

GENERAL POLICY FOR THE ICT AND POSTAL SECTORS 2025
EXPLANATORY MEMORANDUM



Ministry of Information and Communication Technology



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1. INTRODUCTION

This paper is intended to provide an explanation of the General Policy for the ICT and Postal Sectors 2025 giving a background information and conclusions reached in the analysis of the current situation in relevant sectors and government activities.

Chapter 2 provides a review of the achievements of the 2012 Policy.

Chapter 3 provides a table of the current de jure and de facto assignment of roles of relevant organisations, which aids understanding of the assignment of responsibility in the Policy itself.

Chapter 4 summarizes Jordan's international competitive position, benchmarking Jordan with respect to other countries and identifying issues that need to be addressed arising from this comparison.

Chapter 5 reviews related Government policy and strategy. The Policy explained here specifies actions Government will take itself or through other bodies. The Policy is intended to be consistent with these other documents but does not supplant or supplement them.

Chapter 6 identifies key issues to be addressed by the policy.

Chapter 7 specifies Government's vision for ICT, Posts and e-government in 2025. The gap between this vision and the current situation, combined with the powers vested in the MoICT (the Ministry), the TRC (the Commission) and other bodies, has determined the actions in the Policy explained here.

Chapter 8 specifies principles that are intended to be followed when implementing the policy.

Finally, the Annex characterizes the Telecommunications, IT and Postal sectors and the state of e-government.



2. REVIEW OF THE 2012 POLICY

A significant amount of progress has been made towards fulfilling the goals stated in the 2012 Policy. In some instances, however, there appears to be little or no achievement. There are several generic reasons for this:

- The initial Policy being so generic or high level as to be difficult to report against in a meaningful way. For example, the assessment of IT developments, a goal assigned to MoICT, is an ongoing role which is being addressed but is ongoing rather than specifically achievable
- The resource not being available to tackle the goal. In some instances this would be a lack of available budget (e.g. for MoICT to implement all intergovernmental e-services). In others it would be the designated responsible organisation's lack of authority over the essential elements of the goal (e.g. the TRC's goal of reducing the cost of access to rights-of-way
- No action being taken against a goal where there is no apparent barrier to achievement. These goals may have been shelved once the practical or consequential implications of their implementation became clear or may simply have been de-prioritized or ignored,

In addition to the above, there are some goals for which progress reports have not been available. A more rigorous or systematic Policy assessment process may mitigate this problem.

In the light of the experience of implementation of the 2012 Policy the 2018 Policy has been prepared taking account of the following guidelines:

- Each Policy goal should be assigned only to an organisation (or group of organisations) that has direct control over the resources required to achieve the goal;
- It should be clear whether a Policy goal is specific, requiring a particular result to be achieved (a new regulation, market feature etc.) or generic (which may entail acceptance of an ongoing responsibility)
- A systematic Policy achievement review process is put in place to monitor progress. The process may include a mechanism for managing progress.

Implementation of the 2018 Policy is subject to budget availability.



3. CURRENT DE FACTO AND DE JURE ASSIGNMENT OF ROLES OF ORGANISATIONS IN THE ICT AND POSTAL SECTORS

Table 1 shows the **current** de facto and de jure assignment of roles related to the ICT sector by role.

Table 1: Current de facto (df) and de jure (dj) assignment of roles

Scope	Policy and strategy	Regulation	Implementation and operations
Telecommunications sector	MoICT (dj)	TRC (dj)	TRC (dj)
Rights of way	MoICT	Municipality, (dj), Ministry of Public Works (dj)	Municipal Councils set tariffs for rights of way on municipal land (df), TRC assists the operators in coordinating with the different institutions concerned (municipalities, etc...) to set the amounts requested from operators for the right of way (dj; Telecoms Law)
Spectrum	TRC (dj) The role of the MOICT is limited to facilitate and coordinate between concerned parties and not setting strategies and policies. TRC is responsible for the whole management process for the spectrum. The cabinet approve the frequency granting method. The consultative committee led by TRC works as a consultant for the TRC.	TRC (dj)	TRC (dj) for frequencies not assigned to JAF JAF (dj) for frequencies allocated for its use.
Telecommunications operator and service provider licensing	MoICT (dj)	TRC (dj)	TRC (dj)
Broadcaster licensing	Cabinet of Ministers (dj)	MC (dj) MC and TRC regarding frequencies (dj)	Licensees
Provision of public telecommunications services and network activities	MoICT (dj)	TRC (dj)	Telecommunications operators and service providers (dj)
Provision of broadcasting services	Media Commission (dj)	Media Commission (dj)	Broadcasters (dj)
IXP services	MoICT (dj)	Nominally TRC (dj)	Not provided
Telephone numbers	TRC (dj)	TRC (dj)	TRC (dj)
IP addresses	MoICT (df)	NITC (dj)	NITC (dj)



Scope	Policy and strategy	Regulation	Implementation and operations
Domain registration name	MoICT (df)	NITC (df)	NITC (df)
Computer Emergency Response Team (CERT)	MoICT (df)	JAF (df)	JoCERT (NITC) with JAF support provides the CERT for the public sector. (df) Private sector businesses provide their own CERTs. (df)
Digital identity			
Digital certificates	MoICT (dj)	TRC regulates digital certificate providers (dj) MoICT (dj) for government bodies	Business and citizens: Private digital certificate providers (df)
Personal digital identity	Ministry of Interior through Civil Status and Passport Department (dj)	Ministry of Interior through Civil Status and Passport Department (dj)	Ministry of the Interior through Civil Status and Passport Department issues smart ID cards with embedded digital certificates provided by NITC (df)
Business digital identity	MoICT (df) and MIT (dj)	TRC (df) and MIT (dj)	Chambers of Commerce and Industry registers businesses in conjunction with private digital certificate providers that link digital certificates to the registered business (df)
Digital content			
<i>Commercial content</i>			
Broadcast content	Media Commission (dj)	Media Commission (dj)	Media Commission (dj)
Video on demand	None	None	Service Providers (df)
Video streaming over the internet	None	None	Service Providers (df)
Consumer sourced content	MC	Not currently regulated.	Not regulated
Digital content rights / IPR	MC	MC	MC
Data protection / privacy	MoICT	A draft law is still under discussion. Regulation by a special board in accordance with the draft law	Organisations defined within the draft law
Cyber bullying	MoICT	Cyber Crime law (dj)	Public Security (df)
Posts			



Scope	Policy and strategy	Regulation	Implementation and operations
Street addressing	MoICT (dj)	Municipalities (dj)	Municipalities (df)
Private postal operators	MoICT (dj)	TRC (dj)	TRC (dj)
JPC	MoICT (dj)	TRC (dj)	TRC (dj)
Access to ICT services			
Knowledge stations	MoICT (df)	TRC (dj)	NITC (df)
Post offices	MoICT (dj)	TRC (dj)	JPC (dj) but with NITC support for digital services (df)
USO (post and telecom)	MoICT (dj)	TRC (dj)	Orange (telecom) (dj) and JPC (post) (dj)
Electronic money and wallets			
Mobile wallets tied to mobile phone	Central Bank (dj)	Central Bank (dj) and TRC (df)	MNOs in conjunction with financial services operators licensed by the Central Bank (dj)
Other electronic money	Central Bank (dj)	Central Bank (dj)	Financial services operators licensed by the Central Bank (dj)
Government IT and applications			
Hosting centres	NITC (df)	-	NITC (df)
Telecommunications	MoICT and individual departments (df)	-	NBN (MoICT) and licensed operators (df)
Of which NBN	MoICT and funding NGOs (Saudi Arabia) (df)	-	NBN (MoICT) (df)
Systems and applications	Individual departments, MoPSD and funding NGOs such as EU or USAID, South Korea (df)	-	Private IT firms in conjunction with individual departments (df)
E-government services			
E-government platforms and infrastructure	MoICT (df)		MoICT (df)
E-government applications and services	MoICT in support of individual departments (df)	-	MoICT in conjunction with individual departments (df)
E-commerce	MIT (dj)	MIT (dj)	Private sector organisations (df)
IT Sector	MoICT	MoICT	Policy implementation and management of the sector via int@j.
IT Sector start-ups	JIC	MIT	JIC, Oasis 500, angel investors

The following is a list of issues associated with this assignment of roles are as follows:

1. Rights of way. MoICT and TRC have no de jure powers to impose conditions on municipalities when they provide rights of way to telecommunications operators. As a



consequence, municipal councils sometimes set prices at levels that reduce the propensity of the operators to roll out infrastructure, potentially leading to reduced coverage for fixed and mobile networks. In this respect, municipal councils have no stated role in support of access to telecommunications services whereas under the Municipalities Law they, and Local Councils, do have a role in the supply of other utilities. The 2018 Policy provides two approaches to revising this position.

2. MoICT has a very limited role associated with spectrum policy. The TRC is responsible for allocation of spectrum for commercial use and JAF is responsible for allocation of spectrum for military use. Where there is a conflict between the two, the possibility of action by Government to correct any imbalance in spectrum allocation is limited, particularly as JAF has what are like pre-emptive rights over spectrum, which limits availability for commercial use.
3. There is no body that has responsibility for regulating video on demand and consumer-originated content for cultural acceptability. The changes to the law actioned in the 2018 Policy should correct this position.
4. A telecommunications USO and the assignment of the telecommunications USO to Orange Jordan may no longer be appropriate given near universal coverage by mobile network operators. The 2018 Policy provides for a revision to the telecommunications USO Policy and its implementation.
5. The postal USO may require revision to take account of the low level of letter post and prospective increase in parcels arising from e-commerce. The 2018 Policy provides for a revision to the postal USO Policy and its implementation.
6. The separation of e-government from business process re-engineering through MoPSD may lead to difficulties in streamlining government operations. The introduction of e-government allows for direct data provision by clients of government services without any intermediation by government clerical staff. Similarly, the provision of information or services digitally and directly to clients of government services also eliminates intermediation. Thus, e-government can enable significant simplification in service provision, particularly in services that are entirely money and information based, and require no physical intervention. The 2018 Policy provides for the introduction of a joint agency for e-transformation of government covering process simplification and the introduction of e-services.



4. JORDAN'S INTERNATIONAL COMPETITIVE POSITION

Jordan's international competitive position in relation to ICT¹ has been relatively stable over the past five years, though it has declined somewhat in the majority of the survey reports referenced. When compared with its regional competitors, Jordan tends to be ranked ahead of Egypt and Lebanon but behind Bahrain and the UAE.

Looking beyond the overall competitiveness rankings, there are some areas in which Jordan is either performing well or improving, others in which it falls short of the competition or is declining. The sections below highlight the areas of strength and weakness that contribute to Jordan's competitive rank and, from this, suggest the key areas that should be considered in forthcoming policy.

4.1.1 Strengths

An intangible but undeniable strength that Jordan possesses is its resilience. It has, in the face of difficult circumstances, managed to maintain its competitive position over the last year, improving its ranking in several surveys against the UAE, Egypt and Bahrain and keeping pace with Saudi Arabia and Qatar. Jordan's resilience in the ICT sector is evidenced by the fact that it is the only country in the region to improve its 2016 rank in the ITU report, 'Measuring the Information Society'

There are a number of specific areas in which Jordan can claim particular competitive strength, as detailed below:

Stability

Jordan is ranked alongside the leading countries in the region for its political and regulatory environment as well as for its business and innovation environment. This reflects the high level of stability enjoyed by Jordan, a strength that has recently been amplified by a raft of problems in several of its immediate neighbours. Jordan is widely regarded as a good place to do business. It has a natural advantage in terms of its location in the gulf.

Level of Competition

The high level of competition in Jordan's telecommunications market is seen as a positive factor in the country's overall competitiveness. The ranking for the telecom market is among the highest in the region and is ahead of the majority of other countries in the gulf. Despite being cast as a strength, there is a caveat: the battle between mobile operators for customers inevitably inhibits their propensity to invest and may, in the long run, lead to consolidation in the market which could result in a reduction in healthy competition.

Skill base

It has long been the case that Jordan provides skills to the rest of the gulf countries. Until recently, the quality of education in science and mathematics has been rated among the highest in the region and the perception of Jordan as a producer of skilled ICT professionals persists. However, a recent decline in Jordan's ratings in several aspects of its education performance would, if not arrested, undermine this healthy reputation.

¹ As determined from the Global Information Technology Report and other reference sources. See Task 1.6 report: assessment of Jordan's international competitive Position



Telecom infrastructure

The various surveys that have been used to establish Jordan's competitive position all consider infrastructure but each survey uses different aspects of infrastructure to arrive at its ranking. Those that focus on telecommunications infrastructure report a consistent and significant increase in Jordan's competitive position. Again there is a caveat: the ranking for Jordan's international bandwidth and availability of secure internet servers lags other countries in the region. However, there are several indicators, such as Jordan's score for On-line Services and for Internet usage that indicate an evident strength in the country's basic telecom infrastructure that can, and is, being exploited.

Positive action by Government

As indicated at the start of this section, Jordan has proved to be resilient in the face of difficult circumstance. This is evidenced in several areas where rankings that have hitherto been declining have recently either levelled out or improved (e.g. human capital rankings in both the innovation and e-government indices). A range of Government initiatives² and strategies that have promoted measures to protect or improve Jordan's competitive position are likely to have had some bearing here. In addition, factors such as a high uptake of mobile broadband services³ and a rapidly growing number of households with internet access suggest that there is latent capacity for ICT development in Jordan.

4.1.2 Weaknesses

For all its stability and natural competitive advantages, there has been a consistent and, in some cases significant, decline in Jordan's competitive position over the last five years. This does not necessarily mean that things are getting worse; they may be improving but not as quickly as in other countries.

Those areas in which Jordan appears to be at a competitive disadvantage are detailed below:

Infrastructure

Despite having a sound basic telecoms infrastructure, there are some aspects of the country's communications capacity that are of concern, notably international internet bandwidth which is ranked as being lower than all the other countries in the region, and in some cases an order of magnitude lower⁴. Additionally, the number of secure internet servers per million population in Jordan is ranked significantly lower than the other countries with which it is compared. These weaknesses in the country's communications infrastructure inhibits Jordan's ability to provide a full range of support services to the ICT industry.

In a broader consideration of infrastructure, there is evident weakness in Jordan's capacity to generate electricity, where it lags all other countries in the region, bar Egypt. Low electricity production combined with a lack of international bandwidth combine to inhibit the deployment of high-tech facilities, such as server farms, in Jordan.

Innovation

Jordan's ranking for innovation declined year on year between 2012 and 2016 with a slight recovery in 2017. The main reasons for this deterioration in performance are a reduction in the

² Specifically, Jordan 2025, Reach 2025, Jordan's Economic Growth Plan and Digital Jordan.

³ This is attributed to significantly lower prices and the recent launch of LTE services

⁴ International Internet bandwidth, (kb/s per user) which has increased by less than 20% in 2012, compared to other countries such as Bahrain, where it has more than trebled over the same timeframe



quality of human capital and a lower level of research. Particular areas of weakness in these categories are Education (where PISA scales⁵ in reading, maths and science have eroded), the output of graduates in science and engineering and the level of expenditure in Jordan by global research and development based companies⁶

A related factor that has also declined significantly and now presents as a weakness in a knowledge-based economy is creativity. Though slightly recovered over the last year, this has fallen by a factor of three since 2012. The primary reasons that have been identified for this poor performance are the level of activity in the global entertainment and media markets⁷ and the number of country code top level domains⁸ per capita (which equates to the amount of web-based material produced in Jordan)

Skills development and Training

Jordan's ability to produce a workforce with the skills to develop the national ICT capability is at risk. There are two areas on which competitive weakness is evident. First, there is a decline in the output from the education system with the ranking for educational quality in science and mathematics falling significantly between 2014 and 2016 and the gross enrolment rate for secondary education also falling over the same period. The second factor is a decline in Jordan's ranking for business sophistication which has fallen to less than half of its peak score (in 2014) due primarily to a significant reduction in the percentage of firms in Jordan that are offering formal training.

Affordability

The current pricing for pre-paid mobile packages appears to be the best in the region⁸ but the relatively low level of personal income in Jordan means that this does not mean that packages are viewed by consumers as being particularly inexpensive. Furthermore fixed broadband internet tariff are among the highest in the region. With the level of individual usage lagging that of other countries in the region, there is the evident weakness of a digital divide that threatens to exclude those in the country unable or unwilling to take advantage of ICT services in general and e-government application in particular.

4.1.3 Key issues to be addressed

In light of the areas of strength and weakness highlighted above, it seems that there are a number of key areas that the emerging policy should address.

Skills, Innovation and Creativity

There is a consistent theme across several of the reports used here to suggest that attention needs to be paid in future policy to the development of skills, support for innovation and the nurturing of creativity. None of these is easy to measure and it is likely that any metrics put in place under new policy would take time to yield results. Nonetheless, it is clear that skills, innovation and creativity have all suffered, both absolutely and in comparison with other countries.

⁵ Organisation for Economic Co-operation and Development (OECD) Programme for International Student Assessment (PISA)

⁶ Average expenditure on R&D of the top three global companies.

⁷ Based on data from the Global Entertainment and Media Outlook

⁸ One of the categories of top-level domains (TLDs) maintained by the Internet Assigned Numbers Authority (IANA) for use in the Internet. Country-code TLDs are two-letter domains, identified with a country code and especially designated for a particular economy, or country,



With policy attention in all these areas essential, the actions that might be taken to reverse the decline in Jordan's rankings with respect to skills, innovation and creativity might be the establishment of centres of excellence in key areas of ICT, provision of support for entrepreneurs or the development of a framework for innovation in ICT⁹.

Infrastructure

A consistent picture that emerges from all analysis is that the basic telecommunications infrastructure in Jordan is not an area of concern. However, there are associated infrastructure issues that do hamper Jordan's competitiveness: a shortage of international internet bandwidth and a lack of secure internet servers. The Policy of 2012 states that fast, reliable, and affordable Internet access for all users is an important national goal and that Internet penetration, particularly broadband access, should be significantly increased. There are, however, no initiatives from the policy that lead specifically to the increase of international bandwidth or secure servers. Hence this is an outstanding issue for the new Policy to address.

Affordability

The high level of taxes, such as the general sales tax and the special tax, constitute a high percentage of the prices paid by mobile consumers. Moreover, these taxation levels also impact the profitability and viability of operators, and their ability to invest the capital necessary for the deployment of future services. In light of this, the new Policy should focus some attention on the telecommunications sector to mitigate a problem with the potential to stall growth.

⁹ For example, in the UK, the National Endowment for Science, Technology and the Arts programme was established for this purpose.



5. RELATED GOVERNMENT POLICY AND STRATEGY

The government of Jordan has been notably proactive over the last five years in managing the direction of the country's development. In addition to the statement of government policy for the ICT and Postal Sectors issued in 2012, there have been a number of strategic plans relevant to the development of the ICT and Postal sectors in Jordan. The impact of each of these documents is summarised below. The 2025 Policy specifies actions that Government will undertake over the next seven years that are intended to be consistent with and compliment these strategies without supplanting or supplementing the strategies themselves. Therefore, it is not intended that this Policy implements any of these strategies although they have been taken into account in its development.

Jordan 2025 sets out a vision and associated road map for the country's economic and social future. The road map identifies key areas in which there is opportunity for Jordan to achieve its targets. These areas are economic growth, the rule of law, social development, active citizenship, the pursuit of excellence, transparency, competitiveness and sustainability.

The specific measures set out in Jordan 2025 are concerned with the whole economy, rather than ICT sector specific, but they do address issues that underpin the sector's development.

Reach 2025 aims to establish a digital economy in Jordan that empowers people, sectors and businesses to raise productivity and ensure growth and prosperity, creating a highly attractive business destination for investments and international partnerships. Although not specific to the ICT sector, the strategy does address relevant areas, such as e-Government services, Artificial Intelligence and the Internet of Things.

Reach 2025 identifies actions in key areas of concern for the ICT sector, notably talent and skills development, support for innovation and development of a digital infrastructure.

The **Jordan Economic Growth Plan (JEGP)** outlines the vision and policies pertaining to each of seven sectors, one of which is ICT. The JEGP is founded on developing digital technologies with open data and secure information to reduce the use of paper in government institutions, to stimulate investment in the sector and to involve the private sector in the activation of the role of post offices and knowledge stations.

Specific projects included in the JEGP are the development of the National Broadband Network and the automation/re-engineering of government services. Action is also recommended towards the development of the educational curriculum to include gaming software, promotion of post offices to provide e-services, the use of electronic signatures at all levels of administration and encouragement of the adoption of 3D printing.

Digital Jordan presents plans to increase the use of electronic services and to automate government procedures. It targets four main value chains that serve Jordanian citizens, the business sector, the residents in Jordan, and government departments and institutions and goes on to identify a schedule for government departments to participate in an e-transformation plan.

The Digital Jordan strategy involves re-engineering procedures and automating the services of a number of ministries and government departments and minimizing the use of paper by using technology solutions to reach "No paper government" by year 2020. The strategy also includes a revision of the Law on Public-Private Partnership that related to outsourcing procedures for the private sector.

The **Postal sector strategy** sets a vision for an advanced postal services sector that provides a variety of postal services, available to all, with high quality and affordable prices. This entails the delivery of letters to all points across the Kingdom of Jordan and the development of the postal services sector to provide services to the economic and social needs of citizens.

The strategic objectives that are defined to meet this vision and the actions that have been identified to implement them are stimulation of demand for postal services, increasing the



competitiveness of postal services, the provision of comprehensive, sustainable postal services commensurate with social and economic needs of the country and the development of the Jordan Post Company

All of the government initiatives cited above are linked in that each identifies actions that contribute in some way to the development of the ICT and Postal sectors in Jordan. More specifically, Jordan 2025 and the JEGP provide, respectively a vision and an overall economic framework for the country, the latter allocating resources to the ICT specific strategies contained in Reach 2025.



6. KEY ISSUES TO BE ADDRESSED

The Annex characterizes the ICT and Postal Sectors and e-government, identifying strengths, weaknesses, opportunities and threats associated with each. This Section provides a summary of the issues that the 2018 Policy is intended to address.

6.1 Overall

1. The overarching need for a digital identity for all legal persons. Such identity is required for the digital economy. Most of the elements for such an identity are already in place and the requirement for the new policy is to ensure that such digital identity is adopted universally. Some actions will be needed to do that including mobile number portability and digital maps with street addressing to a building level. Mobile number portability will enable new applications that link bank accounts to telephone numbers to be adopted with the recipient of a payment identified by telephone number as happens in several countries. Digital maps with buildings identified are necessary for efficient e-commerce deliveries.
2. The ICT sectors need to be viewed in the policy as providing the foundation for economic development and the development of an information based economy with increased GDP/capita. To this end, taxes and other levies on the telecommunications sector need to be brought into line with other sectors in order to improve profitability and to enable renewed investment in telecommunications infrastructure and services. While mobile tariffs are low in Jordan, tax on mobile services are ultimately paid by the service users and hence have a direct impact on use. Penetration and use of mobile services could therefore be increased by removal of special taxes.
3. The digital divide in the availability and use of ICT, while much reduced by the high penetration of smartphones, needs to continue to be addressed. However, the Policy recognises that smartphones are already the main means for the population to access the internet. By 2025, smartphones will be available to nearly everyone and the need for access via knowledge stations and post offices is likely to be in decline. The Policy addresses business use of IT, particularly amongst micro and small businesses through measures to increase awareness and basic skills in e-applications.
4. The law, A draft revision to the Telecommunications Law and a Green Paper on the Convergence of Media and Telecommunications in Jordan have already been prepared. The draft law and the Green Paper address issues that have been identified in the telecommunications sector and issues associated with convergence that may be resolved by a change in the law. This Policy provides for the amendments of the Telecommunications Law and the Audio-Visual Law to accommodate these changes. Developments in IT may create new legal requirements during the currency of the 2018 Policy. The Policy enables such requirements to be addressed.

6.2 Telecommunications sector

1. Migration to over the top (OTT) services. OTT services may act as substitutes for embedded telecommunications services. If such substitution can be demonstrated, it will need to be taken into account in market reviews and in the imposition of tax and other levies on the telecommunications sector. The regulatory regime should enable and indeed encourage Jordanian telecommunications, IT, media and other firms to develop and sell innovative OTT services since these provide potential revenue streams.
2. Net neutrality. Many OTT services are provided from international companies that may not have presence in Jordan. These companies may be diverting telecommunications and media revenues away from Jordanian telecommunications operators thereby reducing their revenues and also the taxes they pay under the present net neutrality regime.



3. Taxation, spectrum pricing and other levies. The taxes and other levies paid by Jordanian telecommunications companies need to be fair and enable them to profit from their investment.
4. Competition in the telecommunications sector. Measures that enable operators to compete more effectively without resorting to price manipulation are needed. One such measure is an obligation for mobile number portability. Lack of number portability means that individuals are less likely to switch operator or service provider thereby preserving the status quo and reducing innovation and development of the sector.
5. Improved access and transmission infrastructure through infrastructure sharing. Obligatory infrastructure sharing would enable lower cost service provision for all operators.
6. Rights of way to support the development of fixed fibre broadband access and the installation of towers for mobile networks, particularly with the anticipated introduction of 5G services and IoT services before 2025. Price levels and predictability for rights of way needs to be improved to ensure that the benefits of telecommunications infrastructure flow to consumers and investors. Unless they do, telecommunications service coverage is likely to be limited.
7. International bandwidth. Alternative international routes need to be developed. As access to Syria and Iraq improves, land routes to Europe and to the Arabian Gulf need to be explored once again to increase capacity and to increase reliability of international transmission.

6.3 IT sector

1. Revitalization of the IT sector. The policy needs to support revitalization of the IT sector, particularly software development, mobile applications development, cloud and other value added services, call centre and other IT enabled services (ITES) services provided in Jordan for the domestic and export markets. Export of IT services should be promoted aggressively.
2. Introduction and exploitation of autonomous devices. Jordanian companies need to be involved in the development and exploitation of autonomous devices and artificial intelligence to ensure value remains in Jordan.
3. Exploitation of e-commerce by Jordanian companies. Jordanian firms need to adopt e-commerce rapidly to fend off competition from international e-commerce brands and thereby to ensure value remains in Jordan.
4. Further adoption of IT by Jordanian businesses and government. The IT sector is reliant on a strong domestic market. Investment in IT should improve productivity in commerce, industry and government. It should, in addition, provide the basis for growth of the IT sector. Such growth would be supported by the large number of graduates in IT that can be employed across the economy.
5. Restructuring of the IT sector. Mature firms need to work together or in other ways consolidate to bid for large projects and to develop the scale and reliable revenue streams necessary for investment led growth.
6. Renewed emphasis on IT start-ups. Innovation often arises in start-up firms. Projects and a support framework would help their development.
7. Promotion of women home-workers. Such home workers may be able to undertake IT development and support work for the IT sector. They may also work as distributed call centre workers. They might also create new e-commerce or IT businesses from home.
8. Strengthened bonds between universities and the IT sector. University curricula and research needs to be closely aligned to the present and future needs of the IT sector in



Jordan. The aim should be to provide a range of graduate with commercial and “soft” skills as well as technical skills, and technical skills associated with the most modern development environments and applications.

9. Promotion of electronic money. The development of the digital economy will need individuals to adopt electronic money.
10. Regulation of new IT-based services such as those provided in smart cities including IoT and autonomous devices. A comprehensive review of law and regulation will be needed to ensure that it supports such new services.
11. Review of customs levies on re-exported goods. International e-commerce from Jordan can be facilitated if customs levies on re-exported goods are removed.

6.4 E-government

1. Development of e-government services and government IT. E-government services and government IT complement one another. E-government services enable citizens and others to provide information, make payment and receive services electronically. Government IT automates the process of service provision, its management and administration. Together, they can improve access to and delivery of government services and reduce the cost of their delivery. The e-government programme should continue, and should be aligned to improvements in Departmental IT, and should lead also to the provision of data as provided by the Department of Statistics with the minimum of human intervention.
2. E-government services must be rolled out rapidly and in a coordinated manner to create interest amongst prospective users.
3. E-government service and government IT developers need to coordinate their projects through improved peer level communication. The CIO Council may be used for this coordination.
4. E-government services and government IT can be used to increase institutional coordination by enabling cross-departmental datasets and communications to develop.
5. Use of data analytics and artificial intelligence. Government needs to investigate how artificial intelligence and other data analysis tools can support the analysis of social, economic, environmental and other data about Jordan and data about the provision of government services and other government operations to improve effectiveness of Government policy and service provision.
6. NBN. The future role of the NBN and hence future investment in the NBN needs to be determined. To determine its role, the public sector requirements for telecommunications services needs to be assessed to determine whether the NBN will provide the most cost effective solution in the medium to long term. In addition, the technical and other constraints that make the NBN unsuitable for use by public telecommunications operators needs to be assessed.
7. Publicising e-government services. A major marketing exercise needs to be carried out including on social media to promote e-government services.
8. Staffing of all knowledge stations and all post offices has to be sufficient for e-government services to be available through these channels.

6.5 Postal sector

1. JPC’s continued poor performance. Ineffective corporate governance, lack of any market appraisal, lack of an adequate business plan focused on addressing the postal market, inadequate or lack of internal accounting systems, lack of service costing information, inadequate specification of organisation roles and responsibilities, possible nepotism in the



provision of jobs and an inability to monitor operations are leading, in our opinion, to the poor performance of JPC. A decision regarding the continued independent existence of JPC or rigorous restructuring and capacity building is urgently needed and is perhaps the single most important element of the policy.

2. Lack of track and trace systems or point of sales systems in JPC. The lack of track and trace systems or point of sales systems in JPC means that JPC cannot compete with courier services in high value market segments including e-commerce parcel delivery.
3. Lack of a quality of service standard for deliveries made by JPC. Lack of such a quality standard makes monitoring of performance ineffective and inconclusive. A modern postal operator cannot compete with private sector competitors without such a standard and performance that conforms to the standard.
4. Completion of the physical street addressing system. The naming of all streets and roads, and the numbering all the buildings and apartments is necessary for courier services and to enable JPC to move to delivery to the premises in the future if required. Such an approach may also require all domiciles to have a post box. The policy needs to ensure that the balance of the country outside Amman is covered by the street addressing system. Further, digital maps need to be updated with the locations of individual buildings.
5. A postal code system is needed that covers streets and buildings until each building location is shown on a digital map. Such a system would be used by couriers, utility companies, emergency services and others to identify locations and to demarcate routes, coverage at a granularity of a few buildings, leading to improved efficiency and planning.
6. The high cost of rural post offices and the opportunity to use post offices as the service point for a variety of services that need to be universally available including postal services and courier services, access to e-government services, provision of financial services and ATMs. This opportunity may require a re-siting of post offices or alternatively the re-introduction of post office franchises whereby post offices can be located in shops, pharmacies, gas stations and cafes. By using post office for multiple services and adoption of a franchising model may reduce the cost of rural post offices. An evaluation of options for increasing revenue or reducing the cost of post offices is needed.
7. More generally, a review of post office locations. There appears to be a need for more post offices in industrial areas and close to new settlements. However, this requirement needs to be tested.
8. The ability of JPC to provide the TRC with adequate cost information necessary for the calculation of its regulated prices. This issue arises because JPC has inadequate understanding of the cost of its activities.
9. Customs clearance for JPC. The approach taken to customs clearance by Customs and JPC is determined in law. It is leading to inefficiency and delay, and inconvenience for the customer. It needs to change.



7. VISION FOR THE PROVISION AND USE OF ICT IN 2025

By the end of 2025 all Jordanian citizens and businesses and residents in Jordan will have a digital identity, a means of digitally interacting with other people, businesses and government, and a means of digitally paying for goods and services and for transferring money.

The information processing and payment elements of all frequently accessed government services will be undertaken digitally over telecommunications networks from any populated area of Jordan and on major transportation links.

The use of paper forms and over the counter or face to face methods of providing information and paying for government services will be rapidly declining. The use of e-government services will reduce costs in government and in particular reduce the need for office locations that are provided primarily for access to government services.

The use of e-commerce by consumers will be increasing rapidly with Jordanian businesses fully engaged. E-commerce will increase availability of goods and services but will also have the result that there will be a relative, and possibly an absolute decline in the turnover of physical retail stores. International e-commerce sites will have first mover advantage and Jordanian businesses will have to work hard with government support to compete.

The use of e-commerce by business to buy and sell goods and services will be widespread except perhaps in the smallest businesses where it will be increasing in conjunction with consumer e-commerce. Such use will increase business efficiency and will assist companies to reach export markets.

Industrial and commercial businesses, and government, will increasingly be using IT as the core of re-engineered processes. In doing so, they will be exploiting data analytics tools including artificial intelligence to understand their markets, improve process efficiency and better serve their customers.

The Internet of Things and artificial intelligence will lead to large numbers of autonomous devices. These will include autonomous and semi-autonomous vehicles. This autonomy will lead to changing patterns of ownership and use of vehicles and other things. Autonomous devices may change how transportation and other services are provided, bringing about personalised service provision. Domestic transportation and other companies may need to react rapidly to avoid being side-lined by the entry of international companies exploiting these new technologies.

The IT sector will be playing a key role in Jordan's digitalisation and the renewed capacity of the sector will be generating exports of IT products and services. It will have developed services associated with IoT, AI, data analytics and autonomous devices and will be supporting Jordanian firms and export markets in the exploitation of these technologies. Wherever possible, the IT sector will be looking to locate cloud and other processing services in data centres in Jordan, benefiting from the strong cyber laws, cyber security and new international telecommunications links that Jordan has implemented to safeguard all parties.

The telecommunications sector will be playing a full part in enabling access to digital services and will be accommodating the revolution in service provision arising from the rapid migration to over the top provision of communications services. Competition safeguards will ensure a level playing field between over the top service providers and the telecommunications service providers themselves. The sector will be taxed in a manner that enables it to be a driver of the Jordanian economy and the foundation for the digital economy.

The sector will be benefiting from the assignment of spectrum most appropriate to mobile broadband and the mobile IoT at economic prices and able to provide such services in rural areas, along major transport links as well as in urban areas. Fibre to the premises will be available across major cities and towns and where it is not available, wireless services providing broadband



suitable for high quality video will be available. Rights of way will be priced in accordance with the value of the fibre.

High quality re-engineered postal and courier services designed for the growing digital economy will ensure that all Jordanians can send and receive packages and parcels in a timely and economic manner. JPC will be transformed into an efficient company with a market and customer orientation. Couriers will be able to deliver to street addresses through digital maps on which building addresses can be identified and routes calculated. Alternatively couriers and JPC will deliver to boxes or temporary rented boxes in post offices.

A clear regulatory demarcation will be in place identifying the extent of regulation by the TRC, Media Commission, the Central Bank and other Jordanian regulators of OTT services.



8. POLICY PRINCIPLES

The 2018 Policy has been developed in accordance with the following principles.

Developmental focus. A policy that encourages the development of ICT, the Jordanian economy and the social and economic conditions of Jordanians (including the attainment of SDGs).

Universal access. A policy that promotes access to public and commercial services for all people and communities through the deployment and use of ICT. Access is considered to be a function of availability, affordability and capacity to use.

Technology neutrality. A policy designed to enable and promote the digital economy without favour to any particular technologies.

Forward looking. A policy that supports the development of new public and commercial digital services and promotes their use.

Legal and regulatory certainty. A policy that promotes a stable legal, regulatory, and fiscal environment within the context of economic, technological and regional change.

Market driven. Infrastructure provision and service delivery to be generally determined by market forces and subject to appropriate regulation.

Government intervention only where necessary. Government will show leadership, set direction and priorities, manage scarce resources, regulate appropriately, and support the provision of services in underserved and unserved areas.

Strong policy governance. A strong governance model for individual policy implementation projects and for an overall programme with timely, flexible and rapid approach to implementation; and results oriented project monitoring and staged release of funding depending on successful completion of earlier phases.



9. POLICY GOVERNANCE

The following review bodies and structures will be in place to enable effective policy governance.

A Policy Steering Group chaired by the Minister of ICT will be formed to direct and monitor policy implementation. Membership of the Steering Group will include the Minister of Industry and Trade, the Minister of Public Sector Development, the Minister of State for Investment Affairs, the Chairman of the Board of the TRC, and the Chairman of the National Information Technology Centre. The Policy Steering Group will meet on a quarterly basis. It will receive reports on progress in implementing the Policy submitted by the Secretary to the Ministry of ICT. Progress will be monitored against a plan prepared by the Secretary to the Ministry of ICT and agreed by the Steering Group.

A Policy Implementation Group chaired by the Secretary to the Ministry of ICT will be formed to plan and implement policy. The Implementation Group will include Secretaries to the Ministries of Industry and Trade, Public Sector Development and Investment Affairs, and representatives of agencies with responsibility for policy implementation. The Implementation Group will receive monthly reports on progress from those responsible for implementing specific policy measures, review progress against the agreed plan and agree any corrective actions. The Implementation Group will report through the Secretary to the Ministry of ICT to the Policy Steering Group on progress. The Policy Implementation Group will meet monthly.



Annex 1: Current state of the ICT sectors

1. TELECOMMUNICATIONS SECTOR

Jordan's telecom market is one of the most competitive in the region with three major mobile operators each having around a one third share of the market. Mobile broadband is a key growth area for the country, with 4G services already on offer and likely to reach penetration levels of 70% over the next few years.

Strengths

There are some notable areas of strength in the telecom sector:

- **Competition:** The highly competitive mobile market has seen cellular penetration grow rapidly in the last few years, in particular after the deployment of 4G/LTE. Smartphone penetration stands at around 80% and growing
- **Internet access:** Individual usage has increased to a level above the average penetration of both the Arab states and of the rest of the world
- **Backbone networks:** There is significant volume and diversity of installed national transmission capacity that covers the country
- **Resilience:** There is no single point of failure in the provision of international capacity for Jordan. In fact, there is a considerable amount of diversity both in terms of routes in and out of the country and in the ownership of these routes

All of the above represent aspects of telecommunications in which Jordan is well placed compared to its regional rivals and has a potential competitive advantage.

Weakness

There are also some areas in which the telecom sector carries a particular weakness:

- **Tax:** Operators in Jordan are subject to levels of taxation that are well in excess of those levied elsewhere and this contributes to lower levels of network investment than would otherwise be the case.
- **Price wars:** The level of competition in the mobile market has led to a price between operators. This also inhibits investment
- **Number portability:** Consumers in Jordan cannot port their numbers between operators. With phone number a key personal identifier (and potentially a key to national identity) this is a serious concern¹⁰
- **Infrastructure proliferation:** The lack of regulation to promote infrastructure sharing results not only in a slowdown of network rollout but also in the over-provisioning of some facilities, most notably, in the number of towers
- **International capacity:** Despite having diverse international infrastructure, the amount of provided capacity is lacking in comparison with other countries.
- **Rights of way:** Access to infrastructure and, in particular, to rights of way is seen as a persistent problem in Jordan that inhibits the spread of networks

¹⁰ Mobile number portability was first introduced over 20 years ago, is implemented in most advanced administrations and is mandated for all countries in the EU.



Opportunity

The suggested opportunities stem from exploitation of the strengths or attention to the weaknesses noted above:

- **Regulation:** Introduction of mobile number portability would enable every citizen to use their number as a personal identifier. A mandate to share infrastructure would promote faster and less obtrusive infrastructure deployment. Both measures have been widely implemented.
- **Operator encouragement:** With technologies such as the Internet of Things gaining international traction, some easing of the burdens on mobile operators could accelerate the development of the market
- **International bandwidth:** The established international network links provide a sound platform for increasing international bandwidth and hence promoting internet speeds. A local internet exchange would also help in this regard.

Threat

In some cases, there are aspects of the telecommunications market in Jordan that stand as threats that could develop into weaknesses if not checked.

- **Digital divide:** Poorer Jordanians are disadvantaged over broadband access with only the more affluent households being able to afford the fixed lines or smart phones¹¹ required to access the internet
- **Spectrum prices:** Operators are required to pay well above the norm for spectrum and, as a result tend to opt for cheaper spectrum at less attractive frequencies. This may result in the delay or dilution of new services.

Overall, the telecommunications sector appears to be well placed to support Jordan's ICT development. The main restrictions on progress are the heavy taxation on operators and the absence of regulatory support in key areas

¹¹ In mitigation, the second-hand smart phone market in Jordan is very strong and has enabled a broader demographic to own such devices



2. IT SECTOR

Internationally, the IT sector has been subject to a number of major trends that will also affect Jordan during the strategy period. Key developments include the use of mobile infrastructure and related devices for personal IT related service and applications, the introduction of electronic money including electronic wallets on mobile phones, the gradual migration towards e-commerce for business and consumer transactions, and e-government for transactions with government, a migration which is having an adverse effect on many traditional physical sales and advertising channels, the introduction of the Internet of Things (IoT), and the development of working artificial intelligence. Perhaps most importantly, the policy will need to take account of the high dependency of individuals, businesses, governments and nations on the availability, privacy and security of IT services and the data held within them.

In Jordan, the IT sector has, since 2012 suffered a significant downturn in performance that has only recently shown signs of reversing. The downturn arose for a number of reasons. The recent upturn seems to be linked to the revisions to the tax rates that have been applied in 2016.

Penetration and use amongst consumers

The point has now been reached where smartphones, tablets or PCs are widely available amongst higher income households in urban and rural areas but not amongst the lowest income households. Lack of need is the most often reason advanced for not having a computer, and not financial capacity. A sizeable number of individuals indicated that there were alternatives to PCs available, such as smartphone or tablet. The use of the internet amongst individuals is still rising at 56% overall, though it is lower at 47% in rural areas. Of those who used the internet, most used it at home or if not there at work or at school or university. Smartphones are used for internet access amongst nearly all internet users. Virtually no individuals used knowledge stations and internet cafes to access the internet. Internet users use it mainly for social networking and personal communications or accessing media. Accessing health information is also a major use of the internet. Only around 5% to 6% of Internet users use it for e-commerce and e-government services.

Penetration and use amongst businesses

ICT hardware is now widely available at work. The number of establishments using computers to perform their daily work has grown by some 65% between 2014 and 2016, and the average number of devices in establishments growing over that period also in all categories except desktop PCs, servers and printers. The reduction in desktop PCs is more than offset by the increase in the number of laptop computers and tablets. The number of servers may have declined with the take up of cloud services.

The number of workers using computers in their work is growing rapidly. The number of workers using computers to perform their daily tasks increased from about 164 thousand workers in 2014 to about 230 thousand workers in 2016, equivalent to an increase in the proportion of workers using IT from 22.8% to 30%. This increase suggests a rapid digitalisation of work in Jordan and suggests skills in the use of IT will be important in many future jobs.

The use of data networks and the internet is now widespread, having grown rapidly over the last two years. 76.6% of establishments have a data network including some 4% with a wide area network. 70% of establishments had internet access in 2016. The number with internet access has risen from 19,725 in 2014 to 32,746 in 2016.

The internet is also becoming central to many businesses in Jordan with about 82.1% of employees use the internet overall, with the number growing from 124,751 in 2014 to 189,101 in 2016. Three quarters of establishments have websites, about 25% buy or sell goods or services online. Those receiving orders online increased by 63% between 2014 and 2016. Teleworking via the internet



has also increased recently. With respect to e-government, about 30% of businesses want to communicate with government services using websites.

90% of organisations take cyber-security precautions of some sort.

The IT sector

The IT sector is highly disaggregated considering the relatively small size of the sector. Overall there are approximately 631 firms, with many tens and even, as in computer programming, hundreds of companies in individual categories. This means that there are many small companies and annual revenues are measured in hundreds of thousands or low millions of dollars.

Performance of the sector been highly variable with revenues in 2014 at a level approximately half those in 2008. Domestic revenues dropped further but were compensated by higher export earnings until 2014 when they also dropped.

The characteristics of the sector changed over the period from 2008 but the sector is still dominated by wholesale activities, computer programming, value added services, IT outsourcing subsectors, and installation and maintenance services. All of these except installation and maintenance have exhibited declining revenues. Call centre revenues have increased but are still small in comparison with most other activities.

The IT sector has exhibited consistent growth in the number of employees despite declines in revenues, leading to much reduced revenues per employee.

Strengths

1. The widespread availability of smartphones and growing use of the internet by consumers which provides the basis for consumer use of e-commerce and e-government services.
2. The very high adoption of IT and the internet by businesses and use by employees, with an increasing use of e-commerce and desire to use e-government services by business.
3. The strength in call centres and repair and maintenance activities which have provided increased revenues since 2008.
4. The relative strength of export revenues in comparison with revenues overall. This strength may indicate that export-led growth is possible for the sector.
5. Growth in the number of employees in the sector. Unfortunately, employee growth has been amongst lower paid workers such as those in call centres.
6. The good technical, commercial and soft skills of those people who are employed in the sector.
7. The relatively good availability of finance for start-ups.
8. The use of knowledge stations and post offices as centres for training in ICT, for access to e-government services and to the internet. While their use for access to services is going to decrease as the availability of smartphones rises, until lower income groups and individuals have access to the internet from their own devices, there will be a need to provide such services within communities. The focus on lower income groups should be taken into account in determining where knowledge stations and posts offices are located for this purpose.

Weaknesses

1. The low use of the internet for e-commerce by consumers. This low usage represents a lost opportunity for improved access to goods and services by consumers.
2. The low use of the internet to access e-government services. This low usage represents a lost opportunity to improve the supply and reduce the cost of government services.



3. The variable performance of the IT sector since 2008 in the domestic market and also in the export market, with an overall decline in revenues over the period to 2014. In particular the decline in computer programming and consultancy revenues and the near loss of the IT manufacturing sector since 2008, and the decline in software publishing and value added services since the 2011/12 period after early growth.
4. The reduced revenue per employee arising from the decline in those IT subsectors with the highest labour productivity and salaries coupled with growth in subsectors with lower salaries and large numbers of employees.
5. The disaggregated nature of the IT sector with many small companies with low revenues and insufficient scale to generate scale economies through investment. This disaggregation meant that IT firms are relatively small. Their small size gives rise to a number of issues.
 - a. Investment. Their small size means that any individual investment is potentially a large risk to the business. Also, the amount that can be invested is low. Therefore, it is difficult for many Jordanian IT firms to develop intellectual property ahead of demand, and results in a cost plus method of operating the business, undertaking systems integration and bespoke development work rather than product development and sales. While such work provides revenue in the short term, it may not prove sustainable in the long term particularly with a move to applications delivered by services in the cloud. Further, revenue is closely linked to the cost base, essentially to salaries because little intellectual property is created that can be used to generate software licence fees. This means that it is difficult to raise productivity, and growth is limited to employment growth. Overall, therefore little sustainable value is created and the firms are only as strong as their staff base.
 - b. The size of project undertaken. A focus on smaller projects increases sales overhead and difficulty in sustaining a reliable revenue stream.
 - c. A need for partnering to undertake large projects. This partnering has not had a high success rate, and consolidation of the sector is recommended by JIC to increase the average size of IT firms.
 - d. The large number of Jordanian IT firms. The number of IT firms means that competition may erode the value of individual contracts.
6. IT companies that have not embraced new applications and approaches to delivering IT solutions. There is a danger that firms in Jordan will be left behind by global developments in IT. There is a need to:
 - Encourage entrepreneurs with new ideas to join the IT sector
 - Remove barriers caused by sector leadersSuch barriers may be removed through:
 - Competitions for new applications surrounding e-government open to start-ups only
 - Encouraging developer communities
 - Holding boot camps in new technologies
7. Jordan's regional positioning does not favour regional hosting services provision. Jordan is disadvantaged due to the present lack of links to Europe via Syria and Turkey, and links to the Arabian Gulf via Iraq. Much of Jordan's international traffic therefore goes via Alexandria which can be considered to be a single point of failure risk. International IT services firms may well judge hosting in an Arabian Gulf country to provide better opportunity and lower risk than hosting in Jordan.



8. Jordan's location is not suitable to provide a trading hub for regional e-commerce. Further, there is a need to ensure that the ecosystem surrounding e-commerce, covering electronic payments, customs, logistics, postal services, taxation needs to be developed for it to flourish.
9. The adoption of electronic money in Jordan is low. Retailers do not accept electronic payments, the Central Bank requires all non-bank electronic wallets to deposit money overnight at the Central Bank, and current mobile electronic wallets are not built for small payments.

Opportunities

1. Export led growth of the IT sector and the size of the regional IT market and market for Arabic software. Jordan is well placed develop software and firmware intellectual property for Arabic speaking markets and for the Middle East and North Africa. Jordan has good trading links and relations with many countries and Jordanians can travel without undue constraint for sales and implementation work. The Jordanian diaspora is extensive and can provide entry into markets in other countries. There are no barriers in Jordan for Jordanian companies to set up foreign subsidiaries to sell into other markets.
2. The availability of women home workers. Such home workers may be able to undertake IT development and support work for the IT sector. They may also work as distributed call centre workers.
3. The Central Bank sandbox that is providing an infrastructure for Fintech companies to develop their software.
4. ICTAC provides a consultative committee that might be used to publicise mechanisms for developing the IT sector. However, the banks, the Chambers of Commerce and Industry and the universities are not present on that committee.
5. The development of community based ISPs or equivalents to knowledge stations might assist in access provision. Licensing restrictions would need to be removed for such ISPs to be possible.
6. The existing programmes to support start-ups such as Oasis 500. Further similar programmes are needed with support from government and incubators.
7. The use of JIC as a facilitator for the launch of micro and small Jordanian businesses in other markets.
8. Jomopay can facilitate electronic payments from electronic wallets as well as card payments for e-government services and e-commerce.
9. The e-crime unit which provides a national resource for countering cyber-crime.

Threats

1. Inconsistent taxation and economic policies. The National Agenda 2006 – 2015 aim for the IT sector to establish a “favourable investment and infrastructure environment”¹² was not followed for a period between 2008 and 2013. It is important that such an aim is followed for the period to 2025 for Jordan to reach its full potential in the sector.
2. The presence of foreign large IT services companies focused on both the consumer and the business markets.

¹² National Agenda, 2006 - 2015



Companies such as Alphabet (Google), Amazon, Facebook, and Microsoft are providing consumer and/or business services within Jordan using infrastructure, services and intellectual property in other countries. They are providing these services in competition with Jordanian bricks and mortar businesses and IT services businesses. For example, Alphabet and Facebook provides many services paid for primarily through advertising revenue including VoD. Amazon provides hosting services, e-commerce and VoD, and Microsoft provides a variety of hosted business IT services. The Jordanian businesses directly impacted by these global players include retail shops, newspapers and other media financed through advertising, and local IT firms. As the service portfolios of such global players is extended, the range of sectors in Jordan that will be impacted is also extended. Thus, the introduction of Uber means that local taxi firms lose revenues associated with booking taxis. In the future, if Uber is able to create autonomous vehicles, taxi drivers would also lose revenues in favour of the owner of the autonomous vehicle who may well be Uber.

The MNOs and fixed operators in Jordan are indirectly impacted by these global players because telecoms operators are required to carry their traffic over their international networks and their mobile wireless and fixed infrastructure. A large proportion of the internet traffic that they carry is attributable to international IT and media service providers. The MNO and fixed operator retail charges for internet access and broadband services should cover the cost of delivering this international traffic and they should not therefore be out of pocket. Nevertheless, the costs attributable to this traffic are outside their control if they are to maintain adequate quality of service.

Therefore, Jordan as a country faces increased invisible imports from the purchase of substitute services by consumers and businesses in Jordan for those that have up until now been provided by Jordanian firms. Further, Jordan faces the possibility of lost tax revenues from lost sales tax and business income tax on domestic businesses.

The global players may also close out many IT services markets due to their high level of brand recognition and trust in comparison with domestic market entrants, and due to the mutual support their various businesses provide for cross selling and bundling. They are therefore able to become the category killer¹³ in many different markets simultaneously.

3. The small size of the Jordanian market. This impacts on the IT sector in the following ways.
 - a. Development of indigenous IT service businesses. The initial development of the IT base for an IT services business has large scale economies that favour global players over domestic players. Thus, domestic substitutes for Amazon, Uber and others face significant scale issues quite apart from their brand recognition and trust issues.
 - b. Hosting. The domestic hosting market is limited and this, together with limited opportunities for regional hosting in Jordan and limited alternative international links to Europe and elsewhere in the Middle East make a regional hosting proposition relatively unattractive.
 - c. Sale of intellectual property in IT such as firmware or software must take account of requirements in many countries, not just Jordan. Jordanian firms face the additional cost in selling, installing and maintaining IT solutions due to the need to locate staff in multiple countries.

¹³ A category killer is a retailer that specializes in and carries a deep product assortment within a given category and through selection, pricing and market penetration obtains a massive competitive advantage over other retailers



4. Overall level of taxation. Arabian Gulf states have very low or no taxes on businesses, giving those countries some advantage for locating firms such as IT firms that do not need to be near any particular resources. The low tax rates plus the easy access to the most prosperous regional markets make the Gulf states attractive locations for IT firms. Jordan will need to take account of this attractiveness in developing tax and business governance policies.
5. Regulation and taxes imposed on start-ups.
 - d. There is a need to cut unnecessary regulation to reduce start-up costs, such as requirements for physical space, and to reduce taxes on early years' operation of start-ups. For example, sales tax is collected when an invoice is prepared, creating an immediate cashflow issue until payment is received from the customer. Social security obligations are also difficult to finance in early years. Cashflow is of particular concern to start-ups that may be already trading at a loss.
 - e. Changes to the LLC company law is needed to allow for preferential shares so that entrepreneurs do not lose rights to investors who become majority shareholders.
6. Regulation of new technology based services such as those provided in smart cities, IoT, autonomous vehicles and taxi hailing applications such as Uber. In many instances, there is a perception that the regulatory environment is complex with many different parties involved. It is not necessarily clear what needs to be done to set up a business to provide new services, particularly when the service does not fit into a standard category.
7. Taxes and other charges levied on e-commerce. An ecommerce website in Jordan selling imported goods and marketing to the rest of the world has to pay 50% in customs, VAT and other charges. It isn't possible therefore to sell imported goods internationally. In contrast, Dubai import duty is 5% going to 10%, but Dubai is opening a special ecommerce hub. In Jordan, any re-exporting shipment has to go through a re-export process. Each unit is charged \$140. This may be satisfactory for bulk shipments but for individual items, the re-exporting charge is greater than the duty that would otherwise be paid. As a consequence, a lot of entrepreneurs are leaving for more attractive countries for their businesses.
8. Recently imposed regulations on internet censorship, especially the September 2012 amendment to the press and publications law, are perceived to threaten internet freedom in Jordan. The government's revision of this law is a major concern for content development companies, which may be hesitant to invest in Jordan. "Electronic publications" in Jordan are required to get a licence, requiring new publications websites to be legally registered and to recruit editors-in-chief who are members of the JPA and giving authorities the power to block and censor websites, whose owners will be held responsible for comments posted on them.¹⁴
9. The quality of education received by Jordanian graduates is insufficient to meet companies' needs. Companies are concerned that many graduates do not have the required technical and soft skill sets to meet industry demand. Specific skills lacking include: English language, soft skills and business skills, skills in the latest IT technology and mathematics.

While the best universities offer courses that are up to date and provide graduates with the skills the IT sector needs, some universities, including ones with good reputations are not

¹⁴ Source: https://www.export.gov/article?id=Jordan-Information-and-Communication-Technology_2/28/2017



doing so. There is a need to build on relationships between business and the universities to ensure needs are met.



3. POSTAL SECTOR

3.1.1 Current Global Trends in the Postal Sector

The Postal Sector has changed over the last 15 years and now includes private operators who have been permitted to compete in the provision of parcel and courier services. As a result of the introduction of competition and other factors relating to the changing economic landscape, the entities mandated by governments to provide universal service, called the Designated Operators (Dos), have had to revise their business strategies. Most have been converted from government departments or ministries to state enterprises with shares held by the state and structured to operate as businesses with annual reporting of profits and losses and compliance with regulatory requirements. All DOs are regulated by their host governments and most still have legislation that permits them to operate exclusively in areas such as the collection and delivery of letters. This area is called the exclusive privilege or monopoly.

In addition to converting to share-held business entities, the DOs have:

- Diversified their letter mail portfolios to attract new clients
- Re-tooled their operations to focus on the parcels business owing to the loss of letter mail and direct mail traffic to email, on line payments and e-Commerce activity.
- Diversifying its product portfolio to incorporate postal financial services and other counter-related services.

Competition has also stimulated DOs to improve the quality and efficiency of their delivery services by:

- Automating their mail and parcel processing systems using post codes to rationalise the sortation process from the collection of an item to its delivery
- Establishing measurement systems to manage operational processes and to monitor financial performance.

The DOs have also followed the trends in the marketplace of moving from an operations-driven culture to a market-driven one by:

- Making their employees customer facing through seminars, lectures and incentives
- Establishing a competent marketing structure that understands the market and can direct operations to optimize its processing based on customer needs and preferences,
- Ensuring that the marketing function develops the competence to forecast business volumes based on price and quality considerations and to be proactive in the marketplace

Efforts by the global community to introduce more competition in the Postal Sector have been successful to the point where private couriers have become the dominant players in the courier and parcel markets.

Other important trends include:

- With high internet penetration, fewer letters are being sent by customers. The DOs have been losing letter mail business at the rate of 4.5% per year to the point where letter mail accounts for 37.7% of global industry revenue (2015) down from 48.5% in 2010.
- Parcels overall representing 19% of global industry revenue (2015) is up from 14.6% in 2010 and growing at 7.2% on average
- The remaining revenue portfolio of Operators amounting to 43.2% in 2015 is made up primarily of postal financial services (25.9%) up from 17.0% in 2010
- In part driven by cross-border e-commerce, international markets accounted for 23% of total revenue on average in 2015
- E-commerce remains the most important growth driver with global on line retail sales increasing by more than 20% a year.



- Revenue growth for the postal industry remained steady at 2.8% in 2015

3.1.2 The Postal Sector in Jordan

The Legislative framework governing the Jordanian postal market includes:

- The Postal services Law No. 34 of 2007
- The Private Operators Licensing System No. 110 of 2004
- Any other instructions by the Authority under the provisions of the postal Services Laws and the Private Post Operators Licensing Law

The work of the JPC as the Jordanian DO is regulated by a performance contract renewed annually with MoICT. The TRC is responsible for monitoring the implementation of the DOs conditions.

The TRC is responsible for issuing two types of licences to private operators:

- Licence of a local class for the collection and local delivery within the Kingdom
- Licence of an international class for the collection and delivery both in the Kingdom and outside the Kingdom

Today in Jordan there are:

- JPC as the DO
- 7 International licensed operators
- 82 local class operators (mostly in Amman)
- Black market carriers that TRC is trying to bring under their control

Services provided by the DO include: letters, packets, parcels and courier services. In addition, there are postal financial services including money transfer and postal savings bank services.

3.1.3 Private Courier Performance

For the most part, the introduction of private operators in Jordan has been a positive experience for both the customer and the companies providing parcel and courier services to and from Jordan internationally and in Jordan itself. The companies are competitive, profitable and managed effectively using modern management systems and equipment. There are issues relating to licensing as well as customs clearance efficiency and a level playing field but, these seem to be part of the business landscape that the couriers are able to deal with. Most of the larger couriers claim to provide a nationwide service. Some have approached the DO to evaluate the possibility of having JPC carry their rural parcel traffic owing to JPC's extensive network of offices in the rural areas.

According to TRC garnered statistics, the private operators have been able to achieve a 50% share in the parcels and courier market in Jordan in the 2015/2016 period. Up from 34% in 2012 – a dramatic increase.

3.1.4 Jordan Post Company

The 2012 ICT Statement of Government Policy recognized that many of the goals of the 2007 ICT Statement of Government Policy on the Postal Sector could not be fully accomplished including the conversion of Jordan Post Company (JPC) from a Department of Government to a State Company. That conversion was postponed in the 2012 Policy.

JPC has been operating at a loss for the last 10 years. The decision to delay the restructuring of JPC in 2012 will likely result in a continuing trend of costs exceeding revenues in 2017 and future years. Action to be taken over the next three years will determine whether JPC will be able to continue playing a role in the postal sector.

When one compares JPC performance with the DO world community, it is to be noted that:



- Volume of letter mail has declined to 20% of the level attained in 2010; this is a far greater decline than the global trend for the same period
- The global postal industry, in diversifying away from letters into parcels, reduced the proportion of revenue realised from letter mail from 48.5% in 2010 to 37.7% in 2015. Parcels in 2015 accounted for 45% of revenues.
- In JPC's case, letter mail revenues in 2016 remained at around 48% while parcel revenues have not picked up the slack at only 11% of total revenues.
- Another component of the global diversification by DOs has been postal financial services. In 2015, the revenue proportion was 25.9% compared to 0.5% in 2016 by JPC.

A SWOT analysis is undertaken below as a way of identifying the action steps that are recommended to be taken to restructure and re-fit JPC to become effective and to make its contribution to the Postal Sector a valid one.

3.1.5 Conclusions

Strengths

A young and well educated work force

While JPC lacks the modern infrastructure of computer based management and financial information systems, it does have a young and well educated work force which could be moulded into a process oriented and customer facing organization. With qualified and experienced postal leadership, modern postal operations could be developed with support provided by state of the art computer systems and software developers who could be part of the revised infrastructure. Consequently, they could design operational and financial management control systems to support management.

A well established presence in rural areas with 300+ post offices throughout the country.

While these offices are under-utilized, measures can be taken to rationalize the distribution of offices, incorporate additional products and services, and modernize their computer based network applications.

Weaknesses

The poor governance of JPC exemplified by JPC's continued poor performance over an extended period of time

Board members need to be appointed on merit. Operations and the JPC Board need to be separated so that the Board can represent the Government as shareholder and set corporate strategy. A separate management board reporting to the CEO would then have overall responsibility for implementing strategy.

Jordan Post has not carried out the detailed market study recommended by UPU consultants in their 2016 report

At the moment, the size of the Postal Sector market which includes Letters, Packets, Parcels and Courier product is not known. The share that each of the players in the market is achieving is also unknown. The results of the market study, when it is completed, will provide information on the volumes of mail that are in the sector, the share that JPC has of that market and projections of what it can obtain when it offers features of the product that are attractive to the customer. It will be a critical element in preparing its business plan.

Job descriptions at JPC have limited information relating to the duties and responsibilities of the person in carrying out the required tasks

Instead, they are based upon education and seniority. There is no performance appraisal system and there may be nepotism in the selection process.



The financial accounting systems do not appear to enable activity based costing to be undertaken

JPC does not have a computerised financial management and control system or an activity based cost accounting system. It is not able to manage its operational costs on a daily basis and optimise the use of its work force and infrastructure including transportation logistics. Such systems facilitate the generation of timely reports including rate and pricing proposals and determining the cost of the universal service obligation. As JPC's prices are regulated and are essentially cost oriented by virtue of regulation, the TRC, as JPC's regulator, requires accurate costing information to determine regulatory pricing. The lack of a management and control system means that monitoring of JPC's performance against a reliable evidence base is not possible.

JPC appears not to have an adequate business plan

The lack of a market appraisal is indicative that any business plan followed by JPC will be inadequate. There is no indication that JPC is customer oriented or market driven. The lack of any job descriptions is indicative of a lack of any clear specification of organisation structure since such specifications would be derived from the organisation structure. The lack of computerized financial management and control systems and an activity based cost accounting system means that the implementation elements of any plan cannot be costed adequately, and hence it is not possible to determine whether the business plan will be an efficient use of resources.

No Integrated Point of Sale and track and trace systems

JPC does not have an integrated point of sale and track and trace system covering its products and services including Registered Mail, Parcels and Courier. These are sector pre-requisites to meet customer expectations on product performance.

There is no official postal standard for delivery to mail boxes and to street addresses

Service Monitoring for both letter mail and parcels is ineffective and inconclusive and service performance standards do not exist or, if they exist, are not consistent with UPU recommended standards for domestic and worldwide delivery. The UPU monitors inbound mail performance and JPC has readers to detect the RFID mail as it arrives at the exchange office. The global service performance is J+5 (with a target of 80% or 85% of the mail achieving J+5). JPC does not publish these results and neither the regulator nor JPC publishes the domestic results. Evaluation of performance beyond these entry gates is infrequent and statistically irrelevant.

The implementation of a physical addressing system in Jordan is incomplete

The system involves the naming of all streets and roads, numbering all the buildings and apartment numbers, and requiring all domiciles to have a post box. Most of the work of installing street furniture, that was initiated in 2008, has been carried out in Amman. However, the balance of the country has not been completed owing to funding constraints. Further, digital maps currently do not give the locations of individual buildings.

The postal code structure is not at an adequate level of granularity

The current postal code only sorts mail to the JPC's mail carriers' routes. From there, the mail carriers have to sequence their mail manually. JPC does not promote the code and it is not used widely by customers when addressing their mail. The postal code system should be redesigned to allow more refined sequencing which would allow items to be sequenced in the order that it is delivered on all delivery routes.

Having this type of code used by business and citizens for more than 80% of letters would result in a significant improvement in efficiency and reliability for JPC. A refined code structure would also improve the productivity of delivery drivers, emergency workers and others who need to locate or visit individual buildings.



The concept of a bridge between the virtual electronic world and the physical world could provide traction to the idea that a valid addressing system and the investment required is a priority action for a strong foundation for the future for economic, security and emergency services considerations and the role the post office could play.

Opportunities

Having post box facilities in each building will be a challenge to implement

However, other stakeholders such as engineers, contractors, architects may be positively inclined to amend their codes to incorporate such facilities in their designs and specifications.

Improving the rural post offices

JPC is already providing additional services from post offices in addition to parcel and letter mail. These include access to financial services, e-government services and bill payment. Indeed, these are of strategic importance to government in providing access to digital and financial services particularly amongst lower income and other disadvantaged groups. The Knowledge Station Directorate in NITC is training post office workers to provide knowledge station services via the 320 post offices. The plan is to train 830 people. 220 have already been trained.

In addition, there is a plan to train 300 new graduates to develop e-government services at post offices. It is not clear how these people will be used. The intention was for JPC to train the graduates in business. It was designed to create jobs. Salaries not included in JPC's budget. The students will be expected to work from urban and rural post offices and establish start-ups that would be involved in setting up eGovernment and other services at the post office. It appears that the post will be required to provide training for these individuals. The program will start in 2018 and no training and mobilization plan appears to be in place. Such an initiative could be a lose – lose as the graduates will be paid without any idea what is expected of them. JPC will not be able to harness this resource in a meaningful way.

Other opportunities include:

- The provision of ATMs at post offices,
- Allowing other service providers to rent space in the post offices.

Indeed, it may be worth considering a concept whereby the USO could be merged across physical and electronic boundaries by having the post office in rural areas as the one integrated platform for offering: courier services across all couriers, banking services across all banks, eGovernment across all departments, mobile phone fill ups across all mobile providers and so on.

Having a Post Office presence as a postal franchise in the community provides an opportunity to offer other goods and services such as food shops, pharmacies and spreading the overhead costs over a larger number of transactions. Such franchised post offices were present before 2003. After 2003 they were closed down. In 2007 and 2012 MoICT asked JPC to start franchising again particularly in rural areas and to use mobile postal offices. But JPC has not reintroduced franchised post offices and believed mobile post offices were too expensive. Under the franchising system, individuals, newsstands, supermarkets, etc could purchase a franchise. JPC would not use the franchise model because they said they could not find trusted franchisees.

Establishing more post offices in industrial areas

According to feedback received during the interview process, JPC is under-serving the industrial community by not having a larger presence in industrial areas. Other surveys revealed that each of these users of the postal sectors spend in the order of 122 JD per month as a composite for both domestic and international services. The majority of that monthly revenue goes to JPC.



Threats

Competition

Competition has raised the bar on customer expectations. Customers have moved over to competitors based on price, quality and delivery considerations. This has eroded profitable revenue that supported the cost of the universal service provision. The exclusive privilege associated with the provision of Universal services is not bringing in enough money to cover costs.

Flawed definition of a letter

The definition of a letter in the current Postal Law allows the possibility of Private Operators bagging quantities of individual letter mail items thereby exceeding the 500 gram weight limitation and being permitted to deliver inter-Ministerial Government mail by charging at least 5 times the basic domestic letter mail rate for the bag. This is an unjustified loss of revenue to JPC.

In addition, the current definition does not restrict Private Operators from accepting mail of a non-urgent nature. This means that letters can be accepted for non-urgent delivery and delivered over a longer period (Similar to the conditions the DO would offer), and not on a next day basis

The inability of JPC to provide the TRC with costing information

The result is TRC is unable to price JPC services effectively. As an example of how this has damaging effects on JPC is the fact that domestic rates are the same as international outbound rates. This reflects a significant revenue loss to JPC as the most common postal practice by other DOs is for international outbound rates to be double the domestic rate.

In addition, this lack of pricing based on costs prevents JPC from benefitting from receiving revenues for delivering international mail in Jordan based upon a domestic rate referencing formula and needs to rely on receiving revenues based upon world average rates.

The high cost of having rural and urban post offices

Although there appears to be a lot of discussion, there is no unified plan to reduce the cost of the Universal Service Obligation (USO). There are a number of possibilities that need to be explored including:

- Increasing the area covered by a rural post office in line with regional norms
- Increasing the range of services offered in order to share the overhead e.g.
 - Financial services, eGovernment, social welfare payments
 - Commercial services:
 - Services supporting other courier service providers,
 - Mobile phone fill ups

Customs clearance and the Post

By international agreement, JPC is obligated to present to Customs all incoming items for inspection. For its part, Customs is obligated to carry out this function in the premises of JPC. It was learned that Customs agents sometimes only arrive to carry out inspections once a week. The process is slow, inefficient and not customer friendly and causes delays in delivery and inconvenience to the customer. It is not a level playing field when compared to commercial customs clearance offered to Private Operators and causes customers to switch to private courier operators despite the higher costs. By empowering JPC to collect the duties and taxes from the addressee on a C.O.D. basis could make this a level playing for JPC and its customers.

Summary of policy issues

1. **Impact of e-commerce on the Jordanian consumer and small to medium sized retail businesses in Jordan.** The Jordanian e-commerce market is small in relative terms. With the internet and ecommerce, the rural and urban customer now has access to a world selection of goods that can be delivered to his doorstep. He does not need to go to a major



centre such as Amman to search for and choose the product he requires. The decline in retail sales at a store as a percentage of total retail sales will continue. The absence of e-commerce consumer web sites in Jordan and the difficulty in obtaining products from recognised North American and European brands in the Arab region will incline the Jordanian consumer to make purchases outside of Jordan.

2. **The long term reduction in letter mail arising from the use of digital communications.** Post offices and mail services will need to be restructured to accommodate the loss in revenue arising as they have in other countries.
3. **The increase in parcel volumes arising from e-commerce.** This increase will affect infrastructure and resources across the mail and courier sector, including customs, the physical nature of post offices and the need for secure delivery points and street addressing.
4. **The gradual increase in market share of private postal operators.** This increase, together with declines in JPC's traditional letter business may be a threat to JPC's long run viability.
5. **Post Offices.** Post Offices are a necessary part of the universal service and should be used to provide access to electronic government services and the internet. **The requirement for this provision may prove to be relatively short term, and towards the end of the policy period, it is expected that this use of post offices will be in decline with the near universal availability of smartphones and tablets attached to mobile broadband networks.** At that stage, a reorganisation of post offices will be required so that they can continue to provide dropping off points for parcels and remaining mail items and possibly access to financial services. In the meantime, post office manning and the capacity of the staff at post offices will need to be developed so that they can provide support for the digital services to be provided at post offices.
6. **The continuing losses at JPC.**
7. **Financial Management of JPC.** JPC has a problem with its financial management, understanding of its cost structure and operational monitoring and control. The company would like to raise prices but it needs a better understanding of its cost structure and its efficiency. The company could use TRC's cost model to better understand its structure.
8. **JPC lack of market knowledge.** JPC needs to undertake a market study to give it a clear understanding of its market and the services it needs to provide.
9. **JPC's business plan.** JPC needs to develop a plan to enable it to satisfy the needs of its market as assessed in a market study.
10. **JPC's performance.** JPC requires substantial capacity building at all levels of the organisation to turn it into a modern postal operator. It needs to be managed with authority, it needs to review its employees in terms of numbers and skills, bring in new employees with the correct skills and particularly with the right IT skills. The real problem with JPC is a lack of effective leadership – not enough attention has been focussed on the composition of the Board and the value that Board members bring to the business. Board members have not been selected for the expertise that they can bring to the JPC business.
11. **Financing JPC.** JPC has to have government agreement to raise finance. JPC needs to obtain alternative sources of finance in order to invest in plant and machinery.
12. **Customs operation associated with inbound JPC mail.** The customs clearance imposed on JPC are onerous and are a threat to its business in the delivery of inbound international packets.
13. **Customs operations and staffing.** The Customs Department needs to reduce arbitrary decision making and differences in process performance between officers and facilities.



14. **Postal addressing database** with building numbers is not complete and the postcode structure is not at an adequate level of granularity.



4. E-GOVERNMENT

Compared with other nations, Jordan has not progressed well with e-government over the last ten years. Jordan's performance in e-government in Jordan has failed to maintain its 2008 ranking of 50th in the world and has declined to become 91st by 2016.

4.1.1 Awareness and use of e-government services

About 27% of the population is aware of e-government services, awareness being highly dependent on educational attainment at least to secondary level. Use of e-government services varied by region with the Northern Region and particularly rural areas having the highest use of the e-government portal that has been established. Nevertheless, most users reported only using the e-government portal once a year. Other methods of accessing e-government services were used including the USSD code service which was the most popular.

4.1.2 Access to e-government services via knowledge stations

Knowledge stations are used by about 12% of households but mainly for training or for accessing the internet, although only by 1% of individuals. The principal reason for not using knowledge stations was that services could be accessed from other locations, or secondly, that the knowledge station was distant from place of residence. The roll of knowledge stations is limited by staff availability and capacity of the available equipment with the result that only 134 knowledge stations are currently providing e-services.

Knowledge station services are being made available through 320 post offices.

4.1.3 E-government infrastructure

The roll out of e-government was originally coordinated by an e-government strategy for the period 2006 to 2010. However, after 2010, the roll out of new e-services went into decline.

E-government portal

In 2014, a new e-government programme was launched by MoICT with services delivered through an e-government portal managed by NITC. There are now some 122 e-government services available to the public through the portal. Over 500 services are to be delivered over the next two years. In addition, mobile applications are being developed. Currently, there are some 20 such applications.

However, it is not clear to what extent individual departments are benefiting from provision of e-government services to the public by automating processes behind the services and interface.

Social media

Some use of social media is made by government departments and municipalities but there is no social media strategy

Open data

A small number of government datasets are available through the e-government portal, but more data is available from other sources including the Department of Statistics. An action plan will be released in 2018.

Smart ID card

The smart ID card is now available and includes a digital certificate that enables access to e-government services. Other personal data may be stored on the card and it can be used with RFID for accessing services by smartphone or computer with an appropriate reader.



Cloud services

Government is making use of a private cloud provided by NITC.

Government Service Bus

A means of exchanging data between government departments, the Government Service Bus (GSB), has been developed. This enables loose coupling of data sets with the possibility of exchanging data dynamically where the data definitions are consistent. The system has been developed to ensure data privacy policies are honoured.

Big data

The use of the GSB enables big data sets to be developed.

National Broadband Network

A national broadband network (NBN) has been under development since 2003 but still cannot provide service to many government sites. The NBN project has been subject to many delays and options for privatisation are now being pursued. However, the design of the NBN and terms proposed by government may make it unattractive to the private sector. A World Bank study is now being carried out to determine how to move forward with privatisation.

Departmental IT

Ministries, including Health and Education, and Departments such as Customs, have developed applications for their own use often with foreign aid support. A centralized e-procurement system is currently being developed.

4.1.4 Conclusions

Strengths

1. A client-centred service model for e-government has been established.
2. A common infrastructure has been established to enable e-government across the whole of government. The infrastructure that has now been established – the NITC data centre and private cloud, the NBN, the GSB and the smart ID card provides an infrastructure that will support consistency and inter-operability between different e-government services and back-end systems.

Nevertheless, the development environment needs to be engineered to ensure that such a requirement is also taken into account in developing individual applications.

3. The e-government portal provides a client-centric approach to government service provision with a clear specification of procedures for many services. Some of these are implemented as e-government procedures.

It is not clear that there is a social media policy or strategy used by the public sector to provide information to the public.

4. A smart digital ID has been established to access e-government services and to enable exchange of information between different systems.
5. Protection of personal data and privacy. Personal data and privacy requirements are understood and acted upon.
6. Continued emphasis on the bridging of digital divides. The use of knowledge stations and post offices for training and for access to e-services, and the development of applications for mobile devices indicates action associated with this requirement. However, knowledge stations and post offices are not necessarily positioned at convenient locations. Their role



- should be viewed as temporary, since the availability of smart devices and mobile broadband services is already nearly universal.
7. The creation of a Chief Information Officer role at a government level and within each ministry and a “CIO council” to provide the necessary coordination. Jordan has a CIO and a CIO council with departmental representation.
 8. A national CERT has been established for the public sector and to provide advice to the private sector.
 9. Government is rolling out IT systems in many Ministries and Departments including Health, Education and Customs with the support of international organisations and foreign aid. However, such financing may in some cases make it difficult to build systems to a common architecture so that data may be shared and complimentary systems inter-work.

Weaknesses

1. Awareness of, and readiness to use, e-services appears lacking despite government efforts to provide e-government services through knowledge stations and now through post offices. There is a need for more widespread marketing of such services to stimulate their use and to ensure the users benefit from using them.
2. Staffing and equipment at knowledge stations. This is limiting the use of knowledge stations to provide access to the internet and to e-government services.
3. Piecemeal nature of the e-service portfolio. No department appears to have developed a comprehensive set of services. This means that individuals and businesses do not have a good understanding of what services are available. There is a need for planned and prioritized development of e-services within each ministry, municipality and government agency.
4. The slow speed of roll out of e-government services. Delay undermines the programme and impacts cooperation between government departments
5. Financing of e-government services. There is a need for a consistent and reliable budget for e-government spanning a number of years. This budget needs to be tied to an e-government programme with individual projects identified and scheduled. E-government projects could also be funded by PPP arrangements with developers paid for the use of their application.
6. The development of public sector IT services seems to be happening in different silos. There is a lack of peer level communication between MoICT, TRC, NITC, RSS and the Central Bank. Communication is too formal with linkages via senior managers only. The result is that information about the basic infrastructure for the development of e-government services is not widely exchanged.
7. The lack of coordination between e-government projects and BPR projects within government arising from the separation of roles of the Ministry of Public Sector Development (MoPSD) and e-government. While staff from the MoPSD have been seconded to the e-government team in MoICT, the opportunity for employing e-government to simplify and re-engineer government processes may not be fully appreciated. There is a need for the opportunities arising from adopting the “smart” approach to government services inherent in the e-government service architecture to be fully recognized.
8. Use of big data analytics. There is awareness of the opportunity and benefit of data analytics within the public sector IT community. However, the data is not yet available in a form in which it can be used. The GSB will enable the cross-departmental exchange and use of data and this will then allow “big data” sets to be created.



9. Open Government Data with an online catalogue has yet to be established although a start has been made. Government data is available through several sources. The e-government portal provides sample datasets and links to other sources. The lack of comprehensive datasets is a consequence of the lack of availability in online form of many datasets used by government and municipalities within government except to the departments that are primary collectors or users of the data. Once cross-departmental exchange and use of data is enabled, it will be possible to publish selected data as open government data as well.
10. There is no evidence of the provision and use of e-participation tools.
11. Use of e-government to increase institutional coordination. There is little evidence that Jordan is currently using IT to increase institutional coordination. Indeed, the opportunities arising from using email, for example, to improve peer level communication across departments and between agencies and departments is lacking.
12. NBN's coverage. The lack of geographic coverage, and particularly the difficulty of reaching individual sites, makes it difficult for the NBN to provide service for government Ministries except at major sites, with the result that they have, like the Ministry of Education, resorted to the use of public services.
13. The design of the NBN means that it cannot accommodate private sector needs and a re-design is therefore required.
14. The development of the NBN has favoured performance over geographic coverage with the consequence, as exemplified by the Ministry of Education, that Ministries look to the private sector to meet their relatively modest technical requirements.
15. Jordan does not have a supply chain management and/or e-procurement system for the public sector although such a system is being developed with the support of Korea.
16. IT in education is obsolescent, with electronic content dating from before 2002 and inconsistent with the current curricula.
17. Training of public sector staff including teachers in IT is required and should be part of a professional development programme.

Opportunities

1. The use of smartphones to provide a ubiquitous platform for the delivery of e-government services to individuals and households.
2. Knowledge stations and post offices can provide community access to e-government and other e-services. However, in the long term, their use for this purpose is likely to decline due to the widespread availability of smartphones and mobile broadband networks.
3. Knowledge stations and post offices can continue to provide community based training in awareness and use of IT.
4. E-government projects can be used to stimulate the IT sector and particularly start-up IT companies through innovative approaches to contracting with suppliers. Examples may include competitions for prototype applications leading to full development projects with associated incubator type support provided through a private sector incubator / accelerator company.
5. The CIO Council. This needs to be used to ensure peer level communication associated with e-government takes place.
6. E-Government IT infrastructure and processes. These can provide the foundation for radically redesigned government processes.



There is a need for the opportunities inherent in this infrastructure and the related processes to be communicated to the re-engineering teams in the MoPSD, the Central Bank and other ministries, municipalities and public sector agencies.

All parties need to use the e-government infrastructure to ensure that the relevant data they hold is made available across the platform in the right format. In addition to this, it would be appropriate to set targets for the production of usable services using the common development tools.

7. The role of the RSS and universities in the development of analytical tools for big data sets owned by government. RSS and universities may have the capacity to develop such tools. In doing so they would further develop Jordan's capacity in IT in important areas.
8. MoPSD may have a roll in monitoring and evaluating e-services.

Threats

1. The NBN may be slowing down the implementation of government services because of its lack of geographic coverage and an unnecessary diversion of resources away from provision of services. The private sector has already got coverage of the country and could implement faster as Umniah did with the Schools and Orange with Knowledge stations.



5. SKILLS AND TRAINING

Jordan's main strength in this area is the perception that it produces a workforce with the skills to develop its national ICT capability. Until recently, the quality of education in science and mathematics has been rated among the highest in the region and the view of Jordan as a producer of highly skilled ICT professionals persists. However, a recent decline in Jordan's ratings in several aspects of its education performance would, if not arrested, undermine this healthy reputation.

A number of issues that are relevant to skills and training have been raised during stakeholder interviews:

- ICT organisations are not providing vocational training or encouraging staff to gain relevant professional qualifications. This means that ICT professionals are not being developed to their full capability.
- The education system, at all levels, does not develop soft skills such as teamwork, communication and creative thinking. Neither does it teach English language to an adequate level. These deficiencies are barriers to development of usable skills in the ICT sector.
- Public schools are not up to standard of private schools in Jordan and only a few of the universities in Jordan offer undergraduate programmes that bridge the gap between theory and practice.
- Many of the people with programming skills and experience are leaving Jordan, typically drawn by higher levels of remuneration, and this is limiting the capacity of the local ICT sector.
- The gap between what is required by business and what is taught at universities has widened in the last ten years. Most of the country's universities have not kept up with developments in ICT or the market.
- The ability of undergraduates to articulate their ideas is not being developed: they are taught to memorize but not to critically evaluate a concept.
- The female workforce is widely regarded as having great potential but is currently underutilised, due largely to restrictions on extended travel.

The majority of the issues listed above are widely recognised, having been raised by several parties. In mitigation, there are a number of initiatives in place and suggested actions that address the main problems.

- The Jordan Computer Society run training on soft skills with the objective of helping graduates to gain employment.
- Several ICT companies have offered internships for ICT students and these have proved to be effective in developing appropriate skills.
- An ICT master's programme which has a practical focus has been developed at Princess Sumaya University for Technology (PSUT) and is regarded as a model for effective ICT skills building
- ICT companies such as Cisco have felt it necessary to run courses to address the lack of communication, negotiation and other soft skills, which have provided effective
- The sector skills organisation project for developing a framework for educational achievement, which is no longer funded, was not an expensive project and its reintroduction would be good value.



- NITC would like a bylaw to facilitate NITC assisting Ministries in their recruitment for IT roles and in its training function. The present bylaw is temporary, it should be made permanent

In addition to the high level skills issues, there are some specific training requirements that need to be addressed. With regard to the promotion of use of e-government services, there is a need to train people in rural areas in the use of the internet where. There is also a perceived requirement to train junior civil servants in ICT and to attract a higher level of skills into the regulator.