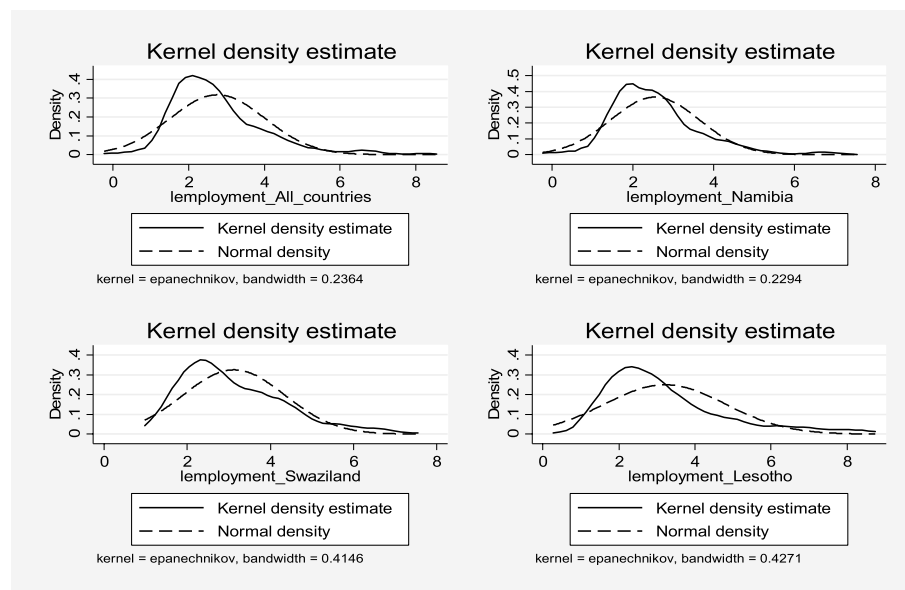
of size. In this case it is the difference between employment in the current year and that of previous three years.

$$Growth_i = \log(size_t) - \log(size_{t-3}) \quad (4)$$

Other variables to be used in the study are constructed as follows,

- Firm Size ( $EMPLOYMENT_i$ ) is measured by number of employees.
- Firm Age ( $AGE_i$ ) is defined as the number of years since the establishment began operations in the country.<sup>3</sup>
- Engagement in Exporting ( $EXPORTING_i$ ) is measured by a dummy variable that is coded 1 if the firm is active in exporting activities and zero if the firm is not engaged in exporting activities. Exporting activities is identified as the percentage of sales that were generated from direct or indirect exports.
- Use of Email ( $EMAIL_i$ ) is measured by a dummy variable coded 1 for firms making use of technology and zero for firms with no technology activities. Technology variable was constructed using a question that sought to evaluate whether a firm made use of an email to contact customers.
- Company owning a website ( $WEBSITE_i$ ) is measured by the dummy variable coded 1 if firms has established its own website and zero otherwise.
- Legal Form ( $LEGALFORM_i$ ) is defined to distinguish limited liability companies, partnership and sole proprietorship.
- Foreign Ownership ( $OWNERSHIP_i$ ) is a dummy variable coded 1 if the firm shareholding by private foreign individuals, companies and organisation is above 10%.
- Female Manager ( $FEMMANAGER_i$ ) is a dummy variable coded 1 if the manager is female and zero otherwise.
- Industry Dummy ( $INDUSTRY_i$ ) is defined to distinguish firms in manufacturing and those in other services sectors. The dummy is equal to unity for manufacturing sector and zero otherwise.

<sup>3</sup> In cases where variable for years when the establishment began its operations, a variable about the year in which the establishment was first registered was used as proxy.



**Fig. 1** Kernel density functions

- Country Dummy ( $COUNTRY_i$ ) are included to control for country specific differences.

Table 1 presents the descriptive statistics for the variables to be used in the study. The mean growth is higher in Eswatini than other countries. And mean employment is higher in Lesotho with 3.21 compared to Namibia and Eswatini with 2.55 and 3.12 respectively. Mean age is higher in Eswatini compared to other countries. About 74% of the firms in the sample reported using email to contact their customers. The highest number of firms that reported using email was found in Namibia with 78%. As relates to owning a website about 44% of firms in the sample reported owning a website. The highest number of firms with websites is found in Eswatini with 66% and lowest in Lesotho with 20%. This shows that email pick-up by companies in the three countries has been rather slow compared to use of email. About 18% of the firms reported to be engaged in exporting. More firms reported being exporters in Eswatini with 23%.

## Empirical results

### Non-parametric analysis of firm growth and size

Before estimating firm growth equation, the section investigates whether firm growth could be linked to size in line with Bigsten & Gebreeyesus (2007) and Coad & Tamvada (2008). If the logarithm of firm size is normally distributed it implies that the growth of the firm is independent of its initial size. Figure 1 shows the kernel density functions for logarithm of employment for each of the ELN countries and for the whole sample. The kernel density is overlaid by the normal distribution. For each of the countries and in all countries, the distributions are not normal they are skewed to the left indicating the dominance of small firms.



**Table 2** Main results-determinants of employment growth

Variables	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4	(5) Model 5	(6) Model 6
Employment	- 0.405*** (0.0320)	- 0.403*** (0.0319)	- 0.420*** (0.0319)	- 0.401*** (0.0332)	- 0.389*** (0.0332)	- 0.403*** (0.0329)
Lemployment_sq	0.0447*** (0.00422)	0.0441*** (0.00422)	0.0453*** (0.00419)	0.0421*** (0.00434)	0.0415*** (0.00431)	0.0426*** (0.00428)
Lage	0.107*** (0.0370)	0.102*** (0.0369)	0.103*** (0.0366)	0.105*** (0.0383)	0.0869** (0.0384)	0.0581 (0.0386)
Lage_sq	- 0.00794 (0.00562)	- 0.00723 (0.00561)	- 0.00700 (0.00556)	- 0.00673 (0.00596)	- 0.00444 (0.00595)	- 0.00206 (0.00590)
Exporter		0.0684** (0.0294)	0.0626** (0.0291)	0.0572* (0.0305)	0.0570* (0.0303)	0.0487 (0.0302)
Email			0.103*** (0.0258)	0.0921*** (0.0266)	0.0956*** (0.0266)	0.104*** (0.0270)
Ownership				0.128*** (0.0364)	0.145*** (0.0379)	0.116*** (0.0383)
Femmanager				- 0.00040 (0.0243)	0.00127 (0.0241)	0.00858 (0.0239)
Company					- 0.151** (0.0758)	- 0.169** (0.0751)
Sole Proprietary					- 0.112* (0.0640)	- 0.145** (0.0639)
Partnership					- 0.193*** (0.0634)	- 0.212*** (0.0630)
Services						- 0.0224 (0.0244)
Eswatini						0.141*** (0.0330)
Lesotho						0.0609* (0.0327)
Constant	0.574*** (0.0707)	0.568*** (0.0706)	0.527*** (0.0707)	0.485*** (0.0753)	0.628*** (0.0983)	0.713*** (0.100)
Observations	792	792	792	723	723	723
R-squared	0.193	0.198	0.214	0.212	0.230	0.253

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Determinants of firm growth**

To investigate the factors that drive firm growth, the following model is estimated using least squares,

$$\begin{aligned}
 Growth_{it}(t) = & \beta_0 + \beta_1 Employment_{it} + \beta_2 Employment_{it}^2 \\
 & + \beta_3 Lage_i + \beta_4 Lage_i^2 + \beta_5 Technology_i \\
 & + \beta_6 Exporting_i + \beta_7 Femmanager_i \\
 & + \beta_8 Ownership_i + \beta_9 Legalform_i \\
 & + \beta_{10} Industry_i + \beta_{11} Country_i + \varepsilon_i
 \end{aligned}
 \tag{5}$$

The coefficient on employment is expected to be negative suggesting that small firms grow faster than large firms. Age is expected to be positive showing that older

**Table 3** Determinants of employment growth-alternative ICT Indicator

Variables	Model 1	Model 2	Model 3	Model 4
lemployment	− 0.402*** (0.0327)	− 0.377*** (0.0338)	− 0.369*** (0.0338)	− 0.381*** (0.0335)
lemployment_sq	0.0440*** (0.00428)	0.0401*** (0.00441)	0.0398*** (0.00438)	0.0410*** (0.00435)
lage	0.103*** (0.0371)	0.107*** (0.0388)	0.0888** (0.0389)	0.0658* (0.0392)
lage_sq	− 0.00731 (0.00563)	− 0.00684 (0.00601)	− 0.00462 (0.00601)	− 0.00281 (0.00598)
exporter	0.0687** (0.0297)	0.0666** (0.0310)	0.0663** (0.0308)	0.0578* (0.0307)
website	− 0.00336 (0.0236)	− 0.0258 (0.0240)	− 0.0162 (0.0242)	− 0.0286 (0.0252)
ownership		0.132*** (0.0368)	0.143*** (0.0382)	0.122*** (0.0387)
femmanager		− 0.00404 (0.0245)	− 0.00177 (0.0244)	0.00536 (0.0242)
Company			− 0.154** (0.0766)	− 0.166** (0.0760)
Sole Proprietary			− 0.133** (0.0645)	− 0.159** (0.0646)
Partnership			− 0.203*** (0.0640)	− 0.216*** (0.0637)
Services				− 0.0241 (0.0247)
Eswatini				0.140*** (0.0336)
Lesotho				0.0221 (0.0334)
Constant	0.566*** (0.0711)	0.514*** (0.0755)	0.679*** (0.0982)	0.758*** (0.101)
Observations	789	721	721	721
R-squared	0.198	0.200	0.217	0.238

Standard errors in parentheses \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

firms grow faster. Use of information communication technology and exporting are expected to bear positive signs suggesting that firms that adopt and embrace information communication technology are able to seize opportunities that help them to grow faster. The exporting dummy is expected to be positive indicating that exporting firms grow faster than those that focus on domestic markets. Foreign ownership is expected to be positive suggesting the benefits of foreign direct investment. Other variables such as quadratic employment, quadratic age, gender and legal form may take any sign (Table 2).

Regressing Eq. 5 provided the results presented in Table 3. Model 1 in the table presents the basic firm growth model with size and age as the only the explanatory variables. Thereafter, the other explanatory variables are included stepwise. As expected, previous employment is highly significant and negative suggesting

that small sized firms grow faster than large one. The finding provides support for greater intervention for smaller firms as they seem to be growing faster and can generate jobs faster. The coefficient of the quadratic employment is significant and positive suggesting the existence of a non-linear relationship between size and growth. Age is found to have a positive sign and significant. This implies that older firms grow faster than the younger firms. The finding is not surprising because empirical evidence on the importance of age has been mixed. The quadratic age is negative. This indicates that firms grow up to a particular age before they begin to realize some decline. So younger firms are able to grow faster and create jobs up to a point beyond which they start shedding off some jobs.

As expected that coefficient of exporting is found to be positive and significant at 1% level indicating that firms that are engaged in exporting grow faster than those that are not exporting. The result is similar to Le (2022) in the case of Vietnam who found that exporters grow faster than non-exporters. More empirical evidence indicates that exporting firms are more efficient mainly driven by presence in foreign markets where they are competing. Thus the results support that firms should be engaged in exporting as it presents huge opportunities for growth. Exporting is always a challenge for small firms and in most cases they require some government support. The availability of business development services and access to markets can help firms to be able to export.

As for use of ICT, the coefficient of use of email is found to be positive and significant indicating that firms that use email to communicate with their clients grow faster than those that do not. Clearly, firms that utilize email services are able to propel their growth prospects. Increased support to develop the information technology infrastructure can go a long way towards supporting firm to grow. An alternative indicator of owning a website was used in the regression and the results are presented in Table 3. The coefficient of owning a website is negative indicating that firms that own website grow slower than those that have them. However, the coefficient is insignificant. One reason for the result on owning a website is that take up of websites by firms in the three countries seems to be low. It is possible that websites are expensive to own and to maintain. Overall, access to ICT infrastructure such as WIFI is still a challenge for small firms in developing countries. There is a general need towards universal access to information technology.

Adding the controls such female manager, foreign ownership, legal form of business, industry and countries does not change the result. The coefficient on foreign ownership is positive and significant indicating that firms with foreign shareholders grow faster than those that do not have. The positive effect of foreign direct investment on economic growth in developing countries is well documented and the results provide further evidence at the firm level. The coefficient of gender of the manager is positive indicating that firms with female manager's perform better than those with male managers. But the coefficient is not significant. The legal form of business shows that sole proprietorship and partnership firms grow slower than the limited liability which is the base category. The partnership coefficient is significant at 10%.

The industry dummy is negative and insignificant suggesting that firms in the manufacturing sector grow slower than those in the tertiary sector. Controlling for country differences indicates that firms in Eswatini and Lesotho grow faster than those in Namibia which is the base category. The coefficients are significant. Overall, the results are as expected. But it is important worth noting that the adjusted r-squared seems to be low.

### **Conclusion and policy implications**

The paper set out to investigate the factors that drive firm growth the ELN countries with specific focus on the impact of use of information communications technology and exporting activities by the firm. The choice of the ELN countries was motivated by that in addition to sharing the same monetary and financial structure, these countries are also members of Southern African Customs Union which makes them share the same tariff structure. Using the unique data collected by the World Bank through the enterprise surveys, the paper investigated the determinants of firm growth in ELN countries and examined the role of use of information communication technology and exporting. Since the paper used employment as the measure of firm size the results have direct interpretation of job creation. The results confirm some of the findings in other countries on the determinants of firm growth. They show that the size of employment is negatively related to growth of employment suggesting that smaller firms are growing faster than large ones in the ELN countries. The age of the company is positively related to growth indicating that older firms are the ones that create more jobs. Exporting firms seems to grow faster than those that do not export. Also firms that reported to be using email for business appear to be significantly growing faster than those that reported not to. Interestingly owning a website was found to be insignificant. Firms with foreign ownership seem to grow faster than those without. However, gender of the manager does not have significant role. The paper contributes to the growing literature on developing countries using firm level data.

The findings suggest that access to export markets, investment in information technology infrastructure and promotion of foreign direct investment are good for business growth and job creation. This could be immediate priorities for the developing African countries.

Finally, the paper has some limitations that future research may focus on in the area. First, it may be important to check with other indicators of ICT to see if they show the same results. Also it may be beneficial to include additional firm specific characteristics and locational indicators.

#### **Abbreviations**

ICT	Information Communication Technology
ELN	Eswatini, Lesotho and Namibia

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#### **Author contributions**

This paper was jointly conceived, developed and written RM and MM. Both authors read and approved the final manuscript.

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**Availability of data and materials**

We used the World Bank Enterprise Survey data for Africa. This is readily available upon request. Please note, we can also avail the do files upon request.

**Declarations****Competing interests**

The authors declare that they have no competing interests.

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