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Firm-Level Performance in Cambodia

An Economic Census-Based Diagnostics

I Younan An and Chhorn Dina

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Author(s) and **affiliation**(s):

I Younan An
Visiting fellow, Cambodia Development Resource Institute
PhD candidate, Department of Political Science, University of Toronto, Canada

Chhorn Dina
Centre director, Cambodia Development Resource Institute
Affiliated researcher, University of Bordeaux, France
Strategy committee, France Luxe Business School, France

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CDRI
56 Street 315, Tuol Kork, Phnom Penh, Cambodia
☎ +855 23 881 701/881 916/883 603
✉ cdri@cdri.org.kh
www.cdri.org.kh

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List of acronyms and abbreviations

2SLS	Two-stage least squares framework
ASEAN	Association of Southeast Asian Nations
CDRI	Cambodia Development Resource Institute
CLMV	Cambodia, Laos, Myanmar, and Vietnam
ERIA	Economic Research Institute for ASEAN and East Asia
EV	Explanatory Variables
FE	Fixed Effects
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GVC	Global Value Chain
ICTs	Information and Communication Technologies
IDP	Industrial Development Policy
ISIC	International Standard Industrial Classification
IV	Instrumental Variable
LDC	Least Developed Country
MFIs	Microfinance Institutions
MISTI	Ministry of Industry, Science, Technology and Innovation
MSMEs	Micro, Small, and Medium Enterprises
NIS	National Institute of Statistics
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
R&D	Research and Development
RGC	Royal Government of Cambodia
SEZs	Special Economic Zones
SMEs	Small and Medium Enterprises
TAF	The Asia Foundation
TFP	Total Factor Productivity
TVET	Technical and Vocational Education and Training
USD	United States Dollar

Executive summary

Cambodia's enterprise landscape is predominantly service-based, with the *wholesale and retail trade and repair of motor vehicles and motorcycles* sector comprising the largest share of establishments. In 2022, this sector alone accounted for 65.6 percent of all businesses, followed by the *accommodation and food service activities* sector (14.2 percent) and the *manufacturing* sector (6.6 percent). However, when measured by employment, manufacturing stands out as the leading sector, absorbing 37.5 percent of the total workforce, primarily in garment-related activities such as apparel, footwear, and handbag production. These industrial activities and large establishments tend to cluster in urban centres, with Phnom Penh and surrounding provinces exhibiting the highest levels of industrial density and employment concentration.

The structure of Cambodia's enterprise sector is marked by a pronounced dualism. On one end is a vast majority of microenterprises, and on the other, a very small proportion of medium and large firms. This polarisation signals a "missing middle," a structural challenge where small firms seldom scale up and medium-sized enterprises remain underrepresented, reflecting systemic barriers to growth and formalisation.

The business environment remains largely informal and individualistic. Informality is evident not only in registration status but also in business premises: as of 2022, 10.2 percent of businesses operated as street vendors, and home-based enterprises were common. Around 73 percent of establishments owned their premises, indicating a strong reliance on self-owned, informal operations. The ownership structure is overwhelmingly domestic, with 99.1 percent of all establishments owned by Cambodians. Foreign ownership is concentrated among larger firms, especially those with 100 or more employees, where foreign-owned enterprises account for over 55 percent. This reflects a bifurcated economy: a predominantly domestic, informal micro, small, and medium enterprises (MSMEs) base coexists alongside a foreign-led, formalised export-oriented industrial sector.

Understanding the drivers of firm performance is critical to Cambodia's aspirations for economic upgrading and export diversification. Drawing on the Economic Census of Cambodia 2022, this study provides a diagnostic analysis of over 753,670 formal and informal firms, identifying key factors associated with better financial outcomes, including monthly revenue, labour productivity, and profit levels, as indicators of firm success or failure.

Key quantitative modelling findings

- **Formalisation and performance:** Firms that are formally registered are consistently associated with higher monthly revenues, profits, and productivity. We also find that the interacting effect between formalisation and foreign ownership should not be overlooked, as registered foreign firms tend to perform better than unregistered domestic firms.
- **Digital adoption:** The use of digital technologies (e.g., online presence and digital payments) shows a significant positive effect on firm performance. Firms investing in digital tools not only earn more revenue but also report higher productivity levels.
- **Ownership structure:** Foreign-owned firms outperform locally owned firms in terms of revenue. However, foreign-owned firms fell short in labour productivity.
- **Firm size and growth trajectory:** Majority of the firms can be driven by the presence of micro and small firms. Thus, this reinforces the nature of a "missing middle" pattern wherein most firms remain micro-sized and informal, limiting opportunities for scalable growth.

The evidence is clear: formalisation and digital adoption are central pillars of stronger firm performance. Registered firms earn more, employ more, and are more productive than their informal counterparts. Digital technologies, especially online sales channels and e-payments, further enhance revenue and productivity. Foreign-owned enterprises also outperform domestic firms, particularly in terms of revenue.

Yet Cambodia's private sector remains structurally segmented. Most enterprises are micro-sized, informal, and disconnected from modern business ecosystems. The mid-sized segment is notably absent, reflecting the country's persistent 'missing middle.' This performance divide stems from deeper structural challenges, including low digital adoption, limited incentives for formalisation, and weak linkages among firms. These issues are even more pronounced outside Phnom Penh, where enterprises face greater barriers to formality and technology uptake. Beyond the capital, firms struggle to access essential resources such as reliable broadband, internet and mobile services, electricity, water, transportation, and other operational inputs.

Policy recommendations

- **Upgrade domestic firms:** Support better management, quality standards, and access to finance and technology, with targeted assistance for women-led enterprises.
- **Make formalisation a growth enabler:** Streamline registration, link incentives to compliance milestones, and facilitate access to proper production spaces.
- **Accelerate technology and skills adoption:** Expand digital training, provide technology extension services, and align the Technical and Vocational Education and Training (TVET) with manufacturing needs.
- **Strengthen domestic–foreign linkages:** Develop supplier programmes and tools that connect the Small and Medium Enterprise (SMEs) to foreign investors and value chains.
- **Diversify spatial industrial growth:** Improve industrial infrastructure in emerging corridors and promote clusters beyond Phnom Penh.
- **Improve data for policy decisions:** Institutionalise firm-level data collection and build a central analytics platform to guide industrial policy.

As Cambodia prepares for its graduation from the Least Developed Country (LDC) status in 2029, addressing these structural divides is urgent. A more inclusive, formalised, and digitalised private sector will be key to enhancing productivity, attracting investment, and securing long-term resilience.

1. Introduction

Cambodia has undergone a remarkable economic progress since the turn of the 21st century. From a post-conflict economy, it has emerged as one of Southeast Asia's fastest-growing countries. Before the COVID-19 pandemic, the economy achieved an impressive average real gross domestic product (GDP) growth rate of nearly 8.5 percent per annum, allowing it to double in size approximately every 8.25 years (World Bank 2024). Between 2000 and 2019, Cambodia's real GDP expanded per capita income growing nearly eightfold, from USD310 in 2000 to USD2,345 by 2019, driving significant poverty reduction from 45 percent in 2006 to 17.8 percent in 2019 and social mobility (Hing and Kruy 2025). This notable growth trajectory enabled Cambodia to attain lower-middle-income status in 2015 and raised expectations of future graduation from the LDC classification by 2029.

Cambodia's economy has experienced a profound structural transformation, moving from a predominantly agrarian base to one increasingly driven by manufacturing and services. The share of agriculture in GDP has declined sharply, from 40 percent in 1999 to 35.5 percent of GDP in 2000 to 16.5 percent in 2022, reflecting a steady diversification away from traditional sectors. The manufacturing sector has grown significantly, doubling its GDP share from 13 percent in 1999 to 26 percent in 2023, and contributing to the broader rise of industry, which reached nearly 41 percent of GDP in 2022, up from 22 percent in 2000. The service sector has remained relatively stable, rising modestly from 35 percent in 1999 to a peak of 42 percent in 2015 before settling at 36 percent in 2023 (Hing and Kruy 2025; World Bank 2024). In addition, the employment share in the agricultural sector has also decreased from 58.1 percent in 2009 to 37.2 percent in 2019, where there has been a rise of employment share in both the textile and apparel sector from 5.8 percent in 2009 to 10.8 percent in 2019 and the construction sector from 3.5 percent in 2009 to 8.7 percent in 2019 (Kokas et al. 2024). This reconfiguration of economic structure underscores Cambodia's transition towards a more industrialised and service-oriented economy. This reconfiguration of economic structure underscores Cambodia's transition towards a more industrialised and service-oriented economy.

Along with its high economic growth, Cambodian business has also grown, as evidenced by a growing number of firms, from 505,134 to 753,670 establishments, as described in the Economic Census data from 2011 and 2022 (NIS 2012; 2023). Cambodia's enterprise landscape is characterised by a dominance of service-oriented activities, with wholesale and retail trade accounting for over 65 percent of establishments in 2022. While manufacturing plays a minor role in firm numbers, it remains critical for employment, especially in the garments and footwear sectors. Economic activities are highly urban-centric, with Phnom Penh dominating as the country's commercial and industrial nucleus.[1] However, firm size distribution remains heavily skewed, with a concentration of microenterprises representing about 95 percent of all establishments and an absence of mid-sized firms, a structural issue often referred to as the "missing middle." This dualism indicates that small firms rarely scale up, and mid-sized enterprises are underrepresented, reflecting structural barriers to growth. Sole proprietorships dominate the business demography, and informality remains deeply embedded, particularly in street and home-based operations (NIS 2012; 2023). Nationally, MSMEs account for approximately 99.8 percent of all businesses and contribute around 58 percent of total employment and 58 percent of Cambodia's GDP (MISTI 2024a). Despite their importance in Cambodia's rapidly growing economy, MSMEs continue to face persistent challenges (Baily 2007). Many remain vulnerable and prone to failure due to a range of structural and operational

1 For more detail information about Phnom Penh's firm development, please consult with *Appendix A1. Phnom Penh's industrial dynamics.*

obstacles. Notably, as digitalisation becomes increasingly embedded in society, MSMEs must adapt to evolving market demands and changing consumer behaviours. With the fast pace of technological advancement, those slow to adopt digital tools risk falling behind.

Despite the Industrial Development Policy (IDP) 2015-2025's ambitions to transform Cambodia into a more diversified, export-driven, and high-productivity economy, census data reveals a persistent dominance of informal, low-tech microenterprises (RGC 2015). Manufacturing's share in total establishments remains below 7 percent, and high-value industrial activities remain limited in scale and scope. Although large firms, mostly foreign-owned, generate significant output and employment, most Cambodian enterprises operate at subsistence levels, with limited adoption of productivity-enhancing technologies. While total employment in registered establishments increased substantially between 2011 and 2022, the bulk of jobs remain concentrated in low-productivity sectors such as retail and food services, diluting the policy's developmental impact (NIS 2012; 2023).

The IDP emphasises integrating domestic firms into global and regional supply chains, promoting technology transfer, and expanding industrial clusters. However, participation in such value chains remains marginal among Cambodian-owned firms, with under 10 percent of establishments engaging in formal supply relationships (RGS 2015). Foreign-owned firms dominate global value chains (GVCs)-linked activities, particularly in SEZs. Ownership patterns reflect a dual economy: a large, informal MSME sector, owned by Cambodians, and a small but dominant formal, export-oriented industrial sector driven by foreign investment. While the IDP outlines mechanisms to support Small and Medium Enterprise (SME) upgrading and supply chain integration, the census data suggest that deeper institutional reforms, infrastructure investment, and targeted support for domestic enterprise upgrading are necessary to overcome persistent structural constraints (RGC 2015; NIS 2023; 2012).

Understanding, therefore, the underlying factor behind firm performance is fundamental to enabling domestic firms to participate in international and regional supply chains, advancing technological innovation, and developing Cambodia's industrial zones.

This report aims to identify the key determinants of firm performance in Cambodia, measured by monthly revenue, labour productivity, and profit levels. We provide a sub-analysis examining trends across different firm sizes. The analysis focuses on firm-level characteristics such as ownership structure, formal registration status, and the role of digitalisation in enhancing development and resilience. The structure of a firm can significantly influence its performance. In recent years, foreign-owned enterprises have played a growing role, contributing to the Cambodian economy on par with domestic firms. As the economy continues to expand, the role of firms becomes increasingly vital, prompting the government to strengthen oversight and promote formalisation through registration and regulatory frameworks (see, for example, Oikawa et al. 2024; Pritchett and Hallward-Driemeier 2011; Bloom and Van Reenen 2007; Syverson 2011). The adoption of information and communication technologies (ICTs) is becoming ever more important in commercial and financial operations. While digital payments are gaining traction, many firms remain underdeveloped in other aspects of digitalisation. It is therefore essential to assess the extent of digital adoption and how it shapes business strategies, competitiveness, and resilience. A rise in digital technology usage and foreign retail presence may also reflect slow growth in local firms, highlighting the need to understand how firms adapt and reposition themselves in a rapidly changing business environment (see, for example, ERIA/OECD 2024; OECD/ERIA 2018).

This report is structured as follows: Section 2 presents a literature review, covering theoretical perspectives on drivers of firm performance, key characteristics of firms in Cambodia with insights from the Economic Census of Cambodia 2022, and the linkages between Cambodia's industrial development goals and firm performance. Section 3 provides a discussion on the methodology of this research in relation to the data sources, variables descriptions and model specifications. Section 4 presents the key empirical findings, detailing how firm characteristics influence revenue, labour productivity, and profit, along with results from instrumental variable estimation and robustness checks. Section 5 concludes with a synthesis of the main insights and offers policy recommendations to strengthen firm performance and support Cambodia's broader industrial development objectives.

2. Literature review

2.1. Drivers of firm performance: Theory and implications

Firm performance is a central concept in development economics, particularly in the context of emerging and developing economies. It encompasses both financial outcomes, such as revenue, profit, and productivity, and strategic behaviour, including investment, innovation, and expansion. The performance of firms is not only a reflection of individual capabilities and market conditions but also a function of systemic and institutional environments (see, for example, Veung 2023; McKenzie and Woodruff 2014; Pritchett and Hallward-Driemeier 2011; Syverson 2011; Amiti and Konings 2007; Bloom and Van Reenen 2007). This section provides an integrative literature review on the theoretical underpinnings and empirical evidence of the main drivers of firm performance, with a particular focus on Cambodia's firm landscape and its regional context within Association of Southeast Asian Nations (ASEAN), as discussed in (ERIA/OECD 2024; Oikawa et al. 2024; Veung 2023; TAF and CDRI 2023; OECD/ERIA 2018; Vandenberg et al. 2016; ERIA 2008).

2.1.1. Theoretical foundations: Global evidence and conceptual frameworks

Management practices as a core driver of productivity

Management quality has emerged as a pivotal driver of firm performance. Bloom and Van Reenen (2007) were among the first to rigorously measure management practices across countries and link them directly to productivity outcomes. Their cross-country survey of 732 manufacturing firms in the US, UK, France, and Germany revealed that better-managed firms, those with structured performance monitoring, target setting, and incentive systems, exhibit significantly higher levels of productivity, profitability, and survival rates. Moreover, they identified wide variations in management scores, with US firms generally better managed than their European counterparts.

Bloom and Van Reenen (2007) demonstrates a statistically strong and economically significant relationship between structured management practices and firm-level outcomes such as Total Factor Productivity (TFP), sales growth, and return on capital. In their cross-country management survey, they found that moving across the interquartile range of management scores yields a 3.2-7.5 percent increase in productivity, accounting for 10-23 percent of the total variation in TFP across firms.

Importantly, Bloom and Van Reenen (2007) attribute poor management performance to weak competitive pressure and inherited leadership structures such as primogeniture. Firms in markets with higher levels of competition were more likely to adopt best-practice management, while family firms led by eldest sons tended to score lower in managerial quality. These findings

underscore the importance of both market structures and organisational culture in shaping firm performance.

Their findings underscore two implications for developing economies like Cambodia: first, that management capability is a critical and often overlooked intangible asset; and second, that fostering competition and diversifying firm ownership structures may indirectly raise managerial quality.

Determinants of productivity: Firm-level heterogeneity

Building on this, Syverson (2011) argues that productivity is shaped by a combination of firm-specific capabilities, market environments, and resource allocation mechanisms. He reviews a wide range of literature showing that productivity dispersion across firms within narrowly defined sectors can be as high as two to one. Much of this variance remains even after controlling for traditional input measures such as capital and labour, implying the existence of "soft" factors like managerial ability, innovation strategy, and firm learning (Syverson 2011).

Syverson (2011) further stresses the role of competition in forcing inefficient firms to exit or improve, a dynamic often absent in weakly regulated or informal economies. In developing countries, this natural selection process is dampened by policy distortions, market failures, and institutional uncertainty. His review stresses that factors such as input quality, demand conditions, and firm-specific knowledge significantly shape productivity. This has direct relevance for Cambodia, where firm heterogeneity is mirrored in the industrial census and where variance in outcomes, especially between informal microenterprises and formal SMEs, is pronounced (NIS 2023).

Entrepreneurial capacity and training programmes

McKenzie and Woodruff (2014) synthesise evidence from over 30 impact evaluations of business training programmes across developing countries. Their findings are cautiously optimistic. While business training does lead to some improvements in business practices, the effects on profitability and employment are generally modest and often heterogeneous. Notably, they observe stronger impacts on start-up rates and initial survival, particularly for male-owned enterprises (McKenzie and Woodruff 2014). They also highlight key challenges in training delivery: short evaluation windows, measurement biases, and limited scale. One recommendation is to integrate entrepreneurial training with ongoing mentorship, improved access to markets and finance, and ecosystem-based support, elements that are particularly relevant for the fragmented Cambodian SME landscape.

Crucially, they find that training helps more with firm entry and survival than with scaling performance. For Cambodia, this suggests that donor-supported SME training programmes must be redesigned to focus on advanced managerial capabilities and peer learning, especially given the dominance of family-run microenterprises and low formal education among firm owners (Veung 2023).

Informal institutions and "deals versus rules"

Pritchett and Hallward-Driemeier (2011) challenge the assumption that formal regulatory reforms are sufficient to improve the investment climate. Using Enterprise Survey data, they reveal a divergence between de jure (formal) regulations and de facto (experienced) firm behaviour. Favoured firms often bypass red tape, while disfavoured firms experience delays and uncertainty even under the same formal regime (Pritchett and Hallward-Driemeier 2011). This divergence suggests that institutional predictability, rather than strict policy design, is a

critical determinant of firm behaviour. In environments like Cambodia, where informal "deals" dominate over formal "rules," firm success may hinge more on relational capital and strategic navigation than on regulatory compliance.

This "firms have climate control" hypothesis holds especially in contexts like Cambodia, where a dual regulatory regime exists. Firms that are politically connected or operate informally face different compliance pressures than registered SMEs. Therefore, improving performance also requires addressing institutional weaknesses, regulatory unpredictability, and informality traps, factors corroborated by the Economic Census of Cambodia 2022 and CDRI firm-level surveys (Veung 2023; NIS 2023).

Trade liberalisation and intermediate inputs

Amiti and Konings (2007), studying Indonesian firms, provide robust evidence through panel data analysis of firms and year that trade liberalisation across industries enhances productivity more through cheaper and higher-quality intermediate inputs than through competitive pressure on final goods alone. Specifically, a 10 percentage point fall in input tariffs led to a 12 percent productivity gain among input-importing firms, double the gain from reduced output tariffs (Amiti and Konings 2007).

This insight is highly relevant for export-oriented economies such as Cambodia. Given the country's reliance on imported machinery, raw materials, and components for its garment and electronics sectors, reducing trade barriers and upgrading supply chains can significantly improve firm-level productivity. This also has strong implications for Cambodia's industrial strategy. It suggests that trade liberalisation policies focusing solely on output markets are insufficient. Facilitating access to high-quality intermediate goods, especially through customs reform and supplier development, may yield higher returns in productivity and competitiveness.

2.1.2. ASEAN and regional perspectives: Comparative lessons and structural constraints

Common challenges across ASEAN SMEs

Vandenberg, Chantapacdepong, and Yoshino (2016) and ERIA (2008) provide comparative assessments of SME constraints in Southeast Asia. Across the region, SMEs face a common set of barriers: high informality, weak intellectual property rights, low productivity, and limited innovation capacity. Regulatory complexity and limited access to finance are recurrent themes, particularly in Cambodia, Laos, Myanmar, and Vietnam (CLMV) countries. ERIA (2008) further highlights the prevalence of micro and informal enterprises, arguing that the lack of medium-sized, growth-oriented firms represents a structural bottleneck, often referred to as the "missing middle," in ASEAN's development trajectory.

Digitalisation and Productivity in ASEAN

The 2024 ASEAN SME Policy Index confirms that digitalisation is a strong enabler of SME competitiveness (ERIA/OECD 2024). ASEAN firms that adopted cloud solutions, online marketing, or digital payment systems consistently outperformed their peers on revenue and productivity metrics. However, digital readiness varies widely: Singapore and Malaysia are far ahead, while Cambodia, Lao PDR, and Myanmar lag behind in both infrastructure and digital literacy. The 2018 version of the SME Policy Index also notes that many ASEAN governments have launched digital SME platforms and innovation hubs, but actual uptake by firms depends on ecosystem factors, especially access to ICT infrastructure, skilled labour, and finance (OECD/ERIA 2018).

Informality, labour markets, and policy design

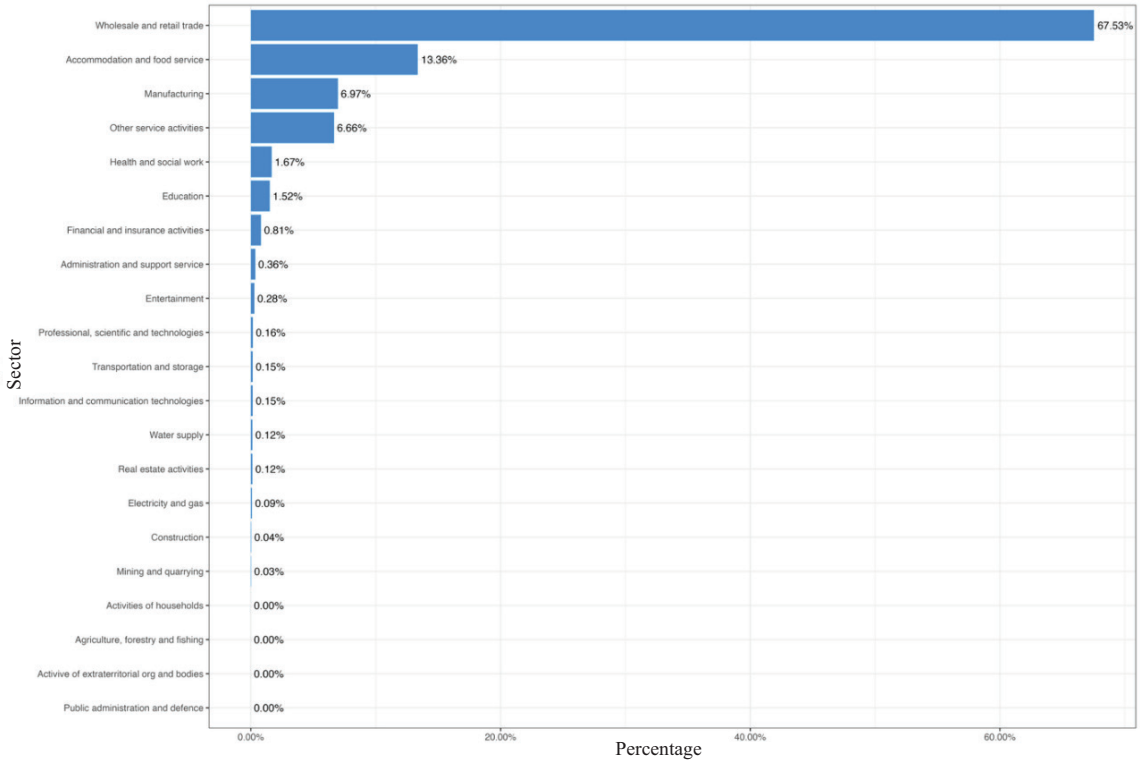
Oikawa et al. (2024) discusses the deep digital divides that persist among ASEAN MSMEs, especially in rural regions and among women-led enterprises. It emphasises the need for inclusive digital strategies that integrate capacity-building, finance, and gender-sensitive policies. The report also notes that informality interacts with digitalisation: informal firms are less likely to digitalise, and those that do so often remain excluded from formal financial and government support schemes. This reinforces the dual challenge in Cambodia: formalisation and digitalisation must go hand in hand, or digital divides will entrench existing productivity gaps.

2.2. Key characteristics of firms in Cambodia: Insight from the Economic Census of Cambodia 2011-2022

2.2.1. Dominant economic sectors: Sectoral distributions and employment share

Cambodia's enterprise landscape is overwhelmingly service-oriented, with the "Wholesale and Retail Trade and Repair of Motor Vehicles and Motorcycles" (ISIC Section G) dominating the economy (see Figure 1). This sector accounted for 67.53 percent of all establishments in 2022, followed by "Accommodation and Food Service Activities" (13.36 percent) and "Manufacturing" (6.97 percent).

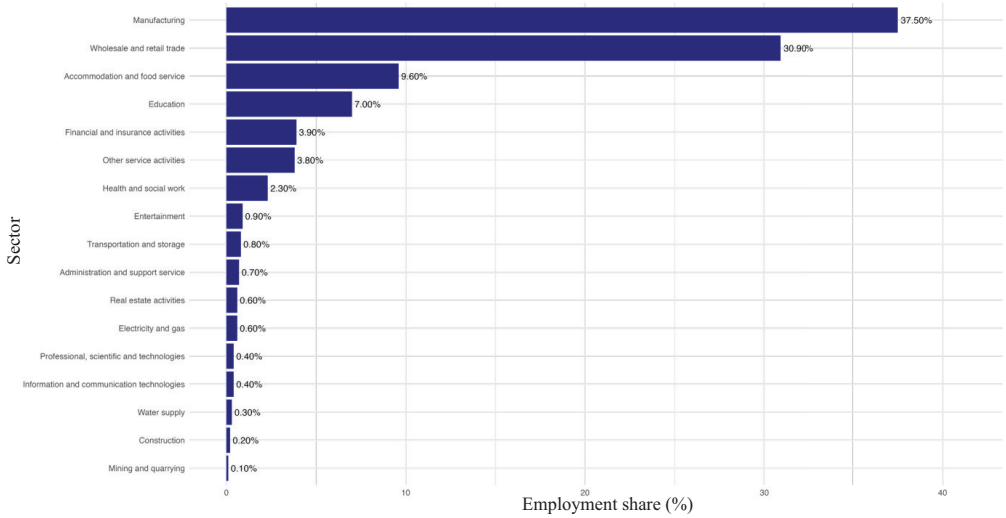
Figure 1: Sectoral distributions of establishments in Cambodia in 2022



Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

In terms of employment, as shown in Figure 2, however, manufacturing emerged as the leading sector, engaging 37.5 percent of the total workforce, mainly in garment-related industries such as apparel, footwear, and handbags (NIS 2023). This marks a shift from 2011, when trade still led in terms of establishment count and employment, though manufacturing was close behind with 31.7 percent of total persons engaged (NIS 2012).

Figure 2: Employment share by sectors in Cambodia in 2022

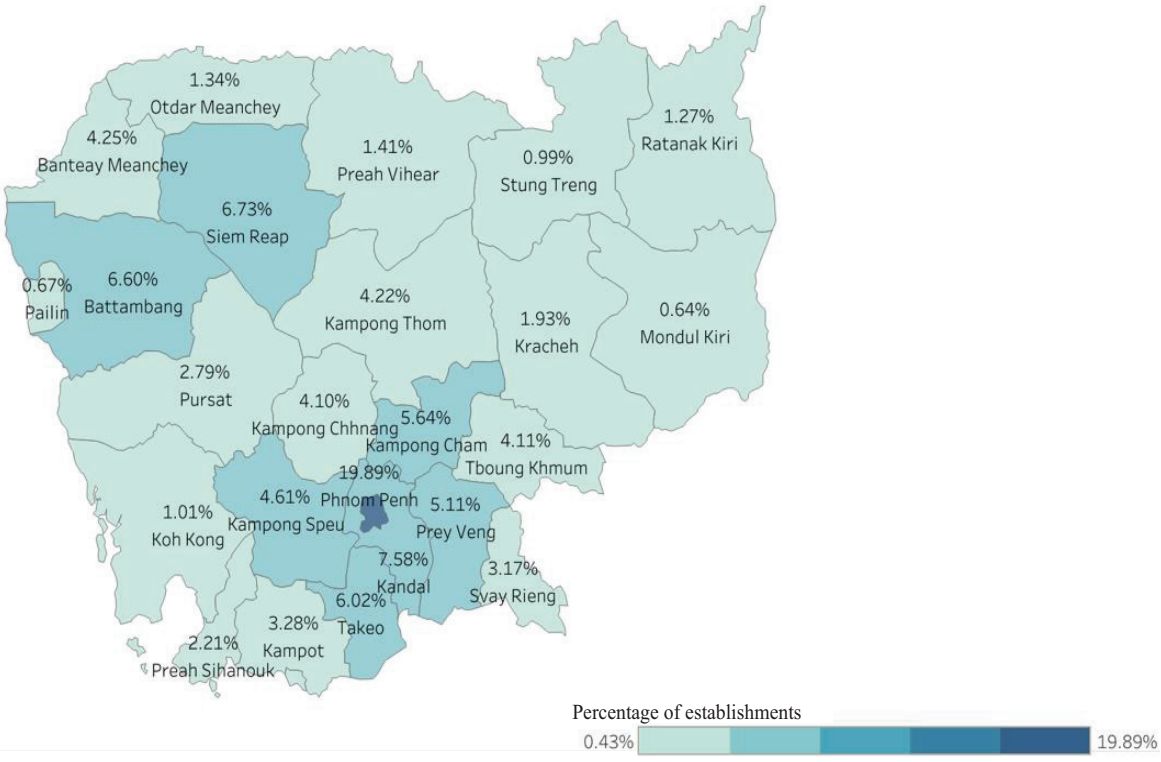


Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

2.2.2. Industrial concentration and urban dominance

Economic activities are highly concentrated in urban areas, particularly Phnom Penh, which hosts 20 percent of all establishments and over 30 percent of the workforce (see Figure 3). Kandal, Siem Reap, Battambang, and Takeo follow distantly. Phnom Penh alone accounted for 37.5 percent of national annual sales in 2022, reinforcing its role as Cambodia's economic core (NIS 2023). High concentrations of manufacturing and large establishments were similarly urban-centric, with Phnom Penh and its surrounding provinces leading in industrial density and employment share (NIS 2023). This high concentration of establishments in Phnom Penh is worth noting due to their major access to transportation linkages, abundance of labour, and economic opportunities.

Figure 3: Map of establishments by provinces in 2022

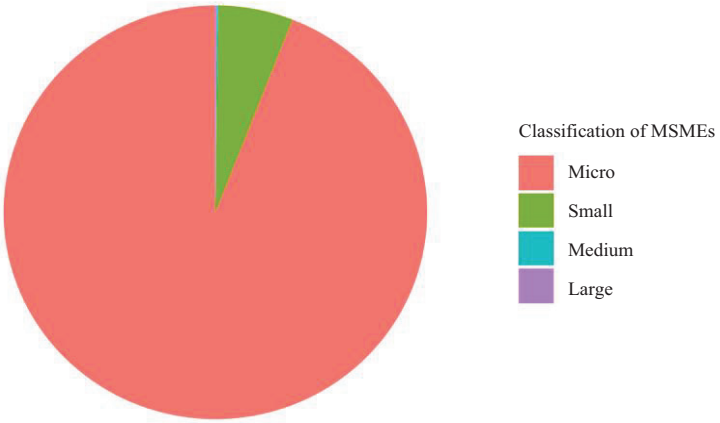


Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

2.2.3. Scale polarisation and the "missing middle"

Cambodia's enterprise structure remains polarised at the extremes, with a significant share of microenterprises and a very small proportion of medium and large firms (see Figure 4). In 2022, 96.5 percent of firms were sole proprietorships, with 48.7 percent of establishments operated by a single person and 33.7 percent by two persons.

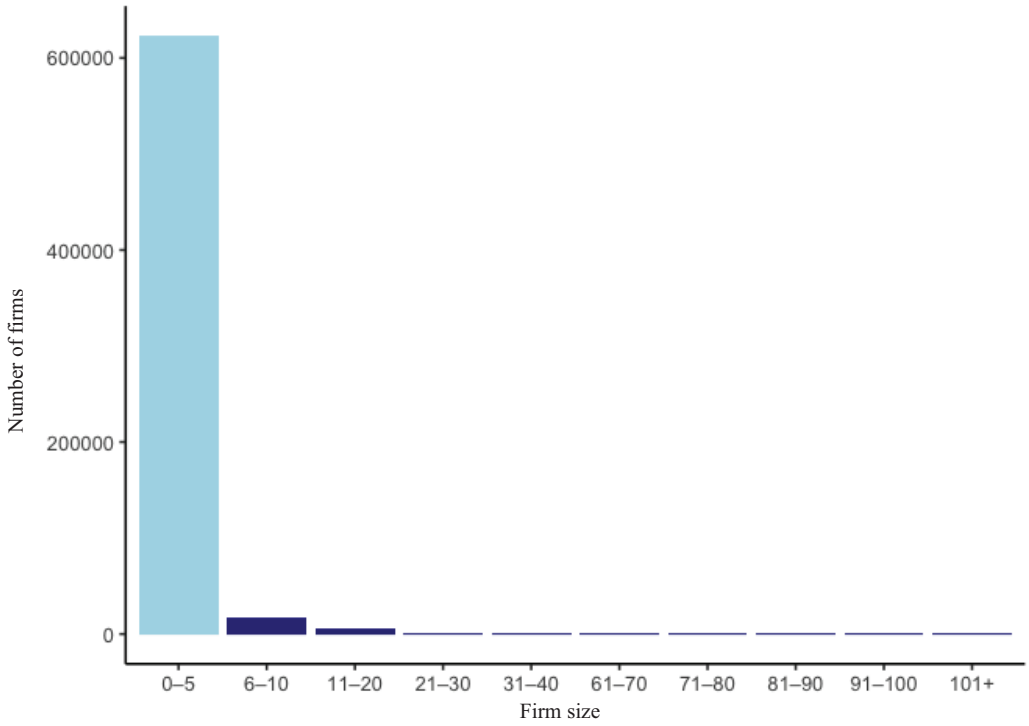
Figure 4: Distribution of enterprises in Cambodia in 2022



Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

In contrast, establishments with 100 or more persons constituted only 0.2 percent, though they employed 40.8 percent of the workforce and generated over a third of national sales (NIS 2023). This dualism indicates a "missing middle" phenomenon, where small firms rarely scale up, and mid-sized enterprises are underrepresented, reflecting structural barriers to growth.

Figure 5: Distribution of firms by size (number of workers)



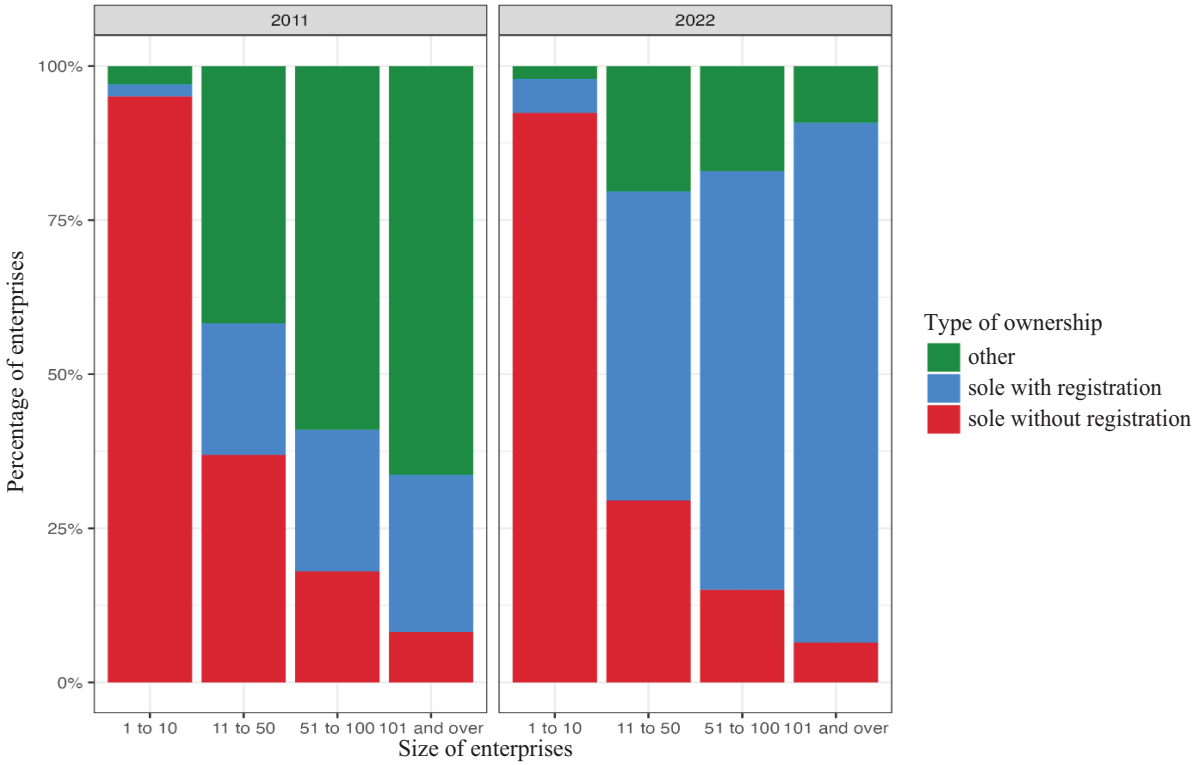
Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

In Figure 5, we present a gradient visualisation for firms' distribution by size based on the number of workers. As the firm size grows bigger, the number of firms decreases. This reinforces the "missing middle" pattern. A major concentration of firms employs only five fewer workers. Thus, microenterprises dominate the economy of Cambodia.

2.2.4. Prevalence of informality and sole proprietorships

The Cambodian business environment is still heavily informal and individualised (see Figure 6). Sole proprietorships, many of which are unregistered, dominate the enterprise demography, paralleling the pattern observed in 2011. Informality is also reflected in the type of business premises: street businesses (10.2 percent in 2022) and home-based enterprises remain widespread. Notably, around 73 percent of establishments own their business premises, suggesting a preference for self-reliant, informal modes of operation (NIS 2023). However, there is an improvement. Figure 6 presents that in 2022, a large percentage of mid-sized enterprises, which are often sole proprietorships, have formally registered. This represents a trend in which formalisation is prevalent for these mid-sized establishments. As shown in the Economic Census 2022, only a small proportion of MSMEs, particularly microenterprises, are registered at the Ministry of Commerce. Most are sole proprietorships operating informally, limiting their productivity and access to government support (NIS 2023). Addressing this requires regulatory simplification, targeted incentives, and reducing perceived costs of formality.

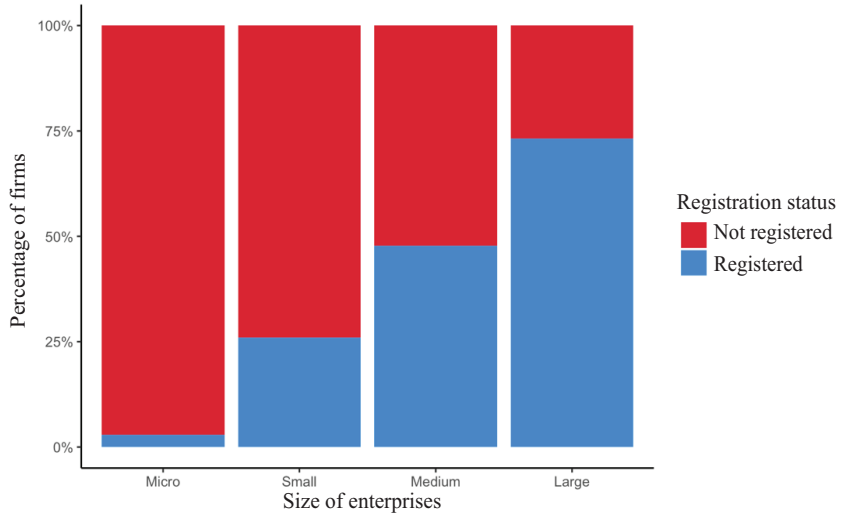
Figure 6: Type of ownership across all sizes of establishments in 2011 and 2022



Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

In addition, if we consider the distribution by category, we see a pattern where microenterprises are less likely to be registered formally with the Ministry of Commerce, while large enterprises are more likely to register their businesses. As Figure 7 shows, about 75 percent of all large firms are formally registered compared to 3 percent of all micro firms.

Figure 7: Enterprises distribution by registration status

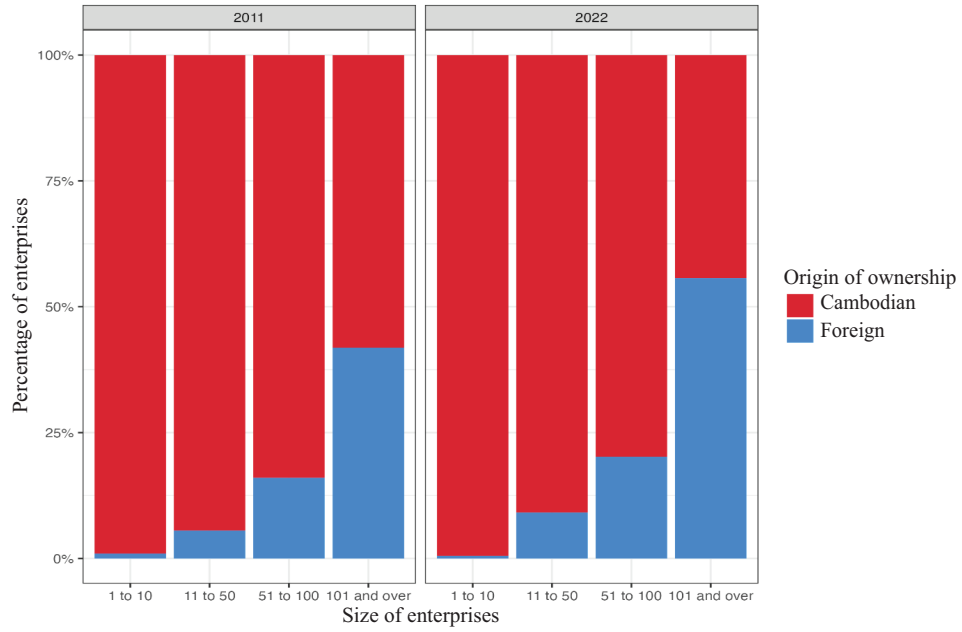


Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

2.2.5. Ownership structure and decomposition

Domestic ownership remains the overwhelming norm: 99.1 percent of all establishments were Cambodian-owned in 2022 (see Figure 8). Foreign ownership is concentrated in the upper end of the size spectrum, particularly among establishments with 100 or more employees, where foreign-owned firms represent over 55 percent of the total. This reflects the bifurcated structure of Cambodia's economy, a domestically led informal MSME sector and a foreign-dominated formal industrial export sector. The 2011 census painted a similar picture, with 98.9 percent of establishments owned by Cambodians (NIS 2012; 2023). More than ten years later, this similarity suggests that Cambodia heavily relies on its local economy and local firms. The firms' structure in Cambodia remains concentrated in domestic ownership, despite Cambodia's commitment to global value chains and plans to attract a higher level of foreign direct investment.

Figure 8: Origins of ownership across all sizes of establishments in 2011 and 2022



Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

2.3. Industrial development goals and firm performance in Cambodia

Cambodia's IDP 2015-2025 outlines an ambitious agenda to transform the industrial structure from low-skilled, labour-intensive production to skill-based, technology-driven sectors. The IDP identifies key levers of firm performance: improving regulatory efficiency, enhancing skills and TVET linkages, incentivising formalisation, and building clusters and linkages between local and foreign-invested firms (RGC 2015). However, as noted in the MISTI (2024) review, significant challenges remain: limited access to finance, low technological capabilities, skill mismatches, and weak inter-firm coordination. These constraints collectively undermine productivity, scalability, and export-readiness (MISTI 2024b).

2.3.1. Industrial performance

The IDP positions industrial development as a core engine for Cambodia's transition from a labour-intensive, low-value economy to a diversified and competitive one. Its overarching vision is to increase the share of industry in GDP to 30 percent by 2025, up from 24.1 percent in 2013, and to boost manufacturing exports and job creation. The policy prioritises economic diversification, export sophistication, and strengthened linkages between industrial activities and the rest of the economy (RGC 2015). Critical subsectors include agro-industry, light manufacturing, and SMEs, with a particular focus on increasing value-added production and reducing dependency on garment exports. The government also aims to improve the industrial ecosystem by upgrading infrastructure, skills, technology, and regulatory efficiency.

However, evidence from the Economic Census (2011 and 2022) reveals persistent structural challenges: while the number of establishments grew from 505,134 in 2011 to 753,670 in 2022, this expansion was dominated by micro and informal firms, largely in trade and food services, rather than high-value-added industrial sectors (NIS 2012; 2023).

In both census rounds, manufacturing establishments constituted less than 7 percent of the total, yet their role in employment and exports remains critical. In 2022, the manufacturing sector, particularly garment and footwear, accounted for 37.5 percent of employment, a marked increase from 31.7 percent in 2011, reflecting some success in labour absorption. However, the structure remains skewed towards low-tech, assembly-based production with limited domestic value addition.

2.3.2. Firm-level indicators: Output, employment, exports, imports, productivity, and technology adoption

The IDP emphasises enhancing firm productivity, export diversification, and innovation adoption. However, firm-level data from the censuses paint a nuanced picture:

Output and productivity: The policy recognises low productivity as a structural constraint and seeks to enhance firm-level output and value-added through technology, skills upgrading, and industrial clustering. Increases in total factor productivity are viewed as a benchmark for sustainable growth. While aggregate sales rose (from USD12.7 billion in 2011 to USD25.3 billion in 2022), output remains concentrated in a small cohort of large firms. Just 0.2 percent of establishments (with 100+ employees) accounted for over 40 percent of national employment and over one-third of total sales in 2022. Meanwhile, over 82 percent of firms employed only 1-2 persons, indicating limited scale and low productivity per firm (NIS 2023).

Employment: Industrial expansion is expected to absorb large numbers of young workers. The IDP encourages labour-intensive manufacturing in the short term while progressively shifting to higher-productivity sectors through vocational and technical training reforms. Job creation remains strong in numbers, with the total workforce in establishments increasing from 1.67 million in 2011 to over 2.6 million in 2022 (NIS 2012; 2023). However, the concentration of jobs in low-wage retail and food services dilutes gains in productivity and skill formation envisaged in the IDP.

Exports and imports: Export diversification is a cornerstone of the policy. The strategy aims to reduce Cambodia's overreliance on garment exports (which accounted for over 80 percent of manufacturing exports in 2014) by supporting the development of agro-processing, electronics, and automotive components. Import substitution in strategic sectors is also promoted to enhance domestic value retention. However, while the IDP encourages export sophistication, it is notable that Cambodia's heavy dependence on garment exports are dominated by foreign-owned firms. In addition, the characteristics of the firms are concentrated among micro and small firms. There is little indication of substantial export-oriented diversification across MSMEs since the majority of MSMEs in Cambodia belong to the wholesale and trade sector, though growth in light manufacturing (e.g., bicycles, food processing) is emerging. Bicycle exports reached USD278 million in 2024, with Cambodia being regarded as one of the top five exporters of bicycles in the world (Chea, 2024). Bicycle exports have now become one of Cambodia's key manufacturing products after garment and footwear products and agricultural products.

Technology adoption and efficiency: Technological upgrading is a key thrust of the policy. It highlights the importance of industrial innovation systems, Research and Development (R&D) collaboration, and the adoption of international standards and certifications to support efficiency improvements, especially among SMEs. However, both censuses found limited adoption of formal accounting practices and low incidence of ICT-enabled business operations, particularly among microenterprises (NIS 2012; 2023). The IDP's call for digital transformation and technical standards uptake remains aspirational, especially outside Phnom Penh and SEZs.

2.3.3. Digitalisation, MSME performance, strategies, innovation, and crisis responses

TAF and CDRI (2023) examined the role of digital adoption among tourism-related MSMEs during and after the COVID-19 pandemic. Their findings indicate that firms that adopted digital payment platforms, online marketing, and data analytics reported significantly better recovery outcomes and higher customer retention. However, digitalisation remains uneven; microenterprises and firms outside Phnom Penh were far less likely to adopt digital tools, primarily due to cost, skills, and infrastructure gaps (TAF and CDRI 2023). This reflects the broader challenge of the "digital divide" within Cambodia's private sector, which not only affects productivity but also limits resilience and access to new markets.

Veung (2023) offers survey-based evidence showing that Cambodian firms that invested in product innovation, employee training, and diversification strategies during the COVID-19 period performed significantly better in terms of profits and recovery. Innovation was especially common among medium-sized firms, while micro and small firms were more likely to adopt informal or ad-hoc coping mechanisms (Veung 2023). The study also emphasises the role of networks and peer learning; firms that participated in business associations or local chambers were more likely to engage in strategic planning, obtain finance, and access support programmes.

2.3.4. Participation in domestic and global supply chains

Integration into regional and GVCs is both a goal and a mechanism of the IDP. Currently, many Cambodian firms operate in low-value segments of global supply chains, particularly as subcontractors in the garment industry. The policy targets vertical and horizontal linkages among firms and between firms and institutions as a means to deepen domestic value chains. Key strategies include: establishing SEZs and industrial parks with cluster development approaches, promoting supplier development programmes to enhance SME participation in export-oriented sectors, and encouraging downstream and upstream integration in agro-industry and light manufacturing (RGC 2015).

However, the census data indicate that most Cambodian firms operate in isolated micro-markets. In 2022, less than 10 percent of establishments had formal supplier or buyer relationships with larger firms. Participation in GVCs remains highly concentrated among foreign-owned manufacturers located in SEZs and urban industrial zones (NIS 2023).

Efforts to foster supply chain upgrading, particularly in agro-processing and light industry, face challenges stemming from firm informality, low technical standards, and underdeveloped logistics. While Phnom Penh and Kandal continue to dominate industrial employment and exports, provincial clusters remain underdeveloped and weakly connected to national value chains.

The IDP sets a compelling vision for Cambodia's economic transformation. However, the firm-level realities captured in the Economic Census 2011 and 2022 reveal deep-rooted structural constraints: a dominance of informal microenterprises, a shallow domestic industrial base, and limited SME upgrading. To achieve the IDP's goals, greater attention must be placed on productivity-enhancing reforms, supply chain development, technology upgrading, and strategic support for Cambodian-owned enterprises. Without addressing these bottlenecks, Cambodia's industrialisation may continue to rely heavily on foreign capital and remain confined to low-value segments of global production.

3. Methodology

3.1. Data source

For our analysis, we use data from the Economic Census of Cambodia 2022, conducted by the National Institute of Statistics (NIS). The Economic Census 2022 is a nationwide survey covering all business establishments across Cambodia's capital and all provinces. The dataset includes information from 753,670 establishments, capturing key aspects such as enterprise demographics, registration status, business operations, and levels of digitalisation (NIS 2023).

To enhance the robustness of our analysis, we apply the percentile range method to remove extreme outliers. Given our focus on financial performance, the percentile range filtering is applied specifically to revenue and profit variables. Outliers falling below the 5th percentile and above the 95th percentile are excluded. This procedure helps improve the reliability and rigour of our estimates (Vinutha et al. 2018).

3.2. Description of variables

3.2.1. Dependent variable: Enterprises' performance

Our primary dependent variables are firm performance across Cambodia. We seek to identify the key determinants that influence monthly financial performance, as measured by *revenue, labour productivity, and profit.* Existing literature suggests that firm performance can be assessed using two broad approaches: financial and non-financial metrics (Kaplan and Norton 2005). Financial performance is primarily measured by accounting indicators, including profit, revenue, and debt levels. In contrast, non-financial performance relates to factors such as customer satisfaction, employee development, and market share (Santos and Brito 2012). To further examine the variation of firm size on performance, we adopt the classification system used by the Cambodia Office of the Council of Ministers (2021), which categorises enterprises into four groups: *micro, small, medium, and large.* Table 1 summarises the criteria used for each enterprise category.

Table 1: Cambodian enterprises' definitions

Sector	Employees		and Annual turnover (USD)		or Asset value (USD)	
	Small	Medium	Small	Medium	Small	Medium
Agriculture	5 – 49	50 – 199	62,250 – 250,000	250,001 – 1,000,000	50,000 – 250,000	250,001 – 500,000
Manufacturing	5 – 49	50 – 199	62,500 – 400,000	400,001 –2,000,000	50,000 – 500,000	500,001 –1,000,000
Service and commerce	5 – 49	50 – 99	62,500 – 400,000	250,001 –1,500,000	50,000 – 250,000	250,001 – 500,000

Source: Cambodia Office of the Council of Ministers, 2021.

3.2.2. Explanatory variables

We examine a series of explanatory variables to gain a deeper understanding of the dynamics of firms in Cambodia (see Table 2). These variables are grouped into two main categories:

Firm characteristics: We first explore how ownership structure and business registration status influence firm performance.

- The first variable of interest is *ownership origin*, classified into two groups: Cambodian-owned (coded as 0) and foreign-owned (coded as 1). While the original census disaggregates foreign ownership by specific nationalities, we consolidate all non-Cambodian nationalities into a single category of "foreign" for analytical simplicity.
- The second variable, *registration at the ministry of commerce*, indicates whether a business is formally registered with the Ministry of Commerce. This binary variable, coded as 0 for unregistered businesses and 1 for registered businesses, offers insight into the role of informality in firm performance. By comparing registered and unregistered firms, we aim to assess whether formal status correlates with better business outcomes.

Digitalisation variables: As globalisation accelerates, digital technologies are increasingly shaping commercial and business operations. It is therefore important to examine whether digitalisation influences firm performance.

- Our third variable, *digital adoption*, captures whether a business has adopted digital technologies in its operations. In the Economic Census 2022, this is based on the question: *"Did this establishment adopt or put into greater use internet-based systems and services including website, social media, mobile apps, and email, to assist daily operations amid the COVID-19 pandemic?"* The responses are binary (yes or no), and we code this as 0 for firms that did not adopt such systems and 1 for those that did.
- The final variable, *digital usefulness*, reflects whether a business perceived the investment in new digital software or platforms can help their businesses. It is based on the question: *"Would investing in new equipment, software or digital solution help your establishment to respond to the COVID-19 crisis?"* Again, responses are coded as a binary variable: 0 for firms that did not invest in digital technologies and 1 for those that did.

Table 2: Summary of main independent variables

Variable	Definition
Foreign ownership	Whether the enterprises are owned by Cambodian, coded as 0, or foreigner, coded as 1
Register commerce	Whether the enterprises are not registered with the Ministry of Commerce, coded as 0, or registered, coded as 1
Digital adoption	Whether the enterprises have not used any internet-based systems or digital services, coded as 0, or have used any digital technologies, coded as 1
Digital usefulness	Whether the enterprises do not invest in digital software or solutions, coded as 0, or invest in these technologies, coded as 1

Source: Authors' elaboration.

3.2.3. Additional variables

In our analysis, we use a series of variables as control variables, which are summarised in Table 3 below.

Table 3: Summary list of control variables

Variable	Definition
Online transaction	Whether the business has involved in online transaction: no involvement (0) or there is involvement (1)
Tenure	Whether the business place is owned (0) or rented (1)
Gender	Whether the business owner is male (0) or female (1)
Age	The age of the businesses
Area	The size of the businesses in square meters is classified into: 1. Under $5m^2$, 2. $5m^2$ to under $10m^2$, 3. $10m^2$ to under $30m^2$, 4. $30m^2$ to under $50m^2$, 5. $50m^2$ to under $100m^2$, 6. $100m^2$ to under $200m^2$, 7. $200m^2$ to under $500m^2$, 8. $500m^2$ to under $1000m^2$, 9. $1000m^2$ and above
Sector	Sectoral classification under which the businesses belong under
Location commune	Commune classification under which the businesses belong under

Source: Authors' elaboration.

We present the summary statistics of our variables below.

Table 4: Summary statistics of all variables

Variable	Observation	Mean	Std. Dev	Min	Max
Revenue in USD	653,106	2,012	37,217	150	12,281,117
Profit in USD	653,106	561	24,479	-7.203,256	10,895,029
Labour productivity	653,106	886	959	5	58,996
Ownership	653,097	0.01	0.07	0	1
Register commerce	653,092	0.04	0.20	0	1
Digital adoption	653,091	0.01	0.09	0	1
Digital investment	652,611	0.04	0.19	0	1
Online transaction	652,767	0.00	0.07	0	1
Tenure	643,359	0.26	0.44	0	1
Gender	653,088	0.29	0.45	0	1
Age	653,058	6.57	8.57	0	42
Area	653,083	3.23	1.84	0	9

Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

3.3. Model specification

3.3.1. Analysis on firms' financial performance

Effect on revenue

In this first analysis, we aim to establish a basic understanding of the factors that affect the revenue earned by enterprises. Using a fixed effect model, we estimate the relationship between our explanatory variables (EV) of interest on enterprises' performance in relation to their revenue. We also introduce an interaction effect where we interact ownership structure with registration of commerce to understand the effect of being a foreign-owned enterprise that has formally registered, compared to other groups. Our estimation model between our EV and revenue can be specified as follows:

Equation 1: Estimation model on revenue

$$Log(Revenue_{is}) = \alpha_0 + \beta_1 EV_{is} + \beta_2 Foreign * Register_{is} + \beta_3 X_{is} + FE_{sector} + FE_{commune} + \varepsilon_{is}$$

Where subscript *i* represents firms and *s* represents sector. $Revenue_{is}$ is our main dependent variable of interest to measure enterprises' performance based on the monthly revenue received by the enterprises. Through revenue, we log-transform our variable due to two implications. Data on revenue is generally heavily skewed, which can cause high variability and unreliable analysis. Log-transform our dependent variable can make the data distribution to become normal-like and symmetric and improve linearity for our linear regression model. IV_{is} is our series of independent variables of interest.

X_{is} is a vector of our control variables related to enterprises' characteristics, including their involvement in online transaction, their tenure, their age, the size of the enterprises, and the gender of the owners.

In our specification model, we also introduce two fixed effects (FE) to control any observed factors caused by different sectors on enterprises' performance.

Effect on labour productivity

We further analyse the effect of explanatory variables on labour productivity. We use revenue per employee as a proxy indicator to determine the labour productivity of the enterprise. Following previous work, scholars have calculated labour productivity as total output divided by the number of employees in the enterprises (see, for example, Amiti and Konings 2007). Although we recognise that there is a limitation with this proxy indicator, where some sectors might have a higher cost of raw materials, thus leading them to have higher revenue. This will allow for a bias in the calculation that fails to consider sectors with high versus low costs. However, we hope to address this in our regression analysis through sector fixed effects. In our analysis, we use total revenue per month for each enterprise as the total output. Due to the limitation of data availability, the Economic Census only captures revenue and expenses based on the projection of one month. Generally, enterprise performance is measured through employee performance or the level of productivity.

Equation 2: Labour productivity formula

$$Labour\ productivity = \frac{Total\ revenue\ for\ each\ enterprise}{Total\ number\ of\ employees\ for\ each\ enterprise}$$

Our model specification for this analysis is as follows:

Equation 3: Estimation model on labour productivity

$$Log(labour\ productivity_{is}) = \alpha_0 + \beta_1 EV_{is} + \beta_2 Foreign * Register_{is} + \beta_3 X_{is} + FE_{sector} + FE_{commune} + \varepsilon_{is}$$

We transform our labour productivity variable into logarithm for consistent analysis and interpretation due to the skewness of our data.

Effect on profit

In addition to revenue, we are also interested in observing whether our explanatory variables affect enterprises' financial performance as measured by profits.

To calculate profit, we use the following simple formula.

Equation 4: Simple formula for profit calculation

$$Profit = Revenue - Expenses$$

Since enterprises incur either positive, zero or negative profit, in this study, we apply the inverse hyperbolic sine (IHS) transformation to the profit variable. Profit distributions are typically highly skewed, with some firms reporting very large profits (max = USD10,985,029) while others experience very large losses (min = -7,203,256). The standard logarithmic transformations (conducted on revenue and labour productivity) cannot accommodate zero or negative values, which would require dropping a substantial number of observations and potentially bias the results. Thus, using IHS transformation is appropriate for profit analysis here.

Thus, our specification model for effect on profit is as follows:

Equation 5: Estimation model on labour productivity

$$IHS(profit_{is}) = \alpha_0 + \beta_1 EV_{is} + \beta_2 Foreign * Register_{is} + \beta_3 X_{is} + FE_{sector} + FE_{commune} + \varepsilon_{is}$$

Effect on performance based on the enterprises' size

In addition, we further specify our analysis by separating it based on the size of enterprises: micro, small, medium and large. We follow the same specification strategy earlier in four separate analyses. This analysis will provide a deeper understanding of the varying effects on financial performances based on the enterprises' sizes.

3.3.2. Instrumental variable estimation

To address potential endogeneity in our key explanatory variables: we employ an Instrumental Variable (IV) estimation strategy. These variables may be endogenous to firm performance outcomes such as revenue, profit, and labour productivity due to issues such as reverse causality and omitted variable bias. However, for instrumental variable estimation, we focus only on variables that are determined by choice. We limit our analysis here to examining only the effects of formal registration and digital adoption on firms' performances, as firms can make agency and decisions to either register or adopt technologies. However, a firm cannot decide whether it should be foreign-owned. We excluded digital usefulness from our IV approach because it only captures the perceptions of the firm, rather than the implementation of digital investments. For instance, more profitable firms may be more likely to formalise or invest in digital tools, while unobserved attributes such as entrepreneurial capacity may influence both digital investment and firm performance.

We apply a two-stage least squares (2SLS) framework, drawing on approaches established in the literature (e.g., Raghavan Sathyan et al. 2018; Su and Azam 2023). Our instruments are constructed using leave-one-out village-level averages for each potentially endogenous variable. For our analysis, we consider a communal level analysis; thus, leave-one-out commune-level averages. This method leverages variation in local peer behaviours, specifically, the average behaviour of firms in the same village excluding firm i, to proxy for exogenous influences. By omitting the focal firm from the calculation, we avoid mechanical correlation between the instrument and the firm's error term in the outcome equation.

This identification strategy is grounded in the concept of peer effects and social spillovers, which are prominent in applied microeconometrics and development economics. Firms situated within the same locality often face similar institutional conditions and social norms. As such, decisions like formal registration or digital adoption by neighbouring firms may influence a firm's own choices through demonstration effects, information sharing, or conformity pressures. However, conditional on observable firm characteristics and location-sector fixed effects, the behaviour of neighbouring firms should not directly affect firm i's performance, satisfying the exclusion restriction.

The use of peer-based instruments has precedent in empirical research. For example, De Giorgi et al. (2010) propose a strategy using the average outcomes of peer groups, excluding the individual, as instruments to isolate endogenous peer effects. Their framework addresses reflection problems and correlated unobservables by exploiting variation in peer composition across overlapping social networks. Similarly, Chetty et al. (2018) implement a split-sample IV approach to identify neighbourhood effects on intergenerational mobility. They construct "leave-one-out" tract-level averages of predicted outcomes to correct for self-selection into neighbourhoods and measurement error, ensuring that the variation in neighbourhood characteristics used for identification is exogenous to the individual family's traits.

In our context, the leave-one-out average of digitalisation or registration among nearby firms captures social learning and normative influence, which affect the focal firm's decision-making

without directly entering its performance equation. This strategy allows us to obtain consistent estimates of the causal impact of formalisation and digitalisation on firm performance, provided the identifying assumptions hold.

Let $firm_{percent_i} \varepsilon\{0,1\}$ denote a binary indicator equal to 1 if firm is registered or digital adopted. Then, for each firm in commune with firms, the instrument is calculated as:

Equation 6: Formula for instrumental variable calculation

$$Z_{ic} = \frac{1}{n_c - 1} \sum_{j \varepsilon c, j \neq i} firm_{percent_i}$$

Two-stage least squares model

First, we estimate the following two-stage specification to explain firm performance, measured by revenue (log), labour productivity (log) and profit (ihs):

First stage:

Equation 7: First stage regression model

$$Registration_{is} = \pi_0 + \pi_1 Z_{is} + \pi_2 X_{is} + FE_{sector} + FE_{commune} + \varepsilon_{is}$$

$$DigitalAdopt_{is} = \pi_0 + \pi_1 Z_{is} + \pi_2 X_{is} + FE_{sector} + FE_{commune} + \varepsilon_{is}$$

Second stage:

Equation 8: Second stage regression model

$$Y_{is} = \beta_0 + \beta_2 \widehat{Registration}_{is} + \beta_5 X_{is} + FE_{sector} + FE_{commune} + u_{is}$$

$$Y_{is} = \beta_0 + \beta_3 \widehat{DigitalAdopt}_{is} + \beta_5 X_{is} + FE_{sector} + FE_{commune} + u_{is}$$

Where:

- Y_{is} denotes firm *i*'s performance in sector *s* (log revenue or IHS profit or log labour productivity).
- $\widehat{Ownership}_{is}$, $\widehat{Registration}_{is}$, $\widehat{DigitalAdopt}_{is}$, and $\widehat{DigitalInvest}_{is}$ are the predicted status of ownership origin, registration at the ministry of commerce, digital adoption, and digital investment from the first stage.
- X_{is} includes firm age, gender of owner, online transaction, business size (area), tenure (owned/rented).
- FE_{sector} denotes sector fixed effects.
- $FE_{commune}$ denotes commune level fixed effects.

Identification strategy and assumptions

We rely on two key IV assumptions: (1) **Instrument relevance**: The local average of firms with ownership origin, registration at the ministry of commerce, digital adoption, and digital investment (excluding the firm itself) is strongly correlated with the likelihood that a firm has ownership origin, registration at the ministry of commerce, digital adoption, and digital investment due to institutional proximity or peer effects. We assess this using the first-stage F-statistic ($F > 10$). (2) **Exclusion restriction**: Conditional on observed covariates and sector effects, the behaviour of other firms in the same village should not directly affect the performance of firm i, only indirectly through influencing its decision of registration at the ministry of commerce and digital adoption.

3.3.3. Robustness and strength checks

To ensure the validity and robustness of our IV results (see Table 5), we implement the following:

Placebo test:

We conduct a placebo test analysis. We create a new variable called urban/rural status to determine the spatial characteristics of each establishment. In this, establishments located in Phnom Penh will be coded as 1 - urban, while those outside Phnom Penh are coded as 0 - rural. Using this variable, we regress our selected instrument variable to explore whether the characteristics of urban vs rural can vary the estimating effects of our main analysis. If our results show a statistically significant outcome, we are violating our exclusion restriction and will be concerned with our choice of instruments.

Stock-Yogo critical value test:

We have four main explanatory variables: ownership, registration, digital adoption, and digital investment. However, in each estimating model, we only conduct an analysis of one instrument on one endogenous variable. Thus, according to Stock and Yogo (2002), the critical value is a function of the number of endogenous regressors and the number of instruments. In our case, the endogenous regressor is one, and the number of instruments is one per model. So, we will compare our F-statistics as follows to the critical values:

Table 5: Stock and Yogo critical values

Instrument	0.10	0.15	0.20	0.25
1	**16.38**	**8.96**	**6.66**	**5.53**
2	19.93	11.59	8.75	7.25
3	22.30	12.83	9.54	7.80
4	24.58	13.96	10.26	8.31

Source: Stock and Yogo (2002).

The Stock-Yogo assumptions only hold in linear regression model. Thus, we do not apply this method to the second part of our analysis, where logistical regression is implemented.

4. Key findings

4.1. Analysis on firms' financial performance

Table 6 below shows the correlation matrix across four explanatory variables. We find that our explanatory variables positively correlate with one another. Our analysis reveals a weak correlation across the four variables. Thus, we should expect there to be no multicollinearity across the four variables, and these four explanatory variables are independent of each other.

Table 6: Correlation matrix for explanatory variables

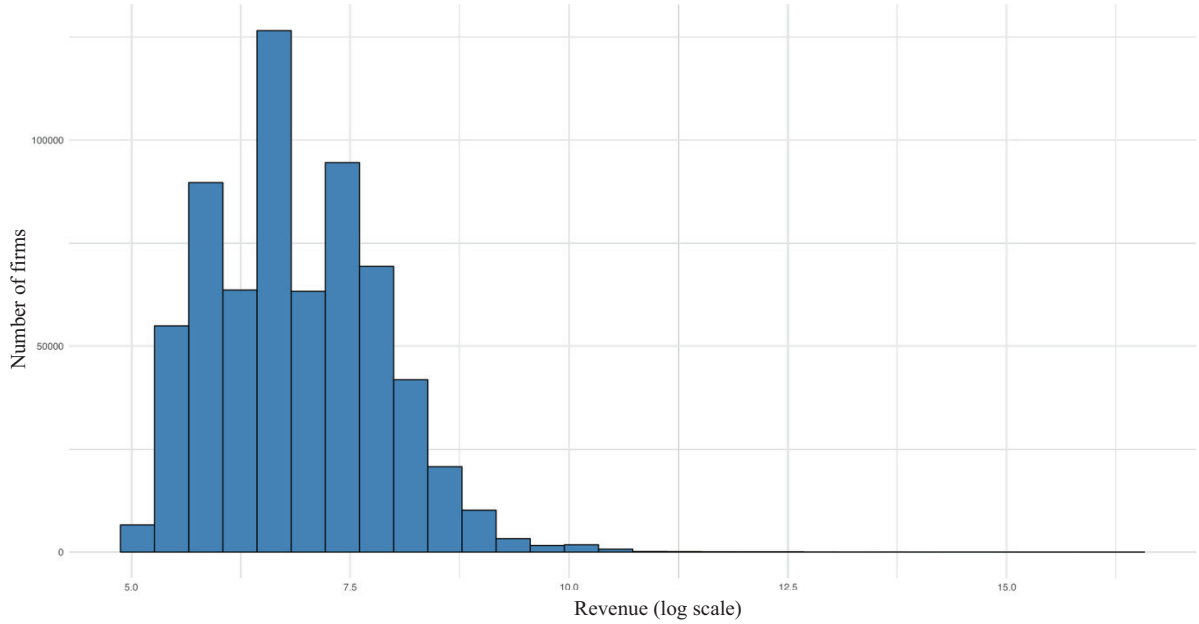
Explanatory variables	Foreign owner	Register commerce	Digital adoption	Digital usefulness
Foreign owner	1.000	0.123	0.049	0.034
Register commerce	0.123	1.000	0.083	0.03
Digital adoption	0.04	0.083	1.000	0.23
Digital usefulness	0.034	0.03	0.23	1.00

Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

4.1.1. Understanding the effect on revenue

First, we show the histogram distribution of monthly revenue (in log scale) across all enterprises. According to Figure 9, we observe that the revenue distribution is positively skewed in which majority of the firms clustered at the lower end of the revenue distribution and a minority of firms earning exceptionally high revenue.

Figure 9: Histogram of revenue (log scale) distribution



Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

Table 7 below summarises the results from our econometric specification strategy to estimate the relationship between monthly revenue and our four independent variables of interests and monthly revenue and our interaction effects.

In Model 1, we estimate our four independent variables of interests and interaction effects between foreign ownership and registration on monthly revenue without any control variables and fixed effects. Our results show that all variables correlate positively with monthly revenue,

and all results are statistically significant. Model 2 presents the estimated results with all control variables, but without controlling for sector and commune fixed effects, while Model 3 incorporates both fixed effects into the analysis.

Model 4 presents the full regression specification strategy for our interested explanations with control variables and fixed effects of sector and communes. We find that the first three of our independent variables statistically significantly correlate with monthly revenue. However, when holding other variables constant and controlling for sector and commune, the digital usefulness effect on monthly revenue is not statistically significant.

While holding other variables constant, we find that foreign ownership, formal registration and digital adoption during COVID-19 positively correlate with monthly revenue. When a firm is foreign-owned, it is more likely to have about 33.24 percent higher monthly revenue than a Cambodian-owned firm. Similarly, when a firm is formally registered with the Ministry of Commerce, the firm is expected to have higher monthly revenue than an unregistered firm by 75.59 percent. In addition, when the firm adopts the use of digital technology, they are correlated to have about 28 percent higher monthly revenue than a firm that does not adopt the use of digital technology.

Table 7: Regression estimate on monthly revenue

DV = log(monthly revenue)	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Foreign ownership	0.436***	0.266***	0.293***	0.287***
	(0.020)	(0.020)	(0.020)	(0.019)
Register commerce	0.893***	0.663***	0.636***	0.563***
	(0.006)	(0.006)	(0.006)	(0.006)
Digital adoption	0.389***	0.309***	0.290***	0.239***
	(0.013)	(0.012)	(0.012)	(0.013)
Digital usefulness	0.047***	0.026***	0.025***	0.013
	(0.006)	(0.006)	(0.006)	(0.007)
Foreign × Register	1.096***	1.018***	1.044***	1.018***
	(0.033)	(0.032)	(0.032)	(0.031)
Online transaction		0.014	0.014	0.022
		(0.017)	(0.017)	(0.016)
Rented		0.268***	0.298***	0.219***
		(0.003)	(0.003)	(0.003)
Year		0.012***	0.011***	0.010***
		(0.000)	(0.000)	(0.000)
Area		0.101***	0.096***	0.116***
		(0.001)	(0.001)	(0.001)
Female		0.003	0.020***	-0.002
		(0.003)	(0.003)	(0.003)
Observations	648736	638871	638871	638871
Adjusted R-squared	0.052	0.103	0.130	0.186
Sector FE	No	No	Yes	Yes
Commune FE	No	No	No	Yes
RMSE	0.92	0.90	0.88	0.85

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

In Model 1, our regression estimate coefficient for foreign ownership is 0.436, whereas in Model 4, the coefficient is 0.287. This attenuation suggests that the estimate in our Model 1's regression was driven by unobserved sectoral and commune level heterogeneity, as well as other firm-level characteristics, including their involvement in online transaction, their tenure, their age, their area size and the gender of the firm's owners. Thus, Model 1 overestimates the magnitude of our estimating effects because it conflates the explanatory variable's influence with those unobserved factors. On the other hand, Model 4 provides a comprehensive estimate that minimises those biases from correlated confounders and sectoral and commune level heterogeneity.

The analysis also incorporates a range of control variables to account for firm-level characteristics that may influence monthly revenue independently of the key explanatory variables. One such control is whether the firm engages in online transactions. While this variable is included across all model specifications, its coefficient is not statistically significant, suggesting that online transaction capability does not have a consistent or strong correlation with firm revenue in the current context. By contrast, the variable for whether the firm rents its premises is highly significant and positively correlated with revenue. This finding implies that firms operating from rented spaces, often indicative of more formal, commercially located establishments, tend to perform better financially than those operating from informal or home-based settings.

Firm age is also included as a control, and its coefficient is positive and statistically significant, although the effect size is modest. This suggests that older firms benefit from experience, market presence, or accumulated business networks, which contribute incrementally to higher revenues. The area variable, likely a proxy for geographical location (e.g., urban versus rural settings), also shows a significant positive correlation with revenue. Firms situated in economically advantageous areas, such as urban centres, appear to have better performance outcomes, potentially due to superior infrastructure, market access, or customer density.

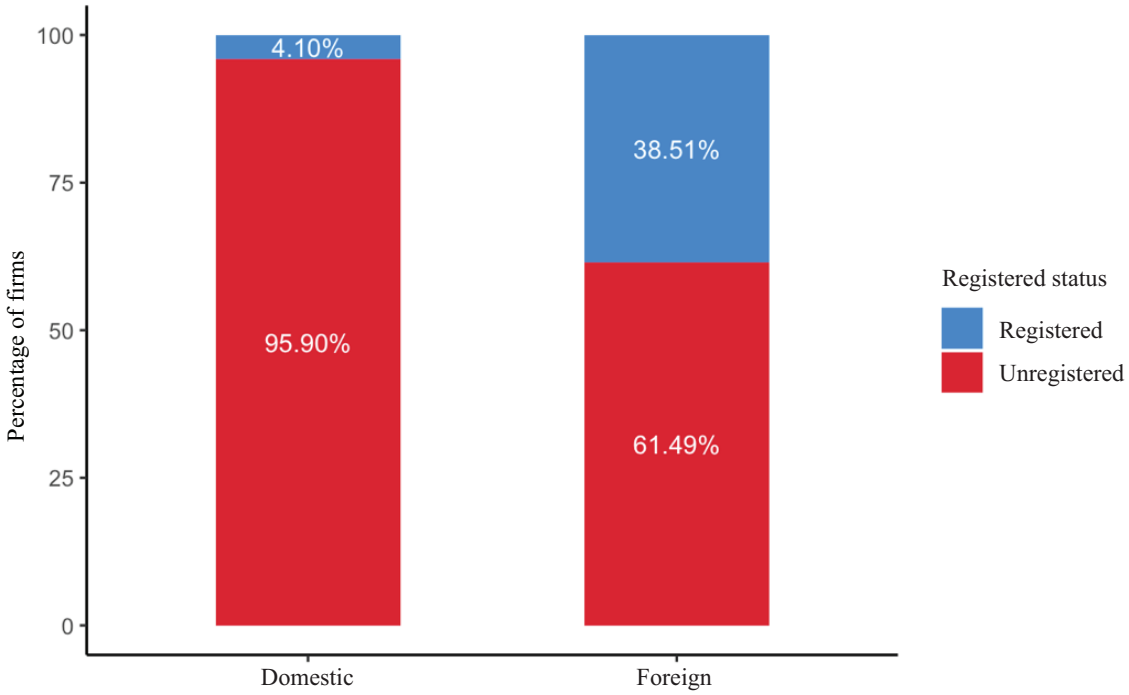
On the other hand, the gender of the firm owner or manager, captured by a dummy variable for female, consistently shows a negative and statistically significant correlation with revenue. This result highlights a persistent gender gap in firm performance, possibly stemming from unequal access to capital, networks, or business opportunities.

Lastly, in this specification model, we further interact the effects between foreign ownership and formal registration. Figure 10 shows the descriptive statistics of the firms in Cambodia based on their ownership and registration. The figure shows that an overwhelming percentage of domestic (Cambodian-owned) enterprises are unregistered, about 95.9 percent of all domestic firms. Moreover, there are also foreign firms that are not formally registered. About 61.49 percent of foreign firms are not registered through the Ministry of Commerce. Thus, we conduct this interaction effects to further explore the effects of both registration and ownership nationality on the performance of these firms.

In the analysis, we also find statistically significant results supporting our interaction effects between foreign ownership and formal registration. When a firm is foreign-owned and formally registered with the Ministry of Commerce, they are more likely to have about 176 percent higher monthly revenue than firms that are unregistered and Cambodian-owned. This is considered to be a large magnitude of effect of the interaction terms. This correlation shows that we should not overlook the role of registration status and firm ownership between domestic and foreign owned.

Table 7 provides an overall regression analysis across all firms in our dataset. However, it is important to note that Cambodian firms vary considerably in size, which may generate heterogeneity in the estimated effects across different types of firms. Medium and large firms may have different trend than micro and small enterprises. This heterogeneity is not fully captured in the specification strategy.

Figure 10: Distribution of firms by ownership and registration status



Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

In Table 8, we address this issue by further conducting the analysis by firm sizes. We ran four separate regressions with all control variables and fixed effects, focusing on micro, small, medium and large enterprises.

We find that the analysis on the micro and small firms sample produces statistically significant effects except for our digital usefulness and interaction effects. Foreign ownership in both microenterprises and small enterprises tends to have higher monthly revenue than enterprises with Cambodian ownership by 5.3 percent and 17.8 percent, respectively. Similarly, when enterprises are formally registered, they are correlated with having higher monthly revenue than the enterprises that are unregistered in microenterprises by 37 percent and in small enterprises by 32.44 percent. Both the digital adoption of microenterprises and small enterprises also pose similarities to the other previous determining factors. Microenterprises and small enterprises that adopt the use of digital technologies in COVID-19 are correlated with higher monthly revenue than the enterprises that do not adopt the use of technologies by 11.07 percent and 14.56 percent, respectively. We also observe firms that are involved in online transactions (for our control variable), and we find that being involved in an online transaction is correlated with having higher monthly revenue of about 20 percent for microenterprises and 7.9 percent for small enterprises.

Our sub-analysis for medium and large firms yields no statistically significant results. However, it is worth noting that the estimates are consistent with the story we observed in micro and small enterprises. While foreign ownership is positively correlated with monthly revenue in medium and large enterprises, for medium-sized firms, both formal registration and digital adoption are negatively correlated with their revenues.

Table 8: Regression analysis on monthly revenue by firm size

DV = log(monthly revenue)	**Micro**	**Small**	**Medium**	**Large**
Foreign ownership	0.052*	0.164***	0.151	0.277
	(0.021)	(0.047)	(0.245)	(0.463)
Register commerce	0.315***	0.281***	-0.029	0.175
	(0.007)	(0.013)	(0.135)	(0.299)
Digital adoption	0.105***	0.136***	-0.081	0.275
	(0.014)	(0.032)	(0.243)	(0.313)
Digital usefulness	0.006	0.004	0.024	0.062
	(0.007)	(0.027)	(0.230)	(0.315)
Foreign × Register	0.006	0.034	0.809	0.631
	(0.016)	(0.057)	(0.463)	(0.572)
Online transaction	0.184***	0.076***	0.008	0.253
	(0.003)	(0.014)	(0.136)	(0.232)
Rented	0.009***	0.005***	0.004	0.063***
	(0.000)	(0.001)	(0.007)	(0.013)
Year	0.071***	0.072***	0.014	-0.060
	(0.001)	(0.003)	(0.037)	(0.069)
Area	-0.029***	0.003	0.001	-0.031
	(0.002)	(0.011)	(0.120)	(0.186)
Female	0.106*	0.078	0.279	0.222
	(0.052)	(0.058)	(0.277)	(0.477)
Observations	602910	34733	705	523
Adjusted R-squared	0.129	0.124	0.020	0.245
Sector FE	Yes	Yes	Yes	Yes
Commune FE	Yes	Yes	Yes	Yes
RSME	0.80	0.89	0.62	0.95

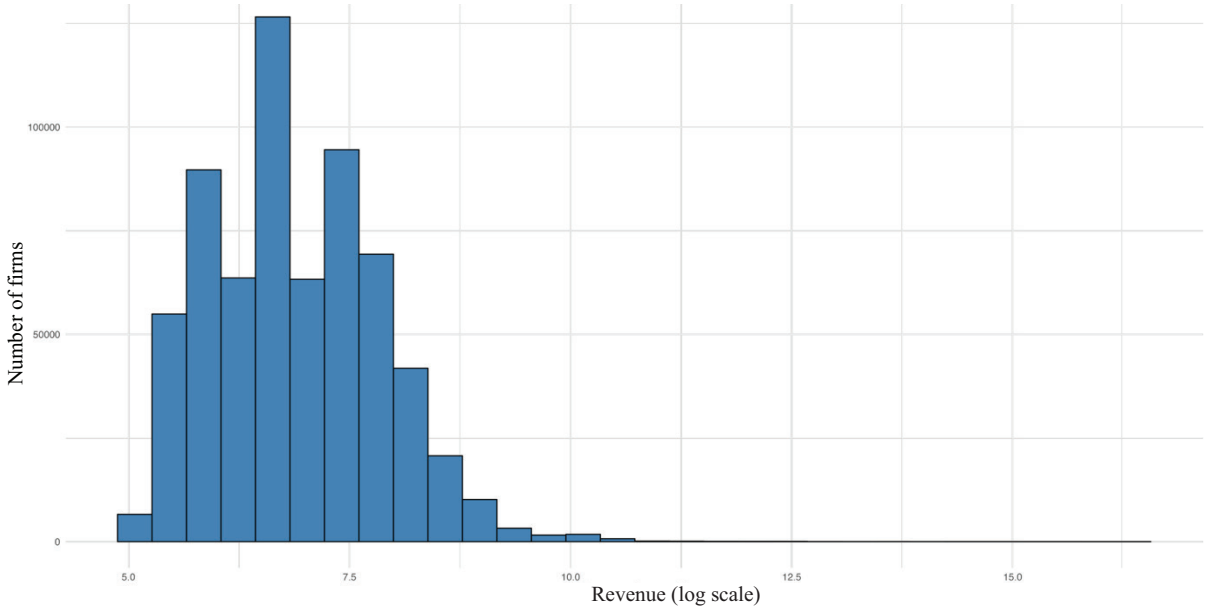
Note: * p < 0.05, ** p < 0.01, *** p < 0.001

Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

4.1.2. Understanding the effect on labour productivity

In this section, we explore the relationship between firm characteristics and digitalisation factors on labour productivity. Figure 11 below visualises the labour productivity distribution in our datasets. We observe that the labour productivity distribution is also positively skewed, with the majority of firms concentrated on the left side of the distribution. In contrast, several firms are concentrated on the right side of the distribution, exhibiting significantly extreme labour productivity.

Figure 11: Histogram of labour productivity (log scale) distribution



Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

Table 9 summarises the results from our specification model, where Model 1 is the base regression without control variables and fixed effects, and Model 4 is the full model.

We find that foreign ownership is negatively correlated with labour productivity. Our models show consistent outcomes where have foreign owners are correlated with having lower productivity level than firms that have Cambodian owners. This has interesting implications because foreign firms might correlate with having higher resource costs and operational costs. In addition, they also tend to be larger than Cambodian-owned firms. Combining their sizes and their cost, these can lead to low productivity level. However, when we interact firm ownership with registration status, we find a positive correlation. Thus, when a firm is foreign-owned and is registered with the ministry, it tends to have higher labour productivity than a firm that is Cambodian-owned and is unregistered by 10.52 percent.

Therefore, further analysis is necessary to comprehend the role of foreign firms in the economy. Firms with foreign owners are correlated with having lower labour productivity level by about 8 percent.

On the other hand, we observe that there is also a positive correlation between formal registration and labour productivity level while controlling for other factors and fixed effects. We find that when firms are formally registered, they tend to have about 12.52 percent higher labour productivity level than unregistered firms.

Digital adoption and digital usefulness exhibit similar results. In the full regression model, the coefficient estimates are not statistically significant, but they present a positive correlation between digital adoption and digital usefulness with labour productivity.

Table 9: Estimates on labour productivity

DV = log(labour productivity)	Model 1	Model 2	Model 3	Model 4
Foreign ownership	-0.117***	-0.149***	-0.113***	-0.084***
	(0.019)	(0.019)	(0.019)	(0.019)
Register commerce	0.143***	0.191***	0.154***	0.118***
	(0.006)	(0.006)	(0.006)	(0.006)
Digital adoption	0.044***	0.025*	0.039**	0.006
	(0.012)	(0.012)	(0.012)	(0.012)
Digital usefulness	0.015**	0.021***	0.023***	0.013
	(0.006)	(0.006)	(0.006)	(0.007)
Foreign × Register	0.092**	0.078*	0.126***	0.100***
	(0.032)	(0.031)	(0.031)	(0.030)
Online transaction		-0.012	-0.011	0.004
		(0.016)	(0.016)	(0.016)
Rented		0.207***	0.248***	0.185***
		(0.003)	(0.003)	(0.003)
Year		0.007***	0.009***	0.007***
		(0.000)	(0.000)	(0.000)
Area		-0.015***	-0.001*	0.009***
		(0.001)	(0.001)	(0.001)
Female		-0.150***	-0.113***	-0.119***
		(0.002)	(0.002)	(0.002)
Observations	648736	638871	638871	638871
Adjusted R-squared	0.001	0.022	0.058	0.124
Sector FE	No	No	Yes	Yes
Commune FE	No	No	No	Yes
RMSE	0.88	0.87	0.86	0.82

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

Furthermore, in Table 10, we conduct a separate regression analysis based on the firm size. For micro-enterprises, foreign-owned firms are correlated with having lower labour productivity than Cambodian-owned firms by about 10.41 percent. However, for small enterprises, firms with foreign ownership are positively correlated with labour productivity. Small foreign firm owners tend to have higher labour productivity by 15.49 percent.

For formal registration, we find statistically significant results for microenterprises and small enterprises. Firms that are formally registered are correlated with having higher labour productivity than those that are not registered by about 14.22 percent for microenterprises and 18.18 percent for small enterprises.

For digital adoption, only small firms are positively correlated with having higher productivity by about 7.25 percent. In addition, for digital usefulness, only the microenterprises result shows a statistically significant correlation. Microenterprises that believe digital technologies are useful to them during COVID-19 is correlated with having 1.8 percent higher labour productivity than the other.

We do not find any statistically significant results for medium and large firms. This result here is consistent with previous estimation, where we also do not find any statistically significant results for impact on revenue for medium and large enterprises.

Table 10: Estimates on labour productivity by firm size

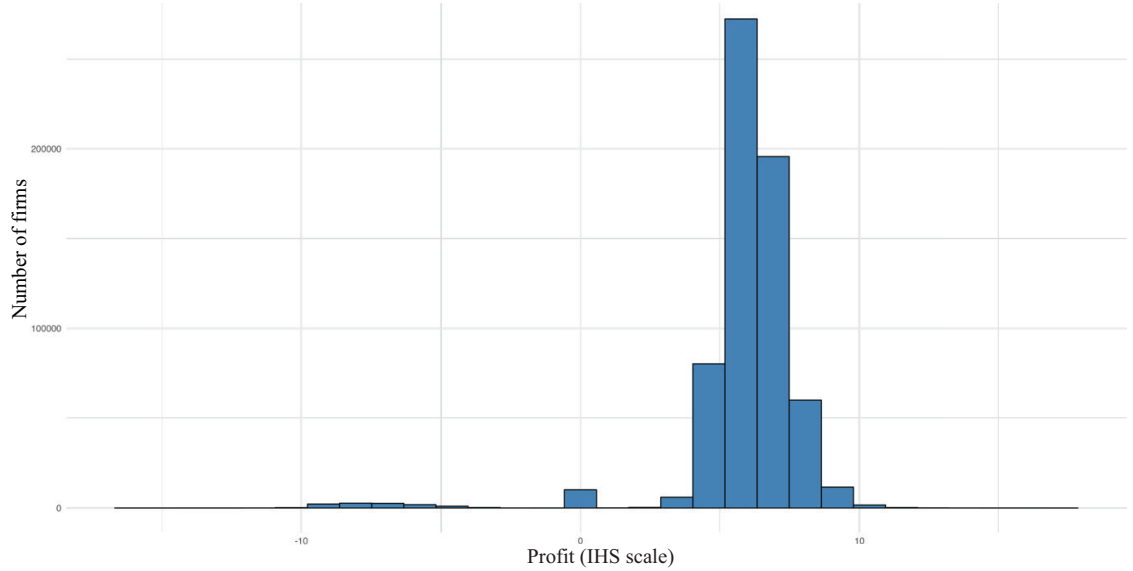
DV = log(labour productivity)	Micro	Small	Medium	Large
Foreign ownership	-0.110***	0.144**	0.079	0.442
	(0.021)	(0.044)	(0.240)	(0.403)
Register commerce	0.133***	0.167***	-0.025	0.232
	(0.007)	(0.013)	(0.132)	(0.260)
Digital adoption	0.014	0.070*	-0.100	0.271
	(0.014)	(0.030)	(0.238)	(0.272)
Digital usefulness	0.018*	-0.012	-0.028	-0.186
	(0.007)	(0.026)	(0.224)	(0.274)
Foreign × Register	0.077	0.035	0.228	-0.126
	(0.053)	(0.055)	(0.270)	(0.415)
Online transaction	-0.004	0.046	0.809	0.387
	(0.016)	(0.054)	(0.452)	(0.498)
Rented	0.195***	0.033*	0.047	0.129
	(0.003)	(0.013)	(0.133)	(0.202)
Year	0.008***	0.001	0.004	0.040***
	(0.000)	(0.001)	(0.007)	(0.011)
Area	0.013***	0.023***	-0.001	-0.070
	(0.001)	(0.003)	(0.036)	(0.060)
Female	-0.123***	-0.032**	-0.036	-0.019
	(0.003)	(0.010)	(0.117)	(0.162)
Observations	602910	34733	705	523
Adjusted R-squared	0.128	0.111	0.024	0.228
Sector FE	Yes	Yes	Yes	Yes
Commune FE	Yes	Yes	Yes	Yes
RSME	0.82	0.85	0.60	0.83

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

4.1.3. Understanding the effect on profit

To capture the financial performances of firms in Cambodia, we additionally examine the impact of our determining factors on profit. Although the Economic Census does not provide an abundance of data on profit, we base our profit calculation on the difference between revenue and expenses as a proxy. There might be some limitations in this case, especially since profit data distribution is also heavily skewed. Figure 12 below shows that a small percentage of enterprises have negative profits, and a smaller portion have zero profits. However, the majority of the enterprises that made positive profits are concentrated on the right side of the histogram.

Figure 12: Histogram of profit levels



Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

Table 11: Regression estimates on profit

DV = ihs(profit)	Model 1	Model 2	Model 3	Model 4
Foreign ownership	0.157***	0.063	-0.001	0.024
	(0.047)	(0.047)	(0.047)	(0.047)
Register commerce	0.625***	0.682***	0.618***	0.592***
	(0.014)	(0.014)	(0.014)	(0.014)
Digital adoption	-0.044	-0.068*	0.056	0.006
	(0.029)	(0.029)	(0.029)	(0.031)
Digital usefulness	-0.101***	-0.095***	-0.089***	-0.058**
	(0.014)	(0.014)	(0.014)	(0.018)
Foreign × Register	-0.051	-0.072	-0.148	-0.121
	(0.077)	(0.077)	(0.076)	(0.075)
Online transaction		-0.127**	-0.128**	-0.031
		(0.041)	(0.040)	(0.039)
Rented		0.209***	0.241***	0.137***
		(0.006)	(0.006)	(0.007)
Year		-0.009***	0.000	-0.002***
		(0.000)	(0.000)	(0.000)
Area		-0.027***	0.030***	0.045***
		(0.002)	(0.002)	(0.002)
Female		0.018**	0.087***	0.076***
		(0.006)	(0.006)	(0.006)
Observations	648736	638871	638871	638871
Adjusted R-squared	0.004	0.008	0.042	0.087
Sector FE	No	No	Yes	Yes
Commune FE	No	No	No	Yes
RSME	2.15	2.14	2.11	2.05

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

We present the regression result in Table 11. We find that only formal registration and digital usefulness are statistically significant correlated with profit level in our full model analysis. First, firms that have formal registration with the ministry are positively correlated with having

higher profit than the firms that do not register by about 80.76 percent. Second, somewhat unexpectedly, we find that firms that perceive digital technology as useful for their businesses are negatively correlated with their profit levels. On average, these firms report approximately 5.63 percent lower profits compared to firms that do not view digital technology as useful. This negative correlation may suggest that less profitable firms are more inclined to view digital technology as a potential solution for improving performance, thereby reflecting anticipation rather than realised gains.

In Table 12, we present our estimates of the impact on levels of profits by firm size. We do not find a statistically significant correlation in the analysis of medium and large enterprises. However, our evidence suggests that microenterprises show consistency compared to labour productivity analysis. We find that micro firms with a foreign owner are negatively correlated with the level of profits. So, having a foreign owner is correlated with having about 10.73 percent lower profit than domestic owners. This can be attributed to the fact that foreign firms generally incur higher operational and resource costs. In the case of micro and small firms in particular, such higher costs can constrain their profit margins, leading to lower overall profitability relative to domestically owned firms.

Table 12: Estimates on levels of profits by firm size

DV = ihs(profit)	Micro	Small	Medium	Large
Foreign ownership	-0.102*	-0.130	1.812	-1.311
	(0.050)	(0.166)	(1.370)	(2.860)
Register commerce	0.283***	0.550***	1.385	1.670
	(0.016)	(0.047)	(0.752)	(1.850)
Digital adoption	-0.029	0.073	-2.234	-4.946
	(0.034)	(0.114)	(1.358)	(1.933)
Digital usefulness	-0.056**	-0.090	3.365	3.410
	(0.018)	(0.097)	(1.283)	(1.946)
Foreign × Register	-0.377**	-0.292	-2.117	0.876
	(0.125)	(0.207)	(1.545)	(2.947)
Online transaction	-0.075+	0.083	0.549	6.250+
	(0.039)	(0.203)	(2.584)	(3.535)
Rented	0.137***	-0.152**	-0.042	1.182
	(0.007)	(0.049)	(0.761)	(1.433)
Year	0.001***	-0.032***	-0.017	-0.026
	(0.000)	(0.002)	(0.040)	(0.081)
Area	0.030***	-0.062***	0.042	-0.512
	(0.002)	(0.010)	(0.206)	(0.425)
Female	0.062***	-0.115**	0.572	1.581
	(0.006)	(0.039)	(0.671)	(1.150)
Observations	602910	34733	705	523
Adjusted R-squared	0.065	0.268	0.253	0.047
Sector FE	Yes	Yes	Yes	Yes
Commune FE	Yes	Yes	Yes	Yes
RSME	1.92	3.17	3.44	5.89

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

For formal registration, we find consistent results in comparison to our previous analysis. Formal registration has a positive correlation with profit levels. For micro and small firms, having registered formally is correlated with having higher profit, approximately by 32.7 percent and 74 percent, respectively.

We do not find any significant results with digital adoption, but our results also vary across firms' sizes. The digital adoption of micro, medium and large firms seems to have a negative correlation with profit. On the other hand, when we examine digital usefulness, only micro enterprise analysis shows a statistically significant result. We find that enterprises that believe that digital technology is useful for their businesses are negatively correlated with profit levels. When the firms believe that technology is useful for them, they tend to have approximately 5.44 percent lower profit than the firm that believes that technology is not useful for them.

4.2. Instrumental variable estimation

In order to address the endogeneity issue, we conduct an instrumental variable strategy to support our analysis. However, among the four main explanatory variables, we choose to estimate formal registration and digital adoption as our main variable of interests here.

4.2.1. Estimation of monthly revenue

The IV specification model of Table 13 shows that coefficients for registration status and digital adoption are statistically significant compared to our Ordinary Least Squares (OLS) model, where all EVs are statistically significant. Thus, we find that being registered formally with the Ministry of Commerce increases an enterprise's revenue level by about 83.12 percent compared to not being registered. Our 2SLS estimates suggest that this effect size is larger than the corresponding OLS estimates, indicating that the OLS model may underestimate the actual effect of formal registration. By using our instrument, the IV approach mitigates this endogeneity concern, capturing the causal impact of registration more accurately.

Table 13: Second stage regression result on revenue

DV = log(monthly revenue)	**2SLS register commerce**	**2SLS digital adoption**	**OLS**
Foreign ownership	0.674*	0.645*	0.287***
	(0.302)	(0.287)	(0.019)
Register commerce	**0.605*** **	0.590***	**0.563*** **
	(0.097)	(0.075)	**(0.006)**
Digital adoption	0.250***	**0.244*** **	**0.239*** **
	(0.052)	**(0.061)**	**(0.013)**
Digital usefulness	0.015	0.019	0.013
	(0.008)	(0.011)	(0.007)
Online transaction	0.020	0.019	0.022
	(0.025)	(0.028)	(0.016)
Rented	0.220***	0.221***	0.219***
	(0.021)	(0.022)	(0.003)
Age	0.010***	0.010***	0.010***
	(0.002)	(0.002)	(0.000)
Area	0.116***	0.118***	0.116***
	(0.011)	(0.011)	(0.001)
Female	-0.003	-0.001	-0.002
	(0.033)	(0.033)	(0.003)
Observations	636451	619561	638871
Adjusted R-squared	0.185	0.186	0.186
Sector FE	Yes	Yes	Yes
Commune FE	Yes	Yes	Yes
RMSE	0.85	0.85	0.85

Note: * p < 0.05, ** p < 0.01, *** p < 0.001
Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

For enterprises that adopt the use of digital technologies, we find that their revenue level is increased by 27.6 percent, which is a similar magnitude of effect to the OLS result (27 percent). In this case, there might be very limited endogeneity issues in explaining the impact of digital adoption on firm revenue.

4.2.2. Estimation of labour productivity

When estimating the effects on labour productivity in Table 14, we find a positive causal relationship between formal registration status and labour productivity, holding other variables constant. Enterprises that are formally registered in the Ministry of Commerce have about 25 percent higher labour productivity than those that are not formally registered. This result also exhibits a larger magnitude of effect than the OLS estimates. This suggests that the OLS model might encounter endogeneity issues in underestimating the effect of formal registration on labour productivity.

Moreover, we do not find statistically significant results for digital adoption in the second-stage regressions. Compared to the OLS model, we also do not find statistically significant but a positive correlation. Through 2SLS, we find a negative relationship between digital adoption and labour productivity. This indicates that if the result were to be statistically significant, the OLS model overestimates the effect of digital adoption on labour productivity.

Table 14: Second stage regression result on labour productivity

DV = log(labour productivity)	**2SLS register commerce**	**2SLS digital adoption**	**OLS**
Foreign ownership	-0.068	-0.052	-0.084***
	(0.068)	(0.062)	(0.019)
Register commerce	**0.224*** **	0.018*	**0.118*** **
	(0.076)	(0.055)	**(0.006)**
Digital adoption	-0.005	**-0.002**	**0.006**
	(0.013)	**(0.031)**	**(0.013)**
Digital usefulness	0.011	0.013	0.013
	(0.006)	(0.010)	(0.007)
Online transaction	0.002	0.002	0.004
	(0.013)	(0.012)	(0.016)
Rented	0.185***	0.185***	0.185***
	(0.026)	(0.026)	(0.003)
Age	0.007***	0.007***	0.007***
	(0.001)	(0.001)	(0.000)
Area	0.007	0.011+	0.009***
	(0.005)	(0.006)	(0.001)
Female	-0.121***	-0.117***	-0.119***
	(0.031)	(0.030)	(0.002)
Observations	636451	619561	638871
Adjusted R-squared	0.124	0.124	0.124
Sector FE	Yes	Yes	Yes
Commune FE	Yes	Yes	Yes
RMSE	0.82	0.82	0.82

Note: * p < 0.05, ** p < 0.01, *** p < 0.001
Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

4.2.3. Estimation of profit

Through 2SLS estimation, we present our estimation of profit in Table 15. Consistent with our previous two specification models, we find that formal registration has a positive relationship with profit levels. Thus, we contend that formal registration is a strong indicator of determining a firm's financial performance. Being formally registered can increase firms' profit level by approximately 84 percent. In comparison to the OLS model, we notice that the OLS underestimate the effect of formal registration on the level of firms' profit.

When considering digital adoption, we do not find statistically significant results. Similarly to labour productivity, through 2SLS, we find a negative relationship between digital adoption and firms' profit. In the OLS model, there is a positive correlation. Thus, the OLS model overestimates the magnitude of the effect by accounting for additional biases from other unobserved factors.

Table 15: Second stage regression result on profit

DV = ihs(profit)	**2SLS register commerce**	**2SLS digital adoption**	**OLS**
Foreign ownership	-0.020	-0.080	0.024
	(0.097)	(0.083)	(0.047)
Register commerce	**0.610*** **	0.584**	**0.592****
	(0.103)	(0.118)	**(0.014)**
Digital adoption	0.014	**-0.002**	**0.006**
	(0.081)	**(0.031)**	**(0.031)**
Digital usefulness	-0.058***	-0.077	-0.058**
	(0.015)	(0.112)	(0.018)
Online transaction	-0.021	-0.019	-0.031
	(0.048)	(0.054)	(0.039)
Rented	0.139**	0.140**	0.137***
	(0.043)	(0.044)	(0.007)
Age	-0.002	-0.002	-0.002***
	(0.008)	(0.008)	(0.000)
Area	0.044	0.045	0.045***
	(0.035)	(0.037)	(0.002)
Female	0.077*	0.079*	0.076***
	(0.032)	(0.032)	(0.006)
Observations	636451	619561	638871
Adjusted R-squared	0.087	0.087	0.087
Sector FE	Yes	Yes	Yes
Commune FE	Yes	Yes	Yes
RMSE	2.05	2.05	2.05

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

4.3. Robustness checks

To conduct the robustness checks for our IV specification models, we conduct a placebo test to determine the exclusion restriction. We select a firm characteristic variable that is assumed to be unaffected by our instruments. We use urban as our variable for the placebo tests. If the firms are located in an urban area, they will be coded as 1; otherwise, they will be coded as 0. We assume that the instrument does not affect the location or the region in which the firms are.

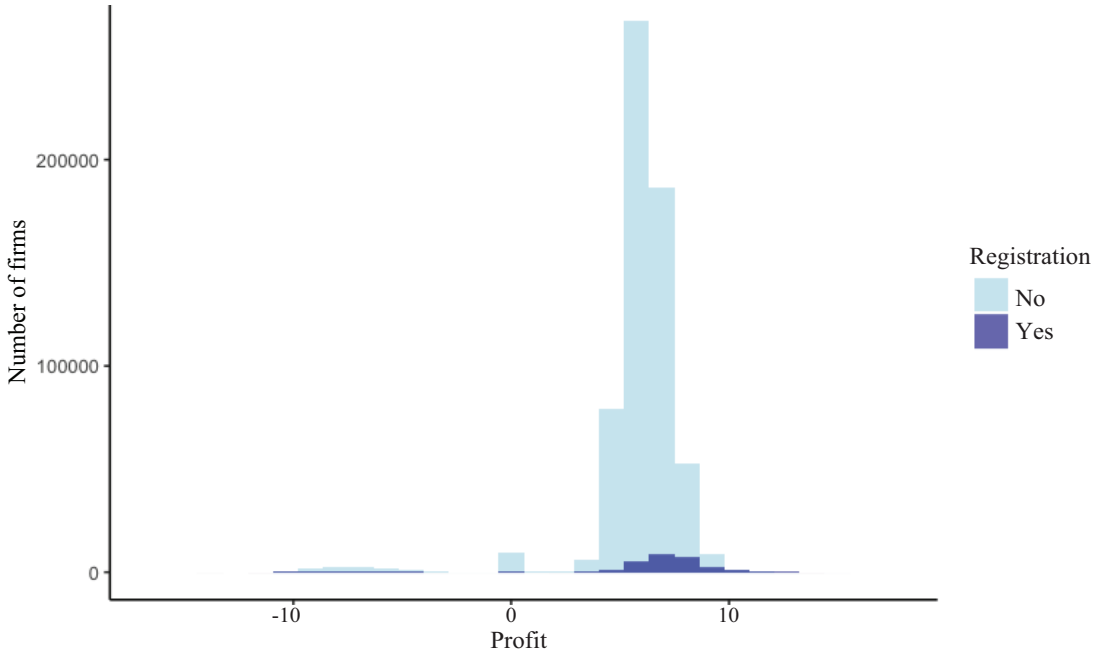
Our result from the placebo test suggests that our choice of instrumental variable does not violate the exclusion restriction. Across the three specification models on revenue, labour productivity and profit, we do not find statistically significant results between our induced independent variables and the placebo variable (urban) in this case.

Lastly, we perform a comparison check of our first-stage regression F-statistics to the Stock-Yog critical values to test the strength of our instruments. Using the F-statistics from our first-stage regression, we find that our selected instruments are strong, as the values of the F-statistics are higher than the Stock-Yogo values.

5. Conclusion and policy recommendations

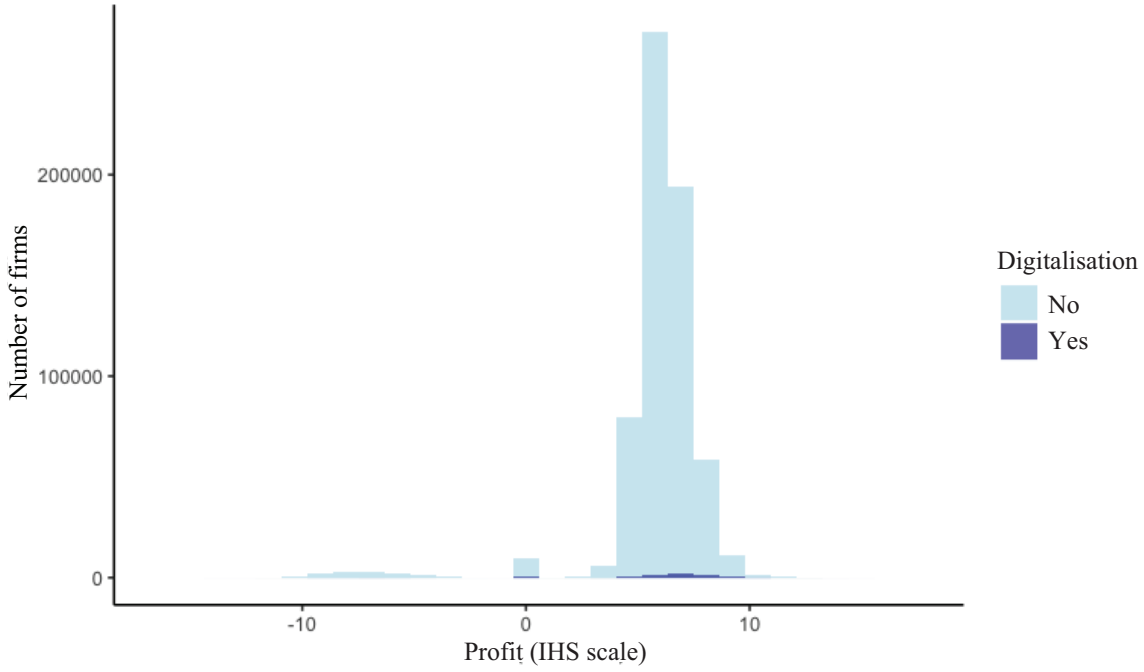
This study provides one of the most comprehensive diagnostics of firm-level performance in Cambodia, drawing on the full coverage of the Economic Census of Cambodia 2022. Quantitative modelling results highlight the critical roles of formalisation, foreign ownership, and digital transformation in improving firm outcomes, including monthly revenue, labour productivity, and profitability. Formal registration emerges as a foundational driver of business success, yet the low share of formally registered firms underscores significant barriers to compliance. Moreover, the growing digital divide continues to widen performance gaps between firms that adopt digital tools and those that do not. Foreign-owned enterprises also demonstrate superior performance, particularly in revenue, reflecting closer integration with global value chains. Figure 13 shows that although registration status is one of the strongest and most consistent predictors of financial outcomes, only a minority of enterprises are registered with the Ministry of Commerce. Notably, firms situated in the higher profit tiers are disproportionately those that are formally registered.

Figure 13: Firm distribution across profit (ihs scale) by registration status



Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

Figure 14: Firm distribution across profit (ihs scale) by digital adoption



Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

The digital divide persists, with digitalisation unequally distributed across firms, as shown in Figure 14. Only a small share of enterprises adopted digital technologies during the COVID-19 pandemic. Firms with higher profits tend to exhibit greater uptake of digital tools; however, overall digital adoption remains low across the business landscape. It is also important to note that digital adoption in this study is measured specifically by the use of digital technologies during the pandemic period.

The qualitative analysis also reveals a firm landscape still dominated by micro and small enterprises, with most operating as sole proprietorships and employing only a handful of workers. In contrast, a very limited number of large establishments, often foreign-owned, continue to drive a substantial share of national employment and sales. This dualistic structure underscores a persistent "missing middle," where mid-sized, domestically owned firms remain scarce. Spatially, manufacturing activity has become increasingly concentrated along strategically important economic corridors. Firms are clustering in and around Phnom Penh as well as in selected border provinces, reflecting advantages linked to infrastructure, logistics, and special economic zones. Digitalisation and supply chain participation remain modest among domestic enterprises, with foreign-invested firms retaining a stronger foothold in higher-value segments of production. This imbalance limits opportunities for local firms to upgrade capabilities and integrate into more competitive market structures.

Policy recommendations

- **Strengthen domestic firm upgrading and scaling:** Strengthening the competitiveness and growth trajectory of Cambodian firms requires coordinated interventions that promote upgrading, scaling, and formal participation in the industrial economy. Domestic enterprises, particularly those led by women, would benefit from targeted programmes that enhance bookkeeping, quality standards, production management, and certification readiness. Expanding access to capital through blended-finance instruments and risk-sharing mechanisms can help firms invest in modern equipment and production technologies. These measures collectively encourage firms to move beyond survival-driven operations toward productivity-enhancing transformation.

- **Treat formalisation as a competitiveness strategy:** Formalisation should be promoted not simply as a regulatory requirement but as a strategy to enhance competitiveness and economic integration. Simplifying and digitising business registration and compliance procedures can reduce the administrative burdens that discourage smaller firms from entering the formal economy. Incentives and access to finance should be linked to progressive compliance milestones, enabling informal enterprises to gradually expand their legal and economic footprint. The transition from home-based operations to dedicated production sites can also be facilitated through more affordable access to industrial spaces. With clearer data generated through formal registration, policymakers are better equipped to design targeted investment in infrastructure, skills, and enterprise support services. Stronger formal participation further enables SMEs to connect with foreign investors and enter higher-value supply chains.

- **Expand technology and skills adoption:** To fully leverage technological change, the firm performance requires practical support to adopt digital tools and build relevant skills. Digital training programmes should be inclusive and gender-responsive, helping entrepreneurs and workers understand and maximise the benefits of digital solutions, from record-keeping and payments to marketing and supply chain management. Medium-sized firms should be encouraged to incorporate more advanced digital and automated systems to improve efficiency and product quality. Industrial technology extension services, combined with tax incentives for productivity-enhancing investments, can accelerate technology upgrading. At the same time, aligning vocational education and training systems with real demand from manufacturing firms will ensure a steady pipeline of skilled workers in priority areas such as machining, welding, electronics assembly, and quality assurance.

- **Deepen domestic-foreign linkages:** Deepening domestic–foreign linkages is essential for fostering industrial upgrading and supply chain participation. Supplier development programmes within special economic zones and industrial corridors can connect Cambodian SMEs with foreign anchor firms and encourage technology transfer. Sourcing databases and supplier readiness tools will make it easier for large investors to engage local firms, while strengthened aftercare services can incentivise greater local procurement and knowledge sharing.
- **Spatial industrial policy that advances economic corridors and addresses geographic over-concentration:** Regional economic diversification also depends on addressing geographic concentration risks. Enhancing last-mile infrastructure, utilities, and logistics services in emerging corridors can unlock new industrial locations and reduce pressure on Phnom Penh. Multi-tenant industrial parks and modular factory spaces can lower entry barriers for manufacturers, helping create clusters of interconnected firms across different regions.
- **Build a firm-level data system to enable industrial policy monitoring:** Finally, a robust firm-level data ecosystem is crucial for evidence-based industrial policy. Institutionalising regular data collection, supported by administrative sources and streamlined census updates, can enable real-time monitoring of firm growth, formalisation, technology adoption, and supply chain engagement. A central industrial analytics platform, housed within the responsible ministry, would help government leaders respond dynamically to changing economic conditions and ensure that support reaches the firms most capable of driving long-term diversification.

Overall, Cambodia's enterprise landscape remains polarised. High-performing firms tend to be formalised, digitally enabled, and globally connected, while the majority of businesses remain small, informal, female-owned, and detached from dynamic growth pathways. The absence of a robust segment of mid-sized domestic firms continues to restrict both inclusive growth and meaningful industrial upgrading.

Closing the dual gaps in formalisation and digital transformation must therefore be prioritised to unlock productivity gains across the broader enterprise base. Doing so will better position Cambodia for economic diversification, technological upgrading, and enhanced export competitiveness as it moves toward graduation from LDC status.

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Appendixes

Appendix A1. Phnom Penh's industrial dynamics

According to the Economic Census of Cambodia 2022, 149,888 establishments spread out across Phnom Penh. This represents about 20 percent of total establishments nationwide. According to the statistics of the Economic Census of Cambodia 2022, Phnom Penh represents a complex and dualistic structure characterised by urban concentration, large-scale industrial clustering, and persistent informality (NIS 2023).

A1. Industrial characteristics

Industrial concentration and urban dominance

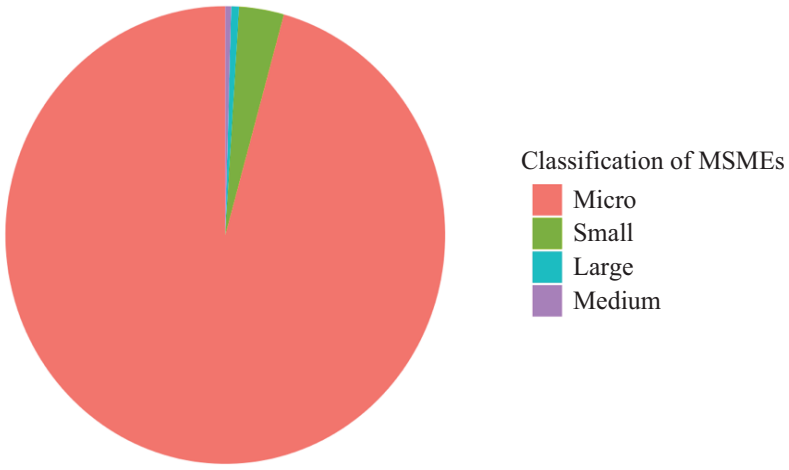
Phnom Penh remains the epicentre of Cambodia's economic activity. With 149,888 establishments, it accounted for nearly 20 percent of all establishments nationwide, the highest among provinces. More strikingly, it employed 930,916 persons, representing 31.2 percent of all persons engaged, highlighting the capital's dominance in both enterprise formation and employment generation. This suggests a significant urban-industrial agglomeration effect, underpinned by better infrastructure, access to markets, and proximity to services such as finance and logistics.

Scale polarisation and the "missing middle"

While Phnom Penh hosts the largest number of large establishments (those employing over 100 workers), the overall national industrial structure remains heavily skewed. Large establishments make up only 0.2 percent of the total, despite employing over 40 percent of the industrial workforce nationwide. The dominance of either very large or micro enterprises with little in between reflects Cambodia's structural challenge known as the "missing middle"—a hollowing out of mid-sized, growth-oriented firms capable of linking MSMEs to global value chains.

Among those establishments, as shown in Figure A1.1 below, micro enterprises represent the largest proportion of all establishments in Phnom Penh, about 96 percent, followed by small enterprises (3 percent), medium enterprises (0.4 percent), and large enterprises (0.6 percent).

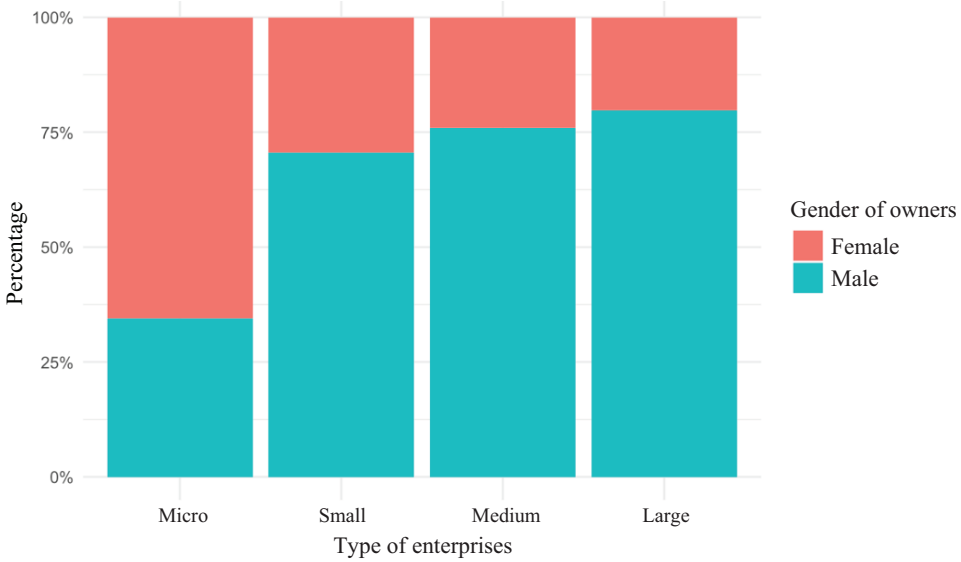
Figure A1.1: Distributions of business establishments in Phnom Penh



Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

As shown in Figure A1.2, the gender distribution of ownership across different enterprises is also strikingly interesting. Female owners only represent about 20 percent of large enterprises, while about 66 percent of micro enterprise owners are female. As enterprise sizes grow bigger, we notice that women are less likely to be the owners.

Figure A1.2: Distribution of business establishments by gender of owners



Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

A2. Informality and sole proprietorships

A defining feature of Phnom Penh's industrial base is its entrenched informality. Across Cambodia, 96.5 percent of establishments were sole proprietorships, mostly unregistered and operating informally. In Phnom Penh, although more enterprises are formally registered (due to stronger administrative presence), the dominance of sole proprietorships persists. The city hosts a large number of street businesses and home-based establishments, reflecting both entrepreneurial dynamism and the vulnerability of informal firms to economic shocks, such as the COVID-19 pandemic.

A3. Sectoral decomposition

Manufacturing sector insights

In 2022, the manufacturing sector in Phnom Penh comprised a substantial portion of the city's establishments and employment. Nationally, manufacturing (ISIC Section C) consisted of 50,028 establishments (6.6 percent), and was the largest employer, engaging over 1.1 million people (37.5 percent). In Phnom Penh, manufacturing activities were concentrated in garment, footwear, and light manufacturing, though increasingly complemented by higher-value segments such as food processing and packaging. This reflects a slow diversification within the city's industrial profile.

However, new manufacturing establishments in Phnom Penh remained relatively low (about 12,560 or 5 percent of new firms nationwide), suggesting that while Phnom Penh retains industrial scale, newer growth engines may be emerging outside its traditional manufacturing base.

Wholesale and retail trade and repair of motor vehicles and motorcycles: Dominance with informality

The wholesale and retail trade and repair of motor vehicles and motorcycles sector (ISIC Section G) is the largest sector in Phnom Penh and Cambodia overall, accounting for 494,552 establishments nationwide, or 65.6 percent of all establishments. In Phnom Penh, this sector is particularly concentrated in:

- Street businesses, market stalls, and home-based retail operations.
- A high percentage of female representation: 69.2 percent of all representatives in the sector were women.
- Sole proprietorships dominate: almost all enterprises in this sector are unregistered, small-scale, and individually owned.

The sector's structure reflects low barriers to entry and high levels of informality. Despite this, it plays a significant role in employment creation, being the second-largest employer after manufacturing, with 920,674 persons engaged, or 30.9 percent of Cambodia's total employment.

In Phnom Penh, this trade sector is also spatially concentrated along major transport corridors, traditional markets (such as Oussey, Central, and Russian Market), and increasingly, in modern retail zones and malls. However, only a small fraction are formally registered with the Ministry of Commerce (just 4.4 percent nationwide), indicating a systemic gap between enterprise growth and formalisation.

This dominance poses both a risk and an opportunity: while the sector is resilient and labour-intensive, its low productivity, lack of scalability, and digital lag hinder upward mobility and participation in modern supply chains.

Accommodation and food service activities: Urban service growth engine

The accommodation and food service sector (ISIC Section I), comprising restaurants, food vendors, guesthouses, and hotels, is the second-largest sector in Phnom Penh by number of establishments, with 106,977 establishments nationwide, or 14.2 percent of the total. Within Phnom Penh, this sector has undergone rapid transformation driven by:

- Urban tourism, rising middle-class consumption, and expatriate presence.
- A growing café, food delivery, and boutique hotel economy, especially in areas such as Boeng Keng Kang, Riverside, Toul Tom Poung, and Sen Sok.
- A large share of female proprietorship and informal employment, mirroring patterns in retail trade.

However, the sector was highly vulnerable to COVID-19 shocks, with many establishments reporting significant revenue losses and labour cuts. Despite this, Phnom Penh recorded a surge in new businesses in food and accommodation between 2020–2022, accounting for 40,479 new establishments (16.7 percent of all new establishments), suggesting continued entrepreneurial activity even amidst crises.

However, only 6.4 percent of accommodation and food businesses were formally registered, reinforcing concerns over regulatory exclusion, informality, and lack of social protection for workers in this growing sector.

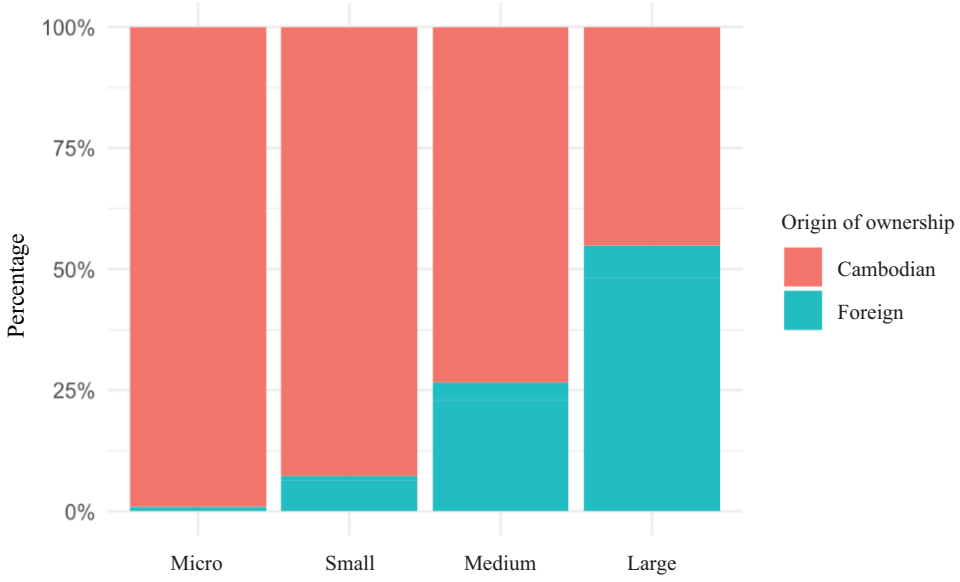
Financial and sales dominance

Phnom Penh-based establishments generated USD20 billion in annual sales, equivalent to 37.5 percent of national sales, again underscoring its role as Cambodia's financial-industrial core. However, these gains are disproportionately captured by larger, often foreign-owned firms. The average sales per entity in Cambodia show a sharp disparity: male-owned businesses earned USD133,541, while female-owned businesses earned only USD37,686, a gap mirrored in Phnom Penh's gendered business landscape.

A4. Ownership decomposition

In Figure A1.3, the origin of ownership also varies. In micro enterprises, the majority of the owners are Cambodian, with about 99 percent, compared to the large enterprises, where Cambodians only own about 45 percent of the total large enterprises in Phnom Penh.

Figure A1.3: Distribution of business establishments by origin of ownership



Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

A5. Scale and scope of foreign ownership

Nationally, only 6,660 of 753,670 establishments were foreign-owned, representing a mere 0.9 percent of all establishments in Cambodia. The number of persons engaged is 961,325 of 2,980,569. However, these entities are highly concentrated in Phnom Penh, which hosts the country's primary industrial zones, commercial centres, and administrative infrastructure.

Foreign ownership is particularly dominant among large-scale establishments:

- Among establishments with 500 or more persons, foreign-owned entities account for 79.5 percent of the total.
- Of all establishments with 100 or more persons engaged, more than half (1,041 out of 1,870) are foreign-owned.

This pattern reflects a classic "dual economy" structure: while local MSMEs numerically dominate, foreign capital controls the commanding heights of the urban industrial economy, particularly in export-oriented and capital-intensive sectors.

Sectoral composition of foreign-owned establishments

According to ISIC breakdowns, foreign ownership is heavily concentrated in specific sectors:

- *Manufacturing (Section C):* 1,469 foreign-owned firms, primarily in garments, footwear, and light assembly. Chinese, Korean, and Taiwanese investors are the dominant ones, especially in SEZs located in and around Phnom Penh.
- *Financial and insurance activities (Section K):* 706 foreign-owned institutions (6.8 percent of the sector), a significant presence considering the capital requirements and foreign equity in commercial banks, MFIs, and insurance companies.
- *Accommodation and food service (Section I):* 1,341 foreign-owned businesses (1.3 percent), including international hotels, restaurant franchises, and boutique hospitality services, especially in Phnom Penh's tourism corridors.
- *Real estate and professional services:* Growing foreign presence in land development, consultancy, and ICT, often linked to expatriate or investor networks.

This reveals a sectoral segmentation, with foreigners primarily investing in capital- or knowledge-intensive activities, while Cambodian ownership dominates small-scale retail, food service, and informal trade.

Nationality breakdown of foreign owners

Among foreign-owned establishments, the most represented nationalities are:

- *Chinese nationals:* 2,608 establishments (0.3 percent of total), most prominent in manufacturing, real estate, and large retail outlets.
- *Vietnamese:* 1,581 establishments, often in wholesale, food services, and cross-border trade.
- *South Koreans:* 439 establishments, mainly in light industry, electronics, and education.
- *Other Asian nationalities (e.g., Thai, Japanese, Malaysian):* 1,198 establishments.
- *North American and European:* 257 (including business services, hospitality, NGOs).
- *Others* (mixed, joint ventures, or unclassified): 577 establishments.

In Phnom Penh, Chinese investment is visibly dominant, especially in garment factories, casinos, and luxury real estate projects. Korean and Japanese businesses tend to operate in electronics, education, and higher-end services.

In brief, Phnom Penh's industrial development exemplifies the opportunities and contradictions of Cambodia's urban economic transformation. The capital's prominence is indisputable, but its industrial growth remains uneven, dominated by large employers and constrained by widespread informality among MSMEs. In addition, Phnom Penh's industrial landscape is shaped by a highly asymmetric ownership structure. Foreign firms, though numerically few, wield outsized influence in terms of employment, capital formation, and export integration.

Appendix A2. Key statistics of firm characteristics at the sectoral level

Sex of representative and Cambodian owner or not

		Sex of representative			Cambodian owner or not		Cambodian owner or not						
	Section of ISIC Rev.5 (number of establishments)	Total	Male	Female	Cambodian	foreigner	Cambodian	Chinese	South Korean	Vietnamese	Other Asian nationality	North American and European	Others
	Total	753,670	232,463	521,207	747,010	6,660	747,010	2,608	439	1,581	1,198	257	577
B	Mining and quarrying	243	183	60	230	13	230	12	-	-	-	-	1
C	Manufacturing	50,028	23,186	26,842	48,559	1,469	48,559	955	53	125	263	32	41
D	Electricity, gas, steam and air conditioning supply	911	587	324	898	13	898	6	-	2	3	-	2
E	Water supply, sewerage, waste management and remediation activities	442	288	154	425	17	425	3	-	7	2	1	4
F	Construction	354	257	97	325	29	325	11	3	2	12	-	1
G	Wholesale and retail trade, repair of motor vehicles and motorcycles	494,552	130,818	363,734	492,672	1,880	492,672	624	51	786	238	39	142
H	Transportation and storage	2,028	1,273	755	1,880	148	1,880	94	6	9	28	4	7
I	Accommodation and food service activities	106,977	25,298	81,679	105,636	1,341	105,636	576	47	345	148	56	169
J	Information and communication	698	412	286	628	70	628	11	4	17	30	3	5
K	Financial and insurance activities	10,440	4,464	5,976	9,734	706	9,734	43	183	21	326	57	76
L	Real estate activities	1,342	789	553	1,262	80	1,262	38	3	2	26	4	7
M	Professional, scientific and technical activities	1,652	1,154	498	1,571	81	1,571	19	2	6	35	4	15
N	Administrative and support service activities	2,943	1,902	1,041	2,893	50	2,893	27	1	2	11	3	6
P	Education	12,283	9,276	3,007	12,146	137	12,146	24	27	9	26	18	33
Q	Human health and social work activities	12,220	7,989	4,231	12,142	78	12,142	35	4	13	9	5	12
R	Arts, entertainment and recreation	4,179	1,606	2,573	4,116	63	4,116	30	4	9	10	3	7
S	Other service activities	52,378	22,981	29,397	51,893	485	51,893	100	51	226	31	28	49

Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

Registered or not at the Ministry of Commerce (2022), registered or not at the ministries and agencies (2022), and ownership type

Section of ISIC Rev.4		Registered or not at the Ministry of Commerce (2022)			Registered or not at the ministries and agencies (2022)		Ownership type				
		Total	Registered	Not registered	Registered	Not registered	Sole proprietorship/ physical person without registration	Sole proprietorship/ physical person with registration	General partnership	Limited partnership	Single member private limited company
	Total	753,670	76,930	676,740	101,203	652,467	684,389	50,350	80	54	79
B	Mining and quarrying	243	133	110	180	63	117	119	-	-	1
C	Manufacturing	50,028	5,658	44,370	8,625	41,403	45,110	4,502	8	2	9
D	Electricity, gas, steam and air conditioning supply	911	391	520	446	465	567	314	1	1	2
E	Water supply, sewerage, waste management and remediation activities	442	201	241	255	187	252	174	-	1	1
F	Construction	354	155	199	186	168	231	117	-	-	-
G	Wholesale and retail trade, repair of motor vehicles and motorcycles	494,552	33,112	461,440	41,700	452,852	467,654	23,213	41	24	15
H	Transportation and storage	2,028	1,004	1,024	1,254	774	1,083	913	2	2	4
I	Accommodation and food service activities	106,977	6,830	100,147	13,242	93,735	100,456	5,702	8	4	2
J	Information and communication	698	370	328	418	280	359	318	3	2	2
K	Financial and insurance activities	10,440	3,968	6,472	4,385	6,055	6,489	3,802	1	2	13
L	Real estate activities	1,342	658	684	736	606	688	641	2	-	-
M	Professional, scientific and technical activities	1,652	426	1,226	540	1,112	1,238	407	-	-	-
N	Administrative and support service activities	2,943	364	2,579	678	2,265	2,585	331	2	-	-
P	Education	12,283	9,477	2,806	10,971	1,312	2,812	2,164	3	4	5
Q	Human health and social work activities	12,220	6,422	5,798	8,324	3,896	5,862	5,286	3	10	19
R	Arts, entertainment and recreation	4,179	490	3,689	862	3,317	3,693	450	-	-	2
S	Other service activities	52,378	7,271	45,107	8,401	43,977	45,193	1,897	6	2	4

Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

Ownership type (continued)

Section of ISIC Rev.4		Total	Private limited company	Public limited company	Interest in joint venture	Public enterprise	State enterprise	State joint venture	Subsidiary of foreign company Cooperative	Branch of foreign company	Representative office	Cooperative	Non-governmental organisation	Other
	Total	753670	175	60	7	177	8,970	2,853	469	226	1,109	20	4,593	59
B	Mining and quarrying	243	3	-	-	-	-	-	-	1	2	-	-	-
C	Manufacturing	50028	19	-	-	1	39	211	34	18	69	-	6	-
D	Electricity, gas, steam and air conditioning supply	911	4	1	-	8	7	4	1	-	1	-	-	-
E	Water supply, sewerage, waste management and remediation activities	442	-	1	-	2	2	1	-	-	-	-	7	1
F	Construction	354	-	1	-	1	1	1	1	-	1	-	-	-
G	Wholesale and retail trade, repair of motor vehicles and motorcycles	494552	39	7	2	1	423	1,929	315	139	732	-	11	7
H	Transportation and storage	2028	14	-	-	-	2	2	3	-	3	-	-	-
I	Accommodation and food service activities	106977	18	3	-	-	109	404	58	39	168	2	2	2
J	Information and communication	698	7	2	-	-	1	1	-	-	3	-	-	-
K	Financial and insurance activities	10440	21	41	-	4	8	29	7	1	16	-	6	-
L	Real estate activities	1342	4	-	-	-	1	3						
M	Professional, scientific and technical activities	1652	-	-	-	-	2	1	1	1	1	-	-	1
N	Administrative and support service activities	2943	-	-	-	-	5	12	3	-	5	-	-	-
P	Education	12283	22	2	2	20	6,896	21	6	5	8	2	294	17
Q	Human health and social work activities	12220	6	1	-	6	947	28	7	1	14	-	29	1
R	Arts, entertainment and recreation	4179	2	-	-	-	9	10	4	-	6	-	3	-
S	Other service activities	52378	16	1	3	134	518	196	29	21	77	16	4,235	30

Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

Head office or branch and tenure of business place

Section of ISIC Rev.4		Head office or branch				Tenure of business place		
		Total	Single unit	Head office	Branch	Owned	Rented	Other
	Total	753,670	740,340	333	12,997	508,660	194,119	50,891
B	Mining and quarrying	243	223	1	19	185	36	22
C	Manufacturing	50,028	49,080	42	906	34,149	13,236	2,643
D	Electricity, gas, steam and air conditioning supply	911	767	4	140	693	184	34
E	Water supply, sewerage, waste management and remediation activities	442	378	2	62	316	103	23
F	Construction	354	313	6	35	207	135	12
G	Wholesale and retail trade, repair of motor vehicles and motorcycles	494,552	490,755	82	3,715	346,411	116,813	31,328
H	Transportation and storage	2,028	1,168	14	846	727	1,224	77
I	Accommodation and food service activities	106,977	105,878	32	1,067	64,233	31,520	11,224
J	Information and communication	698	439	10	249	236	443	19
K	Financial and insurance activities	10,440	7,583	70	2,787	6,155	3,938	347
L	Real estate activities	1,342	1,080	10	252	905	396	41
M	Professional, scientific and technical activities	1,652	1,577	4	71	952	652	48
N	Administrative and support service activities	2,943	2,847	4	92	1,950	862	131
P	Education	12,283	11,417	27	839	9,619	1,479	1,185
Q	Human health and social work activities	12,220	11,963	7	250	9,149	2,714	357
R	Arts, entertainment and recreation	4,179	3,987	3	189	2,786	1,216	177
S	Other service activities	52,378	50,885	15	1,478	29,987	19,168	3,223

Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

Type of business place

Section of ISIC Rev.4		Total	Street	Home	Apartment	Traditional market	Modern shopping mall	Exclusive block or building	Other
	Total	753,670	77,073	511,412	37,531	93,982	2,159	27,954	3,559
B	Mining and quarrying	243	22	116	31	-	-	65	9
C	Manufacturing	50,028	4,104	36,534	2,406	4,603	115	2,129	137
D	Electricity, gas, steam and air conditioning supply	911	33	655	79	11	2	126	5
E	Water supply, sewerage, waste management and remediation activities	442	13	288	32	4	1	101	3
F	Construction	354	12	235	49	2	6	48	2
G	Wholesale and retail trade, repair of motor vehicles and motorcycles	494,552	48,657	342,459	20,965	76,308	1,539	3,023	1,601
H	Transportation and storage	2,028	119	1,228	415	20	13	199	34
I	Accommodation and food service activities	106,977	18,014	70,340	7,409	7,548	236	2,100	1,330
J	Information and communication	698	36	397	153	8	8	88	8
K	Financial and insurance activities	10,440	491	6,761	1,078	378	34	1,673	25
L	Real estate activities	1,342	34	622	345	42	27	248	24
M	Professional, scientific and technical activities	1,652	61	1,323	158	22	24	56	8
N	Administrative and support service activities	2,943	180	2,116	249	238	6	100	54
P	Education	12,283	50	1,860	491	23	11	9,762	86
Q	Human health and social work activities	12,220	232	9,677	521	146	18	1,588	38
R	Arts, entertainment and recreation	4,179	277	3,186	334	171	19	165	27
S	Other service activities	52,378	4,738	33,615	2,816	4,458	100	6,483	168

Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

Area of business place

Section of ISIC Rev.4		Area of business place					Area of business place (continued)				
		Total	<5 m^2	5-10 m^2	10-30 m^2	30-50 m^2	50-100 m^2	100-200 m^2	200-500 m^2	500-1000 m^2	> 1000 m^2
	Total	753,670	112,455	181,557	189,776	106,674	71,709	35,662	18,432	11,957	25,448
B	Mining and quarrying	243	11	28	40	22	18	8	16	9	91
C	Manufacturing	50,028	6,377	10,759	11,899	7,774	5,769	2,714	1,377	924	2,435
D	Electricity, gas, steam and air conditioning supply	911	47	121	172	118	115	58	71	50	159
E	Water supply, sewerage, waste management and remediation activities	442	10	33	46	62	69	47	31	33	111
F	Construction	354	10	41	53	66	47	47	20	18	52
G	Wholesale and retail trade, repair of motor vehicles and motorcycles	494,552	79,919	125,797	131,877	71,657	44,986	20,793	9,448	5,239	4,836
H	Transportation and storage	2,028	72	230	401	323	388	230	148	85	151
I	Accommodation and food service activities	106,977	18,113	25,666	24,232	13,683	10,266	6,112	3,691	2,353	2,861
J	Information and communication	698	21	83	120	128	164	67	57	27	31
K	Financial and insurance activities	10,440	1,006	2,137	2,132	1,365	1,249	820	674	437	620
L	Real estate activities	1,342	8	39	124	138	195	205	141	140	352
M	Professional, scientific and technical activities	1,652	72	266	418	310	299	144	70	43	30
N	Administrative and support service activities	2,943	118	328	630	596	526	329	178	109	129
P	Education	12,283	32	197	504	555	752	879	870	1,177	7,317
Q	Human health and social work activities	12,220	230	1,618	2,806	2,299	2,079	1,196	617	466	909
R	Arts, entertainment and recreation	4,179	299	656	941	743	567	350	212	158	253
S	Other service activities	52,378	6,110	13,558	13,381	6,835	4,220	1,663	811	689	5,111

Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

Year business started

Section of ISIC Rev.4		Total	2022	2021	2020	2015-2019	2010-2014	2000-2009	1999 or before
	Total	753,670	27,904	122,678	91,239	299,062	103,284	73,413	36,090
B	Mining and quarrying	243	5	26	22	113	36	30	11
C	Manufacturing	50,028	1,413	5,974	5,173	19,804	7,884	6,114	3,666
D	Electricity, gas, steam and air conditioning supply	911	12	81	80	328	182	152	76
E	Water supply, sewerage, waste management and remediation activities	442	9	50	49	178	77	53	26
F	Construction	354	10	42	44	160	51	37	10
G	Wholesale and retail trade, repair of motor vehicles and motorcycles	494,552	16,833	80,597	60,365	199,316	70,669	48,845	17,927
H	Transportation and storage	2,028	139	581	297	689	182	99	41
I	Accommodation and food service activities	106,977	5,909	20,523	14,047	42,632	12,896	8,237	2,733
J	Information and communication	698	22	66	58	307	127	107	11
K	Financial and insurance activities	10,440	274	1,612	1,371	4,777	1,421	770	215
L	Real estate activities	1,342	43	218	182	659	150	73	17
M	Professional, scientific and technical activities	1,652	51	228	194	706	233	175	65
N	Administrative and support service activities	2,943	74	271	256	1,249	547	408	138
P	Education	12,283	139	397	319	2,153	1,341	2,870	5,064
Q	Human health and social work activities	12,220	349	1,616	1,369	4,840	1,675	1,320	1,051
R	Arts, entertainment and recreation	4,179	192	603	430	1,811	624	404	115
S	Other service activities	52,378	2,430	9,793	6,983	19,340	5,189	3,719	4,924

Source: Authors' elaboration, using the Economic Census of Cambodia 2022.

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Cambodia Development Resource Institute
56 Street 315, Tuol Kork, Phnom Penh, Cambodia
+855 23 881 701/881 916/883 603
cdri@cdri.org.kh
www.cdri.org.kh