

The Role of Information Technology in Enhancing Service Quality

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Abstract:

This study is designed to elucidate the pivotal role and substantial influence that information and communication technologies exert on administrative functions, with a specific emphasis on customer service delivery. The impetus for this research stems from the profound advancements in programming technologies coupled with a global economic transition from a traditional reliance on the acquisition of tangible goods to an emphasis on direct service delivery mechanisms. These mechanisms epitomize a modern economic paradigm that places a premium on the application of human knowledge within technological frameworks.

In light of these technological advancements, a wide array of institutions across diverse sectors has adopted these technologies to streamline service operations and elevate both the quality and efficacy of their services. This is in response to the pressing need to satisfy the daily requirements and expectations of citizens in the most effective manner possible. The pivotal role of services in daily life necessitates that economic service institutions not only provide exemplary services but also employ comprehensive media and communication tools to stay abreast of rapid technological advancements. Thus, it is imperative to delve into this issue, study it thoroughly, and analyse its intricacies to grasp the significance of information technology in the service sector and its beneficial impact on service outcomes.

Keywords: Information Technology, Communication, Service Institutions, Information Society, Knowledge Economy.

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Introduction:

In the pursuit of modernization, institutions engaged in economic activities, spanning both the industrial and service sectors, and encompassing both public and private enterprises, have ardently sought to procure advanced technological devices and tools. This initiative is aimed at keeping pace with the evolving technological landscape and involves the allocation of specialized personnel within the field.

Amidst this wave of electronic modernization, the extensive utilization of modern information and communication technology has emerged as a cornerstone for competitiveness and prosperity across all sectors.

This trend is underpinned by a global shift towards refining technical programming and harnessing advanced technology. The adoption of these technological advances is particularly pronounced in institutions operating within the service sector, given their relevance to their inherent functions and nature.

Notably, the dawn of the 21st century marked a significant entry into the realms of the knowledge and information society, catalysing substantial advancements and prosperity in all facets of administrative operations, including the delivery of services in safer, more precise, and superior manners. This discourse raises the following question: What role do information and communication technologies play in improving service quality?

Study Objectives:

The objectives of this study are crafted to address the critical issues highlighted by the problem statement, as follows:

- To develop a comprehensive understanding of the role that information and communication technologies play in enhancing the quality of services provided to citizens.
- To elucidate the significant transformations and advancements that information and communication technologies have fostered in service delivery.

- To underscore the necessity of deploying information and communication technologies and to evaluate their effectiveness within the service sector, including hospitals, consulting firms, educational institutions, and administrative bodies, which play a pivotal role in addressing the daily needs of citizens.
- To illuminate the transformative impact of media and communication tools, as well as information technology, on traditional and stereotypical methods of service delivery.
- To investigate the concept of the information complex and its implications for the service sector.

Study Importance:

It is universally acknowledged that digitization and the pervasive deployment of information and communication technologies (ICT) have evolved into the most effective tools within institutional operations and daily life at large. These technologies have revolutionized work mechanisms by bridging geographical distances, reducing manual efforts, diminishing costs, and enhancing precision in procedures and transactions.

In the 21st century, the concept of the information society has become manifestly evident in both practical and administrative ideologies, profoundly influencing general productive outputs and especially service delivery.

In this context, it is observable that information and communication technologies play a significant and effective role in dismantling bureaucratic barriers under the paradigms of electronic management or digitization.

This transformation is part of broader technological updates that have emerged alongside the extensive utilization of information and communication technologies.

Study Methodology:

This study employs a descriptive-analytical approach to meet its research objectives. This methodology entails the provision of comprehensive scientific material and theoretical evidence, derived from a plethora of referenced and trusted sources.

The research systematically collects, explains, and analyses this material using a variety of evidence, examples, and sociological analyses.

The research framework is structured around three principal axes:

1. A historical overview of the emergence and evolution of information technology.
2. An analysis of the impact of utilizing information technology in service development.
3. An examination of Algerian efforts to integrate information and communication technology within institutional frameworks.

1. Historical Overview of the Emergence and Evolution of Information and Communication Technologies:

The term 'Information and Communication Technologies' (ICT), though contemporary and commonly associated with computers, is not a newly conceived notion.

This term historically encompasses earlier forms of information and communication technologies that preceded modern electronic devices. Thus, information technology and communications have evolved through various significant historical stages: (Fadel Al-Samrani, *nod*, p118)

1.1 First Information and Communications Revolution:

This era is distinguished by the invention of writing, beginning with cuneiform and Sumerian scripts, followed by pictographic writing, and culminating in the development of alphabets. This revolution marked the end of the oral tradition, which faded with the demise or cognitive decline of the individual.

1.2 Second Information and Communications Revolution:

This phase saw the emergence and enhancement of various printing technologies, which significantly broadened the dissemination of information and communication through increased publication rates and expanded geographic distribution.

1.3 Third Information and Communications Revolution:

This period was characterized by the advent of diverse forms of auditory and visual information sources, such as the telephone, radio, television, discs, audio tapes, and wireless technologies, alongside traditional printed media. These innovations broadened the scope of information transmission and enriched communication dynamics.

1.4 -Fourth Information and Communications Revolution:

This revolution was defined by the creation of the computer and the progression through its various stages and generations, bringing myriad benefits and positively affecting information flow through computer-linked communication channels.

1.5 -Fifth Information and Communications Revolution:

This current phase is characterized by the merging and interconnectivity between advanced computer technologies and various communication technologies, facilitating the rapid, vast transfer of data and information across extensive geographical distances, regardless of time constraints.

This era, epitomized by the development of vast information networks with the internet at their core, has revolutionized individual, group, and organizational lives, accelerating and simplifying life's pace and transforming myriad activities and services both locally and globally.

The boundaries of time and space have been drastically minimized, enabling individuals to perform diverse activities from a single location via just a communication device.

The discovery and proliferation of the internet have notably enhanced the role played by communications and information in daily life, rendering information a critical, life-sustaining element in all human endeavours, irrespective of their nature.

2. Concept of Information Technology:

The term 'Information Technology' (IT) encompasses a suite of elements and capabilities utilized in the collection, storage, and dissemination of data and information through computer technology and communications. This occurs at a high speed and with notable efficiency, facilitating the creation of beneficial outcomes that significantly contribute to societal development.

IT includes all advanced technologies involved in the transformation of data in various forms into diverse types of information that beneficiaries utilize across all facets of life (Al-Salmi, 2000, p. 15).

3. Concept of Information and Communication Technology:

In recent years, information and communication technology (ICT) has undergone rapid developments, with direct impacts from the digital revolution affecting human lifestyles across economic, social, and cultural dimensions. Economic development is significantly tied to a country's ability to adapt to and control these transformations, utilizing available opportunities.

Often, ICT is used as an extended synonym for information technology, but it is a more specific term emphasizing the role of communications, their integration, and the necessary hardware and software for intermediary companies, storage, and audio-visual systems that allow users to access, store, transfer, and process information (Aboud et al., p 35).

ICT refers to a set of technologies based on computing, microelectronics, and communications, including networks, multimedia, and broadcasting. When combined and interconnected, these technologies are utilized for researching, storing, processing, and transmitting information in various forms such as text, voice, still images, and video, enabling interaction between people and machines.

ICT represents a significant convergence and interconnection between advanced computer technology and various communication technologies, achieving the capability to transmit vast amounts of information at high speeds, regardless of time and place, culminating in information networks, at the forefront of which is the Internet (Abdel Karim Al-Khune, p 07).

4. Importance and Characteristics of Information and Communication Technologies:

a) Importance:

The significance of ICT lies in that modern organizations will not evolve and progress without advanced information systems that rely on integrated databases. This necessitates the adoption and optimal use of

ICT in knowledge management. The importance of information technology comes from the following considerations:

- Information technology provides a powerful tool to bridge the developmental divide between rich and poor countries and accelerate efforts to combat poverty, illiteracy, environmental degradation, hunger, and disease (Al-Samaran et al., 2004, p 34). ICT can bring the benefits of literacy, education, and training to the most remote areas.
- Increasing individuals' ability to communicate and share information and knowledge enhances the prospect of transforming the world into a more peaceful and prosperous place for all its inhabitants. This aspect increases as more people are able to participate in and benefit from this technology.
- ICT contributes to economic development, as the digital revolution has led to entirely new forms of social and economic interaction and the emergence of new communities, unlike the Industrial Revolution of the last century. The information and communication technology revolution spreads quickly and impacts the vitality of society.
- Information technology enables isolated individuals to contribute their ideas and participation in the global community, regardless of their gender or place of residence. It also empowers individuals, communities, and countries to improve their living standards in ways previously impossible and enhances the efficiency of basic economic tools through access to information and transparency (Al-Fattah, 2002, p 159).

b) Characteristics:

Scientific and technological advancements have significantly contributed to individual welfare. Among these continuous developments are those related to Information and Communication Technologies (ICT), which are crucial for providing various communication services, education, training, and the necessary information for individuals and organizations, effectively turning the world into a global village.

Individuals can now communicate with each other easily and exchange information anytime and anywhere. The significance of ICT

is due to its distinctive characteristics, including widespread deployment, robust capacity to handle a large number of users or a vast amount of information, high performance speed, ease of use, and diversity of services.

Additionally, ICT serves as a powerful tool for overcoming the human divide between affluent and impoverished nations, speeding up efforts to combat poverty, hunger, disease, illiteracy, and environmental degradation.

ICT can bring the benefits of literacy, education, and training to the most isolated regions. Through ICT, schools and hospitals can access the best available information and knowledge, and ICT can disseminate messages aimed at solving many issues concerning individuals and organizations (Kaya, 2001, p 147).

1. Sources and Forms of Information and Communication Technologies:

Information technology has both external and internal sources through which technology is transferred either from abroad or domestically.

- a. **External Sources:** Include major industrial companies, international organizations, consulting offices, research and development centres, books and references, specialized associations and information centres, experts, training centres, and universities.
- b. **Internal and Local Sources:** Represented by research and development centres, internal research and development units within facilities or companies, universities and institutes, other companies, consulting offices, standards and measures bodies, and patent offices (Al-Husseini, 2008, p 147).

5.1 Modern Communication Technology in Organizations (Computers, Networks):

The development and widespread adoption of Information and Communication Technology have made it an integral part of all areas of social life, including various types of institutions, regardless of the activities performed therein. The demands of work necessarily dictate the use of various communication technologies.

a) Computer Device:

The computer is one of the most significant achievements in the field of modern Information and Communication Technology, impacting all levels in a short time by saving effort and money and enhancing the performance of both institutions and individuals, especially in the work environment.

b) Networks:

To connect computers to each other or to peripherals like printers, it is essential to have data transfer channels. There must also be a set of methods, rules, and tools that transform the data from the digital format of the computer to the analogy format of the communication channel and vice versa.

These communication channels, known as networks, aim to link the terminal data of computers for the purpose of transferring and exchanging various information with features such as speed, accuracy, security in data transfer, and low cost (Khalifa, 2019, page 23).

2. Benefits and Various Advantages of Using Information Technology:

The application and use of Information Technology (IT) in organizations lead to numerous benefits and advantages, the most important of which are:

- **Enhancing Organizational Performance and Productivity:** The implementation of IT has a positive impact on the performance and productivity levels in organizations, provided there is a degree of alignment between the organization's circumstances and its IT strategy. Furthermore, IT implementation positively influences organizational performance and productivity, thereby increasing the organization's value (Abhay, 2005, 2006).
- **Value Creation in Organizations:** The use of IT in organizations contributes to creating value and assists in executing their strategies, particularly in the context of increasing competition between organizations (Khawaja, 2004, 2005, p 56-57).
- **Decision-Making Effectiveness:** IT simplifies the task of managers in making organizational decisions by providing timely, accurate, and appropriate data and information.

- **Business Development:** IT provides order and discipline within administrative units, continually informing individuals about the developments around them, thereby aiding in business growth.
- **Improving and Developing Customer Services:** IT plays a crucial role in supporting and servicing customers through the use of e-commerce and business process reengineering to meet customer needs and satisfaction.

3. Reasons for the Acceleration Towards the Use of Information Technology:

Trigon has identified a set of reasons that have led to the increased importance of Information Technology. Studies addressing IT have noted several factors that have played a significant role in its adoption. The most important of these factors are:

- **Complexity and Volatility of Business Environments:**

The environment in which organizations operate has become more complex and volatile. Advances in communication and technology have driven many changes, along with other shifts due to political and economic factors.

These conditions have led organizations to undertake activities aimed at improving and protecting their operations, such as business reengineering, enhancing forecasting processes, and building strategic alliances with other organizations, relying on IT as a support tool to ensure the organization's sustainability in a complex and unstable environment (Sadan, 2012, p 10).

- **Economic Globalization and the Associated Breakdown of Traditional Barriers Between Markets:**

This has led to the generalization of certain consumer behaviour patterns across societies, despite differences in prevailing cultures and living standards. Researcher Francis Kissers believes that the two biggest factors in global economic growth are the information revolution and globalization. He argues that the first factor triggers the second, resulting in the breakdown of borders against foreign and international trade.

- **Intensive Use of Globalization in Production Processes:**

This primarily involves an increasing reliance on more advanced technologies and more complex work methods, necessitating the use of specialized skills and diverse experiences to operate these technologies and manage these methods.

- **Significant Developments in the Current Business Environment:**

These have led to important changes in the economic activity environment and the methods of conducting business.

- **Rapid Technological Change and Reduced Costs of Transportation and Communications:**

This has made it economically more viable to integrate geographically dispersed operations and transport products and components across the globe in search of efficiency.

- **Increasing Competition:**

This has forced economic units to discover new ways to enhance their efficiency, including exploring new markets and relocating certain production activities to reduce costs.

4. Impact of Information Technology Use in Service Development:

The need for information services became apparent after World War II, highlighting not only the importance of having information but also how this information is circulated and recycled. Humanity has passed through several stages: from agricultural civilization to industrial and then to the emergence of the digital and information revolution, which has accelerated the delivery of services to them (Ben Amama, October 29-30, 2013, pp 4-5).

The focus on service quality is an old subject; however, what is new is the use of practical methods and modern statistical techniques to implement service quality measurement models. These concern both the perspective of the customer and the service provider, where service quality is understood as a measure of the degree to which service levels meet customer expectations.

The quality perceived by customers is the difference between their expectations of quality dimensions and the actual performance, which reflects the actual availability of these dimensions.

Service quality can also be defined from the perspective of the service provider and the beneficiary. Researchers "Krajowa and Ritzman" emphasize that quality from the service provider's perspective is the service's conformity to pre-set standards, while from the beneficiary's perspective, it is the service's suitability for their use.

From this, the importance of service quality can be derived in the following points, enabling:

- **Growth in the service sector**, as the number of institutions providing services increases; for example, half of these institutions are engaged in providing services.
- **Increased competition**, as the growth in service institutions leads to increased competition, and thus, service quality provides these institutions with numerous competitive advantages.
- **Understanding of customers**, who always demand good treatment. It is not enough to offer quality service at a reasonable price without providing good treatment and greater understanding of customers.
- **The economic significance of service quality**, where service institutions currently focus on expanding their market share. Therefore, institutions should not only attract new customers but also retain existing ones by paying more attention to the quality of service (Bazzaz et al., 2016).

5. Information Society:

The term "information society" first emerged in Japan during the 1960s, coined by Fujimi Masuda and Kanchi Koyama in 1968 to delineate the rapid economic and social transformations occurring in society as a consequence of modernization in post-industrial contexts.

By the 1990s, the scope of this concept had broadened to encompass both the tangible and intangible dimensions related to the internet, a result of the third wave of the technological revolution (Beaten, 2006).

The concept of the knowledge or information society was further refined during the inaugural session of the World Summit on the Information Society in Geneva, in December 2003. It was acknowledged that the primary aim of the information society is to foster development that is centred around people, empowering every individual to create, access, utilize, and disseminate information and knowledge (Abdel Hadi, 2023, p. 16).

This empowerment facilitates the harnessing of potential by individuals, communities, and nations for sustainable development and enhancing their quality of life. The foundational pillars of the knowledge and information society include the production of content and the establishment of basic infrastructure dependent on communication technology.

Additional essential elements are a national policy for information and knowledge, a regulatory and legislative framework, an environment conducive to education, research, creativity, and development, adequate funding mechanisms, and a culture of information and its propagation within society.

Information and communication networks have played a crucial role in connecting people globally and creating a new cultural, educational, and scientific milieu, ushering in what is now referred to as the knowledge society.

In this society, where knowledge forms the core and swims in a sea of information, continuously updated knowledge is leveraged as a tool for creativity, innovation, production, marketing, and competition, offering high-quality global goods and devices at competitive prices (Booking, March 2021, p. 21).

The essence of this activity is human endeavour characterized by innovation and renewal, where both novelty and quality are paramount. Thus, the cultivation of knowledge is perceived as an organizational and educational culture essential for human resources, making it crucial to employ knowledge in economic and service activities.

Knowledge represents an organizational cultural force that bolsters its capacity to fulfil its objectives and justify its practices and decisions. In the contemporary world, science has evolved into the culture of the future (Al-Maidan, 2004, p. 41).



Information systems that operate within this knowledge framework significantly augment the value of all other investments made by an institution. In essence, knowledge workers act as the vital link among all other institutional investments, providing focus and creativity, enhancing the value of these investments, and aligning them to more effectively achieve the institution's objectives (Karooon et al., 2020, pp. 45-46).

6. Algerian Efforts in Integrating Information and Communication Technology in Economic Enterprise Activities:

In recent times, Algerian economic institutions have encountered numerous changes and developments both on a national and global level. The evolution can be characterized by a shift towards central planning, which marked this period with generally low performance levels, reduced production, and a lack of initiative among managers, among other issues.

There was also an attempt to implement comprehensive reform through seeking economic rationalization and revising the overly centralized approach, particularly in how production capacity is utilized. Additionally, measures were taken towards the privatization and autonomy of institutions.

10.1 Algeria's Strategy in Adopting Technology:

Given the significant importance of modern information and communication technologies, most countries, including Algeria, have been keen to build a practical technology base.

Recognizing the crucial role of technology in business environments and other fields, Algeria has developed a strategy aimed at fostering development across various sectors, particularly in communications. This strategy was implemented in phases:

- **First Phase (1985-1987):**

This phase aimed at establishing integrated activities and setups for microcomputers and intensifying national efforts to develop software applications that garnered global interest.

• **Second Phase (1987-1992):**

During this period, the use of microcomputers was expanded along with the development of software and maintenance services.

• **Third Phase (1992-2000):**

This phase contributed to deepening the national computer industry through reliance on local products instead of continuous import processes. Throughout these stages, Algeria pursued a policy of intensive manufacturing to transition from the issue of technological transformation to technological control, a central challenge in industrial policies.

Despite significant efforts, Algeria relied on export operations and foreign institutions and frameworks, which hindered achieving technological independence.

Conclusion:

From the foregoing analysis, it is apparent that contemporary daily life is deeply interwoven with the complexities of technical programming within the domains of information and communication technology, as well as the nuances of the information and knowledge society.

This symbiosis has ushered in a transformative dimension to both developmental and economic spheres across an extensive range of sectors. The optimization of work processes and procedures has been achieved, enabling swifter execution at reduced costs and diminished geographical barriers, substantially enhancing the ability to keep pace with rapid and ongoing technological advancements.

Particularly noteworthy is the service sector, which presents itself as a critically sensitive and indispensable sector characterized by intangible outputs. This sector necessitates the widespread application of information and communication technologies. The delivery of services has evolved into a domain characterized by significant growth and prosperity, driven by adept utilization of these software tools which impart a superior human quality to service provision.

Since the advent of the 21st century and the onset of the fourth industrial revolution, commonly referred to as the post-information age

and the knowledge society, information and communication technologies have taken on an essential role.

The importance of disseminating knowledge through media and communications, along with mastery in technical programming aligned with academic education and a culture oriented towards learning for human resources, has become paramount. These components are now fundamental requirements in the job market, enabling organizations to adapt their methodologies and operations to align with the new economic paradigm.

Algerian institutions have recently initiated steps towards this direction, influenced by a myriad of changes, whether political, economic, or social. Therefore, it is cogent to assert that information technology has profoundly and positively impacted the enhancement of service quality and delivery mechanisms, equipping them with the finest capabilities available.

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