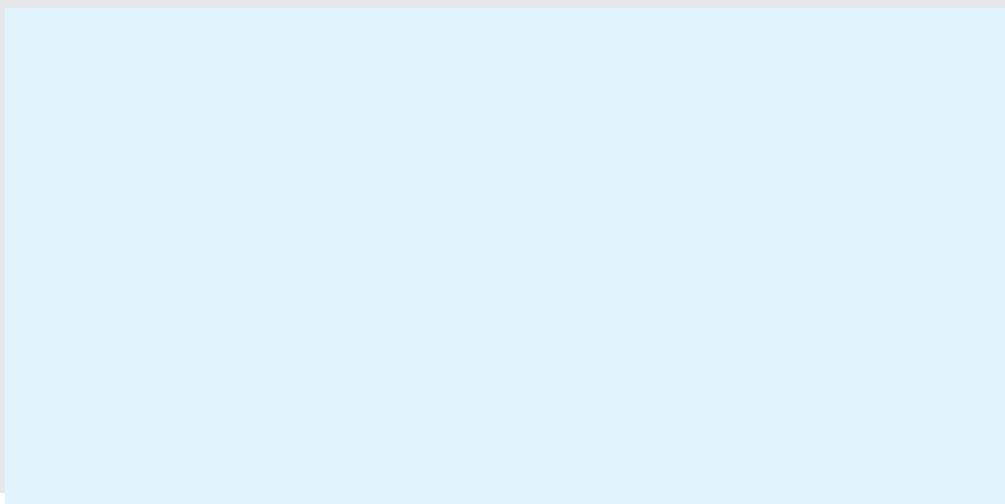




WORLD TRADE  
ORGANIZATION

# e-COMMERCE IN DEVELOPING COUNTRIES

Opportunities and challenges for  
small and medium-sized enterprises



## World Trade Organization

The World Trade Organization is the international body dealing with the global rules of trade between nations. Its main function is to ensure that trade flows as smoothly, predictably and freely as possible, with a level playing field for all its members. The WTO aims to place developing countries' needs and interests at the heart of its work programme.

## What is e-commerce?

For the purposes of the trade focus of this brochure, e-commerce is the sale or purchase of goods or services conducted over computer networks by methods specifically designed for the purpose of receiving or placing of orders. Even though goods or services are ordered electronically, the payment and the ultimate delivery of the goods or services do not have to be conducted online.

An e-commerce transaction can be between enterprises, households, individuals, governments, and other public or private organizations. Included in these electronic transactions are orders made over the web, extranet or electronic data interchange. The type of transaction made is defined by the method of placing the order. Normally excluded are orders made by telephone calls, fax or manually typed e-mails.

## Workshop on E-Commerce, Development and Small and Medium-sized Enterprises

A workshop at the WTO on 8 and 9 April 2013 highlights the relationship between e-commerce and development and examines how small and medium-sized enterprises (SMEs) in developing countries have been using e-commerce to promote, market, service and sell their products nationally and abroad. The workshop focuses on both the opportunities and the challenges facing developing countries and assesses how such issues concerning adequate levels of telecoms infrastructure, regulation and investment either help or hinder SMEs from finding new opportunities through e-commerce.

*This document has been prepared under the responsibility of the WTO Secretariat and is without prejudice to the positions of WTO members and to their rights and obligations under the WTO.*

# Introduction

Many small and medium-sized enterprises (SMEs) in developing countries have the possibility to benefit enormously from mobile telephony, the internet and other forms of information and communication technology (ICT) in their day-to-day business activities. This has already resulted in enhanced productivity in a number of areas.

However, SMEs in these countries are not always maximizing the use of ICT. Governments and their partners, including the private sector, need to take greater advantage of the opportunities emerging in the new ICT landscape. Also, governments need to ensure that users benefit not only from being connected to the internet but also from any technological evolutions that increase the speed of data flows and that can help reduce costs to consumers.

## E-commerce and SMEs

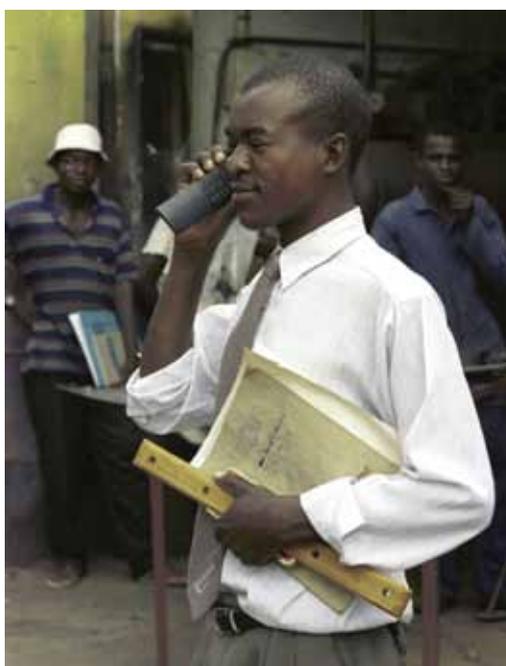
In both developed and developing countries, SMEs make up a majority of business and employ the majority of workers in both manufacturing and services sectors. SMEs cater mostly to their domestic market and their contribution to GDP, although normally very small, can vary greatly depending on the value of the goods or services they produce. While less than 6 per cent of the formal work force is employed in manufacturing in SMEs in Azerbaijan, Belarus and Ukraine, this share is more than 50 per cent in other developing countries such as Ghana, Turkey and Ecuador. Research has indicated that countries with large SME sectors also tend to benefit from the significant contribution which SMEs make to GDP.

A study by the United Nations Conference on Trade and Development (UNCTAD) has shown that SMEs, while generally lagging in ICT, have the most to gain from increases in productivity thanks to e-commerce. SMEs, however, actually run the risk of missing opportunities in both productivity and profitability by not engaging in e-business. SMEs also have a large role to play in the economies of developing countries because it is these same countries that have the greatest potential to benefit from e-commerce. The extent of ICT use by SMEs is dependent on both sector

and size of the business. Typically, those SMEs which are export or import-oriented as well as those involved in the tourist sector have stronger incentives to invest in implementing ICT in their respective businesses.

E-commerce has been hailed by many as an opportunity for developing countries to gain a stronger foothold in the multilateral trading system. E-commerce has the ability to play an instrumental role in helping developing economies benefit more from trade. Unlike the requirements necessary to run a business from a physical building, e-commerce does not require storage space, insurance, or infrastructure investment on the part of the retailer. The only pre-requisite is a well designed web storefront to reach customers. Additionally, e-commerce allows for higher profit margins as the cost of running a business is markedly less.

Another advantage provided by e-commerce is that it allows for better and quicker customer service. In some cases, customers could have direct access to their own personal accounts online and can avoid calling companies on the phone. This can save both time and money. Adding customer online services such as overnight package delivery services can also have commercial benefits. These can be complemented by package tracking services which allow customers to check the whereabouts of their packages online. This helps provide good levels of customer satisfaction with very little effort from the side of the business.

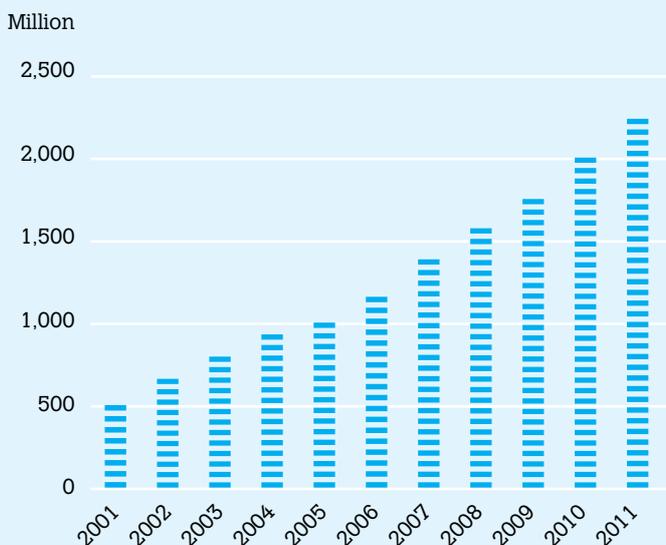


## Growth of the internet

The first decade of the new millennium witnessed a profound change and dramatic increase in the way business and trade takes place electronically. Each day, more users in least-developed and developing countries are accessing the internet through terminals. A growing percentage of users are now also accessing the web through mobile technology. It is predicted that the internet and especially the use of mobile applications will expand exponentially in the decades ahead. There is enormous potential for using ICT to contribute to the social and economic progress of developing countries worldwide. A key role in this regard is played by SMEs.

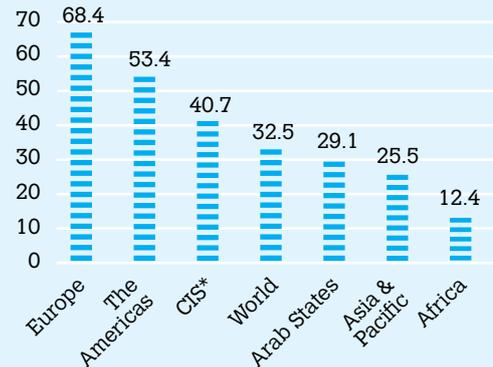
UNCTAD's recent Information Economy Report 2010 shows how ICT use by micro enterprises and SMEs has improved not only business performance but has helped improve livelihoods in some of the world's poorest regions and communities. Many entrepreneurs in developing countries now have a real possibility to benefit from ICT in their business activities. In many cases, this has resulted in gains in enhanced productivity.

Chart 1  
Number of people using the internet, 2001-11



Source: International Telecommunication Union (ITU)

Chart 2  
Individuals using the internet per 100 inhabitants, 2011



\* Commonwealth of Independent States

Source: ITU World Telecommunication / ICT Indicators database

By improving communication channels, both domestically and internationally, the application of relevant ICT can greatly enhance the competitiveness of business. Government efforts to further improve, upgrade and expand ICT use by the private sector should, therefore, be reinforced. UNCTAD's study finds that governments and their various partners, including the private sector, are far from taking full advantage of the opportunities that are emerging in the new ICT landscape. This is evident in part from the relatively limited attention that has been given to ICT in strategies aimed at promoting private sector development.

Of all the internet users in 2011 (see Chart 1), 1.3 billion were from the Asia-Pacific region, the Middle East, Africa or Latin America, indicating a shift in the regions with the most people online. However, in spite of this growing trend in internet use, developed countries still continue to surpass developing countries in terms of number of connections.

Chart 2 highlights the number of individuals using the internet per 100 inhabitants. While the Africa region has a penetration rate of 12.4, Europe has the highest penetration rate, with 68.4 out of every 100 Europeans having access.

## Growth of e-commerce

There is no question that e-commerce has grown rapidly since the first users started to browse the worldwide web in search of goods and services. Today, sales realized over the internet represent a significant proportion of overall commercial sales. In 1991, the internet had less than 3 million users around the world and its application to e-commerce was non-existent. Almost a decade later, by 1999, an estimated 300 million users accessed the internet and approximately one-quarter of them made purchases online from electronic commerce sites, worth approximately US\$ 110 billion. This year, global business-to-consumer e-commerce sales are set to pass the US\$ 1.25 trillion mark.

### B2B, B2C or B2G?

There are numerous types of commercial transactions that occur online, from buying goods such as books or clothes to purchasing services such as airline tickets or making hotel or car rental reservations. Since the main focus of this brochure is on how SMEs use the internet, the discussion here concerns only a few services which relate closely to SME economic activity. These include electronic communications in the area of business to business (B2B), business to consumers (B2C), business to government (B2G) and mobile e-commerce.



### Business to business (B2B)

B2B is e-commerce between businesses such as between a manufacturer and a wholesaler, or between a wholesaler and a retailer. This is the exchange of products, services, or information between businesses rather than between businesses and consumers.

Global B2B transactions comprise 90 per cent of all e-commerce. According to research conducted by the US-based International Data Corporation (IDC), it is estimated that global B2B e-commerce, especially among wholesalers and distributors, amounted to US\$ 12.4 trillion at the end of 2012. If the expansion in e-commerce continues at this rapid pace in developed markets as is expected, B2B and B2C e-commerce transactions will account for about 5 per cent of all inter-company transactions and retail sales by 2017.

### Business to consumers (B2C)

B2C e-commerce entails businesses selling to the general public, typically through catalogues that make use of shopping cart software.

Although B2C e-commerce receives a lot of attention, B2B transactions far exceed B2C transactions.



According to the IDC, global B2C transactions were estimated to reach US\$ 1.2 trillion at the end of 2012, ten times less than B2B transactions. Although B2C e-commerce accounts for only a small share of e-commerce as a whole, it continues to grow. B2C e-commerce is highest in Norway, Denmark, Sweden, the United Kingdom and the United States and covers mainly computer-related products, clothing and digitized products.

Despite the low value of its transactions, B2C e-commerce has received the most attention, partly because issues such as consumer trust and data protection have received considerable concern from policy makers.

### **Business to government (B2G)**

Business to government (B2G) commerce is generally defined as e-commerce between companies and the public sector. It refers to the use of the internet for public procurement, licensing procedures, and other government-related operations.

In B2G e-commerce, the public sector generally assumes the pilot role in establishing e-commerce in an effort to make its procurement system more efficient. The size of the B2G e-commerce market as a component of total e-commerce is still rather insignificant as government e-procurement systems still remain comparatively undeveloped.



## Accessing the worldwide web through mobile telephony

The most popular ICT in developing countries and one which is progressing very rapidly in Africa and Asia, in particular India, is the mobile phone. Mobile phones are increasingly playing a larger role in the expansion of e-commerce in developing countries, especially among users without terminal connections.

Chart 3 shows that in the past ten years, mobile-cellular subscriptions in developing countries have increased nearly tenfold. Not only have they helped to improve how businesses are run, they are also helping to close the poverty gap. Mobile phones are making it possible for rural farmers to engage in mobile money services, allowing them to open saving accounts, earn interest on their deposits and access a variety of credit and insurance products.

In many developing countries, mobile phones are still mostly used for voice communication and texting. Recently, however, they are increasingly being used for data applications such as m-commerce and m-banking. In a number of African countries, notably Kenya, South Africa, Tanzania and Zambia, mobile telephones are being used to do personal banking services.

Entrepreneurs are using calling and texting services to acquire locally relevant information and services. In the near future, internet-enabled phones may help to deliver the same services but more efficiently. Micro enterprises and SMEs, many of which are in the informal sector in developing countries, appear to be the most positively affected by the adoption of mobile telephony.

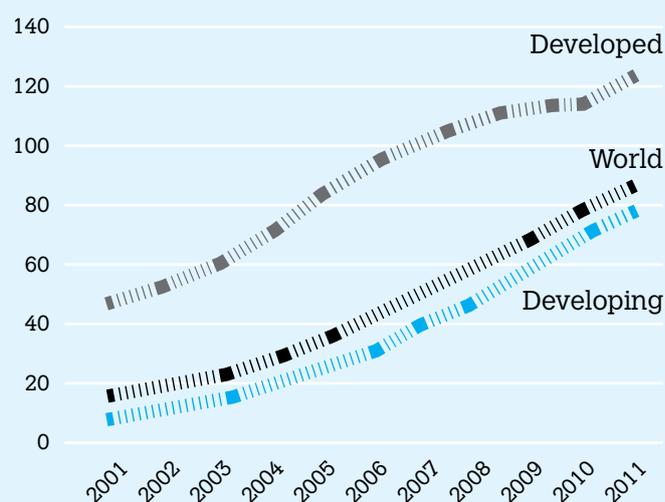
In the agriculture and fisheries sectors in Asia and Africa, for example, mobile phones are now frequently used to conduct sales and purchases, to establish delivery times and destinations and to negotiate prices. While these are classic transactions normally carried out over personal computers, they are being done on location using mobile technology. For fishermen, mobile phones are regularly used to check weather reports and to receive early warning announcements of severe weather conditions on land or at sea.

### What are the prospects of the global mobile market?

Developing countries – particularly major emerging economies – will continue to drive growth of the global mobile phone market. This is due to their large population, low penetration rates and rising disposable incomes although the true growth potential depends also on government policies to help liberalize the market and enhance competition among network providers.

During 2011-20, the number of mobile subscriptions in Africa and the Middle East is forecast to grow at an average rate of 5.6 per cent per year, compared with the global average of 3.7 per cent. However, the expected growth in Africa and the Middle East is from a relatively low base: in 2010, the mobile penetration rate in Africa stood at 56.5 per cent of the population.

Chart 3  
Mobile-cellular subscriptions per 100 inhabitants, 2001-11



Source: ITU World Telecommunications/ICT Indicators database

The Asia-Pacific region will continue to be the largest regional mobile phone market, with 3.9 billion subscriptions in 2020 (up from 2.4 billion in 2010). China will continue to be home to the world's largest number of mobile phone subscriptions, with 1.3 billion subscribers in 2020 (up from 839 million in 2010).

However, India – currently the world's second-largest mobile phone market – will have significant growth potential not only in the Asia-Pacific region but globally, with the number of mobile phone subscriptions forecast to grow at an average annual rate of 5.7 per cent during 2011-20, to reach 1.1 billion in 2020. From a luxury product used primarily in developed countries, mobile telephony has become universally available. It is now an integral part of life for many.

Meanwhile, in the developed world, the commercial deployment of next-generation technologies and devices will increase usage of advanced mobile services, which in turn will open up many new, e-commerce business opportunities and especially in developing countries. Meanwhile, more data applications are now regularly being used in developing countries to conduct business (m-commerce), engage in retail or commercial banking activities (m-banking) and to find work (m-labour).

## Mobile phone revolution

The number of mobile phones in use worldwide between 2000 and 2012 grew from less than 1 billion to more than 6 billion. The mobile revolution is transforming livelihoods, helping to create new businesses, and changing the way we communicate, work and earn and spend income. The mobile phone network is already “the biggest machine” the world has ever seen, and now that machine is being used to deliver development opportunities on a scale never before imagined. During this second decade of the new millennium, maximizing the potential of mobile phones is a challenge that will engage governments, the private sector, and the development community alike.

*Source: World Bank, Information and Communications for Development 2012: Maximizing Mobile*



## How do poorer countries benefit from mobile telephony?

Mobile technology can be utilized by SMEs operating in the agricultural and fisheries sectors. It also has uses for labour and transport mobilization, for micro-credit services and for mobile money. This section provides an overview as to how mobile technology is being used by SME business operators in various sectors in developing countries.

### Agriculture

Greater productivity can help boost farmers' income, especially for small-scale farmers and fishermen, who have limited resources to grow and market their produce. Creating a more efficient value chain at local or national levels also requires engaging many stakeholders, from farmers growing crops and raising cattle to suppliers and distributors.

Farmers in developing countries are increasingly utilizing mobile technology to increase their commercial potential. According to a World Bank study released in 2012, the benefits for farmers who use mobile phones includes access to agricultural information concerning stock piles and prices, data visibility for value chain efficiency and being able to tap into new and existing markets.

When farmers have access to information about prices and stocks, it helps them to reduce the risk of under-selling and of either over or under-supplying their crops in a given market. The World Bank study shows that access to price information by farmers has helped to increase farming income by 24 per cent. Sellers realized even greater gains of up to 57 per cent, with overall price reductions for consumers of around 4 per cent.



Information transmitted by mobile phone also includes access to early warning systems to mitigate the risk of losses due to extreme weather conditions or to the spread of disease.

### Online data and information services

Mobile services can also enable better access to markets and other value-chain stakeholders. Sellers are increasingly using their websites to relay online information on transport and logistics, with some of these services being provided on mobile phones.

For example, through the use of voice and SMS in Morocco, farmers coordinate with local truckers to improve product transport and to identify where the best locations are for them to deliver their products. Some farmers also make use of two-way trade by bringing products back from larger, regional markets to sell in their own rural communities.

#### Case study

#### Sara Maunda, groundnut farmer Malawi

"In June 2011, a grain trader arrived at my gate offering me 30 kwacha per kilo for my peanuts", Sara Maunda said. "My SMS from Esoko told me that the price was more than four times the trader's price. When I showed him, he said, 'These people are lying to you — you will go very far and find that you have lost money.'"

Maunda trusted both her instincts and the text messages. She and four neighbours rented a pick-up truck in Madisi, the nearest town, and headed south to Lilongwe, 80 kilometres away, to sell their groundnut crop themselves. She said: "the market price there was five times the vendor's offer. My share of the sale cleared 24,000 kwacha (\$130) after all expenses. If I had sold to the vendor at my village I would have made only 4,500 kwacha (\$27)."

Source: USAID Frontlines July/August 2012

Product traceability has become increasingly relevant to those developing countries that want to gain or expand into new export markets. The use of ICT has led to improved consumer protection and food safety on the one hand and better livelihood outcomes for farmers on the other. Radio frequency identification (RFID) chips are also used to trace animal movement, enabling the monitoring of animals from cradle to grave. The use of the system in Namibia to replace traditional paper-based recording has increased the accuracy of the data and the speed in which it is disseminated, leading to higher monetary returns on livestock.

RFID has also been used for the prevention of animal poaching. Governments are now able to trace elephant and rhino herds and can take steps to mitigate illegal poaching activities. Such approaches are increasingly showing positive results in Africa and are contributing to sustainable development and to continued prospects for tourism.

## Fisheries

Fishermen and merchants buying and selling fish communicate through voice calls, via SMS messages or by accessing specialist Wireless Application Protocol (WAP) services. WAP is a technical standard for accessing information over a mobile wireless network.

The WAP browser technology was created for older mobile devices. It allows users to access adapted web information and other data even if they do not have newer generation “smart” phones. New generation phones and higher bandwidth access are supplanting WAP in most developed countries. However, the need for low-cost mobile services and low penetration of newer phones has thus far kept WAP alive in many developing countries.



## Case study

### Manobi telecoms company Senegal

In 2003, in collaboration with Sonatel (the Senegalese phone operator), Alcatel, IDRC and InfoDev, the Senegalese telecommunications company Manobi began to provide fishermen with real time weather reports and market prices using WAP and SMS technology via mobile phones.

The interactive technology enabled fishermen to input fish stock information for marketing as well as departures and estimated times of return so that local fishing unions could be alerted in emergencies. The project successfully persuaded Sonatel to install a phone base station near the beach, ensuring network coverage up to 14 km from the shore.

In 2005, Manobi launched a Geographic Information System (GIS), using GPS and GSM technologies to increase protection at sea for fishermen and their boats, in partnership with insurance companies. It provides precise real-time localization up to 45 km offshore. Fishermen pay an insurance premium based on time spent at sea, with their mobile phones acting as security for both them and the insurance company.

## Mobile money

Mobile money services are increasing in popularity. They have helped to improve how businesses operate and now they are also contributing to helping to close the poverty gap. One of the major barriers to poverty reduction is access to formal financial systems for the poor. The use of informal instruments means that the poor are limited in their ability to save, borrow, repay debt and manage risk responsibly.

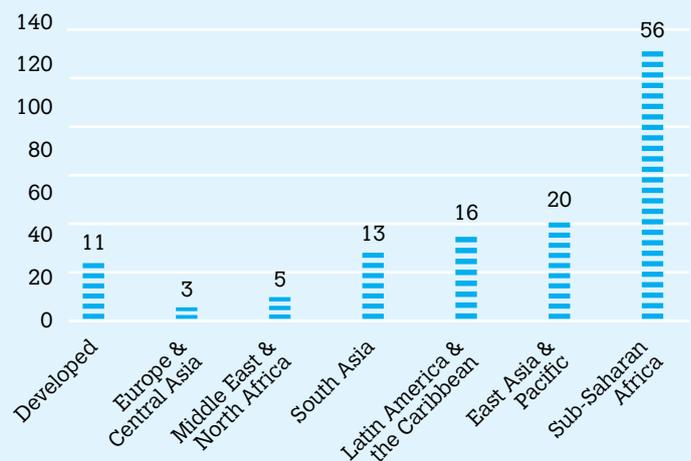
Mobile money services in developing countries are gaining in prominence mainly due to their effective way of conducting payments and providing access to finance, particularly in areas where access to physical bank branches or even ATM machines is minimal (see Chart 4). They are helping to increase productivity and efficiency while at the same time reducing transaction costs.

One of the most successful and fastest growing mobile banking services is M-Pesa, founded in April 2007 by Safaricom, a Kenyan telecommunications company.

Safaricom launched the new mobile phone-based payment and money transfer service to offer its customers an array of services, ranging from depositing money into an account stored on a customer's cell phone to sending balances using SMS technology to other users (including sellers of goods and services) and to redeem deposits for regular money. It also allows users to settle their bills. Users are charged a small fee for sending and withdrawing money using the service.



Chart 4  
Number of mobile money deployments by region, March 2012



Source: GSMA Mobile Money Tracker 2012

M-Pesa has spread quickly and has become the most successful mobile phone-based financial service in any developing country. By 2012, a stock of about 17 million M-Pesa accounts had been registered in Kenya.

M-Pesa is a branchless banking service, meaning that it is designed to enable users to complete basic banking transactions without the need to visit a bank branch. The continuing success of M-Pesa in Kenya has been due to the creation of a highly popular, affordable payment service with only limited involvement of a bank.

## What restricts SMEs from making fuller use of e-commerce?

E-commerce is generally presented in very positive terms but along with the potential benefits come potential problems for developing countries. The adoption of e-commerce in developing countries differs greatly from one country to the other. But many face a number of similar obstacles to e-commerce. These mainly include a lack of financial, legal and physical infrastructure for the development of e-commerce.

The development of various types of e-commerce depends primarily on the existing structure of an industrial sector and how it fits into a given sectoral value chain. Additionally, the difference of cultures and business philosophies across developing countries has also been seen to limit the applicability and transferability of the e-commerce models designed by some developed countries.

Although SMEs have numerous reasons for engaging in e-commerce, the security concerns of the customers remain an important impediment to expanding e-commerce services and business. Probably, the biggest drawback is the reluctance of customers to provide online information about their credit cards.

Ensuring both trust and familiarity through a well-functioning website has proven to be one of the major e-commerce success factors. In the same vein, the growth of broadband has created a greater need for users to protect their security and privacy in an "online" environment. Both individual users and businesses report that computer viruses are the "malware" they encounter the most. Security continues to be a problem for online businesses as customers have to feel confident about the integrity of the payment process before they commit to the purchase.

The potential of e-commerce can only be achieved given adequate infrastructure. In most developing countries, this constraint presents a major obstacle. Smaller, low-income internet markets in developing countries, particularly in Africa, have been unable to attract sufficient investment in infrastructure. Combined with lack of competition, this results in bandwidth cost that can be up to 100 times higher than in developed countries.

### Case study

#### Business Development Department, Thailand

Thailand's Department of Business Development (DBD) is encouraging SME operators to seek new opportunities via e-commerce while introducing the DBD Registered symbol to ensure security for online shoppers.

Deputy Minister of Commerce Siriwat Kajornprasart revealed that he has assigned the DBD to support Thai SMEs in doing business via e-commerce. Due to the huge growth and increasing popularity of e-commerce, he said that Thai SMEs should consider expanding their businesses online in order to find new opportunities and reduce production costs at the same time. E-commerce can also help enhance the potentials of Thai companies to compete in the international market.

*Source: Thai Financial Post published on 6 August 2012*



## Case study

### Peruvian government, fibre-optic initiative

The Peruvian government has announced that it will support the deployment of a national fibre-optic backbone for broadband access, Andina reports. The announcement followed the passing last week of the Law for the Promotion of Broadband and Construction of Optical Fibre Backbone.

Telecoms regulator Osiptel will oversee the rollout, and ensure access is competitive, whilst the Agency for the Promotion of Private Investment (ProInversion) has been tasked with selecting a company to carry out the installation. Osiptel is understood to be drawing up technical criteria for the network, which will link all provincial capitals, and have connections to all districts.

Further, the broadband bill ensures net neutrality, making it illegal for an internet service provider (ISP) to block, interfere with, discriminate against or restrict the right of any user to use an application, regardless of origin, destination or nature.

*Source: TeleGeography, published on 25 July 2012*

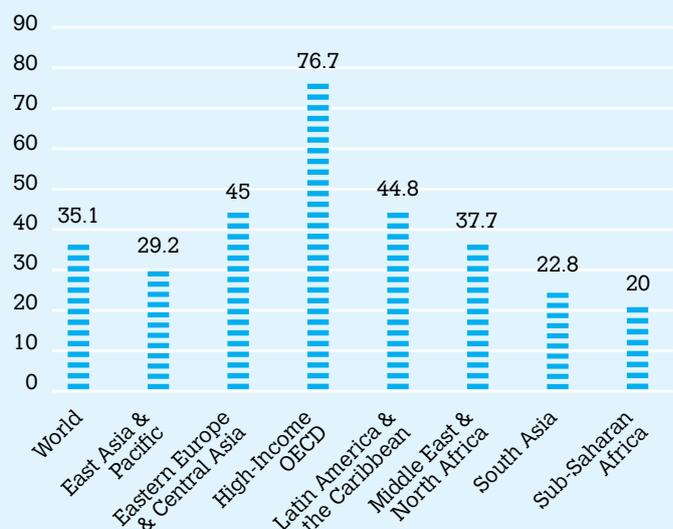
In most cases, these countries remain outside the reach of fibre optic cables and must turn to satellites for international – and sometimes even domestic – connectivity. This happens even in spite of significant improvements brought about by technology.

Another area of concern is the lack of technical skills which keeps SMEs from realizing their full e-commerce potential. Many developing countries do not have a workforce that has sufficient training in ICT and mobile technology. This greatly disadvantages many SMEs that may be seeking to diversify or to branch out into e-commerce.

Making sure enterprises possess the required set of skills and capabilities to use relevant technologies productively is key to securing the economic benefits of e-commerce. Many entrepreneurs in developing countries, and especially in least-developed countries, lack the necessary capacity or awareness to take full advantage of ICT (see Chart 5).

Even if entrepreneurs in developing countries have access to mobile phones or the internet, they may not know how best to leverage them for their business operations. In some circumstances they may even fail to see the value of investing in the technology required so as to be able to take advantage of the opportunities of e-commerce.

Chart 5  
Enterprises with their own website, 2006-09 (in %)



*Source: World Bank Enterprise Surveys*

## Conclusions

This brochure has focused on how e-commerce and mobile telephony have transformed the lives of many people in developing countries. Access to the internet and mobile phones help improve the livelihood of the poor through better communications and greater access to information. Many poor farmers are now able to receive better prices for their crops because they have access to information on market prices. The African company TradeNet, a Ghana-based trading platform, is a key example.

The internet and mobile phones have also spawned a wealth of micro-enterprises, offering work to people with little education and few resources, such as selling airtime and repairing or refurbishing handsets. When farmers have access to information about prices and stocks, it helps them to reduce the risk of under-selling and of either over or under-supplying their crops in a given market. Information transmitted by mobile phone also includes access to early warning systems to mitigate the risk of losses due to extreme weather conditions or to the spread of disease.

This brochure has examined different ways of using e-commerce and has looked at some specific sectors where SMEs tap into vital market information on which their businesses depend. Others still are involved with the development or the dissemination of mobile services such as mobile banking, credit and insurance services.

It is important to remember, however, that SMEs are not alone in their involvement with e-commerce. The government and the private sector have vital roles to play not only in allowing e-commerce to take place but to ensure that it grows and benefits not only SMEs but also consumers. Much of the support to e-commerce depends on having or providing the right infrastructure, regulations and the policy mix allowing e-commerce to thrive.

High-quality and reliable transactions over the internet need advanced telecommunications systems and ones that offer broadband and mobile broadband services at affordable prices to both companies and private users. This requires an enabling environment where competition between telecommunications providers is robust. Also required is a workforce with solid ICT skills. Such skills are crucial for the further development of e-commerce and other mobile applications. The latter are critical in the quest to produce relevant and high-quality applications. Here too, governments can play a vital role in ensuring that secondary and vocational schools teach the necessary skills to help build a viable digital economy and one that is capable of adapting to the needs of its users.

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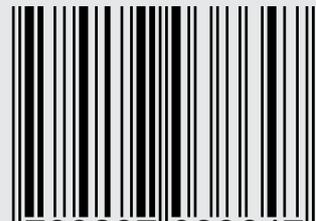
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