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Does Investment Climate Matter for Firm Performance? Evidence from Kenyan Manufacturing Firms

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Abstract

The productivity of Kenyan manufacturing firms is way lower than that of many developed economies and has generally exhibited a consistent decline over the last decade. While this productivity trend has largely been attributed to the presence of a high distortionary institutional and business regulatory environment, existing studies on the role of the investment climate in determining firm performance are ostensibly scanty. This study, thus, employed the World Bank panel enterprise data for the period 2007-2013-2018 in assessing whether investment climate mattered for firm performance in Kenyan manufacturing firms. More particularly, the study sought to establish the role of the court system and property rights ownership in determining firm performance; a feat that remains unexplored in the Kenyan context. The random effects model was estimated while controlling for the year, industry, and firm-specific control variables. The findings revealed that while court inefficiencies significantly impeded labor productivity, property rights ownership significantly increased productivity. Further, human capital positively determines labor productivity. Concerning governance and institutional factors, ISO-certified firms were found to be significantly more productive. Conversely, business licenses and permits constrain firm productivity. Therefore, to ensure unrelenting firm productivity, speedy and just delivery of court rulings on firm-related matters is critical. Secondly, the acquisition of patents relating to product or process innovation by firms enhances product competitiveness. Thirdly, manufacturing firms should invest more in human capital. Finally, the imposition of favorable business licenses

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and permits by the governments globally coupled with the ISO Certification requirement by firms is integral in optimizing labor productivity.

Keywords: Investment climate; labor productivity; manufacturing firms; Kenya

1. Introduction

The majority of the manufacturing firms in developing economies are characterized by a highly distortionary institutional and business regulatory environment as well as overreach by local government officials in their day–to–day interactions with firm managers. These factors negatively influence firm performance (Dollar et al., 2005). More predominantly, as pointed out by Dollar et al., (2005), a highly bureaucratic and corrupt government depicts low and uncertain returns on potential investments. Further, Qureshi and Te Velde (2012) observe that since transaction costs are associated with regulations, bureaucracy, and corruption, the diversion of resources from production would certainly ensue, something that yields significant implications on firm performance.

Investment climate has, thus, been identified as one of the prime determinants of firm performance in developing economies (Lu et al., 2013; Raj and Sen, 2017). Notable empirical studies from manufacturing firm surveys associate poor firm performance with bureaucracy, corruption, and institutional & business regulatory factors (Bigsten and Kimuyu, 2002; Meon and Sekkat, 2005; Hodge et al., 2011). This study, therefore, sought to examine the impact of investment climate on the performance of manufacturing firms in Kenya using the World Bank panel enterprise data for the periods 2007, 2013, and 2018. Broader indices of investment climate at the micro–level namely regulatory governance & institutional factors, human capital factors, and infrastructural-related variables are incorporated in this study. More principally and adding novelty to the literature, this study evaluates the role of property rights (patents in particular) and the court system in influencing firm productivity; a feat that remains unexplored in the Kenyan manufacturing context.

According to the World Bank (2020), Kenya ranks position 56 in the ease of doing business out of the 190 countries ranked globally. Even though this is an improvement over the 61st position recorded in 2019, it is not satisfactory. It potentially highlights the factor behind Kenya's low investment and subsequently lower manufacturing productivity output in recent years. More primarily, the share of contribution of the manufacturing sector to Kenya's Gross Domestic Product (GDP) has consistently waned over the last decade from the 11.26% recorded in 2010 to 7.54% in 2019 (World Bank, 2020). If the declining trend in this sector's contribution to Kenya's GDP

persists, then it will definitely undermine the government's Big 4 Agenda priority prospect of increasing its share of manufacturing contribution to at least 15% of the GDP [Kenya Association of Manufacturers (KAM) and Kenya Business Guide (KBG), 2018]. Further, it will also hamper the realization of Kenya's Vision 2030 prospect of becoming the leading regional (East and Central Africa) provider of basic manufactured goods by the year 2030 (Kenya Vision 2030, 2008). Given that the manufacturing sector plays a central role in the Kenyan economy by contributing to the GDP as well as creating employment opportunities, there is a need to enhance the business climate to harness optimal output from the sector. This will not only boost the GDP but also foster the continuity prospects of the manufacturing enterprises and more so to the Small and Medium–sized Enterprises (SMEs).

It is also noted that Kenya ranks poorly in the corruption perception index with the latest global ranking of 180 countries by Transparency International pitting Kenya at position 124. On a score scale of 0 to 100 where 0 signals highly corrupt and 100 very clean, Kenya scored a paltry 31 (Transparency International Kenya, 2020). Albeit this seems to be an improvement over the 137th position ranking obtained in 2019, the Kenyan corruption global ranking has been unimpressive over the last decade (see Table 1).

Table 1. Kenya's Corruption Perception Index Ranking by the Transparency International

Year/Rank	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Global Rank: $\frac{x}{180}$	154	139	136	145	139	145	143	144	137	124
Score: $\frac{0}{100}$	22	27	27	25	25	26	28	27	28	31

Source: Transparency International Kenya (2020)

This ranking in Table 1 portrays an uncertain business environment and does not auger well for Kenya as it is likely to drive away potential foreign investments. As a result, domestic manufacturing firms are likely to miss out on the vital foreign capital inflows and human capital development which are critical to enhancing firm performance.

Despite the continuously rising inefficiencies stemming from the investment climate-related factors such as regulatory governance & institutional factors, human capital factors, and infrastructural–related factors, empirical evidence on the impact of investment climate on the manufacturing firms' productivity in Kenya at the micro–level is limited. Most studies are macro-based as they tend to align investment climate to economic growth. Nevertheless, the few studies that attempt a micro-analysis i.e., Kimuyu (2007), focus only on corruption and bureaucracy while Bigsten et al., (2010) examine the manufacturing sector in Kenya from the descriptive analysis perspective. This study acknowledges that investment climate is a broader

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term and encompasses many factors such as the quality of infrastructural facilities, human capital variables, and the institutional & regulatory governance factors. As such, this study incorporates some of the previously omitted investment climate variables. Furthermore, this study also analyzes the role of property rights and court inefficiencies in determining the firm–level productivity of Kenyan manufacturing firms.

Following the introduction, section 2 of this paper reviews the relevant literature while section 3 discusses the methodology and data used. Section 4 discusses the empirical findings and the last section 5 provides conclusions and policy recommendations.

2. Literature review

Investment climate encompasses numerous firm performance determining factors namely; human capital variables, governance & institutional factors, the quality of infrastructural facilities, finance–related factors, and the firm-specific control variables. This section reviews the relevant literature on those investment climate factors that are considered most astute in determining the productivity of manufacturing enterprises at the micro–level.

Regarding the human capital factors, the human capital theory of labor productivity finds employee training, the level of education, managerial experience, and Research and Development (R & D) as principal drivers of firm performance (Schultz, 1961; Becker, 1964; Mincer, 1974). Various empirical studies also support the theoretical findings. For instance, more educated employees and experienced managers are found to be significantly associated with increased firm performance in Kenya (Amutabi and Wambugu, 2020). Further, Goedhuys et al., (2008) found employees' work experience and formal training as significant and positive drivers of labor productivity among Tanzanian manufacturing firms.

In evaluating the role of R & D on firm performance, this study proxies the aforementioned variable with property rights ownership. According to Fernandes and Kraay (2007), institutional performance can be defined by two critical dimensions namely, property rights institutions and contracting institutions. They proceeded to show that property rights institutions mattered more for firm performance across countries compared to contracting institutions. According to Lu et al., (2013), property rights protection significantly increased the productivity of Chinese manufacturing firms. Yasar et al., (2011) further revealed that effective property rights significantly influenced firm competitiveness and performance. They posited that high–quality institutions are most likely to be Iso–certified; something that creates a market quality signal that enhances investment through building confidence and trust. In a related study, Goedhuys et al., (2008) associated

ISO certification with high firm productivity among Tanzanian enterprises. According to their study, ISO–Certification acts as a signal for product quality, thus, enabling firms to charge higher prices on their products.

Regulatory governance and institutional factors are found to be pivotal determinants of firm–level productivity. According to Bigsten et al., (2010), a conducive business environment is a prerequisite to optimal productivity. From an analysis of the 2007 World Bank Investment Climate Survey data, the study cited customs and trade regulations coupled with red tape as well as political instability as major constraints to firm performance in Kenya. Faruq et al., (2013) also pinpoint poor bureaucratic quality as an obstacle to firm performance as it reduces productivity by creating delays in shipments & approvals; taxes & licenses disbursements, and more so the time costs for managers engaged in paperwork and networking as well as waiting in lines.

According to a theoretical analysis provided by Batabyal and Yoo (2007), there are opportunity costs associated with poor bureaucratic quality. They argue that it does not only substantially decrease firm efficiency but also threatens the very existence of potential business start–ups and more so the small business entities. Furthermore, resource–shifting effects become inevitable since executive time and attention are channeled away from productive work toward developing and maintaining contacts and networks.

According to Nagler and Naude (2014), easy access to credit significantly increases firm productivity as it enables firms to expand their operations. Furthermore, firms that reported high tax rates coupled with administrative constraints as a major obstacle recorded a decline in their labor productivity levels (Amutabi and Wambugu, 2020; Mawejje and Okumu, 2016). Hosny (2017) investigated the impact of political instability on firm performance using firm–level data across private firms in eight countries in the Middle East and North Africa. The study employed the Ordinary Least Squares (OLS) and an endogenous treatment linear regression model. The findings revealed the presence of a negative relationship between political instability and firm performance.

According to a study by Gaviria (2002), corruption and crime negatively impacted a firm's sales growth in Latin America. In analyzing the link between corruption and firm productivity in African countries using firm–level data, McArthur and Teal (2002) found that firms in countries with rampant corruption were 70% less efficient compared to those firms in corruption–free countries. While assessing the impact of corruption on firm performance in Kenya, Kimuyu (2007) found an inverse relationship between the proportion of revenue reported for tax purposes and the proportion of annual sales spent on unofficial payments. In analyzing the effect of institutional quality on firm performance in India, Raj and Sen (2017) found that corruption mattered much more than other institutional variables. The

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study, thus, suggested a redirection of government focus in addressing the corrupt practices at various government levels as opposed to focusing only on the measures of doing business.

In considering the infrastructural–related drivers of firm performance, Mensah (2016) and Amutabi and Wambugu (2020) found a significant and robust negative effect of power outages on the firm productivity level. Equally, insufficient water supply and internet connectivity problems were found to decrease labor productivity among the Kenyan manufacturing and service firms (Heshmati and Rashidghalam, 2018).

A vast array of literature also finds firm–specific control variables as significant in explaining firm productivity. According to Raj and Sen (2017), labor productivity increases with the size of the firm since large firms are much more capital-intensive than smaller firms. As a result, large firms enjoy the benefits of economies of scale. In evaluating the impact of legal status on firm performance, the same study found a significant reduction in labor productivity for sole proprietorship–owned firms compared to other jointly–owned business entities. According to Raj and Sen (2017), sole proprietorships have a limited capital or assets base and a diversified pool of skills and knowledge. As such, they are less productive compared to other jointly owned entities. Concerning firm location, Nagler and Naude (2014) found a decrease in labor productivity for those firms located in rural areas. This highlighted the significance of closeness to infrastructural amenities in increasing productivity. Regarding age, older firms tend to be significantly more productive than younger firms due to their first–mover advantage. This stems from learning–by– doing that arises from gained past vast experience (Escribano and Guasch, 2005). Moreover, export intensity is found to significantly and positively influence firm productivity. Exporting firms are normally associated with high levels of productivity compared to the purely domestically operating firms due to the accrued benefits of foreign revenue, capital, and technology inflows (Schwarzer, 2017).

The reviewed literature highlights the fundamental role of the investment climate in determining firm performance. While several factors have been empirically investigated at the global level, this study reiterates that investment climate is a broader term that encompasses many factors ranging from; human capital variables, governance & institutional factors, the quality of infrastructural facilities, and the control variables. As such, this study incorporates some of the previously omitted investment climate variables. More particularly, this study also analyzes the impact of property rights (patents in particular) and the court system in determining the performance of manufacturing firms in Kenya, a feat that remains unexplored in the Kenyan context.

3. Methodology

3.1 Data

This study employed panel data from World Bank enterprise surveys for the periods 2007, 2013, and 2018. A total of 2,439 firms were selected across the three waves using a stratified sampling technique. There were 1,265 manufacturing firms from this total sample. This data was collected from 11 regions in the country namely; Mombasa, Kilifi, Machakos, Kirinyaga, Kiambu, Trans Nzoia, Uasin Gishu, Nakuru, Kisumu, Nairobi, and the Central region. After data clean–up, 827 manufacturing firms were obtained for final analysis over the three waves. This data comprised survey questions related to demographics, investment climate, and the business environment in general. Most investment climate–related questions were perception–based in this survey data.

3.2 Model Specification

Theoretically, this study borrows heavily from the neoclassical production function which specifies labor, capital, and technological progress as crucial determinants of productivity (see Cobb and Douglas, 1928). This neoclassical theory of production is blended with the human capital theory which attributes productivity growth to human capital factors namely education level, managers' experience, formal training, and R & D (see Schultz, 1961; Becker, 1964; Mincer, 1974). In the model derivation, we first capture our main variables of interest which are the investment climate factors, and then augment them with the theoretically determined indicators of firm performance. A number of control variables are also integrated in the model to capture the unobserved time-varying firm characteristics.

In this study, firm performance is measured using labor productivity which relates to a firm's gross value–added per employee. The study sought to analyze the impact of investment climate on firm performance in Kenya. More specifically, it examines the impact of the court system inefficiencies and property rights ownership on firm performance. The labor productivity equation is thus expressed as follows:

$$ln\left(\frac{Y}{L}\right)_{it} = \beta_0 + \beta_1(CSI)_{it} + \beta_2(PRT)_{it} + \mu_i + \varepsilon_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (1)$$

Where $\left(\frac{Y}{L}\right)_{it}$ denotes labor productivity of firm ***i*** at time ***t*** while $(CSI)_{it}\ and\ (PRT)_{it}$ refer to the court inefficiencies experienced and the property rights ownership of firm ***i*** at time ***t*** respectively. μ_i and ε_{it} are assumed to be random error terms.

These variables can be broadly defined as follows:

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3.2.1 Labor productivity $\left(\frac{Y}{L}\right)$: The firm's gross value–added per employee, in Kenya Shillings (KES). Value-added relates to the total annual revenues of a firm less the cost of raw materials and intermediate inputs. The Labor productivity variable is expressed in a natural log and is the dependent variable.

3.2.2 Court system Inefficiencies (CSI): The degree of obstacle imposed by the court system inefficiencies on firm–level productivity. It's binary i.e. 1 if a firm reported court system inefficiencies as a major obstacle to its operations and 0 otherwise. Due to the operational delays occasioned by court inefficiencies, it is expected to impact negatively labor productivity.

3.2.3 Property rights (PRT): Whether a manufacturing firm applied for a patent concerning any product or process innovation (1 if yes and 0 otherwise). It is used as a proxy for innovation. Patent ownership is expected to increase a firm's labor productivity level by creating a market quality signal that enhances investment through building confidence and trust (Fernandes and Kraay, 2007; Yasar et al., 2011; Lu et al., 2013).

Since investment climate encompasses a broader perspective, this study also analyzes the impact of the human capital factors **(*HCF*)**, governance & institutional factors **(*GOVINST*)**, and the infrastructural–related factors **(*INFR*)** on firm performance. Equation (1) is, thus, augmented with the aforementioned variables as follows:

$$ln\left(\frac{Y}{L}\right)_{it} = \beta_0 + \beta_1(CSI)_{it} + \beta_2(PRT)_{it} + \sum_{i=1}^{m} \beta_{i>1}(HCF)_{it} + \sum_{i=1}^{m} \beta_{i>1}(GOVINST)_{it} + \sum_{i=1}^{m} \beta_{i>1}(INFR)_{it} + \mu_i + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

These variables can be broadly defined as follows:

3.2.4 Education: The average years of schooling of a permanent full-time production laborer. The more the years of schooling, the more knowledgeable, skillful, and experienced a laborer is, hence, the expected increased productivity level (Amutabi and Wambugu, 2020).

3.2.5 Formal Training: Whether a firm provides formal training programs for its laborers (1 if yes and 0 otherwise). Training enhances workers' skills, knowledge, and expertise hence expected to positively influence productivity (Goedhuys et al., 2008).

3.2.6 Manager's experience: The years of experience of a firm's top manager. The more the years, the higher the expected productivity level (Amutabi and Wambugu, 2020).

3.2.7 ISO−certification: Whether an establishment has got an Internationally−Recognized Quality Certification (1 if yes, 0 otherwise). ISO−Certification is expected to positively influence labor productivity since it acts as a signal for product quality, thus, allowing firms to charge higher prices (Goedhuys et al., 2008).

3.2.8 Political instability: Whether a firm reported political instability as a major obstacle to its operations (1 if yes, 0 otherwise). Political instability creates uncertainty and panic in the business environment hence expected to deter investment and, subsequently, firm productivity levels (Hosny, 2017).

3.2.9 Corruption: The degree of constraint imposed by corruption on labor productivity. It's binary i.e., 1 if corruption was reported by a firm to be a major obstacle & 0 otherwise. Corruption is expected to impede firm performance as it creates a diversion of resources hence less or none of them are devoted towards productive firm investment (McArthur and Teal, 2002; Kimuyu, 2007; Raj and Sen, 2017).

3.2.10 Licenses and permits: Whether a firm reported business licenses and permits as a major obstacle to its operations (1 if yes; 0 otherwise). They are expected to constrain firm productivity (Bigsten et al., 2010).

3.2.11 Customs and trade regulations: The perception of the degree of constraint imposed by customs and trade regulations on labor productivity. It's binary i.e., 1 if a firm reports customs and trade regulations as a major obstacle and 0 otherwise. They are expected to negatively impact firm performance (Bigsten et al., 2010).

3.2.12 Tax administration: Whether a firm reported tax administration as a major obstacle to its performance (1 if yes; 0 otherwise). Tax administrative constraints are expected to constrain firm productivity (Batabyal and Yoo, 2007; Faruq et al., 2013; Mawejje and Okumu, 2016).

3.2.13 Finance obstacle: The degree of constraint imposed by limited access to credit on labor productivity (1 if major obstacle; 0 otherwise). Firms with easier access to credit facilities are significantly more productive (Nagler and Naude, 2014).

3.2.14 Power outages: The average duration of power outages experienced by a firm and is measured by the monthly duration of the outages in hours. Power outages serve as a negative shock to firms by constraining the productivity of factor inputs and consequently the production process hence expected to negatively influence labor productivity (Amutabi and Wambugu, 2020; Mensah, 2016).

3.2.15 Water shortages obstacle: Whether a firm experienced insufficient water supply for production over the last fiscal year (1 if yes; 0 otherwise). It's

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expected to constrain the production process (Heshmati and Rashidghalam, 2018).

However, it is important to note that the econometric estimates obtained from equation (2) may suffer from endogeneity issues due to the presence of an unobserved firm characteristic-a third variable that may simultaneously affect the explanatory variables and labor productivity. As such, there is a need to explicitly control for the effects of this third variable. If not, the error term may absorb the impact of this variable hence resulting in the error term being correlated with the explanatory variables, thus, yielding inconsistent and biased estimates (Li, 2016). Therefore, to address the endogeneity problems, the year and industry–fixed effects are added to equation (2). This yields equation (3) which is then expressed as follows:

$$ln\left(\frac{Y}{L}\right)_{it} = \beta_0 + \beta_1(CSI)_{it} + \beta_2(PRT)_{it} + \sum_{i=1}^{m} \beta_{i>1}(HCF)_{it} + \sum_{i=1}^{m} \beta_{i>1}(GOVINST)_{it} + \sum_{i=1}^{m} \beta_{i>1}(INFR)_{it} + YR_{it} + IND_{it} + \mu_i + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

Where YR_{it} denotes the year–fixed effects while IND_{it} denotes the industry–fixed effects. The industry–fixed effects are also vital in controlling for unobserved heterogeneity, that is, productivity differences across various manufacturing sub–sectors.

However, it is still argued that the proposed fixed effects are only vital in controlling for the time–invariant firm characteristics. As such, the unobserved time–varying firm characteristics that simultaneously influence the investment climate and labor productivity variables may still suffice. Consequently, another approach entails including potential control variables that jointly affect the aforementioned variables and labor productivity (see equation 4).

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$$ln\left(\frac{Y}{L}\right)_{it} = \beta_0 + \beta_1(CSI)_{it} + \beta_2(PRT)_{it} + \sum_{i=1}^{m} \beta_{i>1}(HCF)_{it} + \sum_{i=1}^{m} \beta_{i>1}(GOVINST)_{it} + \sum_{i=1}^{m} \beta_{i>1}(INFR)_{it} + YR_{it} + IND_{it} + \sum_{i=1}^{n} \beta_{i>1}(CTRL)_{it} + \mu_i + \varepsilon_{it} \dots\dots \quad (4)$$

Where $CTRL$ represents the control variables which can be broadly defined as follows:

3.2.16 Export intensity: The ratio of exports to a firm's total sales and is expressed as a percentage. Export intensity is expected to significantly and positively influence firm productivity due to the accrued benefits of foreign revenue, capital & technology inflows (Schwarzer, 2017).

3.2.17 Age of the firm: The number of years the firm has been operational since it began its operations. Older firms tend to be significantly more productive than younger firms due to their first-mover advantage and, consequently, gained past vast experience (Escribano and Guasch, 2005).

3.2.18 Firm size: The number of employees in a firm. It is categorical & coded as 1 for small firms (5 19 employees), 2 for medium–sized firms (20–99 employees), and 3 for large firms (100 or more employees). Productivity is expected to increase with the size of the firm since large firms are much more capital intensive than smaller firms. As a result, large firms enjoy the benefits of economies of scale (Raj and Sen, 2017).

3.2.19 Firm Location: The location of a firm's operations and takes the value of 1 if a firm is located in Nairobi and 0 otherwise. Enterprises located in urban areas have got proximity to the market, infrastructural, and telecommunication amenities hence more productive than their rural counterparts (Nagler and Naude, 2014).

3.2.20 Firm ownership: Defines the legal status of the firm and takes the value of 1 if a firm is a sole proprietorship and 0 otherwise. Due to a limited capital or assets base and diversified pool of skills and knowledge, sole proprietorships are expected to be less productive when compared to other jointly owned entities (Raj and Sen, 2017).

The proposed approaches are potential remedies for dealing with endogeneity problems. Despite controlling for the year-fixed effects, industry fixed effects as well as unobserved time varying firm characteristics; the

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residual endogeneity may still yield inconsistencies in productivity estimation (Li, 2016). Alternative methods namely, the Instrumental Variable (IV) approach and the dynamic models estimated by the Generalized Method of Moments (GMM) have been proposed in the literature to achieve the estimation consistency. These approaches were, however, not employed in this study due to data limitations and the presence of a vast array of investment climate factors in this study. Additionally, it should also be noted that using a great number of weak instruments may turn out to be counterproductive (Donald and Newey, 2001). Further, Li (2016) showed that despite the lack of a valid instrumental variable, the addition of fixed effects and control variables appeared to work efficiently.

3.3 Summary Statistics

This is presented in Table 2

Table 2. Summary Statistics of key variables (N=827)

Variable	Mean	Std. Dev.	Minimum	Maximum
Labor productivity	4095053	3.12e+07	3200	8.32e+08
Court inefficiencies	0.1378	0.3449	0	1
Property rights	0.0266	0.1610	0	1
Education	11.9444	1.5252	1	20
Formal training	0.4135	0.4928	0	1
Managers' experience	17.3470	11.0823	0	60
ISO-Certification	0.2455	0.4306	0	1
Political instability	0.2140	0.4104	0	1
Corruption	0.2152	0.4112	0	1
Licenses and permits	0.1391	0.3462	0	1
Customs and trade regulations	0.1560	0.3631	0	1
Tax administration	0.2164	0.4121	0	1
Finance obstacle	0.1802	0.3846	0	1
Power outages	6.1076	11.5810	0	224
Water shortages obstacle	0.3712	0.4834	0	1
Export intensity	11.0127	23.1635	0	100
Age of the firm	25.5187	17.7268	1	103
Firm size	1.9903	0.7857	1	3
Firm location	0.5236	0.4997	0	1
Firm ownership	0.1874	0.3905	0	1

Source: Stata Computation

Table 2 revealed that labor productivity in Kenyan manufacturing firms averaged 4095053 Kenya Shillings (KES) and varied within the intervals of KES. 3200 and KES. 832 million. The variable also exhibited a high standard deviation of 31200000. On average, 13.78% of the manufacturing

firms reported court inefficiencies as a major obstacle to their operations. Further, a paltry 2.66% of the firms applied for a patent concerning any product or process innovation. This low proportion is worrisome considering the fact that property rights ownership is a proxy for innovation and boosts the competitiveness of manufacturing products in both the local and international markets.

The years of schooling of a permanent full–time production employee for the Kenyan manufacturing firms averaged about 12 years with the least number reported at 1 and the maximum reported as 20. This implied that most laborers within this sector only possessed secondary school education qualifications. The variable had a dispersion of 1.5252. On average, 41.35% of the laborers were accorded formal training programs in a given fiscal year. This leaves a whopping 58.65% of untrained employees yet formal training is a requisite for increased productivity as it enhances workers' skills, knowledge, and expertise. The number of years of experience for the firm's top manager averaged about 17 years with the highest number reported as 60. The variable had a standard deviation of 11.082.

On average, 24.55% of the manufacturing firms possessed an Internationally–Recognized Quality Certification. Further, 21.40% of the firms reported political instability as a major obstacle to their productivity. On average, 21.52%, 13.91%, 15.60%, 21.64%, and 18.02% of the Kenyan manufacturing firms reported corruption, licenses & permits, customs & trade regulations, tax administration, and limited credit access as major obstacles to their productivity respectively.

Concerning the infrastructural–related factors, the average length of power outages in hours in a given fiscal year was reported as 6 hours. Power outages exhibited a spread of 11.5810 and varied within the intervals of 0 and 224 hours. On average, 37.12% of the firms reported water shortages as a major obstacle to their operations.

Regarding the control variables, the ratio of exports to a firm's total sales in Kenyan manufacturing firms averaged about 11.01%. The variable exhibited a standard deviation of 23.1635 around the mean value and varied within the intervals of 0 and 100%. The age of 13 manufacturing firms in Kenya averaged about 26 years with the youngest firm reported being 1 year old and the oldest reported to be 103 years old. The variable had a standard deviation of 17.7268. The firm size variable was defined as categorical will small firms treated as the benchmark category. On average, 52.36% of the manufacturing firms were located in Nairobi City which is the capital city; highlighting the significance of closeness to infrastructural amenities in the determination of a suitable location for a firm. Furthermore, an average of 18.74% of the manufacturing firms in Kenya were sole proprietorships. The rest were jointly owned entities.

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3.4 Robustness Checks

The Hausman specification test was performed in determining the correct model to be estimated between the fixed effects and the random–effects model. The probability value of Chi–squared was found to be 0.4596 which is greater than the 0.05 level of significance. The null hypothesis was, thus, not rejected implying that the random–effects model was the most suitable model to be estimated in this study (see Table 3).

Table 3. Hausman Specification Test Results

Chi2 (36)	36.19
Prob>chi2	**0.4596**
Ho: Difference in coefficients not systematic	

Source: Stata computation

The correlation analysis was also conducted using the pairwise correlation matrix to determine the degree of association among the regressors. The low correlation values signaled the presence of a weak degree of correlation among the variables hence suggesting that multicollinearity was not a problem in this study (see Appendix Table A1).

4. Empirical findings

This study investigated the impact of investment climate factors on the labor productivity of Kenyan manufacturing firms by estimating a panel random–effects model. The findings are presented in Table 4.

Table 4. Labor Productivity Estimates

VARIABLES	**Dependent variable** lnLabor Productivity
Core variables	
Court inefficiencies	-0.300**
	(0.144)
Property rights	0.568*
	(0.305)
Human capital factors	
Education	-0.0461
	(0.0313)
Formal training	0.215**
	(0.104)
Manager's experience	0.00998**
	(0.00483)
Regulatory governance & institutional factors	
ISO Certification	0.451***
	(0.123)
Political instability	0.00201
	(0.120)
Corruption	-0.165
	(0.118)

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Licenses and permits	-0.307**
	(0.139)
Customs & trade regulations	-0.0387
	(0.135)
Tax administration	0.0733
	(0.122)
Finance obstacle	-0.140
	(0.126)
Infrastructural factors	
Power outages	-0.000679
	(0.00411)
Water shortages obstacle	-0.156
	(0.102)
Year fixed effects	
2013	0.170
	(0.144)
2018	0.106
	(0.127)
Industry fixed effects	
Textiles	-0.282
	(0.189)
Garments	-0.333**
	(0.168)
Leather	-0.187
	(0.360)
Wood	-0.362
	(0.331)
Paper	-0.0891
	(0.363)
Publishing, printing & recorded media	-0.322
	(0.256)
Chemicals	0.265
	(0.198)
Plastics and rubber	-0.0443
	(0.229)
Non-metallic mineral products	0.492*
	(0.287)
Basic metals	1.460***
	(0.435)
Fabricated metal products	0.208
	(0.211)
Machinery and equipment	0.0474
	(0.298)
Electronics	1.193***
	(0.359)
Precision Instruments	1.265
	(1.344)
Transport machines	-0.265
	(0.273)
Furniture	-0.397*

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	(0.207)
Recycling	1.594**
	(0.791)
Control variables	
Export intensity	0.000673
	(0.00220)
Firm age	0.00285
	(0.00307)
Firm size	
Medium	0.228*
	(0.122)
Large	0.326**
	(0.138)
Firm location	0.0128
	(0.110)
Firm ownership	-0.405***
	(0.133)
Constant	13.91***
	(0.399)
Observations	827
Number of panelid	756

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

Notes: *The results in Table 4 provide the random effects model estimates. Potential endogeneity was controlled for by incorporating the year & industry fixed effects and the firm–specific control variables.*

The findings in Table 4 revealed that court system inefficiencies and property rights (patents) significantly determined the productivity of Kenyan manufacturing firms. Firms that reported court system inefficiencies as a major obstacle to their operations registered a significant decrease in their labor productivity. This is when compared to those firms which did not consider court inefficiencies as a barrier to their performance. Court inefficiencies; more particularly stemming from court orders and or injustices yield operational delays that negatively impact firm performance. Such orders may not only threaten potential business startups but also provide obstacles to the already thriving business entities. These findings suggest that optimizing firm performance requires enhanced efficiency of court operations in relation to justice and speed in the delivery of firm-related rulings.

Conversely, manufacturing firms that applied for a patent concerning any product or process innovation were found to be significantly more productive than the non–patent firms. Patent ownership acts as a proxy for innovation and is, thus, expected to increase a firm's labor productivity level. It creates a product market quality signal which enhances investment through

building confidence and trust. These findings are consistent with those by Fernandes and Kraay (2007), Yasar et al., (2011), and Lu et al., (2013) which also found a positive significant link between property rights ownership and the productivity of manufacturing firms.

Regarding the human capital factors, formal training and the managers' experience variables were found to significantly increase the productivity of Kenyan manufacturing firms. Firms that provided formal training programs for their permanent full–time employees were found to be significantly more productive than their non–training counterparts. Consistent with findings by Goedhuys et al., (2008) for the Tanzanian manufacturing firms, training enhances workers' skills, knowledge, and expertise hence expected to significantly increase firm productivity. Similarly, one more year of experience for the firm's top manager was found to be significantly associated with higher labor productivity. This is consistent with previous study findings by Amutabi and Wambugu (2020) for the Kenyan service firms which linked managerial experience to optimized labor productivity. This is primarily due to accumulated knowledge, expertise, and technical know–how that is often accompanied by vast experience in firm management.

Concerning the regulatory governance and institutional factors, ISO Certification and business licenses and permits significantly influenced firm performance. ISO Certified firms were found to be significantly more productive than their non–ISO Certified counterpart firms. ISO Certification acts as a signal for product quality, thus, allowing firms to charge higher prices on their products (Goedhuys et al., 2008). Conversely, manufacturing firms that reported business licenses and permits as a major obstacle to their operations registered a significant decline in their labor productivity. Too many or excessive business licensing and permit requirements may not only reduce the profitability prospects of a firm but also threaten its start–up prospects. As such, they are likely to constrain firm productivity (Bigsten et al., 2010).

Though insignificant, the infrastructural–related factors (power outages and water shortages obstacles) were found to constrain the productivity of Kenyan manufacturing firms. Regarding the control variables, we found the firm size and firm ownership to be significant drivers of firm performance. Both large and medium–sized firms were found to be significantly more productive than small firms. By considering the medium and large firms only, we found evidence of significantly higher productivity among the large firms when compared to the medium firms (by virtue of comparison of the magnitude of their respective coefficients). This is expected and supports findings by Raj and Sen (2017) which also found that productivity increased with the size of the firm. This is due to the fact that large firms are much more capital-intensive than medium and smaller firms.

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As a result, large firms not only boast of a higher capital-to-labor ratio but also enjoy the benefits of economies of scale.

Furthermore, this study revealed the presence of considerable heterogeneity among Kenyan manufacturing firms. Labor productivity varied depending on the type of manufacturing firm. Labor productivity was found to be significant and positive for non–metallic mineral products, basic metals, electronics, and recycling manufacturing firms. Among these sectors, recycling firms registered the highest level of labor productivity closely followed by the basic metals manufacturing firms. Conversely, productivity levels were found to be significantly lower among the garments and furniture-producing firms.

Conclusion and policy implicaiton

This study employed the World Bank panel enterprise data for the period 2007-2013-2018 in assessing whether investment climate mattered for firm performance in Kenyan manufacturing firms. More principally, the study sought to establish the role of the court system and property rights ownership in determining firm performance; a feat that is yet to be explored in the Kenyan context. The random effects model was estimated while controlling for the year, industry, and firm-specific control variables.

The study findings indicated that investment climate indeed mattered for firm performance among the Kenyan manufacturing firms. Whereas court inefficiencies were associated with a significant decline in labor productivity, property rights ownership significantly increased the labor productivity of Kenyan manufacturing firms. Due to the operational delays occasioned by court inefficiencies, this study recommended a speedy and just delivery of court rulings on firm–related matters as a way of ensuring progressive and continued firm productivity. With property rights ownership acting as a proxy to innovation, manufacturing firms are encouraged to acquire patents relating to product and or process innovation. This not only enhances firm investment through building confidence and trust but also creates a quality market signal for manufacturing output.

From a human capital factors perspective, formal training and managers' experience significantly increased labor productivity. This implied that manufacturing firms needed to invest more in human capital investment since it is a vital channel for optimizing firm performance. Concerning the regulatory governance and institutional factors, we concluded that while ISO Certification increased labor productivity, business licenses, and permits decreased the productivity of Kenyan manufacturing firms. Manufacturing firms, therefore, ought to acquire Internationally–Recognized Quality Certification requirements as a way of increasing the international competitiveness of their manufactured products. Further, the government

needs to provide a conducive business environment to firms by imposing favorable business licensing and permit requirements. This will not only enhance their survival prospects but also boost their profitability levels.

This study estimated the random effects model while controlling for the year-fixed effects, industry-fixed effects as well as unobserved time-varying firm characteristics to deal with the potential endogeneity problems. However, it is possible that the residual endogeneity issue may still yield inconsistencies in productivity estimation. We were unable to adopt the Instrumental Variable approach due to the lack of a valid instrumental variable and more importantly the presence of a vast array of investment climate factors in this study. Future studies should attempt at analyzing the labor productivity differences across different quantiles from the investment climate factors perspective.

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Data availability statement : The data used in this study is readily available upon request. Further, it can be accessed online from the World Bank Microdata portal through the link: https://login.enterprisesurveys.org/content/sites/financeandprivatesector/en/library.html

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Appendix

Table A1. Pairwise Correlation Matrix

	Court system	Property rights	Education	Formal training	Managers experience
Firm ownership					
Firm location					
Firm size					
Firm age					
Export intensity					
Water shortage					
Power outages					
Finance obstacle					
Tax admin					
Customs & trade					
Licenses & permits					
Corruption					
Political instability					
ISO Certified					
Managers experience					1
Formal training				1	0.0420
Education			1	-0.0402	-0.0077
Property rights		1	0.0060	0.1053	0.0633
Court system	1	-0.0225	-0.0222	0.0275	0.0419

ISO Certified	Political instability	Corruption	Licenses & permits	Customs & trade	Tax admin	Finance obstacle	Power outages
0.0409	0.0393	0.1490	0.1029	0.1181	0.1731	-0.0597	0.0181
0.0978	0.0603	0.0597	-0.0013	-0.0296	-0.0504	0.0203	0.0004
-0.0197	-0.0061	-0.0041	0.0009	0.0135	0.0461	0.0006	0.0108
0.2856	-0.0072	-0.0395	0.0031	0.0586	0.0058	-0.0806	0.0376
0.0012	0.0582	-0.0475	-0.0154	0.0479	0.0474	-0.0658	0.0003
1	0.0175	-0.0184	-0.0587	0.0723	-0.0678	-0.0554	0.1319
	1	0.0926	0.0800	0.1169	0.0908	0.1159	-0.0008
		1	0.0361	0.0830	0.1463	0.0837	-0.0280
			1	0.0969	0.1282	0.0935	-0.0194
				1	0.2272	0.0499	-0.0259
					1	0.0668	-0.0049
						1	-0.0413
							1

Water shortage	Export intensity	Firm age	Firm size	Firm location	Firm ownership
0.0703	0.1022	0.0746	0.1389	0.0865	-0.1291
0.0130	-0.0085	0.0753	0.1073	0.0373	-0.0024
0.0461	-0.0960	0.0391	0.0612	0.0923	0.0358
0.1324	0.1269	0.1582	0.2198	-0.0347	-0.1768
0.0322	0.0800	0.3811	0.1849	0.0292	-0.1138
0.0328	0.1779	0.2332	0.2110	-0.0185	-0.1299
-0.0653	-0.0415	0.0536	0.0027	-0.0512	0.0138
0.0178	0.0401	-0.0404	-0.0123	0.0990	-0.0027
0.0167	0.0043	-0.0702	-0.0040	0.0895	-0.0766
0.0698	0.0265	0.0371	0.0435	0.0898	-0.0357
0.0398	-0.0382	-0.0154	0.0177	0.0310	-0.0192
-0.0346	-0.0477	-0.0867	-0.0784	0.0629	0.0651
-0.0281	-0.0018	0.0972	0.0442	-0.0217	0.0014
1	0.0630	-0.0133	0.1274	0.0414	-0.0548
	1	0.1077	0.2708	-0.0874	-0.0950
		1	0.2330	-0.0699	-0.1949
			1	0.0900	-0.2782
				1	0.0114
					1

Source: Compiled from Stata