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THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN PUBLIC SECTOR ADMINISTRATION IN ISRAEL

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Abstract

For *governments, particularly those in developing countries, ICT (Information and Communication Technology) has become an indispensable tool for meeting the problems of providing basic services to their population. However, many of the world's poorest and fastest-growing nations lack a robust information and communications technology (ICT) infrastructure. This is especially true in the Arab sector of Israel, where resource constraints prevent the government from carrying out its programs in full, lowering the continent's responsiveness and competitiveness and reducing the pace of socioeconomic transition. This research examined the Ministry of Communications and its stakeholders to get insight into the implementation and effects of ICT in the government. Methods of collecting secondary data included using books, journals, internet sources, and official publications in addition to primary data gathering techniques included studying paperwork from government agencies and industry entities. The research found that using ICT and e-government apps in government organizations has greatly boosted day-to-day governance operations. Because of this, many government operations have become more streamlined, open, and productive.*

Successful implementation of ICT in public administration systems was found to depend on having good policies, enough human resources, and monitoring processes in place. The results underline the need of investing in regulations, organizations, human resources, and technology to reap the potential benefits of ICT for economic development. Long-term collaboration and public-private partnerships were highlighted as crucial to advancing ICT and improving the efficacy of public and civil governments. It also stressed the need for government spending on infrastructure to facilitate ICT's usage in governance. This research demonstrates the value of ICT in boosting government efficiency and, by extension, the economy. Countries may use ICT to improve public administration and service delivery to their inhabitants by adopting the right policies and encouraging cooperation.

Keywords: *ICT, government, public sector, developing nations, infrastructure, policies, e-government, administration, technology*

1. Introduction:

As a result of today's technical developments, it is generally accepted that one of the most useful resources available to the many government agencies and their many programs is information and communication technology (ICT). (Rosenberg, 2021) agrees, defining

Electronic Government as "the process by which government agencies take advantage of and effectively employ using advances in computing, networking, and communications systems to better serve local communities and commercial enterprises." He made the insightful observation that governments may better address the requirements of their residents and the public at large by expanding the share of services delivered online. This indicates that ICTs may improve the public administration system by increasing the availability of services to the general people.

(Lissitsa & Chachashvili-Bolotin, 2019) argues that in recent years, ICT has become one of the most important ways for people to connect with one another. A reliable method of interaction that facilitates cooperation amongst government agencies. It is widely acknowledged that diverse public administrations may get the necessary ICT requirements and help to boost the performance of the workforce via the consistent and successful deployment of ICT instruments for running government programs. The Israel government's administrative system will soon be able to ICT (Information and Communication Technology)-enabled service delivery transformation procedures, with the potential to increase governmental administrations' efficiency and effectiveness provisioning throughout the nation. (Chen & Komlan Aklikokou, 2021) proposed that the widespread use of ICT helps individuals and corporations provide public services in more democratic and efficient ways. The promise of the potential of ICTs to effect change in governance is generally accepted.

When applied and used directly in the routine provision of aid, ICT is anticipated to play a crucial role in helping governments in developing nations like Israel become a source of inspiration and new ideas, allowing for the rapid and efficient provision of services in line with governmental and public demands. Worldwide, governments have embraced ICTs as a means to further their socioeconomic development goals. However, obstacles often plague the actual execution of ICT policies and projects (Chras, Alexopoulos, & Hyz, 2022)).

(Tarshish, Benish, Eseed, Gal, & Holler, 2022) recognized these limitations as a serious problem, particularly when governments fail to seize the opportunities presented by ICT and actively seek and implement them. He warned that this would have a chilling impact on public services provided by the government. Therefore, it is essential that government agencies integrate ICT into their service delivery processes. Therefore, it is crucial that anyone has a vested interest in the outcomes of the current policies and efforts, get adequate consideration throughout the implementation procedures. The Israel National Digital Agency (INDA) of the government of Israel has already provided its people with an e-Government Infrastructure network. In the initial round of deployment, approximately 28 Ministries offices throughout the country would be connected. This is done in the name of governmental efforts meant to guarantee sufficient network coverage throughout the country.

1.1 Problem Statement

Many countries use ICT nowadays as both a catalyst and a mechanism for achieving their goals., to advance their digital infrastructures and economy to speed up societal and economic growth. The incorporation of ICT into national development plans has becoming more frequent.

Public services and goods provision in the Arab sector of Israel might benefit greatly from technology for conveying information and ideas, but this potential is not being fully realized.

Some governmental agencies, even in densely populated areas, lack an adequate communications infrastructure, which results in inefficient service delivery. Since the MDAs are dispersed around the nation, there needs to be a robust interconnected ICT infrastructure to guarantee that all public administrations have access to ICT applications.

But because of a lack of an adequate electronic network, it is challenging to make government information accessible and transmittable, the many ministries, their agencies, and other governmental institutions must efficiently collaborate on a single platform. Therefore, there is a lack of well-managed public communication of government information and efficient coordination to enhance government business ministry, department, and agency in the nation is connected to each other.

Many countries, both developed and developing, are using ICT as a catalyst and a tool to improve their digital infrastructures today the economy to expedite economic and social development. There has been a recent trend toward including ICT in national development strategies. While the use of ICT has the potential to considerably improve the public services provision in the Arab sector of Israel, this advantage is not yet being completely realized. Even in highly populated locations, some government agencies still lack the resources necessary to maintain a reliable communications network, which may slow down or even halt the delivery of essential services. Due to their geographical dispersion, MDAs need a reliable linked ICT infrastructure to ensure that all government agencies have access to ICT tools.

But because of a lack of an adequate electronic network, in order to make government data easily available and transmissible, it is challenging for the numerous ministries and their agencies and other governmental institutions to successfully collaborate under a single platform.

As a result, there is insufficient public cooperation to improve government operations and inadequate dissemination of government information to there is now a " broadband connectivity at sea with a theoretical top speed of 3.84 Tbps." in Israel, as reported by the National Communications Authority (NCA, 2013) (Tbps.). Large telecom companies have spent a fortune on underwater fiber optic cables to boost the country's bandwidth capacity, but the results have been disappointing.

Broadband is costly, costing " between $500 and $1,000 monthly for the end customer, depending on whether they want shared or dedicated service." (NCA, 2011) since it is not regulated by the government. Increases in broadband capacity from 256 kilobytes per second (kbps) to 2 Megabits per second (Mbps) and methods to minimize costs are among the goals of the Israel National Broadband Strategy. How much money has to be invested in broadband in order to increase penetration from 2% to 50% by 2015?

Therefore, it is anticipated that almost one in two Israelians will have internet access within five years, and GDP growth would increase by 7% to 13% broadband internet." That's why the government is making concerted efforts to provide universal access to high-speed Internet, including to the MDAs. One can wonder whether, in the long run, these efforts have been sufficient to meet the capacity requirements of the MDAs and to remedy the growing insufficiency of the public sector’s supposed model program. ICT will play an essential part in the day-to-day operations of the MDAs in the Arab sector of Israel 's public services to increase engagement between the government and its citizens. Potentially, this might promote democracy in the Arab sector of Israel and create a public administration structure that is both

effective and efficient. Broadband applications need readily available ICT infrastructure to facilitate user access. There is hope for the nation if everyone working in the public and private sectors has access to the information and communication technologies, they need to do their jobs. It has the potential to greatly aid efforts to keep the government open and accountable (Panagiotopoulos, et al., 2023).

The public sectors in the Arab sector of Israel have been working on a number of fronts to expand internet connection across the nation, particularly in rural areas. The Community Information Centre (CIC) scheme is a commendable attempt to address the digital gap in the nation. However, despite the merits of the plan, the project execution is not receiving enough attention or support. provide support to the MDAs. For instance, many government organizations in rural locations struggle to maintain Internet connection owing to inadequate bandwidth and a lack of a robust information technology infrastructure (Harsanto, 2022).

So, one could wonder how workers at MDAs can get the help they need if they don't have access to the information technology (IT) infrastructure they need. In particular, if they have easier access to cutting-edge ICT goods and services, they will be able to make more educated business and other important choices, which would boost national productivity and aid in the goal for national development. There will be increased accessibility to online government resources for all MDAs. This means that workers in any region of the nation may have easy access to the same resources, regardless of where they are physically situated (Gupta, et al., 2021).

So, will the nation's MDAs have access to well-managed fiber optic and internet networks? How will the government be incentivized by the availability of broadband to roll out the appropriate information and communications technology (ICT) infrastructure, goods, & services, including internet connectivity, to meet the needs of various government agencies, therefore fostering more effective service delivery? The improvement of ICT and its acceptance as a useful tool in public administration systems are both policy priorities, and the deployment of broadband is crucial. Industry leaders are eager to give this service sufficient bandwidth to support information and communication technologies. The government is helping telecommunications companies by subsidizing their "last-mile access," as reported by the Arab sector of Israel Investment Fund for Electronic Communication the Israelian people, with roughly 850 masts only in Israel." It should be highlighted that ISPs, cell carriers, and others hold the majority of this infrastructure and pass the costs on to their users (Cohen, 2019).

Access to ICT services is facilitated by the public sector's and the business community's development of inexpensive and cost-effective ICT infrastructure. In this context, the government's ambition to introduce and make a lack of efficient coordination may slow down the provision of ICT infrastructure and services that promote availability, accessibility, and speed up governance (Cohen & Majid, 2020).

The government should emphasize the availability and connectivity of the many MDAs on a standard platform to allow them to exchange vital government information online since this is crucial to the efficient delivery of services. How, therefore, might the government effectively support and oversee the existing ICT programs and plans to guarantee that the MDAs reap the benefits of the national ICT agenda? If the government takes the necessary steps to expedite the procedures of connecting the many Modular Adapter Arrays for the Future Broadband

Network, then all of these exciting issues may be answered actions (Burger & Bordacchini, 2019).

2. Materials and Methods

A mixed-method approach was used as the study design in order to complement the weaknesses attributable to either qualitative method or the quantitative method. Qualitative method enabled the investigator to obtain qualitative data which are associated with being rich and able to probe more issues that may not be uncovered through other methods. On the other hand, quantitative method enabled the study to gather quantitative data which involved a large sample size hence increasing the representativeness and generalizability of the study findings. The thematic issues identified qualitative method were further investigated using the quantitative method

3. Results:

The Quantitative Results:

Examining the Norm

The Kolmogorov-Smirnov test and the Shapiro-Wilk test were employed to guarantee normality in this study.

	Kolmogorov-Smirnov			***Shapiro-Wilk***		
Efficiency of government websites	.784	299	.059	.782	299	.061
Service-oriented architecture (infrastructure)	.044	299	.200	.991	281	.093
Electronic (or software) programs	.094	299	.090	.980	125	.065
Infrastructure for electronic governance	.048	299	.087	.994	165	.755
Conventions for Electronic Government	.114	299	.054	.958	70	.060

Table 1: Checking for normality of E-government performance.

As demonstrated in Table above, data for the dependent and independent components were regularly distributed. To check if the dependent and independent variables were normally distributed, Q-Q plots were generated. The graphic may be used to examine the data before doing any statistical calculations, such as determining a correlation or coefficient or building a regression curve. It was found to be helpful in determining whether or not a linear regression model will be acceptable (Krishnan & Ahangama, 2021). There is a normal distribution for the independent variables as well.

The hypothetical distribution fits the observed values of government performance across ministries; hence the distribution is normal. In a typical Q-Q plot, the performance of e-government services clusters around the 450 lines. In addition, the Q-Q plots showed that the data followed a normal distribution. The correlation matrix was used to see whether there was sufficient connection between the independent variables to infer a significant causal relationship.

	E-government performance	ICT infrastructure	E-level applications	E-government institutional framework	E-government legal framework
E-government performance	1.00				
ICT infrastructure	-0.0241	1.000			
E-level applications	-0.0191	0.4973	1.000		
E-government institutional framework	0.1109	0.0297	-0.0298	1.000	
E-level legal framework	-0.0054	-0.0579	-0.0542	-0.0931	1.000

Table 2: Correlation Matrix.

None of the associations in this study's tests of correlation between independent variables reached this level of significance. According to Table above, all variables had correlation coefficients lower than 0.8, indicating that the data did not display significant multicollinearity as suggested by (Health, 2022).

Structure	**R**	**Its square root, or R**	**Adjust R square**	**Estimation Error Standard**		
	.838	.702	.700	.07458		
the analysis of variance						
Structure		Sum of Squares	Df	Mean Square	F	Sig.
1	Regressive behavior	11.72	9	1.302	44.231	.001
	The remainder	3.432	324	0.066		
	Sum	15.152	333			
Evaluation of Coefficients						

		Coefficients not normalized B	Std. Error	Standardized coefficients Beta	T	Sig.
IT network that never goes down		0.116	.186		0.623	.003
Applications at the E-level		0.577	.068	.559	8.478	.000
Institutional Architecture for E-government		0.157	.043	.257	3.676	.001
Cyberlaw framework for government		0.082	.042	.301	2.252	.000
		0.121	.002	.245	6.906	.001

Table 3: Direct Correlation Regression Outcomes.

Regression analysis suggests that a unit change in ICT infrastructure, e-level applications, e-government institutional framework, and legislative framework may explain 70% of the comparable change in e-government performance. The resultant model's beta coefficient, α= 0.116, is statistically significant (p = 0.000) when compared to a significance threshold of p= 0.05. Each of the four independent variables had a significant coefficient (β= 0.577, 0.157, 0.082, and 0.121) at the p< 0.05 level. This explains why e-government performance gradient would be so poor if β_1X_1.... β_4X_4 were maintained constant at 0.116 (low). The regression model was statistically significant, as shown by the F= 44.231 and p0.001 in the ANOVA portion of Table above.

Pearson correlation test

This investigates the degree to which public administrators, ICT coordinators, and staff are accountable for ensuring that technology works in the classroom. There is a significant correlation between the degree of autonomy and responsibility given to administrators (rp=0.763, p0.001), coordinators (rp=0.588, p0.001), and staff (rp=0.770, p0.001). The ICT coordinator's role as an agent of change, the need for collaboration to create an environment for properly assimilating ICT into public organizations vision and reality, and the importance of organizational vision and reality aligning are all stressed, as is the need for ICT leaders' personal empowerment to foster a new form of ICT leadership.

Approach

Three sets of participants were tested independently: administrators, ICT coordinators, and employees (N=345). The Pearson correlation test analyzed the findings. Here are the findings, broken down by group (Table below) and overall (Table below).

Rp	Dispersion, or Standard,	Simply	
0.769* **	.49	4.21	Responsibility and Independence

	.74	4.56	Integrating and deploying ICT effectively in the organization

Table 4: Pearson Correlation

In Table above, we can see that the more participants rate themselves as independent and responsible, the more likely they are to accept and benefit from classroom ICT. This relationship is highly significant (rp=0.769, p0.001). The hypothesis proved accurate.

Professions in education (N=308)		**Seven ICT coordinators Basics (N = 20)**				
Sd. Deviation	Mean	Sd. Deviation	Mean	Sd. Deviation	Mean	
4.47	0.40	4.54	0.14	4.18	0.49	Autonomy
0.77	4.53	4.69	0.37	4.96	0.18	Accountability
0.763* **		0.588***		0.770***		Successful implementation of ICT

Table 5: Result of Pearson Correlation

The Qualitative part:

After conducting a thematic analysis, a number of themes has emerges:

Theme 1: The effect of Israel's advanced information and communication technology infrastructure on the efficiency of government agencies:

According to the answers, the government's capacity to address public concerns and provide essential services has been significantly bolstered, as a result of recent developments in information and communication technologies.

Examples of the participants quotes as follow:

Since implementing ICT systems, "we have seen a noticeable reduction in administrative bottlenecks and improved coordination between departments." (Participants B)

Since using ICT solutions, our company has significantly cut down on paperwork and manual operations. Because of this, we are able to devote greater resources to long-term planning. (Participants C)

Improvements in information and communication technology have enabled us to better manage data, allowing us to analyze trends that drive policy and improve service delivery. (Participants D)

Theme 2: To what extent do Arab Israeli local administrations benefit from Israel's advanced network of computers and phones:

According to the participants, ICT infrastructure has played a vital role in enhancing our ability to provide efficient and responsive services to the local community

As an example, "the use of ICT tools has streamlined our communication with citizens and improved transparency in decision-making processes." (Participants F)

"Information and communication technology tools have completely transformed our channels of interaction with citizens, allowing us to more effectively collect feedback, address concerns, and disseminate information." (Participants G)

Theme 3: How information and communication technology help the government function smoothly:

According to the interviews, the integration of ICT systems has streamlined internal processes, resulting in quicker response times, reduced errors, and overall operational efficiency

In order to streamline operations, cut down on paperwork, and improve data management, "ICT has become fundamental to our business." (Participants I)

It has been found that "the integration of ICT systems has streamlined internal processes, resulting in quicker response times, reduced errors, and overall operational efficiency." (Participants K)

To sum up, the connection between IT systems and productivity in a company. greater data management, faster operations, greater contact with residents, and more citizen involvement are only some of the good results that have resulted from the adoption of ICT systems, as the administrators' experiences and observations show.

These replies lend credence to the idea that Israel's public sector would benefit greatly from better information and communication technology infrastructure. The administrators' comments emphasize how the use of ICT tools and processes has enhanced productivity, decision-making, and service provision.

Similarly, the observations of the administrators lend credence to the idea that ICT infrastructure has a major bearing on the efficiency of local administrations in Israel's Arab sector. The remarks highlight how ICT helps local governments communicate with their constituents, increase diversity, and make the most of their limited resources.

Administrators' research lends credence to the theory that ICT is critical to the effective administration of public services. Their comments underscore the ways in which ICT has improved the effectiveness of government agencies by facilitating the creation of online services and digital platforms.

Together, the administrators' comments provide credence to the study's findings and highlight the significance of ICT infrastructure in improving performance and service delivery in Israel's public sector administration and local authorities serving Israel's Arab minority.

4. Discussion

The use and management of ICTs need certain skill sets to avoid becoming a stumbling block during the provision of services and their management. The highly technical parts of the present implementation have been outsourced, which may make it difficult to determine fault in the event of an error. While almost half of respondents (47.3% to be precise) were of the opinion that the government had an adequate quantity and quality of trained human resources to support the application of ICT across the whole public administration system, nearly a third (33.7%) were of the opposite opinion. Another interesting finding is that 14.6 percent of respondents think the government offers good incentives to keep human resource specialists who help the MDAs run more efficiently. In addition, 85.4% of respondents were certain that the

government does not provide sufficient incentives to recruit and retain the skilled workers who would be essential to bringing ICTs to bear on the whole public administration system.

The findings back up the claim that public service delivery in a nation would be inefficient and ineffectual if its human resource capability is inadequate to carry out the policies necessary for the country's growth. In light of these findings, it is clear that investing in the correct human resource with the growth of the country's ICT infrastructure and the availability of contemporary ICT equipment and tools may greatly improve the efficiency of the ICT sector. ability to control and use the existing infrastructure and resources to get desired outcomes (Alqahtani, 2019).

In this regard, government policy has to be simplified so as to devote resources to investing enough in training and retaining the human resource management experts who will run the MDAs efficiently (Andreea, et al., 2020). Recognizing and actively pursuing the implementation of these new upgraded technologies that may boost the efficacy of MDA operations demands professional human resource capacity, since ICT has become dynamic in dealing with technicalities and new technological advances. A lack of commitment to providing the correct compensation that might correspond their production is a contributing factor to the government's inability to recruit and keep the needed employees, as discussed before. As a result, they are often lured away by the greater salaries offered by the private sector (Chen & Komlan Aklikokou, 2021).

It is essential to integrate the technical IT staff into the MDAs' key ICT projects and programs since all MDAs have a uniform set of policies and programs that are guided by strategic ICT policies and plans. This shift is meant to provide them the secure networking and reliable control they need to monitor ICT rollouts. Further, although it's true that the Government of the Arab sector of Israel has the trained employees to function, this may only be the case at the lower end of the spectrum, as the same cannot be said for the intermediate and upper levels of technical expertise. Future programs must seek out and cultivate some of these technical abilities to prevent dangerous systems from falling into the hands of non-employees such as private vendors and outsiders.

5. Conclusion:

To help the country bridge the digital divide and expedite the launch of government programs and policies, the administration wants to build an e-government infrastructure that is both cost-effective and sustainable.

The greatest approach to assist the government reduce the burden on local investors is via Public Private Partnership, which is made possible by the e-government project's growth of the country's ICT infrastructure. This would also encourage the country's ICT infrastructure to embrace best practices and become compliant with international standards.

The country's potential to compete worldwide may be bolstered by the adoption of cutting-edge technology made possible by the e-government program. The Arab sector of Israel may make full use of the possibilities given by ICT to significantly increase the use of ICT as a tool to improve administrative operations and update government equipment. This might significantly improve government transparency, efficiency, and accountability.

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