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Firms' perceptions of obstacles to business: the case of Cambodia

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Abstract

This paper explores the factors affecting firms' perception on how important barriers to innovation are in the case of Cambodia. In particular, the study aims to bring the characteristics of Cambodian enterprises to the fore, shedding light on two issues: what the characteristics associated with firm's perceptions of barriers to their economic and business operations are, and whether differences among their geographical location exist in relation to their assessment of how important such obstacles are. By using data from the World Bank Enterprise Survey 2016 in Cambodia, as well as information drawn from the previous wave of the same survey, the econometric analysis considers the complementarity among different types of obstacles highlighted in the empirical literature as being important from drawing policy implications.

Keywords

Obstacles to business firms, Cambodia, World Bank survey, Firm perceptions, Economic development policy

1. Introduction

Over the last 20 years, the Kingdom of Cambodia has made remarkable progress in creating an enabling environment for business and investment (World Bank, 2023). With an average growth rate of 8% between 1998 and 2019, Cambodia was the fastest growing economy in the ASEAN area (OECD, 2021). Notwithstanding the disruptions of the COVID-19 pandemic, the Russia-Ukraine war, energy crises and worldwide geo-political tensions, the country's economic growth it is still projected to be 5.4% in 2023 (World Bank, 2024). In 2018, the country registered over four times the number of new businesses it did in 2006 (World Bank, 2019). Foreign direct investment (FDI) inflows have been steadily growing, and trade within and outside the ASEAN macro-region has strongly intensified. In addition to large firms and foreign multinational enterprises (MNEs), small and medium enterprises (SMEs) remain critical to expanding production for both the domestic and international markets, constituting 99% of all firms in the manufacturing sector and contributing to 58% of the country's GDP (ITC, 2022).

Despite these achievements, Cambodia lags behind its neighbours in terms of competitiveness. This clearly emerges from its consistently poor rankings in the World Bank's *Ease of Doing Business* (position 144 out of 199 countries in 2019) – better only than Myanmar and Lao PDR in the ASEAN area –, the World Economic Forum's *Global Competitiveness Index* (position 106 in 2022), and the WIPO *Global Innovation Index*, for which the country's place was 101 in 2023, an improvement with respect to 2020 (110), yet placing Cambodia 21st among the 37 lower-middle-income group countries and 15th among the 16 economies in South East Asia, East Asia and Oceania (WIPO, 2023). At the same time, Cambodia's *Corruption Rank* on Transparency International was 158 out of 180 countries in 2023, worsen with respect to the year before (150) (Transparency International, 2024). However, the government has committed since 2010 to fight corruption through the enactment of the Law on Anti-Corruption and the establishment of the Anti-Corruption Unit (ACU), and measures against corruption have been constantly updated.

High barriers to firm entry continue to hinder competitiveness: although improving, electricity infrastructure is still unreliable, corruption is persistent, transparent regulations are deficient, and judicial institutions weak. All these obstacles, together with a pronounced lack of labour skills, frail innovation capacities and limited access to credit, generate a context which hamper the potential of growth for local SMEs and of economic development for the country as a whole. Such hampering factors are also likely to vary significantly across Cambodia subnational regions, with the capital region, Phnom Penh, accounting for the bulk of economic activities, FDI inflows, technological and physical infrastructure, business services, universities, education and financial institutions (e.g. Kolnberger, 2020).

This paper investigates the relationship between the perceived importance of obstacles to business and a series of firm characteristics, including their subnational location. The paper relies on data from the World Bank Enterprise Survey 2016 in Cambodia, as well as information drawn from two waves of the same survey (WB EB 2013-2016) and uses a Multivariate Probit Model to consider the complementarity among different types of obstacles highlighted in the empirical literature. The main findings are that the perception of obstacles is heterogeneous across Cambodian firms and sectors, and shows remarkable differences across regions, suggesting an integrated approach across policy areas and subnational territories.

The structure of the paper is as follows. Section 2 reviews the main academic and international reports' literature that have focused on the nature and relevance of obstacles to business operations of Cambodian firms, with a special focus on SMEs. Section 3 illustrates the data, variables, and methodology used to examine the relationship in object. Section 4 presents the results of the econometric exercise, whilst Section 5 concludes by discussing the main policy implications stemming from the research.

2. Literature and context

2.1 Obstacles to business in Cambodia

The business landscape in Cambodia is primarily characterised by the prevalence of micro and small and medium-sized enterprises (MSMEs), which, despite their tiny or modest scale, make substantial contributions to the country's employment rates, economic growth, and poverty alleviation efforts (Baily, 2008; Thy, 2021). Cambodian SMEs confront a multifaceted array of formidable challenges, encompassing, but not limited to, issues such as weak judicial institutions, insufficient general infrastructure, lack of access to financial resources, deficiency in skilled workforce and human capital, and serious limitations in leveraging technological transfer and fostering local innovative capabilities (Thy, 2021; UNIDO, 2020). Here below, a more detailed discussion of such critical obstacles is presented on the basis of current scholarly and international organisation literature.

Legal Framework and Regulations

The Royal Government of Cambodia has taken proactive steps to alleviate the regulatory burden imposed on businesses. These measures encompass the recent enactment of several key legislations, such as the 2021 Competition Anti-Trust Law, the new Law on Investment, the Law on E-Commerce, and the establishment of the SME Bank of Cambodia, among other initiatives. The overarching goal of these policy measures is to promote the expansion of Cambodia's business sector development and facilitate the growth of local SMEs. Nevertheless, despite these concerted efforts, Cambodia still grapples with substantial constraints posed by the farraginous legal and regulatory context and by the underdeveloped judicial institutions. These challenges collectively contribute to an environment characterised by uncertainty for both foreign investors and local business owners (OECD and ERIA, 2018; DFAT, 2021).

Sok et al. (2020) emphasise that despite the government's persistent endeavours to mitigate such constraints, progress in refining business regulations and regulatory practices has been slow. As shown by Veung and Sean (2023a) – on the basis of an original survey carried out by the Cambodia Development Resource Institute (CDRI) – approximately 12% of the 361 enterprises in their sample perceived the existing legal framework and regulations as unfavourable. Moreover, almost 50% of these firms identified the infringement of their intellectual property rights as a substantial obstacle impeding their business operations and overall performance. Further evidence from the study reveals that Cambodian firms invested significantly more time navigating government regulations compared to their counterparts in neighbouring countries. The prolonged and intricate administrative procedures compel SMEs to resort to informal payments to expedite processes. As illustrated by Veung and Sean (2023b), 39% of firms reported to have made informal payments to public administrators to facilitate various aspects of their operations. In this regard, the Cambodian government has

introduced various reforms, including One-Window Service and Ombudsman offices across the country, to improve public service delivery quality and government transparency and accountability (Neb, 2017). Furthermore, in June 2020, the government launched the Online Business Registration system, also known as the Single Portal, to ease business registration processes (Medina, 2020).

This onerous and often opaque regulatory environment has the potential to discourage entrepreneurs from initiating new start-ups or scaling up existing SMEs, as observed in research conducted by Sorn and Fu (2023) and Sok et al. (2020). Overall, the current Cambodian regulatory landscape poses a challenging barrier to business development and may deter prospective SMEs from navigating the complex bureaucratic terrain, thereby stifling the growth and formalisation of businesses.

Hard and Soft Infrastructure and Transport Network

Infrastructure-related challenges in Cambodia stand as another arduous barrier to conducting business operations effectively, a fact substantiated by several studies (Sok et al., 2020; Veung and Sean, 2023a; Sam, 2020). On the basis of data derived from the World Bank Enterprise Survey, Sam (2020) shows that the cost of electricity surpasses that of neighbouring countries. Furthermore, there is noticeable variability in expenses within Cambodia, with strong territorial disparities in electric network accessibility across subnational regions. In addition to the shortcomings in physical infrastructure, limitations persist in telecommunication and internet networks, which impede efficient connectivity. Veung and Sean (2023a) highlight that the majority of surveyed firms regarded access to the Internet as a hindrance to their business operations, constraining their ability to expand their customer bases and participate in the growth of e-commerce transactions.

Sok et al. (2020) further underline the persistent issue of high transportation costs in Cambodia compared to the neighbours in the Mekong area. This observation aligns with the findings of the Logistics Performance Index (LPI) for 2023, which positions Cambodia at the 115th rank out of 138 listed countries. Particularly concerning is the country's rank of 125th for the infrastructure component (World Bank, 2023). The insufficient infrastructure capacity and suboptimal logistics performance contribute to inflated operational expenses, a point reinforced by Sok et al.'s study, which stresses the ongoing issue of elevated transportation costs relative to the rest of the macro-region. Moreover, as SMEs extend their operations and engage more extensively in trade activities within Global Value Chains (GVCs) – especially within the Great Mekong area – they become increasingly sensitive to the financial implications of high transport costs. This not only affects their competitiveness but also adds to the challenges they face in sustaining and expanding their operations.

Lack of skilled labour, innovation, and technology adoption

Empirical evidence emphasises the pivotal role of human capital in enhancing firms' productivity, as demonstrated by Hing et al. (2023b). The persistent scarcity of skilled labour remains one of the most pressing concerns in the context of Cambodia. According to Thorsteinsdóttir et al. (2021), a mere 14.3% of the workforce in the country is categorised as "skilled". This shortage not only hampers business productivity and diminishes current profitability but also serves as a main obstacle to innovation (Cunningham and Hollweg, 2019; Wrana and Nguyen, 2019). Veung and Ven (2021) report major concerns among enterprises about the competencies of graduates from the Cambodia's education system. These graduates are seen as lacking in quality and relevance of skillsets for business recruitment,

selection, and career advancement. Additionally, most companies find skills training programs inadequate for meeting their specific needs. Cambodian TVET schools often fail to provide skills and knowledge aligned with product and process technologies required by the business sector.

In line with most studies in the economics of innovation literature, Sam (2020) draws attention to the positive correlation observed between technology adoption and the performance outcomes of SMEs in Cambodia; concurrently, Hing et al. (2023b) show that innovation and technology exhibit a positive association with productivity. Nonetheless, the rate of technology adoption in Cambodia lags behind that of other countries in the Mekong macro-region. Veung and Sean (2023a) reveal that less than 50% of surveyed firms having bank accounts with e-banking tools utilise them, with digital adoption rates exhibiting remarkable disparities between the capital Phnom Penh and the other provinces. Hing et al.'s (2023a) survey of 1,000 MSMEs in the tourism sector discloses that nearly all, regardless of size, have embraced basic digital technology for communication and operations, mainly through smartphones. However, the adoption of other devices such as laptops, desktops, tablets, and essential software like Microsoft Office remains relatively low. The survey identifies a shortage of skilled personnel as a key impediment, encompassing not just advanced skills (e.g., programming) but also a grasp of the business context and proficiency in using fundamental software like Microsoft Office.

Access to Finance

Despite the implementation of several government initiatives aimed at improving the financial environment for SMEs to obtain business loans, persisting challenges continue to impede their access to financial resources (UNESCAP, 2022; Veung and Sean, 2023a; OECD and ERIA, 2018). These challenges are apparently not constrained by geographic location or industrial sector, as emphasised by Veung and Sean (2023a), who found that 50% of the 361 enterprises surveyed identified complex lending procedures as a significant obstacle when attempting to secure loans from financial institutions. Consequently, many SMEs resorted to seeking assistance from sources such as friends, relatives, and informal lenders.

The difficulties encountered by these SMEs extend beyond the intricacies of loan application processes. They struggle with multiple barriers, including challenges in meeting collateral requirements, limited access to comprehensive credit information and credit reporting agencies, and the burden of high interest rates and associated fees (UNESCAP, 2022). Furthermore, financial institutions often exhibit reluctance to provide credit to SMEs due to their perceived higher risk profiles. This lack of financial support creates substantial impediments for SMEs, constraining their ability to invest in initiatives for business development and expand their operational plans (Sorn and Fu, 2023; Sok et al., 2020).

Business Networks/Associations

Local (and extra-local) business networks are recognised as one of the primary channels for company growth. These networks serve as a platform for establishing business relationships, overcoming obstacles, creating economic and innovation opportunities, exchanging information and new technological and organisation practises, seeking potential business partners, and ultimately plugging into macro-regional GVCs (Crescenzi and Harman, 2022, 2023). Strong local business networks can also be a significant source of knowledge and competitive advantage (Dyer and Singh, 1998), frequently fostering local economic development (e.g. Håkansson and Ford, 2002; Schoonjans et al., 2013; Abbas et al., 2019). However, Cambodian SMEs often lack such business networks or resources, as corroborated

by Veung and Sean's (2023a) report. Specifically, about 30% of sampled firms were members of a business network or industry association, with manufacturing firms having more extensive networks than service firms (Veung and Sean, 2023a). According to Heang and Haikarainen (2018), SMEs, due to their small size, informality and limited resources, often struggle to connect with and rely on other local businesses.

2.2 Selected empirical literature on firm perception of obstacles

There are two known features in the literature that deal with perceived barriers to firms' performance and characteristics in developing and emerging economies. One line of research focuses on how perceptions of different types of obstacles are influenced by firm characteristics on the basis of cross-country firm-level analyses (e.g., Beck at al. 2006; D'Souza et al., 2017; Nizaeva et al., 2018). The second group of contributions focuses on how firm growth – measured by different outcomes – is influenced by perceived obstacles (especially financial barriers), controlling for other firm specific characteristics, always on the basis of micro-level data worldwide (e.g., Beck et al., 2005; Ayyagari et al., 2008; Tuan Bui et al., 2021; Jabeen et al., 2021; Stojčić et al., 2024).

With respect to the first approach – similar to the focus of the present paper – Beck at al. (2006) use survey data from 80 countries from the World Business Environment Survey (World Bank) to examine the determinants of firms' financial obstacles. They employ an ordered probit strategy and find that age, size and ownership are the best predictors of financial barriers perception: younger, smaller and domestic firms report higher obstacles. Furthermore, firms in countries with higher levels of financial intermediary development, more liquid stock markets, an efficient legal systems and higher GDP per capita remark financial barriers as less important.

Restricting the interest to 27 Eastern European and Central Asian countries, D'Souza et al. (2017) use data from the World Bank Enterprise Survey collected in 2002, 2005 and 2009 to examine firm-level obstacles to growth faced by privatised firms compared to de novo private firms. Using an ordered probit and OLS strategy, they show that de novo firms experience significantly higher barriers than privatised firms across the board. They use also a country fixed-effect model to compare firm performance measured by sales growth, employment growth, and labour productivity between these two groups of firms and show that de novo firms perform better than privatised ones.

Following a different methodological approach based on chi-square test and analysis of variance (ANOVA), Jabeen et al. (2021) investigate differences in the perception of obstacles (access to resources, company regulations, market externalities) faced by firms depending on their size by using data from Indian firms collected as part of the World Bank's Enterprise Survey in 2014. The main results show that SMEs perceive comparatively fewer barriers than large enterprises due to a wide range of support measures and regulations targeting specifically Indian SMEs. Access to resources for managing business operations, competition and availability of qualified labour are the main areas of firms' concern.

Nizaeva and Coskun (2018) utilise firm-level data (2012-2014) from the Business Environment and Enterprise Performance Survey. They examine firm and country-level determinants to investigate SMEs' financial constraints in selected emerging economies in the Western Balkans. The most relevant findings show that firm size is the most robust predictor of

financial constraints' perception, and that older firms in the region feel higher financial restrictions.

Looking at the literature on the second approach, which refers to the perceptions of obstacles as independent variables, several papers look at the characteristics of the business environment that directly affect business growth. For example, Ayyagari et al. (2008) use data from the World Business Environment Survey in 1999 and 2000 in 80 developed and developing countries worldwide and, applying country fixed effects regression, conclude that, among a large set of obstacles to business, only those related to finance, crime and political instability directly influence business growth.

In line with other findings, Beck et al. (2005) examine the effects of financial, legal and corruption obstacles on the growth rates of companies in 54 countries and find that, individually, all obstacles have a negative and significant effect on firm growth, but while financial and legal obstacles are both consistently significant and negative, corruption loses its relevance when considered together with the other two types of obstacles. This study highlights the potential complementarity among different barriers to business.

Focusing on Asia, Tuan Bui et al. (2021) use the World Bank Enterprise Surveys in 17 countries in East Asia and the Pacific from 2009 to 2019 to examine the role of financial access, labour regulations, and labour skills on employment growth. Applying an instrumental variable strategy to account for possible endogeneity between firm barriers and employment growth, their main results point to a negative effect of the financial obstacles on employment growth. In addition, both financial and labour barriers display a significant negative effect on the proportion of permanent employees in companies' workforce.

Stojčić et al. (2024) examine the relationship between perceived institutional barriers, networks and SMEs' propensity to export in Southeast Europe, Central Asia and the Middle East using data from the World Bank's Business Environment and Enterprise Performance Survey in 2019. They apply logistic regressions to capture how institutional barriers and knowledge (i.e. international, institutional and technological knowledge) from formal networks influence export propensity. The main results show that SMEs' perceptions of institutions as barriers to business are generally positively associated with their propensity to export, suggesting that firms export to escape an unfavorable domestic environment.

Furthermore, and relevant for the present study, the majority of empirical studies on the relationship between firms' characteristic and firms' perception of obstacles in advanced economies – centred particularly on barriers to innovation (e.g., Galia and Legros, 2004; D'Este et al., 2012; Iammarino et al., 2009, 2021) – points to complementarities among individual obstacles, which are claimed to be crucial in drawing policy implications. The following econometric analysis investigates more in depth the relationship between the micro-level characteristics affecting Cambodian firms' assessment of how important barriers to business are, including their geographical location, to draw some policy consideration for the specific case of Cambodia.

3. Data and methodology

3.1 Data

Our analysis is grounded on an original dataset, the Enterprise Survey 2016[1] (WB ES 2016), provided by the World Bank for a representative sample of 373 enterprises in Cambodia. Data is used [2] to construct statistically relevant indicators for the analysis of the business environment. Furthermore, the WB ES 2016 allows to build a firm-level panel to track changes in the business environment over a 3-year period, with 131 businesses surveyed in both 2013 and 2016 (WB EB 2013-2016).

The goal of the Enterprise Surveys is linked to the wider strategic objective of the World Bank to promote a favourable context for investment, job creation and sustainable growth for development, which has led to the systematic collection of business data across countries. The WB Enterprise Surveys are an ongoing project to gather data on companies' experiences and perceptions of the environment in which they operate, including those of the obstacles perceived as obstructing business activities. The dataset provides a rich source of qualitative and quantitative information related to, for example, the characteristics of establishments; infrastructure; sales and supplies; competition and innovation capacity; land and permits; security (crime and corruption); finance; business-government relations; labour; business environment; performance; and geographic location. The definition of the variables used in the present analysis is reported in Table A1 in the Appendix.

Dependent variables: obstacles to business

The questionnaire (WB ES 2016) includes a dedicated section listing various categories of obstacles: all respondent companies – both with and without international activities – indicate the importance of each obstacle on a scale that considers the following options: "Does not apply"; "Do not know"; "No obstacle"; "Minor obstacle"; "Moderate obstacle"; "Major obstacle"; "Very severe obstacle". The responses were converted into binary indicators, taking the value 1 if the company perceives the importance of an obstacle as a "Major obstacle" or "Very severe obstacle," and 0 in all other cases (see Table A1 in the Appendix).

Independent variables and controls

The survey includes information on firm size (i.e., small, medium, large), industry (i.e., manufacturing, retail, other services), foreign ownership (percentage share owned by private foreign individuals, companies or organizations), subnational region of location, and international activity. Regarding the latter, in the ES WB 2016 companies were asked about the share of domestic sales, direct exports and indirect exports. In the following analysis the latter two are combined into one indicator – exports – based on direct exports as a share of total sales and indirect exports as a share of total sales, and defined as a dummy variable that

[1] World Bank. Cambodia Enterprise Survey (ES) 2016, Ref. KHM_2016_ES_v01_M. Dataset downloaded from https://login.enterprisesurveys.org/content/sites/financeandprivatesector/en/library.html on March 02, 2022.

[2] The authors acknowledge that the original collector of the data, the authorized distributor of the data, and the relevant funding agency bear no responsibility for use of the data or for interpretations or inferences based upon such uses.

takes value 1 if the firm had either direct and/or indirect exports during the period (Table A1). The regions where the establishments are located (Phnom Penh; Plains; Mountains; Coastal; Tonle Sap) are grouped into a dummy variable (region) indicating firms in the Phnom Penh region versus all other regions (Table A1).

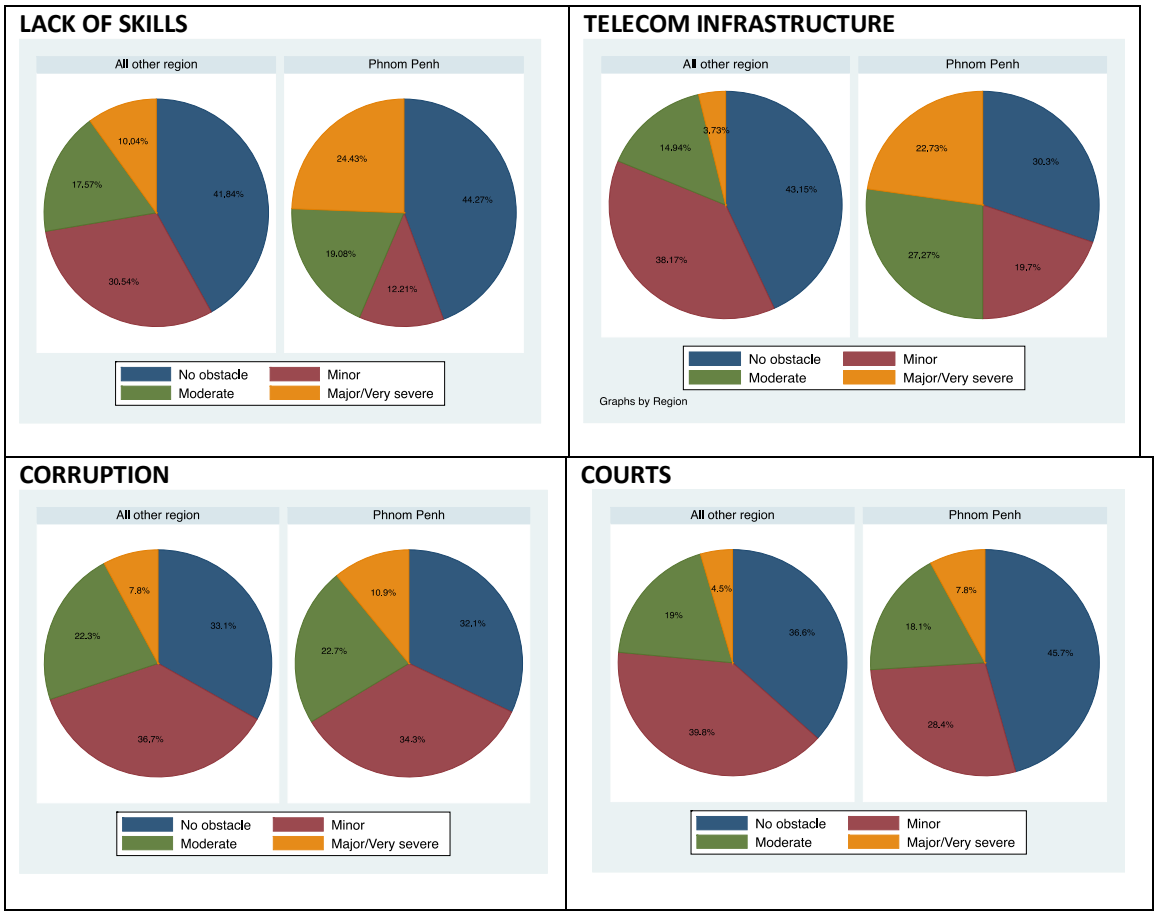
3.2 Obstacles to business and their subnational geography

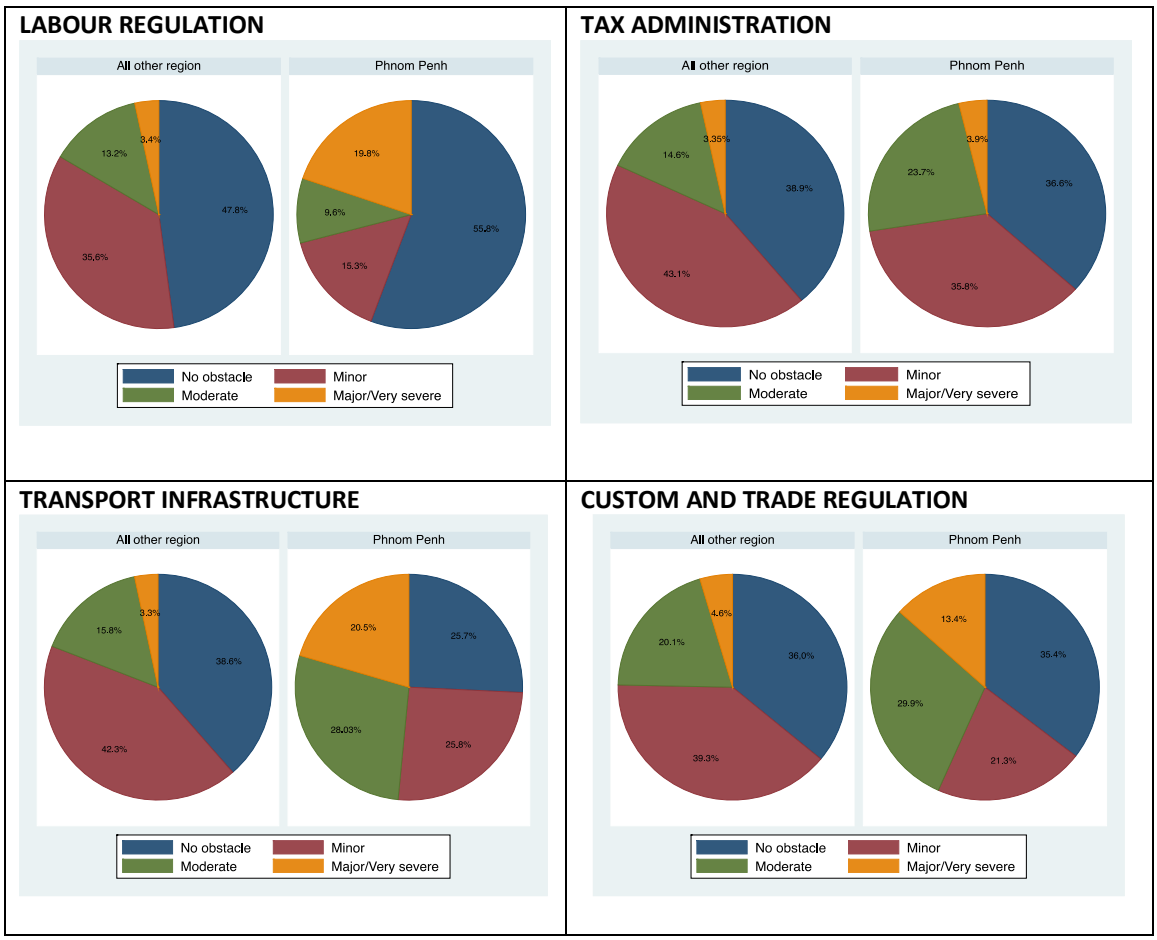
In this section we provide a descriptive picture of the focus of the analysis – obstacles to firms' economic activities (Figure 1) – and some firm characteristics (Figures 2 and 3) with a specific geographical viewpoint as offered by the WB 2016 survey.

Firms' perception of obstacles is heterogeneous and shows stark differences within and between the regions of interest. In the capital Phnom Penh, obstacle perception as a major/very severe firm concern is generally higher than in the other regions, and particularly in relation to access to finance, business regulation, lack of skills, telecom infrastructure, labour regulation and transport infrastructure, where it accounts for about 20 and 25% of the sample companies. Moderate concerns about barriers to business are also larger in the capital.

In contrast, all other regions register a very high percentage of companies (almost 70%) that consider most obstacles to firm activities as minor or even non-existent. Regarding corruption, courts and tax administration, the charts show greater geographic homogeneity.

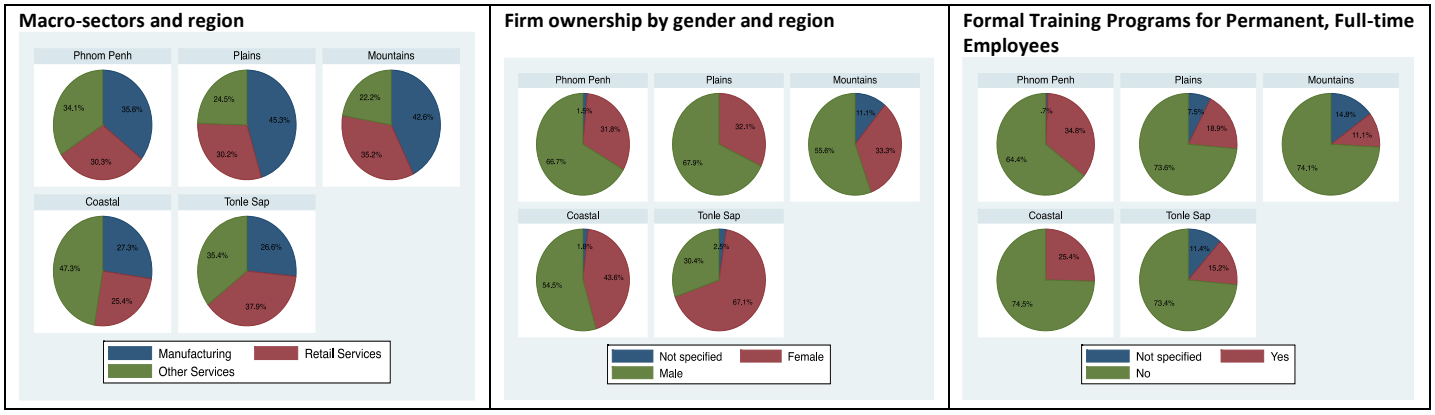
Figure 1: Obstacles to firm economic activities – WB 2016





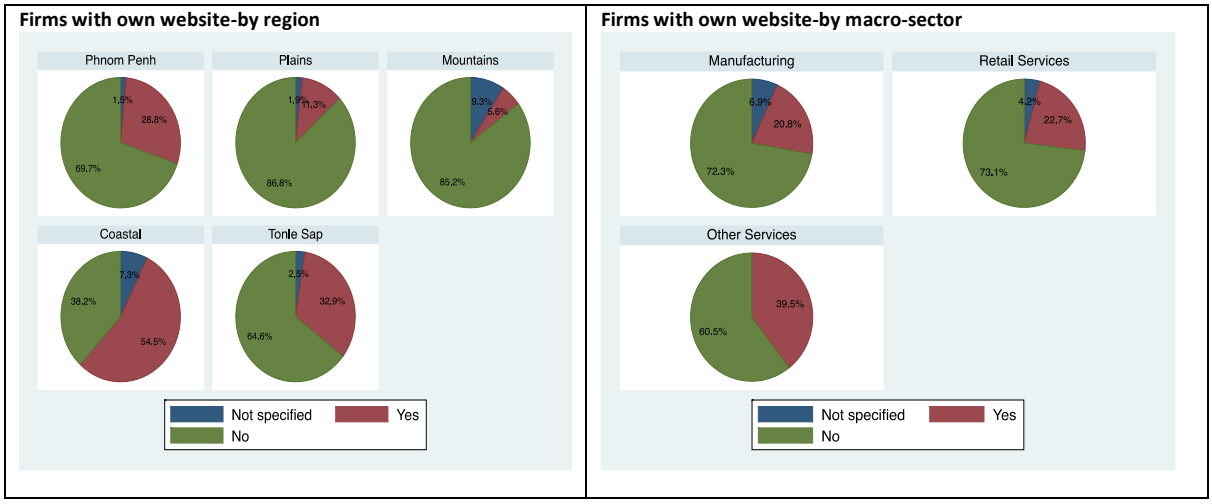
In terms of economic activities (Figure 2), manufacturing is dominant in Plains (45.3%), Mountains (42.6%), and Phnom Penh (35.6%); retail services in the Tonle Sap region (37.9%); other services in Coastal (47.3%) and Tonle Sap regions (35.4%). The share of female-owned enterprises is higher in Tonle Sap (67.1%) and Coastal (43.6%) regions. As expected, the capital region of Phnom Penh has the highest percentage of firms' employees participating in a formal training program (34.8%).

Figure 2: Firm characteristics by region – WB 2016



In terms of access to ICT (Figure 3), the percentage of businesses with a website is the highest in the Coastal region (54.5%), followed by Tonle Sap (32.9%) and Phnom Penh (28.8%), and in the other service sector of activity (39.5%).

Figure 3: Firm characteristics – WB 2016



3.3 Methodology

Obstacles for Cambodian firms

The empirical literature on the obstacles to business – and particularly the studies on firm perception of barriers to innovation activity in the case of advanced economies – has long pointed out the complementarity across different types of obstacles, which are positively correlated with each other and can be grouped in relatively homogenous categories (e.g. Galia and Legros, 2004; D'Este et al., 2012; Iammarino et al., 2009, 2021). The cross-correlation analysis of the obstacles to firm operations considered in the case of Cambodian firms here analysed led to opting for a non-grouping strategy and for the selection of the most significant barriers, capturing access to finance, business regulation (i.e., business licencing and permits), lack of skills (i.e., inadequately educated workforce) and telecom infrastructure.

Descriptive statistics are reported for both the obstacles (Table 1) and the main variables associated with their perception (Table 2). The percentage of enterprises that consider access to finance an obstacle to their business as major or very severe is on average around 11%; this value is higher in the case of lack of skill (15%) and regulation (12%), and slightly lower for telecom infrastructure.

Table 1: Descriptive Statistics: Obstacles – WB 2016

Variables	Obs	Mean	Std. Dev	Min	Max
Access to finance	363	.1129477	.3169657	0	1
Business regulation	358	.1201117	.3255471	0	1
Lack of skills	370	.1513514	.3588763	0	1
Telecom infrastructure	373	.1045576	.2903274	0	1

Looking at the independent variables, small enterprises account for 50% of the total, followed by medium-sized (32%) and large (17%) firms; overall, 35% of the sample is operating in manufacturing, 32% in other services and 32% in retail trade. The extent of firm internationalisation as measured by total exports (both direct and indirect) is around 16% (58

firms), while the share of foreign-owned companies is about 9% (37 firms). More than 1/3 of the sample (35%) is located in the capital region of Phnom Penh.

Table 2: Descriptive Statistics: Main variables – WB 2016

Variable	Obs	Mean	Std. Dev.	Min	Max
Small	373	.5040214	.5006554	0	1
Medium	373	.3217158	.4677621	0	1
Large	373	.1742627	.3798448	0	1
Manufacturing	373	.3485255	.4771434	0	1
Retail	373	.3190349	.4667286	0	1
Other services	373	.3324397	.4717204	0	1
Exports	373	.155496	.3628636	0	1
Foreign	373	.0991957	.2993261	0	1
Region-Phnom Penh	373	.3538874	.478817	0	1

Cross-section analysis

As mentioned, the empirical literature has shown a possible correlation between the different obstacles – our dependent variables – thus implying an estimation problem. Following this literature, and particularly Iammarino et al. (2021), to take into account the non-independence of obstacles and the need to control for potential correlation in the error terms, we run a Multivariate Probit Model (MVP) for the four selected obstacles on the cross section 2016.[3]

Relying on the estimation procedure developed by Cappellari and Jenkins (2003), we estimate a system of four equations, one for each obstacle:[4]

$$Prob\left(Y_{ij}=1\right)=\ \alpha_{\mathrm{j}}+\ \Upsilon_{j}^{i}\mathrm{Z_i}+\ \varepsilon_{\mathrm{ij}} \quad (1)$$

with *j* indicating the obstacle to economic operations, *j* = {access to finance, business regulation, lack of skills and telecom infrastructure}; *i* = 1, …, *N* denotes firm *i*; and $\mathrm{Z_i}$ is the set of independent variables capturing firm-specific characteristics such as size, macro-sector of activity, total (direct and indirect) exports, foreign-ownership, and whether the firm is located in the capital Phnom Penh; $\varepsilon_{\mathrm{ijt}}$ is an error term assumed to be independently and identically distributed with a mean of zero and a variance of σ^2.

[3] The starting point would be the univariate probit model with 4 equations, one for each obstacle group considered. However, such model imposes two restrictions on the data: 1. the assessment of each obstacle is not correlated with that of the others; 2. the determinants are exogenous. Both restrictions are not met under our hypothesis of simultaneous determination of firms' perception of obstacles and their main characteristics; therefore, we opted for a more flexible model.

[4] MVP allows the joint estimation of two or more probit equations through the interaction of their error terms. The disturbances are jointly distributed as a standardized multivariate normal, with zero mean, unit variance and free cross-correlations. When the correlation coefficient between two equations' disturbances is significantly different from zero, this specification accounts for the existence of omitted or unobservable factors that affect both dependent variables simultaneously; whereas, when the correlation is not different from zero, the two equations can be estimated separately as univariate probit models.

In the robustness checks, we try to overcome the limits imposed by cross-sectional methods and control for firm-specific unobservable by estimating a random-effect probit model relying on the small panel subset of 131 firms surveyed in both 2013 and 2016.

4. Findings and robustness check

4.1 Results for the 2016 cross-section

Table 3 shows several aspects of the relationship between firm features and reported obstacles in Cambodia. Considering access to finance (column 1), firms operating in manufacturing and, to a lesser extent, in other services, and foreign-owned firms perceive financial barriers as less relevant. Financial obstacles are instead very serious – displaying a positive and highly significant coefficient – for internationalised firms with exports, and for those located in the Phnom Penh region. Indeed, the geographical location in the capital region is always positive and strongly significant across types of barriers, suggesting higher awareness of barriers to economic operations from business companies located in Phnom Penh.

Foreign ownership shows a mild positive relationship with the perception of obstacles related to business regulation (column 2), which is consistent with the comparative knowledge of MNEs across different geographical and institutional settings.

Firms' concerns related to lack of skills (column 3) are related to firm size: such concerns are strong for small firms in particular and, to a lesser extent, for those at the other extreme of the distribution; moreover, the coefficient is positive and significant for firms engaged in manufacturing, normally in need of more technical skills.

Firms' perceptions of obstacles related to telecommunication infrastructure show a positive and significant relationship with size, with large companies judging these types of barriers as more serious than all other firms; interestingly, the capital location, being always positively associated with obstacle perceptions at the 1% level of significance, shows in this case a particularly high coefficient. On the contrary, in this case foreign ownership is associated with a lower perception of the importance of telecom infrastructure obstacles: MNEs are in fact more likely to develop their own.

Overall, these findings are in line with previous literature on firms' perceptions of obstacles: prior empirical evidence, not surprisingly, shows consistently that the greater the firm's involvement and exposure to the business environment – certainly more intense and diverse in the capital region – the greater the importance it is likely to attach to the obstacles to its business operations.

Table 3: Cross section regression – WB 2016

Results of Multivariate Probit Estimation

VARIABLES	(1) Access to finance	(2) Business regulation	(3) Lack of skills	(4) Telecom infrastructure
Small	0.245	-0.193	0.523**	-0.0817
	(0.223)	(0.218)	(0.219)	(0.240)

Large	-0.0123	-0.157	0.473*	0.688**
	(0.336)	(0.288)	(0.271)	(0.289)
Manufacturing	-0.613**	0.0699	0.488**	0.155
	(0.266)	(0.258)	(0.233)	(0.277)
Other services	-0.440*	0.0522	-0.00145	0.0527
	(0.234)	(0.242)	(0.234)	(0.263)
Foreign ownership	-0.816*	0.561*	0.464	-0.772**
	(0.425)	(0.292)	(0.283)	(0.376)
Exports	0.884***	0.310	0.0769	0.413
	(0.265)	(0.266)	(0.248)	(0.276)
Region- Phnom Penh	0.812***	0.817***	0.486***	1.149***
	(0.196)	(0.194)	(0.177)	(0.219)
Constant	-1.471***	-1.636***	-1.885***	-2.020***
	(0.240)	(0.243)	(0.256)	(0.288)
Observations	347	347	347	347
Number of enterprises	347	347	347	347
Method	MVPROBIT	MVPROBIT	MVPROBIT	MVPROBIT

Notes: Standard errors in parentheses. * p < 0.10; ** p < 0.05; *** p < 0.01.

4.2 Robustness checks

Due to the need to control for unobserved heterogeneity (π_i), a random effects probit estimation is also employed. The analysis is performed on 131 firms observed for two years, 2013 and 2016. Unfortunately, the restricted number of observations and years represents a limit of this analysis in terms of robustness of our results, but the panel data have several advantages and allows us to evaluate numerous aspects.

The panel analysis allows, first, to consider how the relationships between variables may change over time; second, the additional variation introduced by combining the data also mitigates the multicollinearity problems; finally, by appropriately structuring the model, the effects of the bias caused by variability is removed from the regression results.

Based on this information, the following equation is estimated, introducing the time dimension (2013 and 2016).

$$Prob\left(Y_{ijt} = 1\right) = \alpha_{\mathrm{j}} + \pi_i + \Upsilon_j^i \mathrm{Z}_{\mathrm{it}} + \varepsilon_{\mathrm{ijt}} \qquad (2)$$

4.3 Random effect probit results

Table 4 presents the results of the random effect probit estimation, largely consistent with the previous model, especially in terms of localisation in the capital region, showing how firm subnational geography strongly influences the perception of obstacles.

The geographic location in the Cambodian capital is positive and strongly significant particularly for access to finance and business regulation, implying that firms based in the Phnom Penh regions are more aware of barriers to doing business; however, lack of skills seems to be less geographically sensitive, being one of the most serious issues at the level of the country as a whole. Business regulation and telecom infrastructure are relevant barriers for exporters. In addition, as in the multivariate probit analysis, companies' concerns about the lack of skills relate only to manufacturing companies. As previously, foreign ownership is associated to a lower perception of the importance of telecom infrastructure obstacles.

Table 4: Panel regression: WB 2016-2016

Results of Random Effects Probit Estimation

	(1)	(2)	(3)	(4)
VARIABLES	**Access to finance**	**Business regulation**	**Lack of skills**	**Telecom infrastructure**
Small	0.362	-0.105	-0.109	-0.149
	(0.222)	(0.346)	(0.199)	(0.240)
Large	0.184	-0.0737	0.107	0.171
	(0.347)	(0.489)	(0.308)	(0.360)
Manufacturing	-0.0993	-0.260	0.484**	0.0840
	(0.256)	(0.437)	(0.235)	(0.278)
Other services	-0.0142	0.491	0.0788	-0.0958
	(0.243)	(0.384)	(0.241)	(0.281)
Foreign ownership	-0.377	-0.300	0.198	-1.518**
	(0.385)	(0.468)	(0.329)	(0.614)
Exports	0.466	1.076**	-0.0820	0.813**
	(0.324)	(0.460)	(0.325)	(0.340)
Region- Phnom Penh	0.590***	1.719***	0.212	0.450**
	(0.205)	(0.561)	(0.187)	(0.226)
Constant	-1.548***	-3.007***	-1.120***	-1.453***
	(0.265)	(0.775)	(0.234)	(0.280)
Observations	262	252	261	262

Number of enterprises	131	131	131	131
Method	REPROBIT	REPROBIT	REPROBIT	REPROBIT

Notes: Standard errors in parentheses. * p < 0.10; ** p < 0.05; *** p < 0.01.

5. Discussion and conclusions

Firm heterogeneity and subnational specificities and have been long incorporated into the conceptual and empirical research on obstacles to firms' activities, as well as in current policy debates (e.g. local economic development and bottom-up approaches, innovation place-based policies, smart specialisation strategies, etc.) particularly in advanced economies, and increasingly in developing and emerging ones. Nevertheless, developing countries are still seen theoretically and empirically as rather homogenous systems, due to a long-term bias in the political economy of socio-economic development (Scholvin, 2021; Zhu and He, 2022). This study aims to emphasise the firm- and location- specific nature of companies' obstacles perceptions, calling for additional efforts to gathering information and data at a granular level across different dimensions (e.g., by introducing fine-grained industry breakdowns and strengthening sample stratifications at industry and subnational territorial level).

Focussing on the specific obstacles investigated in the present study, some considerations related to policy actions are reported here below for the case of Cambodia. First and above all, it is necessary to take into account that the interdependence among types of obstacles pointed out by the literature requires an integrated approach to remove barriers to business. In addition, it should be considered that both globalisation and the dual technology transition are likely to fuel within-country inequality, increasing even further both regional/provincial and individual income polarisation: designing territorial development policies aimed at offsetting domestic disparities is increasingly appearing as an inevitable task for developing countries governments.

Access to Finance

A significant obstacle that firms continue to grapple with is their restricted access to financial resources. This limitation poses a substantial hindrance to their ability to enhance their competitiveness and integrate themselves into the global supply chain and macroregional GVCs: in line with other studies (Stojčić, et al., 2024), our results indicate that access to finance is a major concern especially in the case of exporting firms. It is of paramount importance to expand and enhance existing government initiatives aimed at bolstering firms' access to financing. One noteworthy strategy is the implementation and expansion of guaranteed schemes, which can offer a safety net for lenders, making them more willing to extend credit to SMEs. At the same time, also addressing problems such as low level of firm formal registration and unsuitable bookkeeping can help firm eligibility for loans. Promoting the adoption of financial technology (fintech) solutions, such as digital banking systems, assumes a crucial significance across the Cambodian context, where the evidence of perceiving high financial obstacles seems widespread across firm sizes. In addition, presently only a small number of firms – particularly among those outside the capital region – have embraced e-banking tools (Veung and Sean, 2023a). More generally, the combination between market-based public–private partnership approaches, and state supported financing schemes maybe the best way forward to improving access to funding and attractiveness to investors (Anguelov, 2021).

Business regulation

Various issues, ranging from obtaining business licenses, dealing with taxation, customs clearance and, more generally, public administration officers, generate significant imbalances in the cost and benefit for Cambodian enterprises across sizes and sectors when deciding whether to initiate, formalise or scale up their operations. One effective approach is the establishment or enhancement of one-stop shops and the simplification of registration procedures. These measures reduce the time and costs associated with business registration. Recently, the government of Cambodia has implemented one-stop shops in Special Economic Zones (SEZs) to attract FDI and provide investors with easy access to land, infrastructure, and essential services, facilitating the setup and operation of businesses (ADB, 2015). These services encompass utilities, tax assistance, customs facilitation, and administrative support for import-export activities. Recent evidence on SEZs indicates their positive impact on both employment and geographical income inequality (Brussevich, 2023). A comprehensive approach is needed to enhance business regulation and transparency, involving intensified and definitive efforts to combat corruption and eliminate preferential practices tied to patronage. The government has recently made significant efforts in implementing its new digital initiatives, including the Cambodia Digital Government Policy 2022-2035 and Cambodia Digital Economy and Social Policy Framework 2021-2035, to achieve higher transparency and accountability (MPT, 2022; RGC, 2021).

Labour skills

Prioritising the provision of essential technical skills and production capabilities to both current and prospective workforce is a must for Cambodian government. This is probably the most crucial aim to preparing Cambodian firms for the advent of the fourth industrial revolution and the digital and green dual technological transitions. This endeavour can be effectively pursued through diverse ways, one of which is the Skills Development Fund (SDF). Originally initiated as a pilot program in 2018 and subsequently evolved into a trust fund in 2023, the SDF represents a government-led initiative aimed at catalysing private sector involvement in the funding and development of demand-driven skill training. It should facilitate co-financing grants for training projects that involve collaboration between private enterprises and training providers, with the ultimate goal of aligning skill development efforts with the actual requirements of the industry.

More generally, however, “Cambodia’s learning crisis” (Chea, 2023) points to the urgent need to improve foundational knowledge at all levels of education – from primary to tertiary, from vocational training to higher education – across all regions within the country: a necessary and primary condition to ensure socio-economic development and citizens well-being. The government’s commitment to diffuse widely digital technologies – particularly among SMEs operating in manufacturing, that in the present study emerge as especially concerned about skills obstacles – is just a first step. An in-depth reform of the education system – a long-term and onerous investment – is unavoidable for an effective integration of technology in education and to ensure that skills and capabilities will be adequate to the challenges of the future.

Telecom and digital infrastructure

The Ministry of Commerce launched an online business registration portal in January 2016, allowing both existing and new businesses to register and pay taxes more easily. However, according to Veung and Sean (2023a), the adoption of this online platform has been limited, with only a small percentage of firms utilising it, particularly in peripheral provinces. Reasons

mentioned for not using the online system include the perception that applying for documents in person is more straightforward, the lack of awareness about the online portal, and the uncertainty about its suitability for own businesses. In fact, online registration offers advantages such as tracking tax obligations and improving transparency and auditing procedures.

More generally, having reliable and fast internet access is critical for achieving business growth and engage in e-commerce transactions (Veung and Sean, 2023a). The introduction of the Cambodia Digital Government Policy 2022-2035 represents a significant step toward the country's digital development. The policy's strategic focus is centred on expediting the growth of high-speed broadband networks and associated infrastructure while also addressing digital territorial disparities across the country. On the crucial matter of digital literacy, it is important to note that micro and unregistered businesses outside the capital region are often the least informed about digital technology and its advantages. Consequently, policies aimed at enhancing digital literacy should specifically target these types of businesses, by boosting awareness campaigns, and assisting micro and small businesses in crafting their digital investment plans.

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Appendix

Table A1 – Definition and description of the variables: World Bank enterprises survey 2013-2016

Variable	Definition in the WB Survey	Description
Access to finance	"How much is Access to Finance an obstacle to the current operations of this establishment?"	Dummy = 1 Major/Very Severe, 0 Otherwise
Business regulation	"How much is Business Licensing and Permits an obstacle to the current operations of this establishment?"	Dummy = 1 Major/Very Severe, 0 Otherwise
Lack of Skills	"How much is Inadequately Educated Workforce an obstacle to the current operations of this establishment?"	Dummy = 1 Major/Very Severe, 0 Otherwise
Telecom infrastructure	"How much is Telecommunications an obstacle to the current operations of this establishment?"	Dummy = 1 Major/Very Severe, 0 Otherwise
Corruption	"How much is Corruption an obstacle to the current operations of this establishment?"	Dummy = 1 Major/Very Severe, 0 Otherwise
Courts	"How much is Courts an obstacle to the current operations of this establishment?"	Dummy = 1 Major/Very Severe, 0 Otherwise
Labour regulation	"How much is Labour regulation an obstacle to the current operations of this establishment?"	Dummy = 1 Major/Very Severe, 0 Otherwise
Tax administration	"How much is administration an obstacle to the current operations of this establishment?"	Dummy = 1 Major/Very Severe, 0 Otherwise
Transport infrastructure	"How much is Transport an obstacle to the current operations of this establishment?"	Dummy = 1 Major/Very Severe, 0 Otherwise
Custom and trade regulation	"How much is Custom and Trade Regulation an obstacle to the current operations of this establishment?"	Dummy = 1 Major/Very Severe, 0 Otherwise
Sector	Manufacturing (Tobacco, Textiles, Garments, Leather Wood, Paper, Publishing, printing and Recorded media, Refined petroleum product, Chemicals, Plastics & rubber, Nonmetallic mineral products, Basic metals, Fabricated metal products, Machinery and equipment, Electronics, Precision instruments transport machines, Furniture Recycling); Retail (Retail); Other services (Wholesale, Hotel and restaurant, Services of motor vehicles Construction, Transport)	Dummy = 1 (Manufacturing, Retail, Other services), 0 Otherwise
Size	Small >=5 and <=19; Medium >=20 and <=99; Large >=100	Dummy = 1 (Large, Medium, Small), 0 Otherwise
Foreign ownership	Foreign-owned (total or partial)	Dummy = 1 if the % share owned by private foreign individuals, companies or organizations is greater than 0; 0 Otherwise
Female ownership	Gender of firm owner	Dummy = 1 if the firm is female-owned

Exports	Based on Direct Exports as % of total sales and Indirect Exports as % of total sales	Dummy = 1 if the % share of direct and/or indirect export is greater than 0; 0 otherwise
Region	Location of establishment	Region of establishment Phnom Penh, Plains, Mountains, Coastal, Tonle Sap
Region-Capital	Location of establishment	Dummy = 1 if the region is the capital Phnom Penh, 0 otherwise
Formal Training Programs for Permanent, Full-time Employees	Formal Training Programs for Permanent, Full-time Employees in Last Fiscal Yr	Dummy = 1 if the enterprises provide formal training to any of its employees, 0 otherwise
Enterprises with a website	At the present time, does this establishment have its own website?	Dummy = 1 if the enterprise has an own website, 0 otherwise

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