Research Paper: Electronic Governance as Key Tool to Strengthen Integrity, Transparency, and Fairness in the Public Sector

«Palestinian Case Study»

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Executive Summary
Constitutional provisions establish the scheme of the relationships between governments and citizens that lead to what is called a "social contract". Governments utilize governance tools to organizations relations between both parties, in a manner that allows governments to exercise authorities and offer services in legal, social, economic, services, and employment spheres equitably and as per citizens' expectations. In return, citizens carry out their duties toward their country as per national laws and suitable means.

This paper explores the issue of Information Technology and Data Systems in five sections. Section One defines public sector governance and its basic foundations. It reveals the role of technology and information systems as a prime governance tool. It shows also the various aspects of Information Technology and Data Systems' utilization in the public sector; and the impact on governance in the fields of integrity, fairness, transparency, and effectiveness.

The paper shows that haphazard use of Information Technology may lead to adverse results. Therefore, **Information Technology and Data Systems** must be managed before, during, and after use in government agencies; with tools that measure impact, results, and performance. The section presents information as well on the justification and benefits resulting from the use of Information Technology.

Section Two presents the experience of some countries that made successful transformation to information technology and data management, and the impact this step had on government performance.

Section Three presents the Palestinian case and the components of governance in the public sector. It presents indicators on information Technology in Palestine from a universal perspective (ESCWA report), and that of the Palestinian Central Bureau of Statistics. The section shows the experience and aspirations in Palestine in information technology as given in the Public Sector Technology and Information Cluster Document, approved by the Cabinet, in addition to the electronic government services system – mentioned in this paper as a success story – on how to overcome impediments created by occupation. The service system is considered one of the most important outputs of the mentioned plan, the result of which is a system for electronic government services, first time in Palestine.

Moreover, the paper shows the lack of structured and unified mechanisms for the use of Information Technology in the governance of the Palestinian public sector, which necessitates the creation of a comprehensive approach for the use of Information technology and data management systems in the public sector.

Section Four presents the results and recommendations along the following themes:
1. Building the components of governance in the Palestinian public sector.
2. Building the system of information technology in Palestine, in the context of the technology and general administration cluster.

3. Looking at Information Technology governance, to ensure best investment possible in Information Technology at the various institutions.
4. Periodic measurement and assessment of success of Information Technology systems and its impact on the government sector.
5. Expanding education and training of staff on the development and use of Information Technology.
6. Rationalization of Information Technology in Palestine as per international standards, and to put Palestine on the world's Information Technology map.

Introduction

Governance is defined as "the set of mechanisms, procedures, laws, systems; and decisions that ensure discipline, transparency, and fairness. Governance seeks quality and excellence in performance, through activating the performance of the economic units and how they utilize available human resources to ensure maximum benefit to stakeholders and society." (Al-Khatib, 2009) [1].

The Organization for Cooperation and Development (OECD) defines governance as intertwined with governance of companies; governance is: "the system through which company administration is guided. It determines responsibilities of the various parties such that the administration board, managers, investors, and other stakeholders. The definition determines the set of regulations and procedures for decision-making relevant to the institution, and to the structure that ensures meeting the aspired objectives and achieving better performance." (OECD, 2017) [2].

Public sector governance is defined also as the management of government business in a manner that prevents financial crises, waste of public funds, and ensures administrative control. It also determines who is responsible when issues arise in the course of applying regulations, or executing projects or operations within and among public sector departments." (Ghader, 2012) [15].

Governance, in general administrative terms, is a system that guides and controls the various administrative bodies through laws, regulations, and procedures that ensure quality and excellent performance. Governance guides the choice of tools and methods suitable to plan and implement efficiently, control and manage relations, and organize the work among various stakeholders and units. Governance improves performance through contemporary criteria and indicators that lead to transparency and fairness. Public sector governance is similar to that in the private sector in terms of administration, supervision, monitoring, auditing, and complimentary relations among various units to achieve best interest. Yet there are differences between the two. In private sectors, the administration board is entrusted with the power to achieve a governance through policies that yield profit to the owners. On the other hand, the public sector possesses political power and non-profit objectives, and seeks to meet public interest. Public sector governance is in the hands of the legislative council, cabinet; and government departments who own internal and external resources that lead do transparency, fairness, and effectiveness.

Various tools must be available to ensure governance in the public sector. Countries utilize Information Technology and Data Systems in government and private sectors, given the importance of governance when wanting to invest and employ resources properly. As such, Information Technology must be managed wisely to guarantee proper use of public funds and to prevent mistakes. Also, Information Technology must be evaluated in terms of their impact on administrative work efficiency and effectiveness, and how to manage the gaps, and then prepare alternative plans based on contemporary technology as supportive tools in

the implementation of plans, and to ensure integrity and transparency in government performance.

1. Public Sector Governance
1.1 Components of Governance in the Public Sector

Public sector governance means that the government adheres to laws, policies, strategic plans, and procedures that ensure fairness, transparency, effectiveness, and quality. To achieve such results, the following pillars must be adhered to:

Legal Framework: It is a pillar based on the political order of the State, the executive and institutional structures including the basic law (i.e., constitution) that all determine the nature of the State, its mandate and structures, through defined legislations, organizational and executive regulations, and control and instruction mechanisms.

Administrative Framework: It is the standards and basis through which state institutions are managed, and decisions are made as per the assigned roles the organizational structures that determine responsibilities and mandates. It is also the mechanisms for follow-up, evaluation, auditing, and accountability that ensure harmony between the decisions made and implementation on the ground.

Infrastructure of Information Technology**:** It ensures that equipment, technology tools, and contemporary data management systems are utilized in government administration and achieve effectiveness, fairness, integrity, and transparency.

1.2 Role of Governance in Improving Public Sector Performance

Governance depends on continuous planning, managing, financing, monitoring and evaluation. Exercise of responsibilities in government institutions requires defining and measuring performance, to find out and analyze the strengths and weaknesses, and to put plans that raise the standards of performance and increase productivity.

The management of institutional performance takes place for various reasons, the most important of which are the following (Kapllan, 2009) [17]:
 1. Planning and forecasting: enable institutions determine its capacity to realize objectives.
 2. Improvement: performance monitoring, identifying problems, and providing solutions.
 3. Competitiveness: enables comparing performance with that of other institutions, to determine the level of consistency and responsiveness to the external environment.
 4. Adherence to regulations and standards: measures institutional adherence to laws, regulations, and control mechanisms that prevent corruption and implement international standards that ensure best performance.
 5. Reward: encourages employees' outstanding performance, and gives incentives based on actual performance and fairness.

To raise the standard of government performance, there must be mechanisms that reduce the amount of time, effort, and cost it takes to do the job; and that improve quality, productivity, and innovation. All should be done in the context of control factors that seek integrity, transparency, fairness, and effectiveness. Information Technology in the private and public sectors alike plays a strategic role in the administration of institutions and reinforcing good governance.

1.3 Use of Information Technology and Data Systems in the Public Sector

Realization of the aspired level of technology means that the institution prepares and installs systems for technical activities, ready-made programs, databases, networks, computers, and other relevant elements." (Al-Kasasbeh, 2011) [4]. Information technology consists of the following components:

1. Physical resources: equipment that processes, stores, and preserves data.
2. Programmatic resources: orders and instructions that guide the work of computers and support systems that result in good performance.
3. Databases: linked to organized and reciprocal relations, stored properly with no duplication.
4. Communication networks: hardware and communication protocols that allow computers to communicate among each other in a secure environment.
5. Human resources: without which Information Technology systems become useless. Needed are human resources that possess knowledge, expertise, and capacity. Staffing should include programmers, databases experts, communication experts, technology administrators, etc.

IT systems operate in support of decision-making, synchrony, control, and analyses that lead to better organizations, and to build contemporary future schemes." (Wikipedia) [25]. **Data systems support the process of decision-making, and help decision-makers analyze problems and derive solutions and alternatives.** Following are examples of information systems:
- Databases management systems.
- Administration databases.
- Decision-making databases.
- Geographic databases.

Governments seek IT systems to support realization of strategic national goals in all sectors including agriculture, transportation, health, education, governance, commerce, banking, and tourism. Implementation takes place through various axioms such as (the Ministry of Commerce and Export Development, Tunisia) [33].

While information is considered an important strategic resource for any country, one that informs the decision-making process, yet information verification without information technology that organizes them could leads to loss of value at all levels. Following are some of the most important aspects where Information Technology is needed in government work:

Quality of Government Services
The role of government in general is founded on the ability to provide the best services possible, consistent with citizens' aspirations and the need to raise the standard of government performance. Governments want to succeed, and to perform with quality that ensures speedy delivery of services at low cost.

Governments are competing to improve the quality of services they offer to citizens. With the tremendous developments that took place in the field of technology, governments found out that utilization of technology and data management systems are key to realize the aspired goals.

International studies indicate that technology in government services minimizes bureaucracy and administrative corruption that affect justice, integrity, and transparency in public service delivery. The system becomes more susceptible to mistakes when run by humans (Hussein, 2013) [3].

Support the Decision-Making Process
Technology us is not restricted to improving government efficiencies. It has the ability to deliver information needed for senior officials who want to carry out their duties when strategic decisions are needed. Information Technology became vital for developing business sectors and providing timely information (McMahan, 1997) [19]. Such tools diminish the disguised unemployment.

Organizing the Accounting Process
Accounting principles are a key tool utilized by employees. When properly used, it enables transparency through financial statements and reports, and protects the rights and interests of individuals, and builds trust among stakeholders.

Accounting principles are also a mechanism for audit and review. Technology has impacted greatly the systems of finance, auditing, declaration, and transparency. Technology became indispensable when finances and accounting are sought, and when results are announced (Wahdan and others, 2021) [5].

Employment and Staffing Systems
Information technology allows more employment opportunities, when administrative and information systems are utilized for entry of applications and candidate information as per job announcements. Technology eases the process of comparison among candidates according to academics and other defined merits. In addition, meetings and electronic exams can be more organized, and new jobs are created that were nonexistent in the past.

Technology increases the motivation to change, and to come up with new systems and programs for electronic work- which decreases the needed time and effort through innovative solutions.

1.4 Role of Information Technology and Data Systems in Governance of Public Sector
The United Nations Convention on the Elimination of Corruption consists of sound practices in administration, public property, fairness, responsibility, and equality. The Convention protect integrity and promotes anti-corruption culture; e.g., proper basis for employment decisions and public procurement management. The Convention sets a code of conduct, hiring criteria for senior staff, staff training, and other aspects that prevent corruption (United Nations Convention on the Elimination of Corruption, 2013) [13].

The Convention's technical guide addresses the utilization of Information Technology in the public sector. It seeks to achieve good communication with citizens through websites, and electronic government systems, electronic management, complaint systems, and simple administrative procedures. The overall aim is to increase integrity, transparency, fairness, and effectiveness in government work (Technical Guide of the United Nations Convention on the Elimination of Corruption, 2013) [14].

Proper investment in Information Technology and Data Systems in governments makes procedures simpler. This reflects positively on protecting citizen rights, offering them services equitably, and improving their lives. All of this would happen when high-caliber services are offered to citizens. Information Technology also preserves the country's resources and prevents depletion. It expedites communication inside and outside the different institutions. **The role of information technology and contemporary data systems manifests itself in governance through the following aspects:**

One: Through the Door of Integrity
The 2030 Sustainable Development Plan, adopted by the United Nations in the field of public integrity, says that integrity is one of the basic pillars of political structures. Integrity ensures the economic and social well-being of States, and makes a foundation of governments to protect public interests and societal values. Reports by the Organization for Economic Development (OECD) make same conclusions, affirming that promoting integrity is practiced differently in different countries, and that it is why the Organization issued a set of recommendations that help countries enforce the same concepts of integrity.

The impact of Information Technology is crucial for a culture of integrity, through the following aspects:

- **Diminish the possibility of favoritism and nepotism:** Information Technology in government services diminishes the favoritism, nepotism, and bribery. Electronic applications and fees paid electronically for services eliminate human intervention and suspicious services.

- **Diminish the possibility of human error:** Automation of procedures in government institutions, and adopting information systems, leads to credible results. Automation of government services including electronic payment systems, means that human error is at minimum.

- **Provide an Effective Tool for Monitoring Financial Data:** This is relevant to revenues, expenditures, financial tenders, and taxes. Social network analysis and data mining makes it possible to look at tax records of companies and individuals, and to reveal fraud and secretive transactions, if any (Abu Idris, 2020) [21].

Two: Through the Door of Transparency
The United Nations defines transparency as "the free flow of information, meaning that information and processes are open, and stakeholders can makes needed verifications, and that ensures the protection of individual interests and decisions." (The United Nations Convention Against Corruption, 203) [13].

Informational transparency is an important basis for verification across social and economic domains. Without transparency, local economies remain closed, investors run away, and planners and decision makers are unable to realize economic plans. The Technical Guide of the United Nations Convention Against Corruption, affirms the need to give citizens the right to access information, create exemptions based on policies and backstopping relevant to the State, and to classify information parties can have access to, while taking public interest into consideration (Technical Guide, the United Nations Convention on the Elimination of Corruption, 2013) [14].

The system should make sure that only a small number of exemptions exist on access to information as needed to protect national interests. **Financial transparency** gives citizens access to information on budgets, revenues, expenditures, financial reports, etc. **Administrative transparency** is defined as the clarity of legislation and ease of understanding it; its stability, harmony, objectivity, linguistic clarity, and flexibility. System development should be done as per the economic, social, and administrative dynamics; in a manner consistent with the needed simplicity of procedures, and mechanisms for dissemination of information. (Al-Momani, 2019) [6].

An open information system is key to making societies operate in a transparent manner. Information should be disseminated electronically, such as population data, indicators on economic performance, land property, taxes, schools and universities, and electronic archiving of government institutions (Yousef, 2009) [7].

Three: through the door of fairness
The tenth objective of the 2030 Sustainable Development Objectives is meant to stem the various facets of inequality inside countries, communities, and peoples' segments. The Objective is meant to empower the marginalized segments of society and give them access to technology and knowledge. Administrative corruption is one of the most severe factors that affect an organization's ability to flourish. Studies reveal that administrative corruption is a major source of internal and external weakness of organizations (Al-Subaii, 2017) [8].

Four: the door of effectiveness – economic value
During the second half of the twentieth century, there appeared a group of very strong international companies. Their power rested not only in their financial resources, but as well on their physical assets including buildings, equipment, machines; organizational capacity, relations, continuous development, creativity and innovation at all times.

Effectiveness, as seen through the prism of governance, is the efficient administration of resources, prevention of waste, and realization of sustainable economic revenues that benefits the whole of society. It is worth mentioning the strong linkage between effectiveness and efficiency. The two are not synonymous. An organization could be characterized as effective, but it is not efficient in the utilization of resources. Efficiency is part of effectiveness, and the two combined equal performance (Yasmin, 2010) [9]. Moreover, effectiveness is defined as "measurement of output's quality. Efficiency is defined as the measurement of the level of quality that yields output." (Al-Shahrabli, 2014) [10].

1.5 No Governance without properly using Information Technology
Governance of Information Technology yields three benefits (YouTube, 2020) [24], namely:
1. Efficient use of Information Technology prevents technological projects that deplete resources without achieving the aspired objectives.

2. Risk optimization helps determine the risks and to put in place remedial plans, and to integrate the risk chain and enterprise risk management plan. The risk and its impact on the organization must be measured, along with the impact of remedial plans.

3. Resource optimization plans must be developed, to measure the ability of existing resources to meet institutional requirements. Budgets must be allocated to complete the work or to replace it with more efficient solutions. The exercise requires expert human resources, to bring new information systems that replace ineffective ones.

Accordingly, the governance of information technology is highly needed and inevitable if we aspire to employ resources properly and to prevent new dangers. Governance of Information Technology requires answering the question: who is the decision maker on issues relevant to Information Technology? What are the benefits and risks of introducing Information Technology systems for various applications? What is the correlation with partners and the surrounding environment? There are numerous questions that clear answers, as demonstrated in the following table:

Table 1: example on questions and decisions correlated with governance of Information Technology (Ayshoush, 2021) [11]

Decisions correlated to governance of Information Technology		
IT principles	What is the role of information technology in business? What are the good behaviors correlated to information technology? Where will funding come from?	Davenport, Hammer, and Metsisto 1989, Broadbent and Weill 1997
IT Architecture	What are the key functions correlated to organizational functions? What information drives the key functions? How should the data complement each other? What are the technical capacities that should be adopted as criteria for propelling an effective IT system? What activities serve as criteria for supporting complementarity of the data? What are the technological options that will drive the testing of the system and to deciding an approach that ends up adopting an Information Technology system?	Keen 1995, Ross 2003
Information Technology Infrastructure Strategies	What Information Technology services are crucial for achieving the organization's strategic objectives? How to estimate price of Information Technology services? What Information Technology services must be attained through outsourcing? What is the plan to keep infrastructure up to date?	Keen 1989, Weill, Subramani and Braodbent 2002
Business Application Needs	What are the market opportunities for the new applications correlated with the operation? What are the proper strategic assessment tests? Who will decide outputs of each project and lay foundations for organizational change that ensures quality?	Earl 1993
Information Technology Investment and Prioritization	What changes or improvements are strategic to the project? What is the distribution within the current Information Technology portfolio? Is the portfolio consistent with the organization's general objectives? What is the post-implementation commercial value of the Information Technology project?	Devaraj and Akohli 2002, Ross and Beath 2002

2. International Experience on the Role of Information Technology in Governance
There are numerous successful experiences in countries that introduced Information Technology in governance. Following are some examples:

> **Estonia's Experience**
> Estonia is one of the most digitally advanced countries. Their success is due to an open-minded society toward electronic solutions, with a strong infrastructure that served as an incubator for all electronic services that are safe and user friendly. Estonia gained citizens' trust in its digital structures alongside an unprecedented level of transparency in administration. <u>Following are some of the 2019 indicators</u> on the use of electronic governance in Estonia (Arab Thought Institute, 2018) [22]:
>> A. Indicators of availability and effectiveness
>>> • At least 2% of the country's Gross Development Product is saved due to the country's use of digital signatures in the electronic transactions.
>>
>> B. Financial indicators
>>> • 98% of the companies were founded on the Internet.
>>> • 99% of banking transactions takes place via the Internet.
>>
>> C. Electronic governance indicators
>>> • 98% of Estonians carry a digitized national ID card.

The United Arab Emirates' Experience
The Emirates developed its intelligent education system through the Sheikh Mohammad Bin Rashed Center for Advanced Intelligent Education. The program began in 2013 and was completed in six months only. The Emirates excelled in intelligent education, due to the important role technology plays in education, and because in 2021 all government schools are digitized using 4G telephones and WiFi in the seven princedoms (Layalina) [30].

The United Kingdom's Experience
Pulse and Fintech report, issued by KPMG consulting firm, which is a biannual report on investment trends in financial technologies, reveals that investments in the United Kingdom amount to USD 24.5 billion (equivalent to £17.7 billion) in IT systems. The country assumes second place after the United States with investment amounting to USD 42.1 billion. An investigate study reveals that London is home to 3018 companies in the field of financial technology. Some experts estimate that the United Kingdom's ability to attract talent is the main factor behind success.

Canada's experience
Canada is achieving great progress in the development of Artificial Intelligence in the form of machinery that simulates the human movement and brain. This is done through research centers and universities, most notably of which is the University of Alberta, Edmonton, in the oil rich province. The Government of Canada supports such efforts and allocates huge annual budgets. According to experts at the Canadian Institute for Advanced Research, Canada became a beacon for technopreneurs among industrialized nations. The Center managed to train persons with rare talent in the development of Artificial Intelligence in major Canadian cities that include Toronto, Montreal, and Edmonton (Yasin, 2018) [32].

Romania's experience
The National Commission for Integrity adopted a two-fold strategic decision on the integration of Information Technology: to strengthen the Commission's capacity, and improve the level of transparency. The activities consisted of capacity building programs to utilize information management systems designed specially for income and property declarations, and another system for documents' management and archiving. In addition to transparency, the government decided to have the income and financial declarations presented via the Internet. Due to the new financial records, all investigations became possible electronically. However, some impediments remain: namely high cost, security and sustainability of records, and cooperation among the relevant institutions to use sophisticated applications.

Somalia's experience
Somalia succeeded to digitize payments, due to the national payment system, which put the country on the threshold of a genuine digital revolution. The National Bank created a central payment system that linked 13 creditors together and declared electronic payments as official. Payments were expedited for people throughout the country. Somalia is a leading country in the use of smart phones, whereby 70% of the 13 million population carry out their financial transactions via smartphones. Given the momentum and technological leap, Somalia is about to become the first non-currency community in the world (African, Business, 2021) [23]. Somalia managed also to eliminate the previously rampant problem of forged currency.

3. Palestinian Case: Technology and Data Systems in the Public Sector
We hereby present an overview on the availability of the various components needed for governance of the Palestinian public sector, and the extent to which the sector processes technology and data systems according to national and international criteria, and how Palestine is utilizing technological tools and data systems in the governance of the government's public sector. When looking at the Palestinian experience in comparison to that of other countries,

>**3.1 Components of Governance in the Palestinian Public Sector**
>Despite the availability of a legal basis for Information Technology governance in Palestine, in terms of basic and tertiary legislation, there are political impediments created by the occupation. These obstacles impede governance and prevent Legislative Council elections that would make the legal environment safer. The context affects the quality of work in the legal and executive authorities.
>
>Moreover, internal components are lacking, namely an administrative environment in its various components, and lots of efforts are needed. The gaps must be determined, alongside strategies, plans, procedures, and schemes for assessment and implementation.
>
>Current administrative practices are outdated for the most part. For example, the current administrative structures are overexpanded and outdated, and so are the assessment tools for government performance and staff. On the other hand, there is minimal progress in job appointment mechanisms that use electronic systems. Opinion surveys at the General Personnel Council website reveal that 29% of

respondents believe that job announcements and electronic submission of applications are excellent because of transparency and integrity it fosters. In comparison, 25% of those surveyed expressed dissatisfaction with the administrative procedures (General Personnel Council) [29].

Currently, there are 1420 government services in Palestine distributed among various ministries and non-ministerial institutions. Most of these services are offered to citizens using conventional methods, despite the government's efforts to build a network of electronic services that are easy to use by citizens.

When it comes to **capacity building**, there is not a comprehensive and systematic method, and training needs continue to be correlated poorly to job needs. In addition, post training assessments are not conducted in relation to training's applicability to job needs, and most of the trainings take place in a theoretical manner.

In relation to a well-defined archiving and communication system that is computerized, government institutions began taking diligent steps in electronic archiving that expedites communication between the various departments instead of hardcopies. Efforts are also underway to replace paper with electronic files that are preserved and archived electronically and where retrieval is easy.

Procedure Manuals are considered a key pillar, but their absence presents a major impediment to governance. Manuals clearly show the practical steps toward the implementation of policies and duties in a detailed manner. These help employees implement their work accurately, as they explain how work should be implemented. Manuals also show the responsibilities of each person, and reminds staff and managers of the importance of adhering to the various provisions, or bear the consequences when rules are broken. These manuals serve as an overall "terms of reference" for the various duties. The absence of procedure manuals continues to impede the government's work in general including the process of evaluation and accountability.

In a nutshell, procedural manuals are a key pillar to governance. These continue to be lacking in government work but must be drafted, reviewed, approved and adhered to.

3.2 Use of Information Technology in Palestine Public Sector
3.2.1 Current Status of Technology and Information Systems
Indicators by the United Nations Economic and Social Commission for Western Asia (ESCWA) for the Arab region reveal the following indicators on Palestine in the field of government services, be it electronic or movable (ESCAW data, 2020) [28]:

Table 2: ESCWA indicators on electronic services in Palestine

2020	2019	Percentage/ Number	Indicator	Country
12	6	Number	The number of services offered	Palestine
38	22	Number	The number of available services	Palestine
27.37	50	Percentage	Access to available data	Palestine
13.93	14.66	Percentage	2020 GEMS indicator value	Palestine
13.33	33.77	Percentage	Customer satisfaction in the service	Palestine
18.71	64.25	Percentage	Access to the public	Palestine

3.2.2 National Indicators on Information Technology in Palestine

2019 data by the Palestinian Central Bureau of Statistics, issued in 2020, reveal the following mapping results relevant to the technology sector:

- Increased number of cellular communication participants in Palestine by the end of 2019, up to 4.2 million persons, at the rate of 85 cellular phones per 100 persons.
- There were 363,000 ADSL high speed Internet participants in Palestine.
- 97% of families in Palestine had at least one cellphone.
- 324,000 families, amounting to 33% of the population, had computers (desktops or laptops).
- 86% of families in Palestine had children between the age of 10 – 17 years old enrolled in the educational system and had Internet at home. 93% of families had children between the age of 18 – 24 years old enrolled in the educational system and had Internet at home.
- 86% of the youth between the age of 18 - 29 years amounted to the highest percentage of Internet use.

The indicators revealed a great level of technological awareness among Palestinians in general and the youth in particular, which paves the way for the utilization of technology in various sectors. This is achieved despite the continued impediments by the occupation on Information Technology in the spectrum and frequencies, and the fact that the West Bank and Gaza are still using 3G and 2G respectively.

The International Telecommunications Union has allocated 60 megahertz for the Palestinian electromagnetic spectrum, but the occupation is consuming at least 50 mega, thus allowing Palestinians only10 mega which is small and insufficient for useful internet applications. Besides, occupation authorities do not allow entry of advanced technological equipment that improves the capacity of the public and private sectors. Nevertheless, Palestine possesses the potential to build a technological base for the purposes of proper public sector governance.

3.2.3 Palestinian Experience in the Use of Information Technology

- <u>General administration and the information technology cluster (Palestinian Cabinet decision 3/98/18/m.w/m.a), 2020 [12]</u>
  The idea of an information technology cluster in public administration came about as a governmental effort to achieve a qualitative leap in government services, expedite work procedures, interconnect ministries together, improve the business environment,
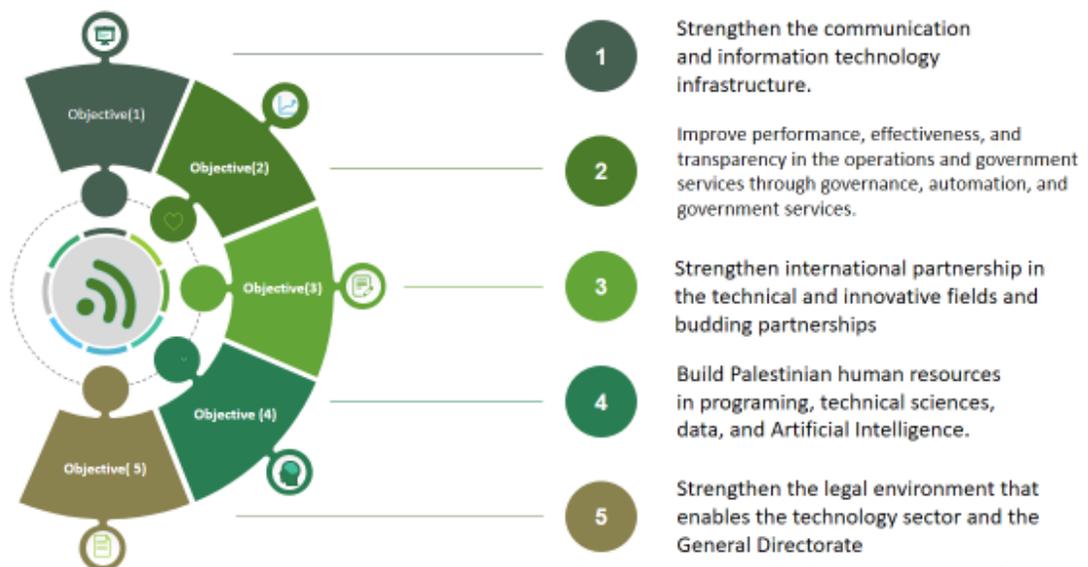
spur investment, be at par with the 4th industrial revolution, and integrate digital technology in the productive sectors be it industrial or agricultural. The aim also is to be creative and produce high quality products suitable for the international market.

Palestine is a country under the unusual reality of occupation, colonialist rule, and arbitrary measures. Numerous restrictions prohibit the flow of goods, products, raw material, and individuals, thus impeding the process of development.

In response to the existing challenges, the Palestinian Cabinet has endorsed the "Information Technology Cluster in Public Administration," on 28 December 2020, which seeks to move toward a digital culture and to realize the strategic objectives in the below-enclosed Exhibit 1.

1. Build and strengthen an ecosystem whereby information technology and communications serve a Palestinian digital economy to the full extent possible.

2. To link and create harmony with government efforts to develop the information technology sector, the work done by the General Administration Directorate for the Services Offered to Citizens, companies, and institutions- with the aim to make it easy for quality services to be offered.

3. To give priority to the developmental initiatives and transform it into major interventions as per a government strategy, including an effort to increase the number of employees in the information technology and communication sectors. The needed human resources are to come from Palestinian universities and colleges. The aim is to bring persons from the needed specializations, stem unemployment, and improve the standards of living.

Strategic Objectives of the Technology and General Administration cluster

1 Strengthen the communication and information technology infrastructure.

2 Improve performance, effectiveness, and transparency in the operations and government services through governance, automation, and government services.

3 Strengthen international partnership in the technical and innovative fields and budding partnerships

4 Build Palestinian human resources in programing, technical sciences, data, and Artificial Intelligence.

5 Strengthen the legal environment that enables the technology sector and the General Directorate

Exhibit 1: Strategic Objectives of the Technology Cluster and the General Directorate- Toward a Digital Economy [12]

- <u>System of Electronic Services by the Government</u>

The government's system of electronic services is one of the most important initiatives that stemmed from the second strategic objective of the Technology and General Administration Cluster.

The government's electronic services seek to automate services and create a link among government departments, to ensure free flow information, and to organize services in the best and fastest way possible. The aim also is to create channels for electronic payments that are safe and at par with technological advancements in the world. The exercise envisions a look at reciprocal roles at the various levels of operation, infrastructure, quality control, and the role of supportive agencies.

The concept was approved by the Cabinet in the decision number 18/92/18/m.w./m.a) of 2021, on 18 January 2021. The decision determined the roles by partner government agencies in managing the system and ensuring operations and management successful and sustainable. Exhibit 2 shows how the Cabinet assumes the role of guarantor for the network's sustainability and quality, through monitoring the accurate implementation of legislation and procedures and serving as the terms of reference. The Finance Ministry was assigned a supervisory role of the operations and management of system. While the Ministry of Telecommunications and Information Technology was assigned to manage the infrastructure needed for electronic service system including data and information security.

In Palestine, the first 10 electronic services will be launched soon before the end of the year 2021 and will be followed by other services gradually. This accomplishment, simple as it is, amounts to an important attempt compared to the rest of the world. It is the beginning of a Palestinian success story despite the impediments created by the occupation. It is also the beginning of digital transformation at the government level, and paves the way for Artificial Intelligence Applications.
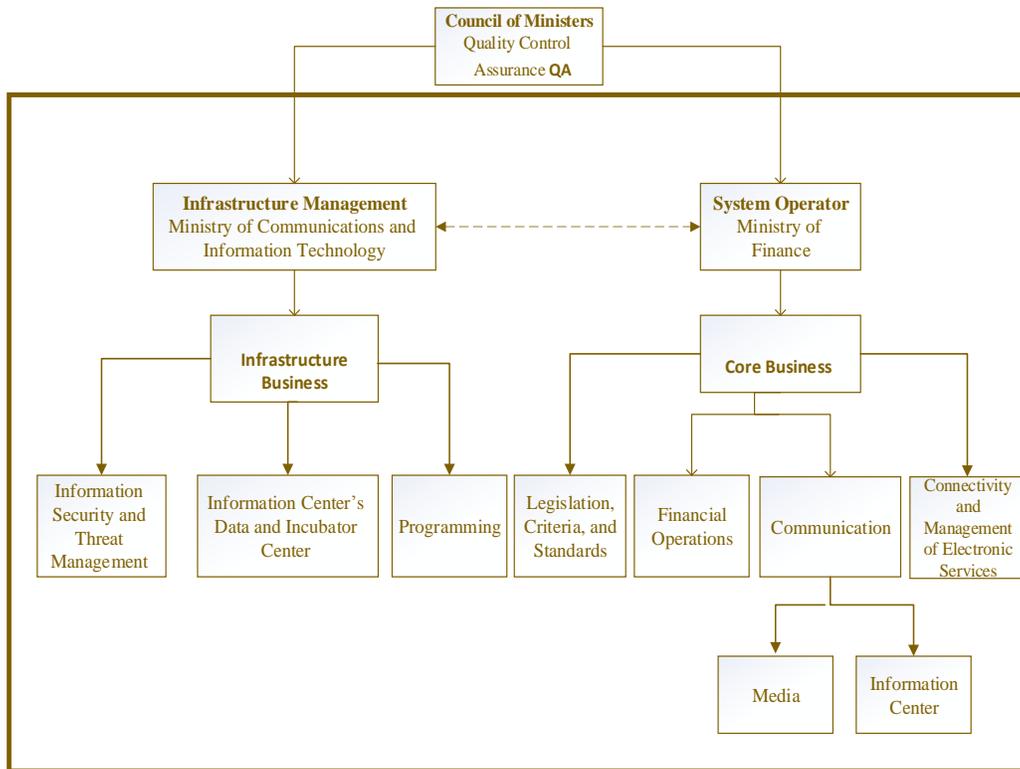
Exhibit 2: Administrative Structure for Operating the Government's Electronic Services [16]

3.2.4 Methodology of Information Technology Use in the Palestinian Public Sector

Information Technology has been in use in the government sector since years, but it was not systematized. Each institution operated separately, subject to budgets and projects. Palestine needs to organize this sector comprehensively, with a unified vision, and based on a methodical approach that takes into consideration the high cost of information systems, programs, and technological equipment.

Palestine is in dire need for a **governance system of information technology in State institutions** to invest in the best possible manner in administration work, prevent depletion of government resources, and organize use by those who are mandated to do so. Such an exercise will unify decisions relevant to the technological network in the country in a balanced manner, which will put Palestine as a competitor on the global technology map. The path toward this vision begins with the following steps:

One: Legal Legislation

Legal legislation is one of the most basic components for Information Technology governance. The new science of Information Technology, and its role in administrative work, has impacted the laws that govern conventional administration.

Current laws are no longer able to organize the transition and transformation in contemporary methods, be it protection of individual rights or organizing the various responsibilities. Palestine must modernize its legislative system, given that there are

old laws from previous eras, some of which are in place but do not meet the needs of contemporary reality.

Legislation that governs administrative work must be revisited to develop a package of legal, administrative, and political reforms relevant to productivity and effectiveness of State institutions and staff. This should include laws and regulations that include the Civil Service Law and its annexes, and the laws and regulations on government services and fees. All of these were addressed in the 5th strategic objective of the Technology and General Administration Cluster document.

Here, we note that actual steps were taken in the document on governance of electronic government services [16], which focuses on governance of electronic services system operations. The document explains the basis and procedures inside the system and feeds into the decision-making process properly in a manner that meets aspired goals according to roles, responsibilities, and rights mentioned in the document.

The document's aim is to define communication roles within the various components, and to create a healthy and cohesive work environment. Moreover, the financial policy on electronic payments organizes the work according to government's vision and financial policies. The document paves the way for a gradual and basic transition by all parties. It links the central units together and with the Monitory Authority to manage revenue of the various ministries, centers of authority, banks, and payment service providers [16].

Two: Policies and Procedures
Policies on Information Technology must be put in place in all public sector institutions, especially in the fields of information security, event management policies, and disaster recovery policy, just to name a few. There is no substitute to a **Comprehensive Users' Manuals** for Information Technology in the public sector, to explain technical support and associated responsibilities.

Three: Measurement of the Impact of Information Technology and Data Systems' Utilization in the Palestinian Public Sector
Information Technology and data systems in government institutions will have a positive role on the performance of government, and in diminishing mistakes and improving public sector governance.

Currently there are no studies that measure the impact, and the process of measurement is unorganized. Each institution strives individually with no clear basis, which reflects negatively on proper utilization of Information Technology. The assessment phase is crucial for the remedy of gaps, to put developmental plans in place, and support institutional structures leading to good governance. Assessment should be taking place through the Information Technology Governance Model, that measures growth and organizational maturity (Aishoush, 2012) [11].

Impact of Information Technology and data systems' utilization can be measured through the following steps:

A. Measurement of Government Performance after the Information Technology and Data Systems are Introduced

Government performance is measured against the methods that were in place before Information Technology was utilized. A set of criteria and indicators measure the effort, time, and outputs.

B. Comparison with Neighboring States

Performance need to be measured in comparison with other countries, using the same measurement tools. Measurement informs the process of creating development plans that meet the aspired objectives.

C. Measurement of Public Sector Staff Satisfaction

Impact measurement tools of Information Technology in government institutions should include measurement of staff satisfaction with the systems. The study (McMahan and others, 1997) [19], indicates that automation of institutional processes may negatively affect the motivation of staff to get the job done. However, the study says also that design of information systems without taking staff opinion into consideration may diminish the value of the new system. Therefore, a comprehensive and ongoing process, reliant at first on the design of information systems suitable for the job must be undertaken. The process must be based on coordination with those responsible for the operations, utilization, and then to move toward a process of measuring the impact and improving the system further.

4. Results and Recommendations

Based on the above-mentioned: in relation to governance and its components in the public sector, the impact of utilizing Information Technology in public sector governance, demonstration of other countries' experience and how they succeeded, and presentation of Palestinian accomplishments, we hereby present recommendations that can lead to a Palestinian model for Information Technology and information systems' utilization in governance of the government sector.

One: Building governance capacity of the Palestinian government sector

To work at all levels of administrative governance needed by Palestinian institutions, as follows:

a. Adopt new methods in administration and develop institutional structures based on transparency and a new system for supervision, guidance, and accountability.

b. Make it mandatory that procedural manuals are created. Manuals must be clear and based on international criteria for all government institutions. The manuals are to detail the processes, tasks and responsibilities that are legally assigned and that ensure institutionalization of the work in governmental departments. In addition, the manuals must provide quick response, when need be, and help build procedural plans that improve the work.

c. Ensure fairness and transparency in service delivery to citizens by government staff, through electronic governance and measurement of citizens' satisfaction.

d. Create training programs that develop individual skills technically and administratively, and that raise belonging and dedication.

e. Build partnerships with other sectors, leading to the best investment possible in resources and ensure effectiveness of the governance process (e.g., private public partnerships).

f. Adopt well-defined documentation programs that are computerized and stored in a studied manner and according to clear criteria. Retrieval and benefiting from the information should be easy and avoid contradictions and repetitiveness in effort and cost.

Two: Building the Network of Technology in Palestine in the Context of the Information Technology and General Administration Chain

Fragmentation of technology projects and the efforts exerted by the public and private sectors are causing the loss of time, money, repetitive work, and weaker accomplishments.

The Information Technology Cluster and General Administration Document incorporate all the factors that lead to development of the Information Technology sector in Palestine.

Three: Governance of the Information Technology Sector is the Best Guarantee on Utilization, Investment in Information Technology, and Protection of Resources

A new set of legislation is needed to organize the Information Technology sector, enable supervision, and lay the foundation for gradual transformation from one level to the other. Plans are to be designed for follow-up with the Information Technology general directorates at government institutions, to ensure that progress is harmonized, and a unified level of technology is utilized throughout the country. The new system will reflect positively on government performance in general; and ensure fair distribution of budgets allocated to systems, equipment, programs, according to needs of various governmental institutions.

The lack of technological governance depletes national resources and allows for gaps in measurement of government performance. "As per the criteria of ISO/IEC 38500 (2008), good governance of Information Technology is the system through which the processes of guidance and supervision takes place on utilization and future support. Supervision allows for the realization of plans, and it includes a look at strategies and policies that govern the use of Information Technology in the institutions (Iso.org) [27].

Four: Periodic Measurement of the Extent to Which Technology and Information Systems are Used and their Impact on the Government Sector
After all the steps are taken to introduce Information Technology and technology systems in administrative work, success must be measured be it in the government sector and in terms of the impact on the work being done." A study by Delone and Mclean, 1992) [20], determined 6 factors to classify the measurements of information systems' success: quality of the information system, utilization, user satisfaction, individual impact, and organizational impact. The two researchers developed a success model whereby the categories are correlated leading to a system." (Ghanem, 2009) [18].
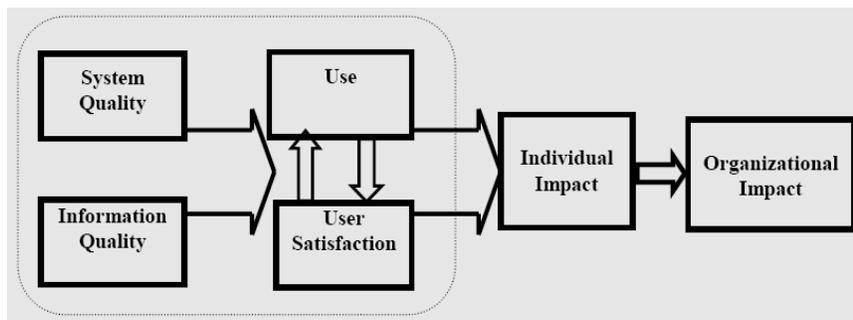
Exhibit 3: Delone and Mclean Model

Making new systems available to staff allows them the time to get other jobs done and to be creative. Staff satisfaction cannot be overlooked when the new systems are utilized in governmental work. Emphasis must be given to the role of senior management in preparing the staff before the Information Technology systems are designed.

Five: Expand the Teaching and Training of Human Resources in the Field of Information Technology Utilization
Ongoing staff teaching and training in Information Technology is the best investment toward the future. It provides the government sector with experts that are qualified and knowledgeable in the utilization of technology, and spurs ingenuity and progress in government work.

Six: Rationalization of the Level of Technology in Palestine within International Standards
Irrespective of the level that can be realized in Palestine; adherence to the indicators and standards, creating local definitions, and implementing work plans accordingly, is the baseline for Palestine to embark on asserting its presence on the international map.

5. Conclusion

The concept of governance that utilizes Information Technology and data systems is in the final analysis, content, and pillars, a translation of moral principles with the use of technology. These values are manifested through tools for preservation and development, and that come in the form of legislation, control mechanisms, and procedural guides, among others.

The term "electronic morals" means that proper utilization of Information Technology and data information systems allows for governance of public sector institutions properly. Undoubtedly, the supporting tools of governance cannot alone build moral concepts. We must look at a cumulative process in the management of change, and to proceed on a path of thinking and embedding a sense of belonging among individuals. This becomes possible first and foremost through school education and continue until the university and beyond. We are talking about a complete and correlated cycle. Undoubtedly, the government assumes the greatest responsibility to plant the seed through the selection of leaders who have integrity and needed values at all levels of institutional operations. Also, investment is needed in staff's creative energy especially in the field of Information Technology, and the system must be energized with financial and moral support that guarantee continuity.

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