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Addressing Barriers to Digital Adoption Among Cambodian Micro, Small, and Medium-Sized Enterprises

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KEY POINTS

- Gender gaps in digital adoption are mainly linked to structural factors affecting business scale rather than gender-specific technology barriers. When firm size is comparable, men and women owners show similar rates of digital adoption.
- Barriers to digital adoption for MSMEs include limited information, skill shortages, uncertain economic benefits, financial constraints, owners' business aspirations, unreliable infrastructure, and cybersecurity concerns.
- Targeted approaches for women entrepreneurs are essential, especially concerning business networks and financial access, as women-owned MSMEs have lower participation rates in business associations and are also less likely to apply for formal loans.
- Skill shortages are a significant challenge across all MSMEs, with low investment in employee capacity training and in owners' personal skills development. Gender norms and care burdens contribute to women owners spending less time on skills development. Uncertain perceived economic benefits, coupled with limited access to formal loans, deter investment in digital technology.

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INTRODUCTION

Digital transformation offers significant opportunities for Cambodia's micro, small, and medium-sized enterprises (MSMEs) to expand markets, improve efficiency, and enhance competitiveness. However, adoption rates vary dramatically across firm sizes, creating a widening digital divide that threatens to leave smaller enterprises behind.

Multiple agencies, including the Ministry of Industry, Science, Technology and Innovation (MISTI), the Skill Development Fund, multilateral donors, and various nongovernment organizations (NGOs) have established digital support programs. Understanding adoption patterns across different MSME segments and identifying priority target groups can enhance evidence-based program planning and resource allocation.

This brief provides evidence from 414 MSMEs across three economic centers (Phnom Penh, Battambang, and Siem Reap) to inform strategic development of digital support initiatives. The research, conducted through firm surveys and 32 stakeholder interviews from May to July 2024, quantifies adoption gaps and examines barriers across firm sizes and sectors.

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METHODOLOGY

The study that forms the basis for this policy brief employed a mixed-methods approach, combining quantitative analysis of firm-level data with qualitative insights from key stakeholders.

The quantitative component surveyed 414 MSMEs in Phnom Penh, the capital city, and two provinces (Battambang and Siem Reap), focusing on sales and retail, accommodation and food services, and agro-processing sectors. The survey was conducted in May 2024 and measured digital technology adoption across seven business functions and collected data on equipment ownership, financial access, and adoption barriers.[1] A stratified sampling approach ensured representation across firm sizes, with deliberate oversampling of small and medium enterprises to enable analysis of adoption patterns among small and medium-sized enterprises (SMEs).

To complement quantitative findings from the firm survey, 32 stakeholder key informant interviews conducted between May and July 2024 provided qualitative insights from eight government bodies, five development partners, five NGOs, seven industry associations, and seven surveyed enterprises. Interview data were thematically analyzed to identify adoption barriers and implementation challenges.

FINDINGS

Current Situation of Digital Technology Adoption

Figure 1 shows the level of digital technology adoption in the seven general business functions by firm size and owners' gender, highlighting two important patterns. First, although overall digital technology adoption was low, it differed significantly by firm size and business function. Microenterprises typically relied on traditional methods (e.g., handwritten notes) for most business functions, whereas SMEs incorporated digital technology into their operations, particularly in business administration and production planning. Regardless of firm size, digital technology was most commonly used for payments, with 70% of microenterprises and 83% of SMEs in the sample using mobile banking services (e.g., KHQR).[2] In contrast, quality control showed the lowest digital adoption rate among all business functions, with approximately 85% of firms still relying on manual or visual inspection processes without digital assistance.[3]

Second, gender differences in digital adoption within each firm size category were notable, but nuanced. Women-owned microenterprises slightly outperformed men-owned microenterprises, particularly in sales (e.g., sales through social media or delivery apps) and payments (e.g., mobile banking payments). This pattern was also evident in social media, where 33% of women-owned microenterprises had social media accounts compared to 9% of those owned by men. In contrast, the gender gap in digital adoption among SMEs was minimal. These findings suggest that the commonly perceived gender gap in digital technology adoption may stem largely from structural factors affecting business scale, as women tend to own smaller firms, rather than gender-specific technology barriers within each size category. This is an area that deserves further investigation.

This pattern of digital technology adoption is consistent with patterns of digital device ownership shown in Figure 2. Panel A reveals that microenterprises primarily relied on smartphones and mobile internet connections, lacking other digital devices. This limited device ownership prevented them from adopting digital tools beyond mobile applications and social media platforms, which may reflect their limited needs for advanced digital tools for their business operations. In contrast, SMEs were more likely to own digital devices, particularly laptops or desktops, facilitating the adoption of basic or specialized business software in their daily operations (e.g., office software for business administration). These equipment gaps showed minimal gender differences within size categories.

Main Barriers to Digital Technology Adoption

Analysis of survey responses and key informant interview data identified several common barriers to digital adoption. The first major barrier was limited access to information about digital technologies. Although SMEs had diverse information sources, including other firms, experts, and industry events, microenterprises largely relied on media and informal networks such as friends and family members. Importantly, business association membership was a critical factor, as members were more aware of government support for digital adoption. However, membership rates differed significantly by firm size and owners' gender, with women-owned microenterprises particularly underrepresented in these associations, limiting their access to valuable information networks.

> *"For women, one barrier to investing in new skills is the care burden. A lot of women have the responsibility of taking care of family, cooking, and cleaning. Men, their families, and society might say that's the women's job and they don't support."*
>
> Woman Representative (Development Partner)

[1] The survey followed the approach in X. Cirera et al. 2021. Anatomy of Technology in the Firm. *NBER Working Papers, 28080*.

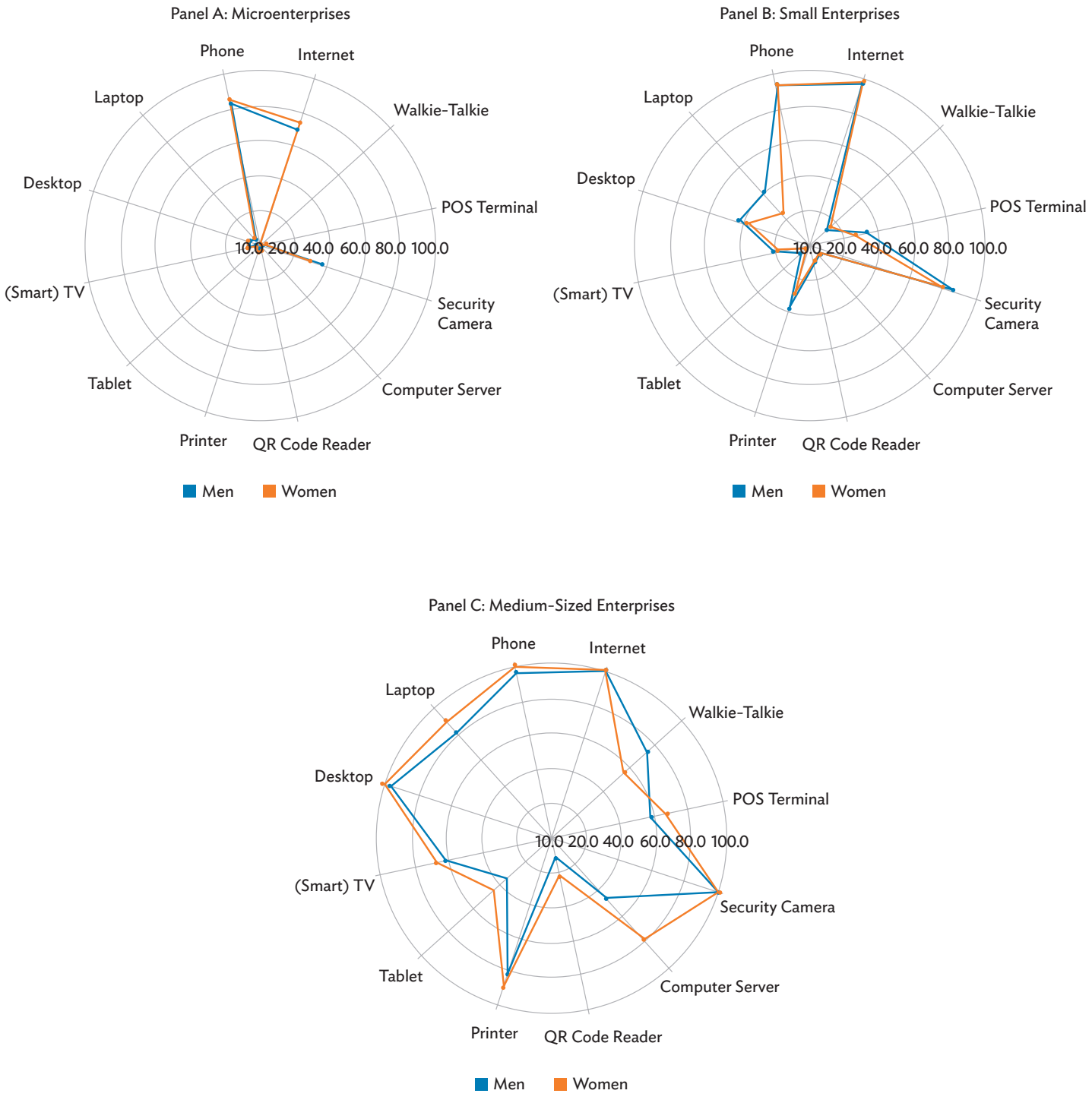
[2] KHQR is Cambodia's standardized EMV-compliant Quick Response (QR) code system that enables a single, interoperable QR code for retail payments, allowing customers to pay merchants using any supported mobile banking app and facilitating convenient cross-border payments within members of the Association of Southeast Asian Nations countries.

[3] The limited digitalization in quality control may be partly explained by the sector composition of our sample, which primarily consisted of firms in sales and accommodation. In our data, MSMEs in the agro-processing sector had statistically significant higher adoption rates of digital technologies in quality control than firms in other sectors.

Figure 1: Digital Technology Adoption by Firm Size and Gender

Source: Asian Development Bank survey data.

Figure 2: Digital Device Ownership by Firm Size and Gender



POS = point of sale, QR = Quick Response, TV = television.
Source: Asian Development Bank survey data.

Second, significant skill shortages posed a challenge across all MSMEs, with larger firms particularly aware of this barrier. Training and expert advice were identified as one of the top three necessary interventions for digital transformation by 60% of microenterprises, 81% of small enterprises, and 93% of medium-sized enterprises. Furthermore, while MSMEs recognized the need to hire digitally skilled workers, they faced significant challenges in attracting such talent.

Despite recognizing the need, few MSMEs invested in employee capacity training. Less than 1% of microenterprises offered such training, compared to 7.5% of small enterprises and 17.6% of medium-sized enterprises. Investment in owners' personal skill development followed a similar pattern, with microenterprise owners spending an average of 15 minutes daily on business skill development, while small enterprise owners dedicated 30 minutes and medium-sized enterprise owners dedicated 50 minutes. Gender disparities were particularly pronounced among microenterprises, where women owners spent 12 minutes less than men owners on daily skill development. This gender gap narrowed to 3 minutes among SME owners. Key informants identified entrenched gender norms as significant barriers to women owners' skill development.

Third, limited demand constrained the economic benefits of digital adoption, discouraging investment, particularly among microenterprises. When customers made little use of digital tools such as online shopping platforms, business owners saw few tangible returns, reinforcing their hesitation to invest further. Furthermore, microenterprises may be too small to realize efficiency gains from digital technologies in business administration and production planning, unlike larger firms that need and can better use these tools. Despite limited benefits, digital adoption requires substantial initial investments in equipment and creates operational complexities during implementation. This combination of high costs and uncertain returns deterred firms, especially microenterprises, from digital adoption.

Fourth, limited access to formal loans posed a significant barrier, with pronounced disparities by both firm size and owners' gender. While approximately 40% of microenterprises had formal loans, this rate exceeded 60% among SMEs. Gender gaps were particularly evident among smaller firms: women-owned micro and small enterprises were approximately 10 percentage points less likely to have formal loans compared to men-owned firms of similar size. The type of financial institution also differed by gender, with women-owned micro and small enterprises more likely to rely on microfinance institutions, while their men-owned counterparts had greater access to private commercial banks. These gender-based disparities were less obvious among medium-sized enterprises. Reflecting these gender differences in access to formal loans, women-owned micro and small enterprises were more likely to identify securing funding as one of the top three necessary interventions for digital transformation.

Fifth, since the benefits of digital adoption often materialize in the long run, owners' business aspirations emerged as a crucial factor. The data revealed a clear size gradient in growth ambitions: while 54% of microenterprise owners aspired to expand their business in the next 5 years (with 10% planning to scale down or close), this proportion rose to 71% among small enterprise owners and 90% among medium-sized enterprise owners. Notably, within each size category, men and women owners showed similar levels of business aspirations. These aspirations were closely linked to digital technology adoption among MSMEs. Thus, owners' growth mindsets may play a crucial role in digital adoption.

> *"In the future, consumers should also adopt more digital technologies. Then, suppliers or sellers will also change their practices. For example, when consumers ask for a QR code, business owners will change based on the demand and open a bank account. Thus, customers' use of digital technologies will drive digital technology adoption among businesses."*
> Woman Representative (Industry Associations)

Beyond these five barriers, key informant interviewees pointed out two additional barriers to digital adoption. To begin with, in rural areas, unreliable infrastructure, particularly inconsistent electricity supply and poor internet connectivity, prevented businesses from fully using digital technology, which widened the digital divide between urban and rural areas. Furthermore, cybersecurity was identified as a growing concern as MSMEs increased their digital presence. MSME owners often lacked understanding of both potential cyber threats and essential preventive measures, while the high cost of cybersecurity software left their businesses particularly vulnerable to online attacks.

POLICY RECOMMENDATIONS

These five barriers to digital technology adoption are interlinked and cannot be addressed in isolation. Supporting MSMEs in their digital transformation therefore requires a comprehensive strategy, with coordinated action by government agencies, financial institutions, business associations, and development partners. Drawing on the survey findings, the following recommendations outline a framework for targeted interventions.

Expand access to information and foundational digital skills through a multichannel approach. The Government of Cambodia has invested in developing online platforms to support small enterprises. Relevant government bodies (e.g., MISTI) could leverage the existing platforms for MSMEs (e.g., KhmerSME) while also developing complementary offline resources for areas with limited connectivity (e.g., community-based outreach programs and mobile training units). These information channels should serve two purposes: providing tailored content about appropriate digital technologies and delivering flexible training opportunities. To increase information outreach and facilitate access and adoption, platforms can be enhanced to offer advice and resources tailored to business size (e.g., microenterprise owners may need marketing applications rather than complex business administration software). To support skills development, training on fundamental topics such as business management, digital marketing, cybersecurity, and business regulations

should be delivered through flexible formats (short modules, recorded sessions) that accommodate time constraints. This comprehensive approach would be particularly effective in addressing gender-specific constraints that limit women's access to traditional training, including household responsibilities or business operational demands, especially for women managing sole proprietorships.

Expand business networks for information exchange, particularly among women firm owners. Programs aiming to address deficiencies in access to technology and support women entrepreneurs should consider the importance of partnering with business associations to provide networking opportunities that specifically address barriers faced by women entrepreneurs. Special attention should be given to creating entry-level networking groups that are accessible and welcoming to microenterprise owners with limited formal education or business experience.

Facilitate personalized knowledge transfer through individualized training programs. Skill gaps remain a major constraint for MSMEs. MISTI could collaborate with educational institutions and government partners (such as the Techo Startup Center) to design and deliver customized training, targeted technical assistance, and mentorships by experienced professionals or business owners, allowing for hands-on, context-specific learning in digital adoption. Business associations and private sector networks could play a leading role in expanding mentorship opportunities, particularly for women entrepreneurs. Their programs could integrate both technical and managerial skills as well as practical strategies to navigate gender-related constraints. An additional approach could be to link mentorship initiatives with university internship programs, enabling STEM students to work directly with MSMEs on digital transformation projects. Such collaborations would generate mutual benefits: MSMEs would gain technical support, while students acquire valuable practical experience in applying digital solutions to real business challenges.

Address gendered barriers to capacity development. Our analysis revealed that women business owners, particularly those running microenterprises, face distinct challenges in allocating time for capacity development due to their household and business responsibilities. Moreover, the qualitative interviewees highlighted gender-based perceptions about digital technology as a potential barrier to adoption and training. Therefore, in addition to designing gender-based programs (e.g., women-only training environments) to encourage women owners to participate, it is important to implement flexible training modalities that accommodate women's time constraints (e.g., offering shorter, module-based training sessions and mixed delivery options (online, in-person, or hybrid)). Additionally, featuring successful women entrepreneurs as trainers and mentors would help challenge gender stereotypes around technology and demonstrate pathways to success.

Strengthen access to skilled digital expertise. SMEs often struggle to hire skilled digital professionals because they cannot match salaries offered by larger firms. A practical option would be to pilot a blended support program, combining temporary subsidies or matching grants with access to digital talent pools and advisory services. Support could range from short-term consulting to longer-term employment, with subsidies phased out against performance benchmarks. Institutions such as MISTI would be well placed to consider convening such an initiative in partnership with financial institutions, universities, and development partners, drawing on global best practice.

Implement trial programs for digital adoption. Relevant government bodies (e.g., MISTI and the Ministry of Post and Telecommunications) and development partners could implement trial programs that allow business owners to test digital technologies before making substantial investments. These programs would include demonstration facilities in key business districts, mobile demonstration units for rural areas, and peer learning opportunities where early adopters can showcase their experiences. This approach may address the common hesitation among business owners stemming from concerns about operational complexity and uncertain returns on investment. Through hands-on experience with these solutions, owners can better evaluate the practical benefits, implementation requirements, and potential returns, leading to more informed adoption decisions.

Provide multifaceted financial programs. Financial institutions and relevant government bodies (e.g., MISTI, Ministry of Economy and Finance, Ministry of Education, Youth and Sport, and the National Bank of Cambodia) could collaborate to implement comprehensive financial education programs that cover financial literacy, mobile banking applications, daily financial management, and bookkeeping for current and aspiring business owners. By strengthening understanding of financial products, these comprehensive programs would reduce the apprehension of default—especially among women microenterprise owners, as identified in the survey—and support more informed and confident financial decision-making. Programs should be designed with flexible delivery formats, practical examples relevant to different business types and sizes, and materials accessible to participants with varying education levels. Digital financial services should be featured to help MSMEs become comfortable with mobile and online financial tools. For participants who complete the training, financial institutions could offer streamlined lending procedures that remain fully compliant with regulations while reducing documentation burdens—using standardized templates, pre-verified financial literacy certificates, or simplified business documentation within the regulatory framework. This approach would link financial access to improved financial capability, and help MSMEs build the skills, confidence, and trust needed to manage credit responsibly and overcome structural barriers to finance.

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