IT Report 2010

On the Internet Ecosystem in Saudi Arabia

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هيئة الاتصالات وتقنية المعلومات
Communications and Information Technology Commission

Foreword by CITC Governor

The Communications and Information Technology Commission (CITC) is proud to present the second in its series of reports on the state of IT in Saudi Arabia. CITC issues these reports in the spirit of transparency and advocacy that underlies its mission to develop information and communications technology (ICT) in the Kingdom.

Last year's report mapped out the Kingdom's IT markets, addressed the major inhibitors to IT usage and spending, discussed key opportunities for building IT industries, and addressed the availability and development of IT professionals. This year, CITC briefly updates key indicators of the previous report and then provides an in-depth analysis of Saudi's internet ecosystem and its enablers, identifying best practices and areas for improvement, and recommending measures to improve Saudi IT for the benefit of all.

A well-developed and mature internet ecosystem can provide substantial benefits to the Kingdom. It can increase the availability of information and services to the country's residents and to the customers of its businesses. It can enhance the productivity and delivery of services by both government agencies and enterprises. It can improve the efficiency of markets, resulting in lower prices, faster delivery times, and increased output. It can enable new cooperation between industry and government, or between government and its citizens. And it can expand Saudi Arabia's export economy to include intellectual property. Properly developed, the internet economy can also become a significant employer for the young people currently being educated in the Kingdom's schools.

As the Kingdom's ICT regulator, CITC is charged not only with driving the liberalization of the sector and increasing ICT availability, but with encouraging the development of the entire internet economy. CITC hopes that this report and the activities around it will arouse public interest in key IT sector issues, increase awareness of best practices and the challenges to be addressed, and clarify the benefits to be gained from concentrated, assiduous efforts to improve this aspect of the Saudi economy.

In conclusion, I would like to pay tribute to the continued support of the Government of the Custodian of the Two Holy Mosques. I would also like to thank everyone who shared their perspective with CITC during the interviews and surveys that were conducted for this report.

Eng. Abdullah A. Al-Darrab
Governor, CITC

Acknowledgements

CITC would like to acknowledge the contribution of all organizations who participated in the studies cited in this year's report and in the 2009 report. These organizations include government ministries and bodies, organizations in various industries, and other stakeholders active in the Saudi internet ecosystem. The following organizations merit special mention for their support:

Advanced Electronics Co	National Technology Co.
Al Fanar IT	Oger Systems
Alcatel Lucent	Oracle
Al-Falak Systems Solutions & Consulting (MSO)	Osool Capital
Al Hokair Group	Paramount Computer Services
Al Jazirah Press	Philips
Almarai	Qaym
Al Watan	Redington
Arab Satellite Communications Organization	Remal IT Company
Arabic Computer Systems/National Net Ventures	Riyadh Bank
Arabise Egypt	Riyadh Chamber of Commerce & Industry
Awal	SAMBA Financial Group
Badir Program for Technology Incubators	Saudi Arabian Basic Industries Co (SABIC)
Banque Saudi Fransi	SADAD
British Telecom Al-Saudia	Saudi Airlines
DMS (Egypt)	Saudi Aramco
Ebttikar	Saudi Bell
EJADA	Saudi Binladin Group
Electronia	Saudi British Bank (SABB)
Flextronics	Saudi Business Machines
Gonabit.com	Saudi Cement
Hawaaworld.com	Saudi Electricity
ICC - Zai	Saudi IT Co.
ICT Ventures	Saudi Oger
Infosys BPO	Saudi Post & emall.com.sa
ITS2	Saudi Telecom Company (STC)
Jeraisy Computer & Communication Services	Savola Group
King Fahad Armed Forces Hospital	SmartLink
Logicom	SPIMACO
Ma'aden	Tata Consultancy Services
Microsoft	Wipro
Mobily	

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Executive Summary

Overview

Saudi Arabia is one of the fastest growing countries in the region in terms of information and communications technology spending. Total IT spending in the Kingdom reached SR 27 billion in 2010 and is forecast to reach SR 46.3 billion in 2015, representing a compound annual growth rate (CAGR) of 11.4%. The industries that drive this spending are, in order, telecommunications, finance, government, and oil and gas. In particular, spending by the government is growing rapidly as it launches major efforts in employment, education, smart cities, transportation, and healthcare.

Per capita ICT spending in Saudi Arabia will continue to grow at 10-16% annually over the next five years, improving the Kingdom's position in regional rankings of ICT spending as a percentage of GDP. Among key technology markets, packaged software will show the fastest growth, followed closely by IT services and hardware.

Key Findings

CITC conducted a large-scale survey involving over 1,500 Saudi residents and more than 400 companies, government entities and other stakeholders of the internet ecosystem. CITC's research found that usage of the internet is increasing among all sectors of Saudi society. Although there are still some barriers to widespread adoption of cutting-edge services, residential, government, and enterprise users all indicate that they expect the internet to play an increasingly central role in their life and business over the next five years. As ICT becomes integral to education, government services, healthcare, and employment, internet access increasingly opens up new opportunities, and thus the digital divide becomes an ever more urgent problem.

Saudi e-commerce is still in its early stages. While 30% of businesses and 13% of government organizations buy online, only 8% of the businesses sell online. In particular, "clicks and mortar" business is still in its infancy, as most Saudi retail chains have yet to establish an online channel. On the consumer side, there is as yet little adoption of e-commerce, although surveys show that more individuals plan to try it in the future.

Enablers of the internet ecosystem are in an intermediate state of development. The legal framework, ICT infrastructure, and delivery options are in line with the Kingdom's peer group, while more work needs to be done on payment systems, security and data protection, and IT skills. There are also some barriers to be overcome in funding and nurturing startup companies and other entrepreneurial activity that are a key source of innovation and development in the internet economy.

Recommendations

CITC has identified several steps that the Kingdom could take to boost adoption of internet content and aid entrepreneurs in the formation of new businesses and business models. On the demand side, the Kingdom should increase consumer access to – and comfort with – the internet as a channel for commerce. The government should also embrace its role as a bellwether client in the internet economy by propagating best practices in e-procurement and by adhering to guidelines for the participation of smaller providers in major projects. To aid internet content startups, payment options should be both expanded and made more efficient. Entrepreneurs in general would be aided by regulations supporting venture capital investments and further expansion of the Kingdom's growing incubator network.

" IT spending reached SR 27 billion in 2010 and is expected to grow 10.2% year-on-year in 2011."

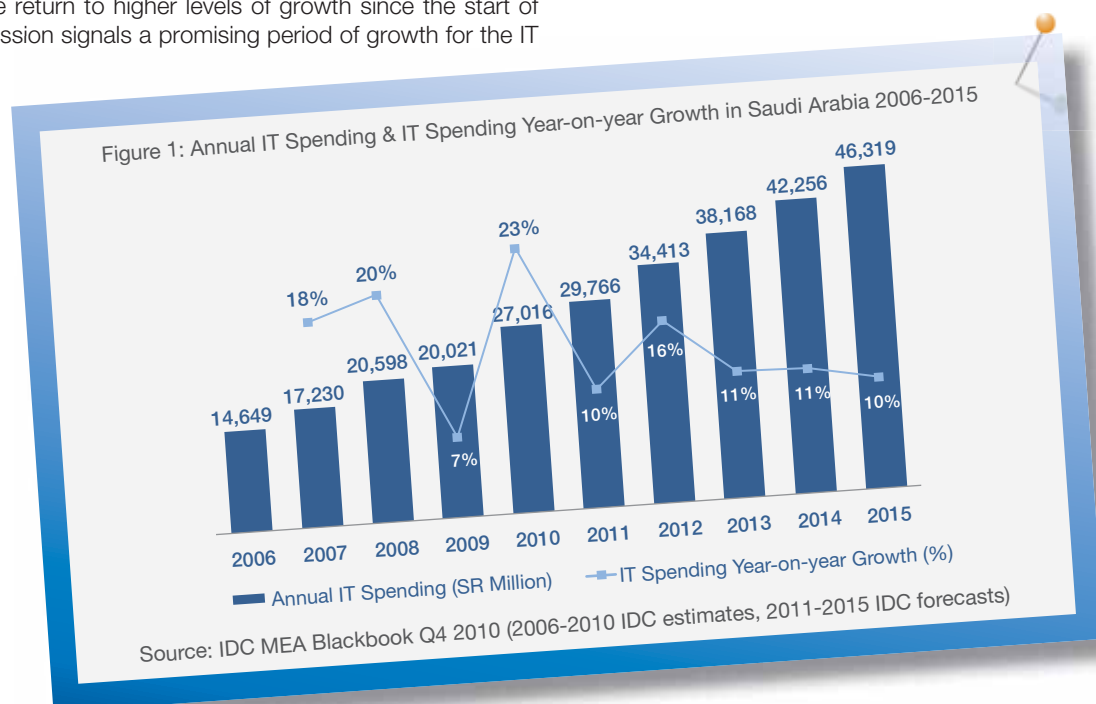# 1. Overview of the IT Market in Saudi Arabia

1.1   IT Spending in Saudi Arabia

Over the course of the last two decades, the use of IT in the Kingdom has exploded. Since the introduction of public internet services in the late nineties, the underpinning ICT usage benefits (and increased awareness thereof) and focused government initiatives have spurred sustained surges in growth. These developments have ushered in significant waves of acceptance and adoption by the commercial, government, and home sectors in their daily activities. This has been supplemented by a corresponding growth in the supply of services and devices from ICT providers. Over the past few years, Saudi Arabia has seen a growing and increasingly pervasive reliance on ICT and internet services by consumers and businesses alike.

In line with the overall strong economic expansion that has been witnessed over the past decade, IT spending continues to scale new heights. The negative impact of the global economic slowdown also appears to be wearing off; the year-on-year growth rate seen in 2010 was more than triple that recorded in 2009[1] (see Figure 1). This makes the Kingdom one of the fastest-growing IT markets in the region. The return to higher levels of growth since the start of the global recession signals a promising period of growth for the IT

industry. IT spending reached SR 27 billion in 2010 and is expected to grow by 10.2% year-on-year in 2011. Strong growth rates will be maintained over the next few years, with IT spending set to expand at a compound annual growth rate (CAGR) of 11.4% through 2015. This rapid growth, fuelled mostly by increased spending on hardware and IT services, will take IT spending to SR 46.3 billion in 2015.[2]

IT spending per capita reached SR 998 in 2010, which represents a 14% increase over the previous year's value.[3] This compares favorably with countries such as Turkey (SR 441), Egypt (SR 111), and Malaysia (SR 784), and the high growth forecast for the next few years is expected to improve the Kingdom's position relative to other IT economies, such as the UAE (SR 2,916) and Singapore (SR 5,382). IT spending as a share of Saudi Arabia's GDP stood at 1.65% in 2010. In this, the Kingdom outperforms Egypt (1.15%) and Turkey (1.19%), but lags behind others such as the UAE (1.93%) and Singapore (3.28%).[4]

Figure 1: Annual IT Spending & IT Spending Year-on-year Growth in Saudi Arabia 2006-2015

Source: IDC MEA Blackbook Q4 2010 (2006-2010 IDC estimates, 2011-2015 IDC forecasts)

[1,2] *IDC MEA (Middle East & Africa) Blackbook Q4 2010*
[3,4] *IDC MEA Blackbook Q4 2010 and Economist Intelligence Unit (EIU) country reports May 2011*

1.2 Key Technology Markets

Hardware continues to account for the bulk of spending (66.7%), followed by IT services (22.8%) and packaged software (10.5%).[5] The share of hardware in IT spending is expected to decrease to 60.3% in 2015, while the shares of IT services and packaged software are expected to increase to 27.3% and 12.5%, respectively (see Figure 2).
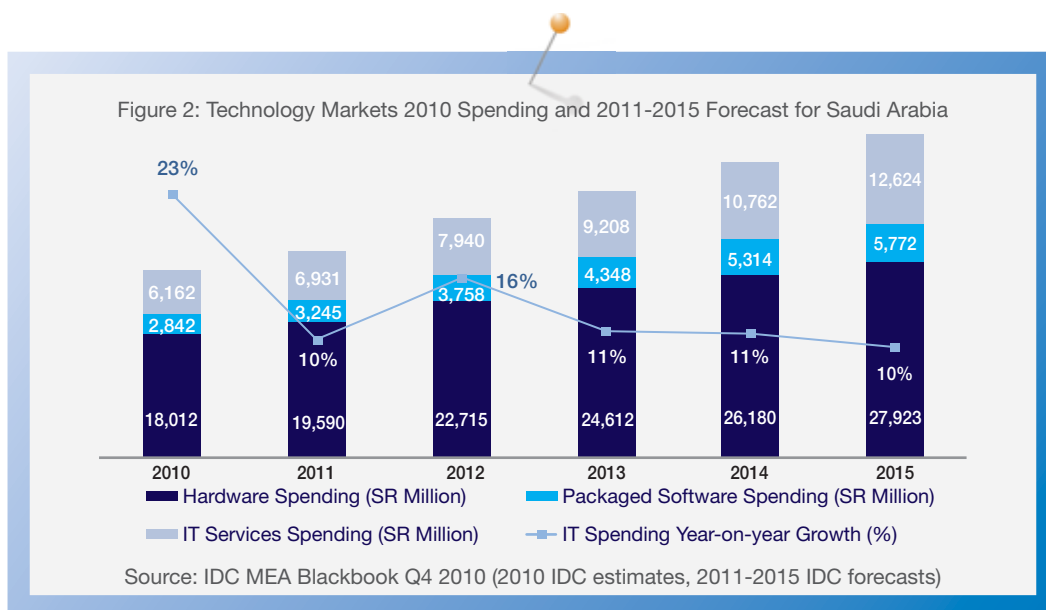
Hardware

Across all key technology markets, hardware recorded the highest year-on-year growth rate of 29.5% in 2010, maintaining its position as the largest component of the Kingdom's IT market. Hardware spending reached SR 18 billion in 2010. Spending on personal computers (PCs) grew marginally from 2009, but its share of total hardware purchases fell ten percentage points from 2009 to account for 37% of the hardware market in 2010.[6]

Following the caution that characterized 2009, business confidence returned in 2010. New desktop uptake was triggered by refresh cycles among small- and medium-sized businesses (SMBs) and large businesses as well as by several projects delivered in the education and energy sectors. The introduction of newer models also drove down the prices of older models, fuelling demand among Saudi residents, especially in the portable PCs segment. On the other hand, smart handheld devices recorded the highest year-on-year growth of 154% in 2010, while their share of the hardware market swelled to 32%, up from 16% in 2009. The printers and multifunction peripherals (MFPs) segment bounced back to its pre-crisis level in 2010, registering year-on-year growth of 37%. While the Saudi server market registered a fall in 2010, Saudi Arabia has emerged as one of the leading countries in virtualization and server consolidation as the Kingdom continues to see an increasing demand for datacenter deployments.

The hardware market is expected to expand at a CAGR of 9.2% over the next four years and is forecast to reach SR 27.9 billion in 2015. The introduction of media tablets and newer PC models will drive demand from the home segment. As companies remain somewhat cautious by keeping IT costs down, virtualization, a higher uptake of blade servers, and demand for richer configurations are likely to drive higher hardware spending.

Figure 2: Technology Markets 2010 Spending and 2011-2015 Forecast for Saudi Arabia

	2010	2011	2012	2013	2014	2015
IT Services Spending (SR Million)	6,162	6,931	7,940	9,208	10,762	12,624
Packaged Software Spending (SR Million)	2,842	3,245	3,758	4,348	5,314	5,772
Hardware Spending (SR Million)	18,012	19,590	22,715	24,612	26,180	27,923
IT Spending Year-on-year Growth (%)	23%	10%	16%	11%	11%	10%

Source: IDC MEA Blackbook Q4 2010 (2010 IDC estimates, 2011-2015 IDC forecasts)

5,6 *IDC MEA Blackbook Q4 2010*

" Software spending grew 12.9% year on year in 2010 to reach SR 2.8 billion while spending on IT services increased 10.2% year-on-year in 2010 to reach a value of SR 6.2 billion."

Packaged Software

Software spending grew 12.9% year-on-year in 2010 to reach SR 2.8 billion. Spending in this category is expected to expand at a CAGR of 15.2% through 2015 and is forecast to reach SR 5.8 billion.[7] Systems infrastructure software, such as operating systems, security and storage software, contributed 45% of total software spending in 2010, while spending on application software, such as Enterprise Resource Management (ERM) and Customer Relationship Management (CRM), accounted for 39%, and application development and deployment software, such as databases, made up 16%. With massive business expansion in the Kingdom, there has been a high demand to standardize the software solutions (applications, databases, security and storage) that are being implemented in branch offices. This is across the board within the large sectors of oil and gas, government, telecommunications, and banking.

Unprecedented data growth is a key concern for companies in Saudi Arabia. The need for structured information led many companies across different sectors to heavily invest in database solutions.[8] However, due to the economic crisis, these companies realized that they needed to prioritize and work on retaining customers. This led to the uptake of business intelligence and advanced analytics solutions aimed at aiding better decision making and improving business performance. Business continuity, compliance to both local and international regulations, and increasing awareness of IT threats have led to enterprises investing in security and storage solutions. Organizations in Saudi Arabia realize that to be sustainable and maintain a competitive edge, they need to be accessible to their customers 24/7 and protect their data from being hacked or misused internally.

IT Services

Spending on IT services in Saudi Arabia increased 10.2% year-on-year in 2010 to reach a value of SR 6.2 billion, and it is expected to expand at a CAGR of 15.4% through 2015 to reach SR 12.6 billion.[9]

Project services, which encompass systems integration and application development, constitute the largest portion of the IT services market in Saudi Arabia. Saudi Arabia requires continued investment in the automation, modernization, consolidation, and integration of disparate IT systems. The need to integrate, automate, and streamline businesses is also expected to stimulate demand for project services, and this segment will therefore continue to dominate the Saudi IT services market.

While most Saudi organizations still prefer to in-source the operational management of their IT systems, there has been a shift in recent years toward managed services, as well as an increased uptake of holistic IS outsourcing contracts.[10] A number of factors have contributed to growth in the demand for outsourcing services, including the natural maturation of the market, low availability of necessary skills, and increasing pressure on companies to focus on their core businesses.

As Saudi companies are expected to seek improved operational efficiencies and look to supplement their internal IT skills, demand for outsourcing services will only increase over the four-year forecast period.

[7,9] *IDC MEA Blackbook Q4 2010*
[8,10] *IDC Research 2010*

1.3 IT Market Drivers and Inhibitors

Key Indirect (Economic) Drivers

Economic Cities: The Saudi Arabian General Investment Authority (SAGIA), responsible for driving foreign direct investment (FDI) in the country is leading several initiatives, including the ongoing development of economic cities across the Kingdom. These are likely to attract local and foreign investments in the private sector, pushing investments in IT infrastructure. Liberalization of various industry sectors, such as utilities (power generation and water management) and transportation will positively impact innovation and stimulate investments in improving current IT systems.

Saudi Arabia's 2011 Benefit Plan: In order to ensure the Kingdom facilitates improved public services and infrastructure, King Abdullah unveiled a benefits plan for Saudi Arabia worth an estimated SR 138.8 billion that primarily aims to address the demand for houses and civil infrastructure in rural areas across the Kingdom.[11] As the development plans unfold, these projects will also drive investments in IT.

Investments in Infrastructure Projects: The Saudi government has launched several large-scale infrastructure projects based on the long-term strategies of achieving a sustainable economy and reducing the Kingdom's dependence on oil revenues. Public sector investment worth nearly SR 1.4 trillion is planned for the 2010–2014 period.[12] Increased budgets are planned for improving healthcare and education. Investments are also planned for transportation infrastructure, the establishment of new airports, and the expansion of key air traffic hubs across the Kingdom, which will drive investments in IT products and services.

Investment in Healthcare and Education: As part of its proposed healthcare reforms, the Saudi government aims to create a stronger institutional framework and deliver improved healthcare services by promoting public-private partnerships in the healthcare industry and establishing more hospitals. To cope with the increasing population in Saudi Arabia, the Ministry of Health is also keen on establishing an e-health initiative as well as hospital management systems and national electronic records, which will drive investments across various IT projects in the Kingdom.[13]

In the research and education sector, King Abdulaziz City for Science and Technology (KACST) and newly established universities, such as King Abdullah University of Science and Technology (KAUST), are at the forefront in terms of focusing on technical education in collaboration with multinational vendors. Princess Nora Bint Abdulrahman University in Riyadh will be among the largest universities in the region to promote education among the female population in the Kingdom. Over the next few years, the government intends to establish new universities in the Kingdom to address the increasing demand for quality education, which will also stimulate investments across various IT services.

Key Direct Market Drivers

Investment in Datacenters: With organizations across vertical sectors investing in improving their IT infrastructure, the demand for datacenters in the Kingdom is at an all-time high, with client organizations contracting IT service providers to design the required infrastructure and build new datacenters.[14] This has positively impacted demand for IT products and services.

At the same time, construction projects in multiple economic cities across the Kingdom, as well as the development of the Information Technology & Communications Complex (ITCC), Saudi Arabia's first dedicated IT park, will drive an increase in expenditure on an array of IT services, particularly large systems integration projects aimed at establishing new datacenters to support the community.

Continued Evolution and Growth in Managed and Shared Services: The outsourcing market in the Kingdom is evolving, primarily driven by the fact that service providers are increasingly investing in introducing new services portfolios and educating their customers. This has led to an increased adoption of hosting and managed services.[15] This growing adoption is driven

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[11] *Reuters http://www.reuters.com/article/2011/03/01/us-saudi-finmin-idUSTRE7204V320110301*

[12] *EIU Saudi Arabia country report March 2011*

[13] *Saudi Arabia Ministry of Health*

[14,15] *IDC IT Services Research 2010*

"IT skills deficit, data security concerns and lack of best IT procurement practices remain the key IT market inhibitors."

by increasingly complex technologies combined with organizations' lack of internal expertise in managing them. This growth is also complimented by multinational organizations investing in the Kingdom using third-party managed services to counter the IT skills shortages they face locally.

On the shared services front, holding companies and business groups in Saudi Arabia have started investing their resources in helping their organizations grow into large-scale conglomerates. With these businesses expanding across the region, there is an increasing interest in utilizing a shared services model with provider departments becoming an internal service provider in order to rationalize non-core activities. The concept is gaining popularity in the Kingdom, particularly within multi-interest conglomerates, and will see growing investments in the IT infrastructure to support it.

Consumer Sector Demand: Saudi Arabia has a large population base with a high percentage of young people. Coupled with the factors of relatively high disposable incomes and increasing market reach and penetration, the consumer segment is expected to drive demand across multiple ICT market segments, including PCs, tablet computers, smartphones, and consumer mobile voice and data services.[16]

Key Indirect (Economic) Inhibitors

Regional Developments: Recent regional events, such as the social unrest in certain Arab countries, have the potential to temper market sentiment and spending, and decrease the appetite for foreign investment in the region, including in Saudi Arabia.

Oil Price Volatility: While oil prices are at a recent high, any fluctuations in the prices and any negative changes will indirectly impact IT spending. The favorable benefits of the current energy market environment are expected to support the new spending commitments by the state, and any reduction in these energy

market benefits might strain the public finances. Oil revenues are among the chief sources of support for the Saudi economy, which strengthens if the oil price stays high or rises but could weaken if the oil price decreases. In particular, a scenario of lower oil prices might discourage public sector spending on infrastructure and diversification projects and ultimately affect IT spending.

Key Direct Market Inhibitors

IT Skills Deficit: The Saudi market faces a high IT skills shortage. While this situation positively impacts the outsourcing services offered by third-party service providers, it can also impact the economy on a broader scale. A lack of IT skills can directly increase the cost of business operations for organizations. Large organizations are particularly handicapped due to the lack of advanced technical skills required for technology-intensive solutions, which inhibits them from investing in IT. Providers also face challenges in finding and retaining skilled IT staff, which often drives up their cost models within the Kingdom.

Data Security: Data security remains a key concern for Saudi companies across all verticals. Although this can drive investments in IT to ensure data is secure and all necessary measures are taken at regular intervals to prevent data leakage, organizations can also be reluctant to invest in their IT infrastructure due to a lack of customer education in the IT security area.

Customer Education: On the one hand, Saudi Arabia has some very innovative and forward-thinking organizations in terms of IT usage, but to a large extent a lack of customer education often inhibits the adoption of emerging technologies and solutions within the Kingdom. Customers are either unaware or unsure of the type of business models and services offered. This lack of awareness of the services available in the market and an inability to truly appreciate the benefits offered by IT often inhibit customers from investing in IT services.

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[16] *IDC Telecommunications Research 2010*

2. The Internet Ecosystem

2.1 Definition of the Internet Ecosystem

This report uses the following definitions for the internet ecosystem and its related terms:

The **internet ecosystem** is a socio-economic environment encompassing individuals, organizations, technical infrastructure, and a regulatory framework, all of which contribute to developing, publishing, accessing, and using internet content.

Internet content, in turn, is any type of digital information, whether in the form of text, image, video, animation, audio, communication, or application (for example online banking, e-shops, or e-government), that is publicly available on the internet.
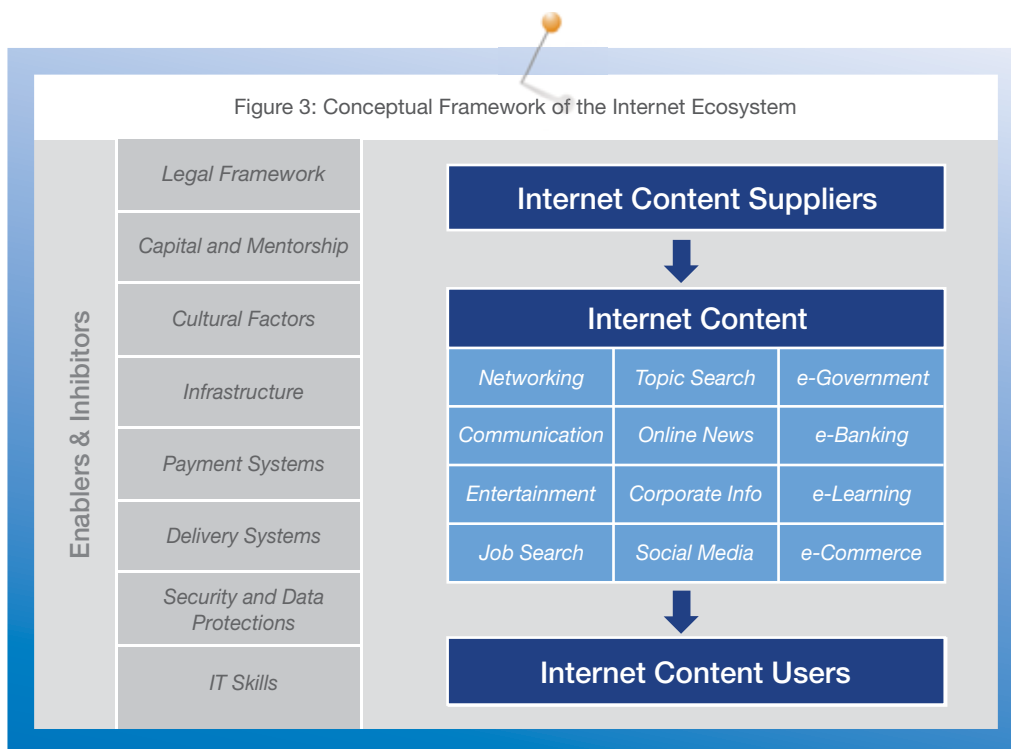
The internet ecosystem is a subset of the digital ecosystem, which also includes non-internet digital media (for example CDs and DVDs) or digital broadcasting. In addition to its content, the internet ecosystem is made up of the following components, which are displayed, together with their relationships, in Figure 3:

Internet content suppliers and users produce and consume a variety of internet content for a variety of purposes. They can be individuals or organizations.

Internet content enablers are the set of factors that make internet content possible as well as support and regulate it. If an enabler is underdeveloped, it can be regarded as an inhibitor. Enablers help or hinder existing functions of the internet ecosystem, and they influence the ability of suppliers and users to contribute to the system, and for the system to develop new functions and capacities. They can also be thought of as building blocks for a variety of internet business models.

For a detailed examination of enablers and inhibitors, please refer to Chapter 4.

Figure 3: Conceptual Framework of the Internet Ecosystem

Enablers & Inhibitors	Internet Content Suppliers		
Legal Framework			
Capital and Mentorship	**Internet Content**		
Cultural Factors	Networking	Topic Search	e-Government
Infrastructure	Communication	Online News	e-Banking
Payment Systems	Entertainment	Corporate Info	e-Learning
Delivery Systems	Job Search	Social Media	e-Commerce
Security and Data Protections			
IT Skills	**Internet Content Users**		

" The internet ecosystem has a variety of effects on society including commercial, social & cultural, educational and governmental."

2.2 Functions of the Internet Ecosystem

The internet – and its most successful application, the World Wide Web – has had a variety of effects on society, both within the Kingdom and worldwide.

Commercial

The internet has fundamentally transformed business models, practices, and environments across industry sectors. For a variety of industries – for example, electronics, software, or entertainment – the internet has become a key sales channel, if not the primary one. Its 24-hour availability and global reach transcend the many limits of a physical sales network, allowing customers more convenient access to a greater variety of goods and services. Conversely, the internet's ability to aggregate customers with specialized needs into viable demand pools supports a variety of specialized offerings that would be impractical to provide via a physical network.

The internet also offers new forms of marketing communication. Whereas before the internet most marketing material had to be 'pushed' to potential customers, marketers can now make their content available on a 'pull' basis, ready for consumption at the individual customer's time of need. The internet also enables greater interactivity and micromarketing, making it possible to tailor and deliver campaigns to niche segments. In addition, internet-based social media offers new opportunities for influencing purchasers, receiving instant feedback, and deepening consumer attachment to brands.

Social and Cultural

From the early days of Usenet forums and bulletin board systems, social media has played a critical role in creating and maintaining virtual communities. These communities transcend geographical boundaries and have enabled rural internet users in particular to participate intellectually and culturally to an extent that was not possible before the internet. Additionally, the internet's interactive nature has transformed much communication from a passive audience model into an interactive dialogue, where user-generated content mixes with – and influences – content produced by governments and corporations.

Educational

The internet – and especially the rich media capabilities of the World Wide Web – offers substantial potential for education. Its constant accessibility allows for self-directed study, while its low distribution costs, combined with its ability to aggregate interests, make available a wide variety of specialized content. And as new generations grow up with the technology, it increasingly becomes more intuitive for them to consume all sorts of content.

Governmental

The internet has changed the way that central and local governments interact with citizens and the business community, while e-government initiatives significantly improve the level of service delivery to people and businesses.

From a demand perspective, e-government saves citizens time and money, and offers easier and more convenient services with reduced turnaround times, while the need to travel to government offices and undertake complicated paperwork is significantly reduced.

From a supply (government) perspective, e-government creates significant efficiencies as government processes can be automated on integrated and consolidated data platforms in secure and effective legal and technological environments. Innovations such as cloud computing enable governments to share data more effectively and make more services available at the point of need.

While e-government is a vital component of Saudi Arabia's internet ecosystem, it falls outside the scope of this study. For the most detailed and up-to-date information on e-government in the Kingdom, please visit www.yesser.gov.sa.

2.3   Selected Events in the Development of the Internet Ecosystem

Tables 1 and 2 outline major milestones for the development of the global and Saudi internet ecosystems:

Table 1: Development of the Global Internet Ecosystem[17]

Year	Event
1969	Advanced Research Projects Agency Network (ARPANET) developed.
Late 1970s	Electronic payment transfers become practical for governments and corporations (Electronic Data Interchange/Electronic Funds Transfer).
1982	Internet Protocol standardized – key architecture underlying the internet.
1993	Mosaic Web browser introduced – first graphic browser, beginning adoption of World Wide Web.
1990s	The popularization of the World Wide Web and the rise of secure data transfer protocols led to early adoption of e-commerce in the USA. Business models move quickly into the mainstream and across borders. Amazon.com founded in 1994 and eBay in 1995. Internet stock (dot-com) bubble.
1998	Google founded – radical increase in search engine effectiveness. Later, Google popularizes search advertising.
2000	Dot-com crash begins. Many internet-centric businesses collapse by start of 2001.
2004	Facebook launched – first mass adoption of social networking
2000s	Maturation and consolidation. Despite crash, global e-commerce transaction volumes steadily rise, led by B2B business. Strong companies continue to grow. eBay buys PayPal in 2002, Amazon posts first annual profit in 2003. Web 2.0 models increase interactivity and interoperability.

[17] *CITC Research*

" Household broadband penetration in the Kingdom reached 41.6% in 2010."

Table 2: Development of the Saudi Internet Ecosystem[18]

In order to assess the current maturity level of the Saudi internet ecosystem, CITC collated a set of indicators that are presented below in Table 3. The table compares selected Saudi indicators with those for regional peers Egypt, Jordan, and the UAE. It also includes data for Turkey and Malaysia as significant Islamic economies in other parts of the world. Lastly, it presents the Czech Republic (which occupies the middle of many EU league tables) and the United States as developed-world benchmarks.

As Table 3 indicates, household broadband penetration in Saudi Arabia is lower than the international benchmarks, but fares well in relation to other countries in the Middle East and North Africa.

Year	Event
1993	King Fahd University of Petroleum and Minerals (KFUPM) in Dhahran becomes first Saudi institution to connect to the internet.
1994	King Abdulaziz City for Science and Technology (KACST) becomes the '.sa' domain manager to coordinate internet services within the Kingdom.
1999	Internet access begins the move from government and academia into the mainstream.
2004	Liberalization of the ICT market by introducing new licenses for telecom services.
2004	SADAD enters production.
2005	The Ministry of Communications and Information Technology (MCIT) establishes e-Government Program.
2006	The transfer of internet-related responsibilities from KACST to CITC.
2007	Saudi Electronic Transactions Act promulgated – establishes rules for electronic transactions and digital signatures.
2010	Household broadband penetration reaches 41.6 % in Saudi Arabia.
2010	Saudi Post addressing system certified as complete.
2010	Registration opened for Arabic domain names under (السعودية.).

Table 3: Selected Internet Ecosystem Indicators

	KSA	UAE	Egypt	Jordan	Turkey	Malaysia	Czech Republic	USA
Household broadband penetration [19]	41.6%	53.7%	5.0%	18.0%	27.1%	29.6%	45.9%	66.0%
Internet user penetration [20]	41.0%	75.9%	21.2%	27.2%	45.0%	64.6%	65.5%	77.3%
Number of active hosts in the country's local domain [21]	481,880	372,403	195,447	45,337	4,003,186	344,210	3,831,296	N/A
Number of domain registrations purchased in the country [22]	23,343	22,619	41,313	5,881	976,298	129,945	159,423	75,827,630

[18] The Internet in Saudi Arabia Study by KFUPM, CITC and Yesser websites
[19] KSA data: CITC 2010 Annual Report; Malaysia, USA data: IDC Galaxy 2010; Rest: IDC Telecom Services Database
[20] KSA data: CITC 2010 Annual Report ; Rest: http://Internetworldstats.com
[21] All specified countries: Internet Systems Consortium, Inc. (http://www.isc.org/) NB, January 2011
[22] KSA data: Saudi Network Information Center; Rest: http://WebHosting.Info, March 2011

3. Internet Content: Attitudes and Usage in Saudi Arabia
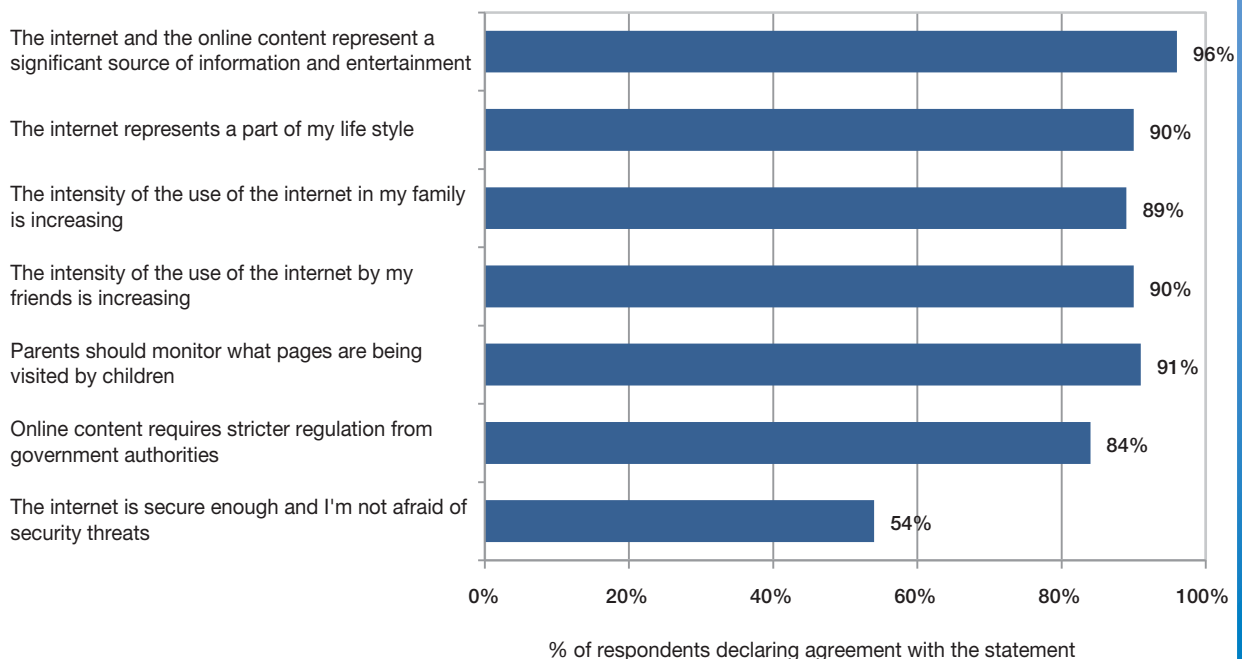
3.1 Residential Attitudes and Usage

Attitudes toward Internet Content

While internet usage in Saudi Arabia still lags behind most developed countries, CITC's research confirms that the internet has become an integral part of Saudi society. According to a recent survey, 96% of residential internet users believe that internet content is an important source of information and entertainment. That Saudis are strongly involved with the internet is evidenced by the fact that almost 90% of those surveyed consider the internet to be an integral part of their personal life (see Figure 4). Approximately 90% of the respondents declared that internet usage among their friends and family is increasing.

As with much of the rest of the world, individual usage of internet content is driven mostly by young people, who are keen on using new ICT technologies. In particular, the highest frequency of internet use can be seen among students, who are encouraged to use the internet at their schools.

Figure 4: Saudi Attitudes toward Internet Content [23]

Statement	% of respondents declaring agreement
The internet and the online content represent a significant source of information and entertainment	96%
The internet represents a part of my life style	90%
The intensity of the use of the internet in my family is increasing	89%
The intensity of the use of the internet by my friends is increasing	90%
Parents should monitor what pages are being visited by children	91%
Online content requires stricter regulation from government authorities	84%
The internet is secure enough and I'm not afraid of security threats	54%

% of respondents declaring agreement with the statement

[23] CITC Internet Ecosystem Survey 2010

"Saudis display high usage rates when it comes to static content and social networking. Multimedia and interactive content are not as widespread."

Content Filtering

As the usage of the internet grows, so too does the probability that Saudi users will be exposed to harmful and/or abusive internet content. As part of its mandate, CITC operates a complaint procedure and administers content filtering services to protect the Saudi society from harmful content, including pornography, gambling, and drug-related material. These filtering efforts are carried out in collaboration with the Saudi public: CITC handled over 675,000 suggestions from public internet users to block and unblock Web sites in 2010.[24]

As the chart above shows, CITC's surveys have confirmed that its efforts to promote safe internet content are fully in line with the expectations of internet users, with 84% of respondents declaring that internet content requires stricter regulation from government authorities. The need to protect children from harmful internet content was also clear: 91% of respondents agreed that parents should monitor children's use of the internet. This parental monitoring constitutes a second layer of filtering of the internet content that young people consume.
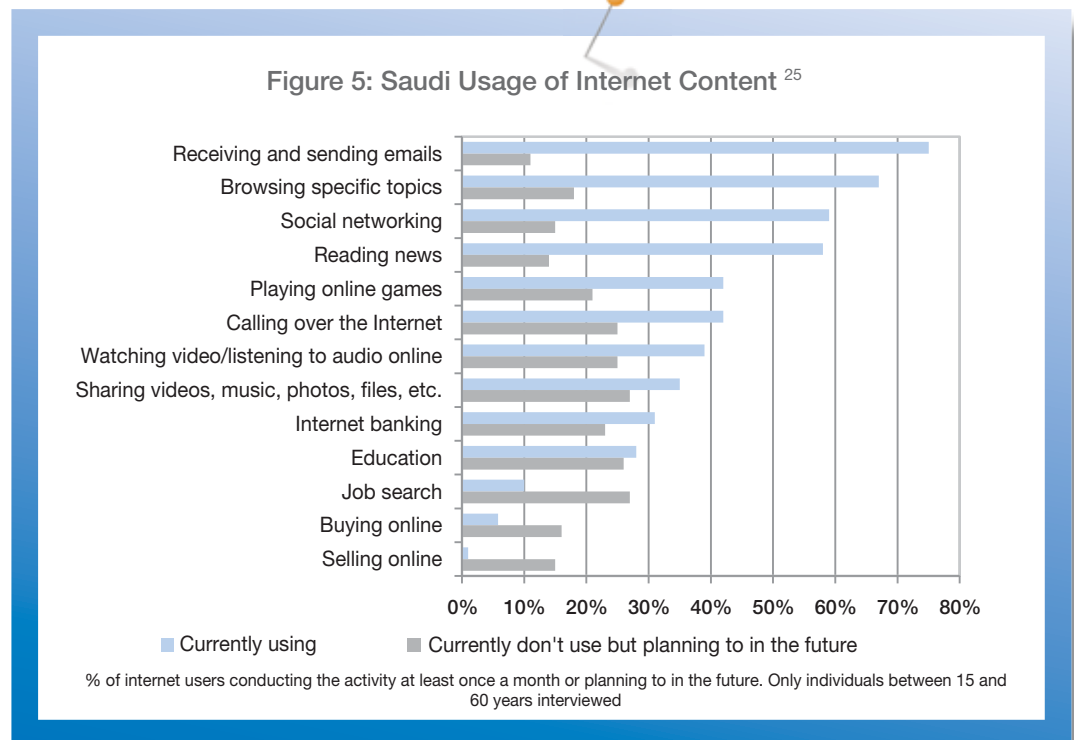
Internet Security

Any computer, server, or network connected to the internet is a potential target for malicious attacks. These attacks can come at any time of day, from any location in the world, and from any device.

Unsurprisingly, internet security is the most frequent concern, raised by 46% of internet users. As user awareness and sophistication grows, the rate of concern over internet security may actually rise, representing a barrier to internet usage and e-commerce. (For a more detailed discussion of security as a possible inhibitor to internet commerce among both consumers and enterprises, please refer to Section 4.2.)

To educate the public about internet security and internet content regulations, CITC has launched an awareness campaign using various media, including print, broadcasting, brochures, email, Web campaigns, and roadside advertisements. The campaign stresses the importance of supervising children's use of the internet and safeguarding personal data.

Usage of Internet Content

Saudis display high usage rates when it comes to static content and social networking. Multimedia and interactive content, however, are not as widespread, while banking, education, job searching, and e-commerce are relatively low but are expected to see a higher uptake in the future (see Figure 5).

Figure 5: Saudi Usage of Internet Content [25]

% of internet users conducting the activity at least once a month or planning to in the future. Only individuals between 15 and 60 years interviewed

[24] CITC 2010 Annual Report
[25] CITC Internet Ecosystem Survey 2010

As the original 'killer app' for the internet, email enjoys the highest usage, with three out of four residential users indicating that they use it today. Web browsing, social networking, and reading news also enjoy penetration levels of more than 50%.

Browsing

The survey showed that there are certain universal topics sought by users across all market segments, and there are some topics that are closely associated with specific market segments. The universal topics include information on religion, health and medicine, and travel. While these topics are popular across different demographic segments, some differences can be observed: for example, religious information is more popular with older people and in rural areas. Health-related topics are sought out especially by older demographic segments. Men search overwhelmingly for content related to sports (89%), and cars make up their next most browsed subject at 21%. Women, meanwhile, visit Web sites dedicated to fashion and beauty (64%) and cooking (48%). Women's consumption of health and medicine information is more than double that of men, at 37% versus 16%.

Social Networking

The importance of social media has risen over the past couple of years, and today it represents one of the most important drivers of internet usage, especially for the younger generation. By the end of 2010, there were 3.2 million Facebook users in Saudi Arabia, which represents a 12.2% penetration rate (compared to 45.3% in the UAE, 33.9% in Qatar, 7.6% in Oman, and 5.5% in Egypt). Two-thirds of Saudi Facebook users are aged between 15 and 29 years old.[26]

Given young people's dominance of Saudi demographics, the use of social media will likely grow rapidly in the future. Social media is becoming the main platform for interaction between individuals, businesses, and government entities. Saudi enterprises and government agencies will need to determine how best to use these tools to interact with their customers and constituencies.

Reading News

Approximately 60% of Saudi internet users read news online and the online news consumption is increasing in Saudi Arabia.

The results show that convenience is the most important driver for reading news online. Readers can easily browse through the articles and find relevant ones, and online news is more up-to-date, generally free, and can be accessed at any time. Variety and richness of content is also an important factor attracting users to internet news.

Entertainment

An increasing number of Saudi internet users are going online to play games, watch videos, and listen to audio streams. Approximately 40% of Saudi internet users play online games and the same proportion visits Web sites with online video or audio content.

Education

E-Learning content is very popular in Saudi Arabia, especially among females and the younger generation. The research revealed that 28% of internet users in the Kingdom access education Web sites on a regular basis and approximately the same proportion are planning to learn online in the future. Education is the main internet activity showing a higher adoption rate among females than males.

Job Search

Job search is a low-intensity online activity, which is expected given the fact that looking for a job is an occasional activity rather than a daily or weekly habit. However, while only 10% of internet users are currently accessing job search Web sites, 27% plan to do so in the future. Job search thus represents the top planned-for online activity, along with sharing videos, music, and photos. The most popular job search Web sites are the online career pages of large organizations.

E-Commerce

E-commerce is still in the early development stage in Saudi Arabia, with only 6% of residents having made online purchases, compared to 13% in the Czech Republic or 58% in the USA.[27] However, the Saudi e-commerce market is set to gradually expand, as 16% of the internet users are planning to buy online in the future, while 15% are planning to sell online.

[26] Arab Social Media Report, Dubai School of Government, 2011
[27] IDC Worldwide Digital Marketplace Model and Forecast, 2009

Increased plans to buy online create opportunities for Saudi online sellers. They can emulate the success of existing regional and domestic companies, such as saudi.souq.com or Saudi Airlines, which are popular among the internet users surveyed. New market entrants could also draw inspiration from international e-commerce models like Amazon, Yahoo, or Google, which are also very popular in Saudi Arabia. These portals were indicated as top preferred websites for buying online by at least 7% of the residents surveyed.[28]

3.2 Enterprise Attitudes and Usage

Attitudes toward Internet Content

Roughly two-thirds of businesses view online content as important for their organizations. This prioritization extends to both creating and updating content and to using the internet to carry out transactions (see Figure 6).

Businesses strongly indicate that they see the importance of e-commerce to their organizations. Two-thirds of respondents foresee e-commerce playing an important role in their organizations over the next five years, while more than half agree that they are seeing increasing usage in their partner ecosystems. The appetite for e-commerce content can be observed especially in the large company segment, which generally shows higher levels of IT and internet maturity.

Attitudes toward Internet Usage

Enterprises most often use the internet for interacting with government authorities and for accessing banking and financial services: more than 75% of the respondents use the internet for these operations (see Figure 7).

28,29,30 CITC Internet Ecosystem Survey 2010

Figure 6: Enterprise Attitudes toward Internet Content [29]

- Creating or updating content on the internet is important for the organization — 69%
- The amount of internet usage by employees for business purposes is increasing — 68%
- I see e-commerce playing an important role for our organization over the next five years — 66%
- E-Commerce usage among our business partners (e.g. suppliers, customers) and competitors is increasing — 51%

% of companies declaring agreement with the statement

Figure 7: Business Usage of the Internet [30]

- Interaction with government authorities — Currently using: 86%, Planning: 9%
- Banking and financial services — Currently using: 75%, Planning: 16%
- Buying online from suppliers — Currently using: 30%, Planning: 39%
- HR-related activities — Currently using: 12%, Planning: 48%
- Training and education — Currently using: 8%, Planning: 45%
- Market research — Currently using: 5%, Planning: 40%

■ Currently using
■ Currently don't use but planning to in the future

% of businesses conducting the activity or planning to in the future.

As partner ecosystems mature and the availability of online content increases, activities such as buying online from suppliers, HR functions, training and education, and market research can expect to see significant increases in usage. These increases in usage are in line with the potential business benefits the internet ecosystem can provide to companies, especially in terms of time and cost savings.

Enterprise Provision of Internet Content

Almost half the companies surveyed currently operate a corporate Web site. While this percentage is lower than the rate in the UAE (83%), or EU countries (69%),[31] 38% of Saudi companies indicate future plans for having a Web site, which would bring the overall percentages in line with international benchmarks. A higher percentage of large companies had Web sites as well as a sponsorship presence on other Web sites, while only a third of small companies have Web sites.

While the corporate Web site appears to be the first point of online presence for businesses, company newsletters and company profiles on social networking Web sites were found to be the next most-frequently used tools. Companies are quite keen on supplying more information on the internet. Roughly 40% of the companies indicated plans to set up tools beyond Web sites such as newsletters, profiles, blogs, and sponsored listings.

E-Commerce

CITC's research indicates that enterprises are increasing their online buying, but that online selling is still in its infancy in the Kingdom (see Figure 8).

E-commerce sales by businesses are still at a relatively nascent stage in the Kingdom with 8% of the businesses surveyed currently selling their products or services online, mostly directly through their website. Encouragingly, however, among the companies that do not currently sell online, roughly half have plans to sell within the next few years. Among large companies, almost 70% plan to sell online within the same time period.

Businesses were the most common target group for companies selling online with all the companies selling to businesses (B2B selling). Consumer selling (B2C) and government selling (B2G) also rated highly, with at least

two-thirds of the companies selling to these entities. In terms of target group revenue share, B2B was estimated at 54%, B2C at 28%, and B2G at 18%.
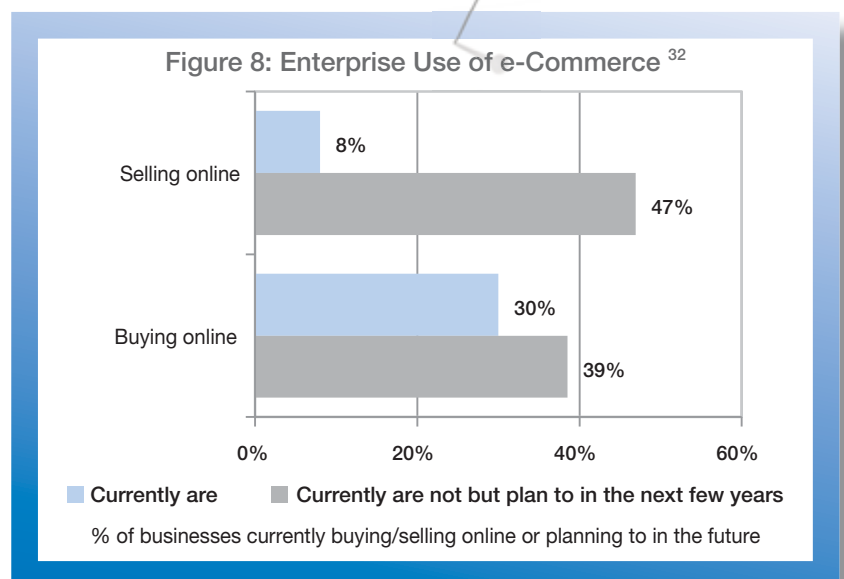
Among the companies that currently sell online, the most common selling mechanism is a dedicated online shop. Next are offline sales through online or email enquiries or using integrated Enterprise Resource Management (ERM) systems.

More encouraging indications from the survey are that most of the companies that buy online are satisfied with the experience and most of these companies expect to see an increase in online purchases in the next 12 to 24 months. The most common online buying mechanism for these companies is offline sales via online and email enquiries. Online shops rank third, another sign that Saudi e-commerce still has much room for development.

Saudi Arabia was the most common destination market for companies selling online. Gulf and Arab countries were also important markets, with at least two-thirds of the companies targeting them.

In terms of geographical buying preferences, buying from Saudi Arabia is the most common. In terms of types of purchases, the most common type is services, consumed by nearly two-thirds of the companies, followed by products and then raw materials.

Credit cards are the most cited payment method, with 68% of the companies accepting them. Bank transfers and cash or check on delivery are next, with acceptance by roughly half the companies surveyed. Debit cards are accepted by a third of the companies, while SADAD and PayPal-type services are not as commonly accepted.

Figure 8: Enterprise Use of e-Commerce [32]

Selling online
- Currently are: 8%
- Currently are not but plan to: 47%

Buying online
- Currently are: 30%
- Currently are not but plan to: 39%

■ Currently are   ■ Currently are not but plan to in the next few years

% of businesses currently buying/selling online or planning to in the future

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[31] *UAE ICT Survey, Eurostat*

[32] *CITC Internet Ecosystem Survey 2010*

" Government organizations expect to show strong growth in online training and education activities, as well as online buying."

3.3 Government Attitudes and Usage

Attitudes toward Internet Content

Government organizations in the Kingdom assign the internet unquestioned importance, with all organizations placing a high value on online content. In addition, 70% of government organizations report increased usage of online content by their employees, which is similar to the percentage among surveyed businesses. CITC's research indicates that government leads other sectors in providing most types of internet content.

The level of enthusiasm displayed by government organizations toward e-commerce is considerably lower than that displayed by the business sector, both in terms of usage by partners and the role that e-commerce plays within such organizations. Perceptions around the maturity of e-commerce support mechanisms, such as delivery, payments, and security systems, are also lower than those reported by business respondents.

Attitudes toward Internet Usage

The most frequent use of internet content by government organizations is interaction with other government authorities, with 90% reporting such usage. The next most-widely used functions are HR-related activities, banking and financial services, and training and education. Compared to the business sector, HR and training and education are more popular in the government sector (see Figure 9).

In the future, government organizations expect to show strong growth in online training and education activities, as well as online buying.
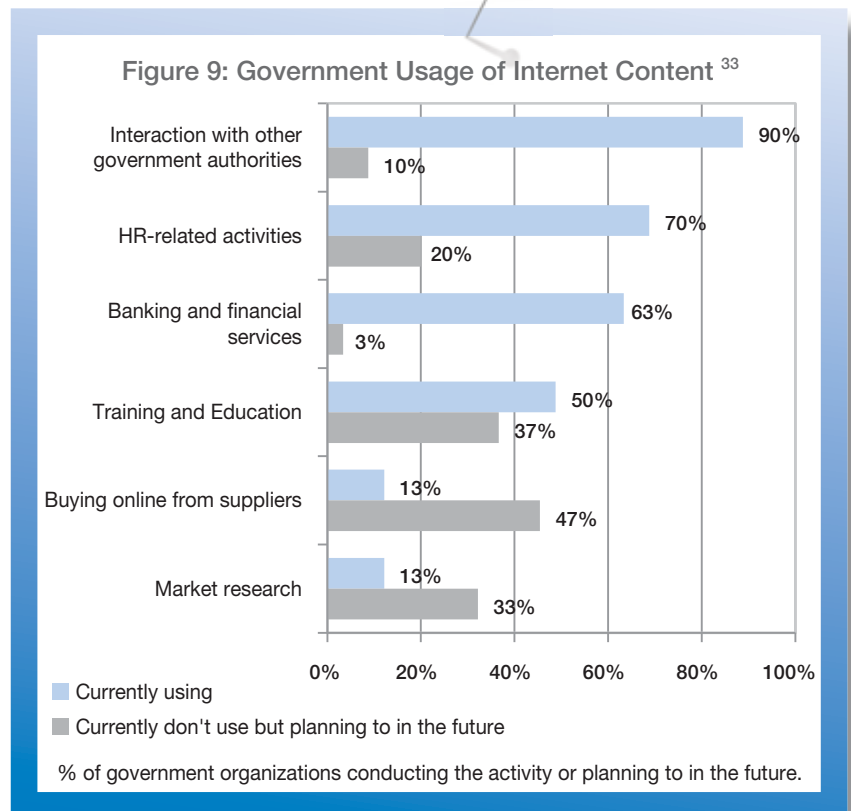
Provision of Internet Content

Web sites and newsletters are the most prevalent types of content provided by government organizations, with all reporting having a Web site as well as a newsletter. Approximately half of the respondents have a blog, a profile on social network Web sites, and a sponsored presence on other Web sites. In general, more government organizations supply different forms of internet content than business organizations.

When developing and maintaining the physical infrastructure needed for the provision of internet content, government organizations rely mostly on internal resources and capabilities. When government organizations do seek external assistance, they do so in the areas of Web hosting, Web development, application hosting and security services. Those that engage external providers report they do so for their expertise and industry knowledge.

Buying Online

Only 13% of the government organizations surveyed buy products or services online. This percentage is lower than the rate for businesses, where 30% of those surveyed bought products or services online. However, the government sector is expected to close this gap as 47% of the interviewed organizations would like to start buying online in the future. One-third of the organizations that do not currently buy online indicated plans to do so in the next year.

Figure 9: Government Usage of Internet Content [33]

Interaction with other government authorities: 90% / 10%
HR-related activities: 70% / 20%
Banking and financial services: 63% / 3%
Training and Education: 50% / 37%
Buying online from suppliers: 13% / 47%
Market research: 13% / 33%

■ Currently using
■ Currently don't use but planning to in the future

% of government organizations conducting the activity or planning to in the future.

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[33] CITC Internet Ecosystem Survey 2010

E-Government Services

Yesser, the National e-government program, acts as an enabler and facilitator for transforming the public sector into an information society. A wide variety of government e-services are currently provided to different types of customers. These include:

- **Citizens and Residents:** Various e-services for labor and employment, such as inquiries about job applications and visas for various ministries and educational institutions, and for municipalilites, such as viewing and paying for water and electricity bills.

- **Businesses:** Various e-services for labor and employment, such as visa applications and work licenses, and for communications and technology, such as online domain name registration and postal address validation.

- **Visitors:** Various e-services for travel and tourism, such as visa applications and extension requests, and for education and culture, such as e-libraries and research database queries.

In a second measurement conducted by Yesser, 15 government entities had e-services already available or nearly so. Another 43 entities, or roughly 30% of those interviewed, are at a point where they could offer e-services in the near future. [34]

While e-government is an important and rapidly expanding part of the Saudi internet ecosystem, a detailed description and analysis of it are excluded from this study. However, more information about it can be found at www.yesser.gov.sa.

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[34] *Second measurement report from the Yesser Web site*

// The key driver of internet usage for residents is convenience of access."

4. Key Enablers of the Internet Ecosystem

While Chapter 3 focused on current usage of the internet, this chapter examines the key enablers, drivers and inhibitors affecting the internet ecosystem as well as the perceptions of those factors held by consumers, businesses, and government organizations. Enablers and inhibitors are often two sides of the same coin: if an enabler is underdeveloped, it becomes an inhibitor.

4.1 Drivers and Inhibitors: Survey Data

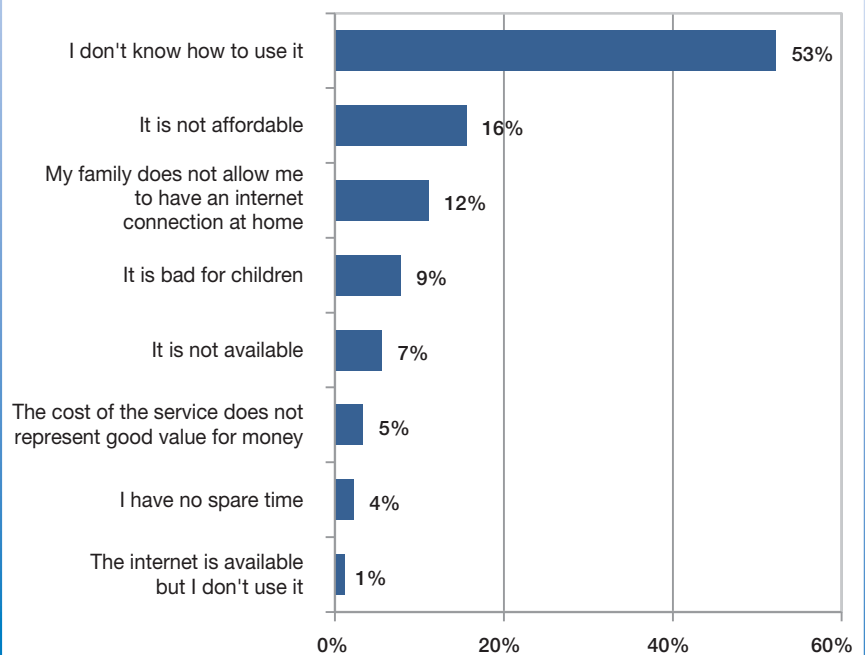### Residential Drivers and Inhibitors

In general, the key driver of internet usage is convenience of access. This driver was mentioned for almost all internet activities. Saving time in finding relevant content was also an important factor, mentioned especially in relation to reading news, online banking, online shopping, e-learning, and searching for jobs. The breadth and diversity of content was another factor, especially in the areas of searching and browsing, reading news, playing online games, using online audio and video, and education. Finally, the ease of forming communities and making new connections played a large role in the popularity of online social networking.

Those individuals who do not use the internet at all overwhelmingly identified a lack of knowledge as the primary inhibitor to internet use, with affordability and family restrictions on use accounting for much of the rest of the other responses (see Figure 10).

Saudi consumers who do use the internet, on the other hand, identified the following inhibitors to increased content consumption and e-commerce adoption:

- **No need/interest:** Many are simply uninterested in activities such as searching for jobs online or playing online games.

- **Cultural factors:** Many internet users still show a preference for more traditional activities such as reading newspapers, going to banks, shopping in physical stores, and searching for jobs in a conventional manner.

- **Infrastructure and access:** Some internet activities are limited by costly and slow internet connections, as well as by onerous payment and delivery methods. Examples of such activities are buying and selling online, playing online games, and consuming online audio or video.

Figure 10: Inhibitors Identified by Non-Users of the Internet [35]

I don't know how to use it	53%
It is not affordable	16%
My family does not allow me to have an internet connection at home	12%
It is bad for children	9%
It is not available	7%
The cost of the service does not represent good value for money	5%
I have no spare time	4%
The internet is available but I don't use it	1%

[35] *CITC Computer and Internet Usage Study, 2009*

- **Distrust:** Especially as it relates to privacy and security provisions as well as to unreliable information or services provided online. Internet activities affected by this lack of trust include social networking, reading news, searching for jobs, banking, and e-commerce.

- **Availability:** Limited access to internet content due to unavailability of information in Arabic, or general difficulties in locating information hampers browsing/searching, reading news, and consuming online audio or video.

The King Abdullah Initiative for Arabic content aims to address the issue of Arabic online content. The initiative has been assigned to King Abdulaziz City for Science and Technology (KACST),[36] which is working with other institutions inside and outside the Kingdom to develop tools that help enrich content, such as dictionaries, search engines, morphological analyzers, speech recognition systems, and optical character recognition systems. KACST is also cooperating with different organizations and companies such as Google, Wikipedia, and national libraries to create more open and higher quality Arabic content.[37] Selected projects being executed include the translation of 33 eminent books on technology,[38] the development of an open-source translation engine with IBM,[39] and the translation of 2,000 Wikipedia articles on science and technology.[40] Other activities have also been organized, including content enrichment competitions, symposiums, meetings, and workshops.

Enterprise Drivers and Inhibitors

Enterprise respondents identified the following general drivers and barriers to using the internet ecosystem:

- **Infrastructure factors:** Instant availability and quicker response times are the most important drivers for the proliferation of internet content and commerce – given that they have the potential to bring cost and time savings benefits—while poor broadband performance is a substantial barrier to e-commerce adoption. Underdeveloped delivery options and difficulty in procuring employees with sufficient IT skills are also serious inhibitors. Small businesses complained most about the IT skills gap.

- **Ecosystem health:** Given its potential importance as a sales channel, the internet affords companies better market participation (from both customers and suppliers) and higher responsiveness to market demand and competitive pressures.

- **Business barriers:** Internet content and e-commerce are not utilized if they do not support (or are not perceived to support) the business case. The most cited inhibitors are misalignment with business strategy, unsuitability of products for e-commerce, and lack of interest from customers and partners.

Government Drivers and Inhibitors

Most of the factors that affect the government's approach to internet content are similar to those seen in the business sector, including availability, response times, and the variety of information available. However, certain factors do differentiate government from enterprise:

- **Cultural factors:** Government organizations demonstrate a higher willingness to publish information online, given their organizational imperatives; providing information to citizens, businesses, and other branches of government is considered part of the government's mandate, and the internet is a key channel for that.

- **Government consistency:** Government initiatives are mostly driven from the top down. Compared to the business sector—where company actions are necessarily more fragmented—the government sector aligns its activities, including the use and provision of internet content, according to high-level imperatives.

- **Security:** Given the amount of information provided online, the growing importance of e-government, and the sensitivity of the information that they handle, government organizations have a higher concern for security.

- **Language:** A higher proportion of employees in the government sector prefer Arabic to English content than is the case in the business sector. Information published online by government organizations is therefore more often solely posted in Arabic. By the same token, the lack of available Arabic content is viewed as a barrier to using the internet.

[36] Initiative details are available on http://www.econtent.org.sa

[37] Computer Research Institute, KACST website: http://ceri.kacst.edu.sa

[38] KACST website: http://www.kacst.edu.sa/en/about/media/news/Pages/news19.aspx

[39] IBM website: http://www-03.ibm.com/press/us/en/pressrelease/28824.wss

[40] KACST website: http://www.kacst.edu.sa/en/about/media/news/Pages/news152.aspx

" Saudi entrepreneurs have different development trajectories and different funding choices than Western entrepreneurs."

4.2 Enabler Maturity

In addition to its surveys, CITC conducted a series of interviews with large Saudi enterprises, entrepreneurs, government organizations, and other players in the Kingdom's internet ecosystem to understand their concerns and opinions regarding the state of the internet ecosystem and the factors influencing the opportunities for new companies to form, grow, and bring innovation to the Saudi internet ecosystem.

Capital and Mentorship

Startups have historically provided a disproportionately high share of innovation to the global internet ecosystem. Supporting entrepreneurship, therefore, encourages the development of the entire sector, the introduction of innovative business models, and the growth of intellectual property in the Kingdom. A better business environment for startups, in turn, leads to increased employment by encouraging the formation of more companies as well as companies engaged in businesses that require more employees. Saudi entrepreneurs have different development trajectories and different funding choices than Western entrepreneurs, but young companies' need for capital and mentorship is universal. Unfortunately, the Saudi startup ecosystem has some gaps in these areas when compared with developed countries. Recently, however, there have been a number of serious efforts by key stakeholders to bridge these gaps. Worthy of note are the Saudi Industrial Development Fund's Kafalah Program (see Kafalah's website: www.sidf.gov.sa), which aims to overcome the difficulties faced by economically viable SMBs in providing the guarantees required by the lenders, and CITC's Tahfeez Program (Tahfeez.sa), which aims to offer free mentorship and business consulting services to IT SMBs.

From the point of view of startup funding in Saudi Arabia, the following observations stand out:

- The venture capital (VC) ecosystem is underdeveloped due to a cultural preference for investments that generate steady income as opposed to high-risk, long-term investments that generate little income but may generate a large eventual payout.

- Financial regulations do not allow for the types of security structures generally used to reward investors and employees for taking a chance on a new venture. Venture capitalists require preferred share classes to protect their interests after having made the earliest – and therefore riskiest – investments in new ventures. Startup employees, meanwhile, are generally paid less than equivalent positions in established companies; in developed countries they are awarded conditional stock in the company in order to share in its eventual success.

- Family-controlled business groups are a major source of technology funding, playing many of the roles that seed, angel, and venture funding do in the West. The majority of such business groups are uninterested in ICT startups, and are perceived by entrepreneurs to be more interested in acquiring young businesses at valuations lower than those realized in developed countries. Moreover, initial public offerings are very rare.

- Due to the lack of investment capital, bootstrapping – funding the business from personal savings and from the business's own profits – is virtually the only funding method available to Saudi entrepreneurs. The largest exception to this rule is loans and equity investments from relatives of the founders. Bootstrapping has the advantage of preventing overextension and risky investment. However, it also often means that a business must develop slowly, potentially losing out to a better-funded competitor or delaying the availability of its products and services.

- The consequences for business failure in Saudi Arabia are severe. Banks often demand the entrepreneur's home as collateral on a loan, and there is no provision for bankruptcy. The inability to protect homes and other basic property from business failure is a powerful disincentive to take risks, which increases the likelihood that innovative ideas will go undeveloped.

In addition to their need for funding, Saudi entrepreneurs also require more access to business mentorship. In developed countries, venture capitalists protect their investments by providing this mentorship to the companies' founders and officers, guiding them in business model development, staff acquisition, expenditure management, and so on. This mentorship has historically been lacking in the Kingdom. Recently, however, startup incubators have begun to proliferate. Most notably, the Badir network administered by KACST has established programs in ICT, biotech, nanotech, energy, and advanced manufacturing. Badir plans to launch at least 11 incubators related to specific industries over the next few years.[41]

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[41] Badir website http://badirict.com.sa/

Legal Framework

The Kingdom's laws and regulations define the playing field for all entities involved in producing or consuming internet content. As an enabler of the ecosystem, the legal framework seeks to achieve wide-ranging objectives, such as protecting intellectual property rights and personal data, as well as enacting effective sanctions and complaint resolution measures.

The legal framework surrounding the internet ecosystem spans different legal domains, such as telecommunications, banking, privacy, and IT. Consequently, various regulatory bodies, including Saudi Arabian Monetary Agency (SAMA), CITC, and the Ministry of Interior, have reporting and enforcement responsibilities.

With regards to the overall completeness of the framework, Saudi Arabia has enacted rules on cybercrime, spam, online content regulation, domain name regulation, and commercial regulation, including the following:[42]

- The *Anti e-Crime Act* is considered the main legal reference in the area of internet fraud in the Kingdom. Penalties include imprisonment and/or fines up to millions of riyals.

- The *Anti-Spam Policy Regulation* aims to address the issue of spam sent through electronic means and provides guidance on definitions, controls and duties and responsibilities for providers.

- The 2007 *E-Transactions Law* aims to control, regulate, and provide a legal framework for electronic transactions and signatures and facilitate their implementation in both the public and private sectors.

- The *Anti-Commercial Fraud Law* outlines the criteria for determining whether the content of misleading internet advertisements is illegal and if any action should be taken.

- The *Copyright Law* and the *Dispute Resolution Policy* are also relevant pieces of legislation when it comes to cybercrimes.

- Additionally, specific pieces of legislation have been enacted to regulate various domains, including banking and telecommunications.

With regards to internet domain name registration, CITC provides registration services through the Saudi Network Information Center (SaudiNIC), which provides the top-level domain names of Saudi Arabia (.sa). SaudiNIC has recently started providing the top-level domain for Saudi Arabia in Arabic (السعودية.), in addition to offering two-part top-level domain registration under .sa (e.g., nic.sa). All domain name registration services are provided for free.[43]

While the Kingdom has covered many areas of the legal framework with the aforementioned regulations, the maturity of internet ecosystem-related legislation still has some gaps when compared with neighboring and developed countries:

- In terms of offering protection for consumers in electronic transactions, Saudi Arabia is roughly on par with its peers in the Middle East and North Africa, but lags behind developed nations. This is true despite the establishment of the Saudi Consumer Protection Association, which is an independent organization dedicated to defending the rights of consumers, protecting them from fraud and counterfeit products and services, and enhancing consumer awareness.

- In the area of personal data protection, developed nations have much more stringent regulations addressing the sale or disclosure of data collected by companies involved in internet commerce.

- Other areas where the legal framework could be tightened include online dispute resolution, authentication and security, and digital copyright.

In cases where the responsibility for enforcing legislations rests with the law enforcement authorities, adequate training and guidance are critical in ensuring the effective enforcement of these regulations.

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[42] CITC study titled 'Review of current legislations in Saudi Arabia', available on http://www.spam.gov.sa
[43] CITC website, more information available on http://www.nic.net.sa

" Broadband subscriptions have grown nearly 70-fold over the last five years."

ICT Infrastructure

A mature internet ecosystem cannot exist without an advanced ICT infrastructure, which includes internet connections, datacenter infrastructure, and internet-related services. A mature ICT infrastructure enables content suppliers and users to introduce more sophisticated services, such as streaming and multimedia content or mobile internet applications, as well as tighter business systems integration in the enterprise and government segments.

ICT infrastructure in the Kingdom has recorded unprecedented growth over the past few years. Broadband subscriptions have grown nearly 70-fold over the last five years, from 64,000 in 2005 to 4.4 million in 2010. This represents a CAGR of around 133%.[44] The current level of household broadband penetration has reached 41.6%, which is higher than in Egypt (5%), Jordan (18%), and Turkey (27%), but still below the UAE (54%) and the USA (66%) - see Table 3.

While the growth of broadband adoption is impressive in the Kingdom, the research revealed some areas for further improvement:

- **Broadband quality:** Smaller companies express few concerns around Saudi Arabia's ICT infrastructure, as such businesses do not usually need to integrate and maintain an extensive network of physical locations. On the other hand, larger companies express more concerns about the ICT infrastructure, especially those with locations spread across the Kingdom and in more remote areas. Large companies also have stringent performance requirements for datacenter operations and broadband networks. Improved broadband speed, reliability, and latency would encourage the diffusion of business outside the major urban centers.

- **Customer sophistication:** The ICT providers interviewed by CITC feel that enterprise clients in the Kingdom could be more sophisticated when it comes to purchasing systems integration and other ICT services. Best practices for ICT procurement increasingly dictate that ICT strategies, RFPs, and SLAs specify business benefits rather than specific and detailed technical architectures. Adopting the procurement best practices by businesses would allow for more efficient solutions to ICT needs.

Despite the rapid development of the Saudi ICT infrastructure, efforts toward developing a mature infrastructure should continue in order to keep up with advancing technology and growing demand.

[44] CITC 2010 Annual Report

Payment Systems

Electronic payment systems support the commercial function of the internet ecosystem by enabling internet users to sell and buy online, access paid content, and use e-government applications.

Businesses, as well as individuals, declare a strong need for a range of reliable and secure payment systems. The Kingdom has made significant progress in building mature electronic payment systems, with the following payment methods being available today:

- **SADAD:** Of the three electronic payment systems operated by SAMA, SADAD is the only available option for e-commerce (The others are SARIE for large clearances, often interbank, and SPAN, the ATM and POS network).

- **Credit cards:** A credit card acts as a short-term loan and frees its holder from having to manage large amounts of cash. Credit cards are available in the Kingdom, but are generally used for planned, major purchases.

- **Short code SMS payments:** Enabled by mobile phone operators, these are the most prevalent form of micropayments in the Kingdom.

- **PayPal:** Along with similar methods, this is available for sending money but not receiving it, limiting its use in e-commerce. Some local internet users open PayPal accounts associated with foreign addresses and bank accounts and use them to purchase goods abroad.

- **Prepaid cards:** Various types of companies offer prepaid cards – hosting providers, gaming companies, and so on.

While these electronic payment systems are already in place in the Kingdom, some limitations remain:

- **SADAD:** SADAD's current limitation of 100 billers means that only the biggest billers in the Kingdom have access to the system. This limits most internet merchants to using credit cards, short code SMS, and prepaid cards as electronic payment methods. To address this limitation, SADAD is currently working on Biller Base Expansion, which will increase its biller options from around 100 to 20,000.

- **Mobile payments:** According to CITC's research, mobile payments represent one of the key challenges for electronic payment systems in the Kingdom. A more advanced mobile payment method could increase payment availability and decrease the dependence on cash. The limitations with this method of payment, which include its usually low transaction ceiling, high transaction fees for operators, and excessively long delays before passing payments on to merchants, must be addressed for this to become a more viable payment method.

- **In-transaction processing:** A best practice for e-commerce, in-transaction payment processing, whereby placing an order and making a payment are combined into a single transaction, decreases cancelled transactions, speeds up order flow, and reduces errors. This capability is currently not offered by SADAD, but does figure in its extended development plan.

- **Credit card availability:** Credit cards suffer from a low adoption rate in Saudi Arabia, and are generally held by the head of the household, reducing their availability for most types of transactions.

- **Prepaid Cards:** The high number of card brands has created a fragmented market and associated distribution challenges as there are too many cards for merchants to stock. Furthermore, there currently exists no regulation for licensing prepaid cards; therefore, unless an official license is introduced for their use, these cards will likely be phased out of the market.

Delivery Systems

Distribution infrastructures represent a significant enabler for e-commerce as distribution is a key consideration for physical goods bought or sold online. Merchants of physical goods require at least the following attributes from their distribution providers: clear pricing; full or nearly full coverage of the target sales area; predictable delivery windows by geography, shipping method, and merchandise characteristics; ability to integrate with merchant's IT systems and business processes; and the ability to handle any special characteristics of the merchandise (e.g., oversized cargo or perishable goods).

The most critical gap in Saudi Arabia's distribution was recently closed by Saudi Post's comprehensive addressing system. In October 2010, Saudi Post received certification that it had implemented a complete addressing system for the Kingdom. A consistent and comprehensive addressing system allows shippers to estimate delivery costs and times and to route deliveries efficiently. Adoption by major shippers, including competing logistics companies, is virtually complete. The only major gaps in adoption remain the residential sector and ultra-local entities such as small businesses.

At least for B2C, shipping charges represent one of the biggest purchase inhibitors for online sellers of physical goods. These charges have the potential to erase the pricing advantage of online retail and to counter the willingness of shoppers to pay a small extra charge for the convenience of home shopping and home delivery.

In general, errands by personal drivers and other domestic staff replace some of the functions of home delivery in the Kingdom, especially for women. Furthermore, B2B distributors have developed their own distribution capacities and networks and CITC's research did not uncover any significant gaps in this area.

Security and Data Protections

Security in the internet ecosystem can significantly influence the uptake of e-commerce and online content by businesses and individuals. For the purpose of increasing usage, perceptions and awareness of protections are as important as the protections themselves. Indeed, CITC's business survey indicates that security is one of the main barriers when it comes to companies buying and selling online. Security concerns were indicated as an inhibitor to selling online by a quarter of the businesses, while almost a third of the businesses identified security concerns as a barrier to buying online. Residential users expressed similar viewpoints, with roughly a quarter of residents indicating that security concerns were a barrier to buying and selling online.

The Kingdom has promulgated a series of laws and regulations to address various aspects of cybercrime, and has named stakeholders to carry out pieces of these regulations. Interviews with businesses, however, showed that they are unsure as to the extent of the regulations, believe that enforcement is lax, and see gaps in stakeholder responsibilities for them. A significant opportunity exists for awareness campaigns to address these issues.

The safety of personal data is another concern for internet users, and here criminals are not the only possible culprits. Legitimate businesses may also reveal personal information, either inadvertently or as part of a legitimate sale to other parties. Regulatory protections against this kind of disclosure need to be strengthened in the Kingdom.
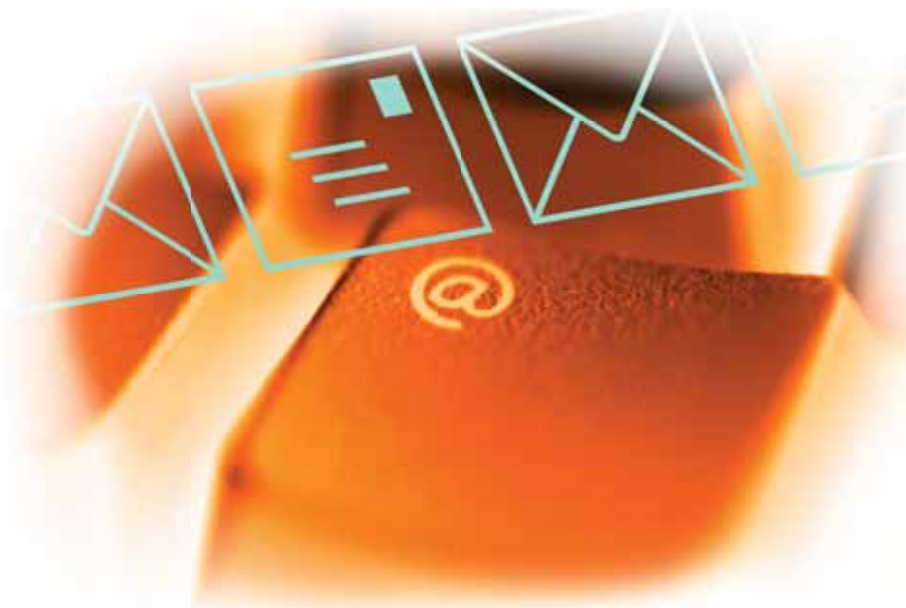
IT Skills

The lack of IT skills represents one of the most important factors hampering the use and supply of internet content in Saudi Arabia. The 2009 CITC Report on the State of IT in the Kingdom contains a detailed and comprehensive analysis of IT skills in the Kingdom; therefore, this report focuses only on the implications of IT skills shortages on the Internet ecosystem in Saudi Arabia:

- **Supply of internet content:** The lack of IT skills was declared as the most important barrier to developing internet content: 19% of companies in the business sector and 27% of the interviewed government organizations raised concerns in this area. In addition, a lack of technical expertise scored high among the inhibitors to e-commerce adoption in the business sector. The 2009 CITC Report on the State of IT concluded that the most in-demand and most difficult-to-find IT professions are software developers and ICT security experts. These professions are critical for the development of the internet ecosystem.

- **Use of internet content:** Individuals need to possess sufficient IT skills to use internet content. According to the 2009 CITC Computer and Internet Usage Study, the main reason for not using internet content among individuals in Saudi Arabia is a lack of IT skills, with 53% of respondents saying they do not use internet content because they do not know how to use it. Once individuals gain the necessary skills and start using the internet, they need more education on the security threats they will face and increased awareness of best practices for dealing with them.

5. Business Models in the Saudi Internet Economy

Notwithstanding some of the challenges outlined in the previous chapters, Saudi entrepreneurship and innovation have produced early entrants that employ several different business models. This chapter outlines the internet business models that are currently employed in the Kingdom (see Table 4). The companies mentioned in this chapter are not meant to constitute an exhaustive list; rather they are meant to illustrate the varying approaches currently being taken in the Kingdom.

5.1 Internet Business Models for Physical Goods

Internet business models involving physical goods are less developed in the Kingdom than those involving only virtual goods.

Web Channel Only

A reliance on the Web as the sole sales channel—an attractive option for new businesses—eliminates the costs associated with operating a store network and the associated logistics. These savings can then be passed on to the customer. All logistics associated with delivering goods to the customer can be outsourced to specialist delivery services or the national postal system. In addition, the fact that the goods are either stored in a few central locations or sourced directly from the manufacturer makes it possible for Web-only retailers to offer a broader selection than those found in traditional physical stores.

Examples of Web-channel businesses include e-mall.com.sa—an electronic mall operated by Saudi Post. While offering no goods itself, e-mall aims to provide a complete, reasonably priced platform to small merchants that want to establish an online presence. These virtual storefronts extend from clothing to handicrafts to food retailers. As of November 2010, e-mall offers 4,000 different products and has 20,000 registered users. Meanwhile, consumer-to-consumer (C2C) business has found an early home on internet forums and bulletin boards. While C2C is hard to track, anecdotal evidence suggests that it represents the first experience with ordering goods online for many people and that its transaction volume may be growing.

'Clicks and Mortar'

'Clicks-and-Mortar' is a term used to describe traditional store-based (bricks-and-mortar) retailers that establish an online channel. Although they have higher operating expenses than their Web-only competitors, clicks-and-mortar businesses also enjoy some advantages: they generally have higher brand recognition and customer loyalty, can integrate their store and online experiences by leveraging their logistics network and a unified view of their stock, and offer in-store pickup, returns, and loyalty programs.

While most prominent Saudi retail businesses have yet to establish an online channel, there have been some recent examples of those who have. Jeddah-based grocery Andalusia Express, for example, became the first Saudi grocery chain to offer an online channel in 2010. U-mark.net grew out of a chain of stores offering 'as seen on TV' products, and now offers exercise equipment, health and beauty products, and related goods. U-mark was recognized as one of 2010's fastest-growing Saudi companies by SAGIA's saudifastgrowth.com. Saudi Arabian Airlines introduced online booking in 2003, and substantially upgraded and expanded its online channel in 2007 and 2010. As of May 2010, online sales represented over 20% of its total orders.

"Advertising-supported content, subscription models and pay-per-use models are the common types of internet business models found in the Kingdom."

5.2 Internet Business Models for Virtual Goods

Internet business models for virtual goods and services are more widespread in Saudi Arabia than are models for physical goods. While the path to profitability in the Kingdom has been proven for these models, it is also true that such businesses generally do not contribute much to the Kingdom's employment rate. Most interviewed businesses in this category employ only 2–20 people within Saudi Arabia. For the internet ecosystem to add significantly to Saudi employment figures, models involving physical goods and services, as well as more intricate virtual models, need to become substantially more successful.

Advertising - Supported Content

Ad-supported sites are a prevalent model in the Kingdom. By targeting users interested in a particular subject, an online portal creates a segmented target market for advertisers. By deriving revenues from advertisers instead of its users, the portal eliminates cost as a barrier to participation. Freed from the need to support B2C transactions, the portal needs only make technical investments in a software platform, server capacity, and connectivity, all of which are mature, well-understood products. Portals that sell advertising have a natural add-on business in tracking aggregate user behavior. A good example is Hawaaworld.com, which is one of the most successful women-oriented portals, as well as an example of a successful venture experiment. Also, Remal IT operates a network of several special-interest sites, and claims to be one of the biggest advertising networks in Saudi Arabia.

Subscription Model

The subscription model is also fairly common in Saudi Arabia. It requires more user engagement, which in turn requires a sufficient value proposition to incentivize users to commit to a regular subscription charge. Examples include financial sites such as Mubasher.com—a financial information and trading platform—and mobile service providers' websites, which offer a variety of rich-media message content on a monthly subscription basis.

Pay-Per-Use

Pay-per-use (or pay-per-item) sites often make use of micropayments enabled by the Kingdom's mobile providers or prepaid cards, and are frequently used to distribute media and entertainment content. One example is music-master.com, which launched in February 2011. The site offers music downloads on a per-track and per-album basis across the Gulf.

Table 4: Business Model Opportunities and Challenges		
Model	**Opportunities**	**Challenges**
Physical Goods: Web Channel Only	Absence of physical store network leads to low operating costs, allowing merchant to cut prices and offer greater selection of goods. Lower operating costs conserve capital.	Low Saudi uptake of e-commerce reduces target market. The local delivery network may not be efficient enough, especially for perishable goods.
Physical Goods: Clicks and Mortar	Physical stores strengthen brand identity. Saudis often prefer to see and feel goods before buying. Unifying inventory systems and return procedures combines the best of both models.	Store networks require higher operating costs than Web-only businesses. It is difficult to unify customer experience across both traditional and Web sales channels.
Virtual Goods: Ad-Supported	Making products free to users eliminates barriers to use and the need for a consumer payment system. Low setup costs.	Low entry barriers present constant competitive threats. Reduced demand for employees means this model would have a limited impact on Saudi employment. Unpredictable revenue.
Virtual Goods: Subscription	Steadier income can support higher-value services. Can be combined with ad-supported model.	Subscription fees present a barrier to entry for consumers.
Virtual Goods: Pay per Use	Ideal for discrete goods like music tracks, movies, and entertainment events. Low barriers to use. Micropayments can be executed quickly, reducing transaction friction.	Micropayment options limited in KSA. Streaming content (where required) requires advanced delivery infrastructure and high broadband performance.

6. Recommendations

The wide variety of enablers CITC has uncovered in its research leads to a wide range of recommendations. Each can be implemented individually, or several in parallel, to improve the Kingdom's internet ecosystem and strengthen its entrepreneurial environment.

Encourage Innovative and More Sophisticated E-Commerce Models

Due to the financial and cultural barriers to e-commerce, most of the Kingdom's successful e-commerce startups employ simple business models whose operations require only a small number of people. If the Kingdom wishes to improve the dynamics of the internet economy—including boosting employment—it will have to encourage more sophisticated business models that utilize new technologies and trends. These business models could cover a wide range of areas, including e-learning, B2B portals, platforms, search, enterprise services, multimedia, and e-commerce based on physical goods.

Consider Regulatory and Other Stimuli for E-Commerce

The relevant government stakeholders, including the Ministry of Commerce & Industry, MCIT, and CITC should examine all options to stimulate the adoption of e-commerce, including the introduction of regulations addressing capital investment and consumer protection, as well as the use of e-commerce in their own activities. Models such as subsidies, regulatory holidays, and exemptions from taxes and duties, should also be considered. In all cases, the emphasis should be on boosting competition rather than limiting it, but always on a level playing field.

Expand Securities Regulations to Accommodate Venture Capital and Stock Options

Since venture capital invests in early-stage, risky companies in the expectation that it will be the first to benefit if those companies become successful, it requires special preferred securities to protect its interests. Under Saudi law, there is only one class of equity, making it impossible to create a Western-style investment agreement and in turn discouraging capital flow to worthy companies. Similarly, Saudi Arabia's lack of stock options removes an important compensation tool for early-stage startup employees. Therefore, the Capital Management Authority should lead discussions on overhauling the securities structure to enable private investment in startups and allow for deferred compensation. The new structure need not duplicate Western models – it may be possible to come up with securities that perform the same functions while accommodating the Saudi investor's preference for short-term gain as well as Shariah law.

Institute Bankruptcy Laws

Although entrepreneurs do not generally intend to declare bankruptcy, the facts are that starting a company is inherently risky, and that risk and innovation are often two sides of the same coin. The lack of bankruptcy options in the Kingdom inhibits new business formation; therefore, the Ministry of Commerce & Industry, along with other relevant stakeholders, which may include the Ministry of Justice, should consider instituting bankruptcy protection that would encourage innovation and risk taking.

"CITC and its Computer Emergency Response Team (CERT) are actively launching campaigns addressing the internet security concerns."

Facilitate the Matching of Startups and Investors

To increase the flow of capital into Saudi enterprises, the government should increase the mutual visibility of new businesses and investors from within and without the Kingdom. One way to do this would be to operate a web portal that makes available details of a startup's products, structure, and business model to registered investors, and allow startups to identify investors that specialize in their business areas. CITC has taken the first steps to implementing such a system through its new directory of Saudi IT companies, ITDirectory.sa.

Increase the Cultural Prestige of Entrepreneurship

The relatively low cultural prestige of entrepreneurship, combined with low salaries offered by entrepreneurial companies, limits the pool of talent that startups can attract. The Ministry of Commerce & Industry could take the leading role in efforts focused on increasing that prestige and partner with organizations such as the Council of Saudi Chambers or the National Entrepreneurship Center. The suitable activities can take many forms, from royal patronage, to media campaigns, to expansion and formation of entrepreneurship centers, incubators, and support groups.

Mentor SMBs and Encourage the Alignment of their E-Commerce and Business Strategies

While the private sector acknowledges the benefits of e-commerce and declares future adoption plans, the real adoption rate of e-commerce remains low. This is especially true in the SMB sector, which has the highest potential to drive the internet ecosystem's growth. Companies should be diligent and analyze how to embed e-commerce into their business processes and supply-chain ecosystems, how e-commerce benefits could support their corporate strategies, and develop a clear business case to justify e-commerce set-up costs. The government sector should also assist local companies by mentoring them in how to improve their plans and processes.

Make the Government Sector the Tipping Point for E-Procurement

Many interviews with large businesses suggest that companies are hesitant to adopt e-procurement. Given its status as a major economic driver and Saudi business' reliance on it to set the tone, the government could jump-start mass e-procurement adoption by becoming its primary adopter. Once a set of agreed-upon practices and capabilities are in place, large industries in the Kingdom will almost certainly follow suit in short order.

Promote Trust and Confidence in Using the Internet

Security concerns, in tandem with threats from harmful internet content, represent key barriers to increasing internet content adoption by Saudi residents. CITC and its Computer Emergency Response Team (CERT) are actively launching campaigns emphasizing the importance of supervising children's use of the internet; protecting personal data; safeguarding against blackmail, extortion, and fraud; and increasing awareness towards relevant legislation. Other entities, including the King Saud University's Excellence Center for Information Security, should also play an important role in this regard.

Enhance Customer Data Protection and Anti-Spam Measures

CITC recommends specifying clearly what businesses can & cannot do with the consumer data they collect online. It is also important to establish penalties and clear procedures for failure to follow these regulations as well as for determining assignments of liability. Consumers should be given more direct control over how their data is used. This control could be in the form of opt-in/opt-out measures for commercial e-mail, SMS, and other forms of solicitation. For their part, MCIT is in the process of introducing an e-Privacy Law, and CITC has recently introduced its Regulation for the Reduction of SPAM.[45]

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[45] For more information please visit http:// www.spam.gov.sa

Increase Internet Literacy

Among residential users, lack of digital and internet literacy skills is a main reason for not using the internet. The education sector should promote the use of the internet as part of schools' curricula. The government should collaborate with training institutions, such as the Technical and Vocational Training Corporation (TVTC), and consider establishing training facilities for users beyond school age.

Increase Broadband Quality across the Kingdom

Companies with sites across the Kingdom report that broadband quality is insufficient to link datacenters, integrate local offices more tightly, or design offerings to an acceptable minimum level of performance and functionality. CITC recommends therefore that service providers focus on increasing the quality of their broadband offering by improving bandwidth, latency, reliability, availability, and diversity. Special attention should be paid to consistency across the entire country.

Reduce Limitations Related to SMS Short-Code Payments

Short-code SMS payments are used as a convenient way to execute a variety of small transactions. This payment method, however, may be inadequate to support many types of payment, such as purchases of physical goods, longer-term subscriptions, and premium content. To expand the product and service models that could be enabled by short-code payments, CITC recommends that service providers stimulate the use of this payment method (by, for instance, increasing its transaction ceiling).

Encourage Mobile Providers to Cut Transaction Fees and Speed up Payment Pass-Through

Internet content businesses complain that mobile carriers demand high payment fees and delay pass-through of the payment (sometimes by up to 60 days), creating cash flow difficulties for small businesses. Mobile carriers should therefore take a lower percentage of the short-code payment and remit the payment to the merchant more expediently.

Improve Training in Usability and Interface Design

Interviews with a variety of respondents indicate that usability design is an underdeveloped skill in the Kingdom. Saudi technical education should place greater emphasis on the best practices in usability and interface design while accommodating local characteristics, such as high usage of the mobile channel or the low-bandwidth, low-reliability connectivity available in some rural areas.

Appendices

Appendix A: Methodology

In order to map the current state of IT in Saudi Arabia, and to assess the current developments and challenges related to the Saudi internet ecosystem, CITC conducted extensive primary and secondary research.

Primary Research: CITC conducted 1504 interviews with Saudi residents to understand their current awareness and usage of internet content and collect information about current drivers and inhibitors having an impact on the internet content adoption. In addition, CITC carried out in-depth interviews with 48 Saudi residents (focus groups) to get in-depth, qualitative insights into their internet use patterns. The research was carried out between November 2010 and January 2011.

CITC also conducted 354 interviews with private companies and 30 interviews with government organizations to collect quantitative data about the current adoption of the internet content to support organizational strategies and internal processes. This research component was undertaken between November 2010 and March 2011.

CITC additionally conducted 27 in-depth, face-to-face interviews with large companies, and key stakeholders operating in the internet ecosystem environment. The goal was to get in-depth, qualitative insights in order to assess the internet ecosystem enablers and understand key challenges and opportunities.

Secondary Research: CITC undertook in-depth and comprehensive secondary research and examined a number of existing studies on the IT sector in Saudi Arabia as well as international sources documenting the progress similar countries have made and best practices they have adopted.

Appendix B: Definitions

Hardware: Any technological equipment used in the processing of information in the form of data (input, process, output, communication, and storage). It includes computer systems (client and server devices), system peripherals (printers, handheld devices, and other add-ons), storage hardware, and network equipment.

IT Services: The provision of labor-based services, which assist individuals and organizations in the implementation, management, and operation of computer systems, peripherals, storage, network equipment, and software. Organizations providing IT services typically deliver some or all of a variety of services ranging from support to complete IT operations, management, and outsourcing.

Internet User: For the purposes of the survey conducted for this report, an internet user is a person between 15 and 60 years of age who accesses the internet at least once a week for personal purposes.

In-Transaction Processing: Combining the two steps of placing an order and making a payment into a single transaction.

Packaged Software: Packaged software is programs or codesets of any type commercially available through sale, lease, or rental, or as a service. Packaged software revenue typically includes fees for initial and continued right-to-use licenses. Packaged software includes application software, system infrastructure software and application development and deployment tools. Packaged software also includes the implicit value of software included in a service that offers software functionality by a different pricing scheme.

Appendix C: Abbreviations

CAGR	:	Compounded Annual Growth Rate
CITC	:	Communications and Information Technology Commission
CRM	:	Customer Relationship Management
ERM	:	Enterprise Resource Management
FDI	:	Foreign Direct Investment
GCC	:	Gulf Cooperation Council
GDP	:	Gross Domestic Product
KACST	:	King Abdulaziz City for Science and Technology
KAUST	:	King Abdullah University of Science and Technology
MEA	:	Middle East & Africa
PC	:	Personal Computer
SAGIA	:	Saudi Arabian General Investment Authority
SR	:	Saudi Riyal

Appendix D: Table of Indicators

	Indicator	Value	Source
1	IT spending in KSA (2010)	SR 27.0 billion	IDC Blackbook Q4 2010
2	IT spending in KSA year-on-year growth (2010/09)	23%	IDC Blackbook Q4 2010
3	Hardware spending in KSA (2010)	SR 18.0 billion	IDC Blackbook Q4 2010
4	Packaged software spending in KSA (2010)	SR 2.8 billion	IDC Blackbook Q4 2010
5	IT services spending in KSA (2010)	SR 6.2 billion	IDC Blackbook Q4 2010
6	IT spending as % of GDP in KSA (2010)	1.65%	IDC Blackbook Q4 2010, EIU Saudi Arabia Country Report March 2011
7	IT spending per capita in KSA (2010)	SR 998	IDC Blackbook Q4 2010, EIU Saudi Arabia Country Report March 2011
8	IT spending forecast for KSA (2015)	SR 46.3 billion	IDC Blackbook Q4 2010
9	IT spending CAGR forecast for KSA (2011-2015)	11.4%	IDC Blackbook Q4 2010
10	Mobile penetration in KSA (2010)	186%	CITC 2010 Annual Report
11	Total number of mobile subscriptions in KSA (2010)	51.6 million	CITC ICT Indicators Report 2010
12	Total number of internet users in KSA (2010)	11.4 million	CITC ICT Indicators Report 2010
13	Broadband penetration for households in KSA (2010)	41.6%	CITC 2010 Annual Report
14	Number of broadband connections in KSA (2010)	4.4 million	CITC 2010 Annual Report
15	Number of registered domains in KSA (May, 2011)	23,343	Saudi Network Information Center (SaudiNIC) Report
16	Percentage of companies in KSA that have a company website	47%	CITC Internet Ecosystem Study 2010

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