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Title

**The Impact of Digital
Administration (DA) on the
Development of New ICT
Skills within Moroccan
Administrations**

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Abstract

All studies and analysis highlight the importance given by the government, both developed countries as emerging markets to

information and communication technologies (Aldrich and al, 2002). This strategic importance given to the roles of information and communication technologies

is doubly justified: First, the economic sector where the information technology and communication is the largest source of job creation (Fang, 2002). Second, the transverse

effect of these technologies by placing them as a major factor of structuring the economy (Chen, 2002). This study is a part of dealing with the consequences of the

development of new professions and jobs related to information and communication technology within the Moroccan administrations. The results

should inform and support public policy for training and qualification for the skills related to the integration and use of information technology and communication within

the Moroccan government. Analysis of the results of the study show that in the Moroccan administrations, there are ten jobs that are heavily impacted by the

introduction of information technologies and communication and which are: 1. Database Administrator, 2. Systems Administrator, 3. Security

Officer, 4. Web administrator,
5. Project Manager, 6.
Application Developer, 7.
Architect Information System.
(Newly created), 8. Data entry
operator, 9.E-consultancy.

(Newly created)

10 - Trainer. Besides the aspect related to the identification of jobs and trades mainly ICT, our various

semi-structured interviews
revealed the following:

The process of integration ICT
in the Moroccan
administration can be
characterized

as hybrid. The use of external providers is observed in most cases. Individual projects ICT integrated address applications of automation built into mixed mode.

The concept of e-government is at the beginning stage. Based on the model of St. Amant (2003), we found that these integration projects are in the information phase and other

phases are not yet started
because of the non-
implementation of projects
and timeliness of outputs.

Keyword: ICT, Digital Administration, Moroccan E-government – ICT Skills – E-gouvernement Model

1 - Context of the study

All studies and analysis highlight the importance given by the governments, both developed countries as

emerging markets, to
Information and
Communications
Technologies (Aldrich et al,
2002). This strategic
importance given to ICT is

doubly justified: First, the economic sector where the information technology and communication is the largest source of jobs creation (Fang, 2002). Second, the transverse

effect of these technologies by placing them at the forefront of structuring the economy and society as a whole (Chen, 2002).

The Moroccan government has made the introduction of information technology and communication within its administration a priority (Talbi, 2007). The following

extract from royal speech
attests to this reality. ".... *The
strategic significance of the
new economies, coupled with
the profound and rapid
changes that it operate as a*

prelude to the emergence of the knowledge society and communication, imposes a duty to upgrade, to give our country the ability to master new technologies and operate

optimally, the tremendous opportunities they offer to us.

.."

..

The results of this study should inform and support

public policy guidelines for
training and qualification for
the skills related to the
integration and use of
information and
communication technologies

within the Moroccan
government.

There is no need to stress the
valuable contribution of ICT
which are currently the best

tools for decision support and that can have a positive impact on the process of modernization of the Moroccan administration (Hajji, 2001). The various

projects to integrate ICT
within the Moroccan
administrations have lead to
an opportunity to rethink the
relations maintained between
the Moroccan government

and citizens (Ourzik, 2005):
Valuing close relations,
service quality and ease use of
administrative procedures.
The proposed digital
administration (DA) in

Morocco commonly called e-government project¹ is

¹ Project e-government is the

designation agreed for all projects developed to automate services offered by the Moroccan administration.

undoubtedly one of today's most promising issues by which access to public services offered by the Moroccan government can be both based on human

relations and closer to the expectations of citizens and socio-economic actors (Sahim, 2006). In Morocco, the project fits into the digital administration e-Morocco

Vision 2010², which is a
support functional

² Long term orientation to integrate

Morocco into the society of information and communication. This document was prepared in 2007 by the Ministry of Industry and new technologies

modernization of the
Moroccan administration and
having a direct impact on
human resources
development and evolution
the structure of jobs within

those administrations. The general research questions of this study are:

- What conclusions can we draw about the proposed

digital administration
(DA) carried by the
Moroccan government?

- What new information
and communication

technologies skills are
induced by the
integration of ICT projects
within the Moroccan
government?

- What are the factors that most influence on the decision to integrate ICT within the Moroccan administrations?

- What are the factors that determine the success of integration ICT projects within the Moroccan administrations?

- What are the features (functional and technical) of integration ICT projects within the Moroccan administrations?

2. Synthesis of the literature review

- The integration of ICT in the process of modernizing the

administration offers several advantages. For the administration, these include: The increase in the number of recipients of the services offered

(Daniel and Forman,
2002);

- The decrease in
operating costs of
government (Heeks,
2001);

- The acceleration of trade and on-line administrative services (Laudon & Laudon, 2001).

The concept of the digital administration offers a simplified, faster, more complete service to citizen, regardless of its location (St. Amant, 2003). Our literature

review will be structured as follows: The first section provides a definition of digital administration and highlights its advantages and conditions for success. The second

section presents a framework for development of digital administration with its four phases. The third section will be dedicated to the development of a review and

state of achievements of the integration of information technology and communication within the Moroccan administrations. The fourth section describes

the relationship between the
existential structure of Human
Resources and the evolution
of the integration of
information technology and

communication within the administration.

2.1 Digital Administration: Basic concepts and definitions

The digital administration is a concept that has emerged in public administration and services of the States in the late 1980s. Some definitions emphasize either on the

effective management of Administration (ITA, 1999) or on improving the quality of services to citizens (Hirst & Norton, 1998) or on a new governance adopted by the

Board (Alberta, 2000). We cite three important definitions for the rest of this study.

"... The digital administration was the adoption by the various public institutions and state bodies of new information and communications technologies

in their relationship with citizens, employees and partners in public or private service ... "(Arthur Andersen, 2000).

"... E-government [...] is not just about service delivery over the Internet [...] The far more daunting challenge in the years ahead is a revolution in governance

Itself, has revolution in the fullest Meaning of The Word - A Dramatic Shift in That the ways politic and social power is organized and used ... "(Alberta, 2000).

"... The digital administration is a process that allows the use of the Internet to: (a) provide services to clients and companies, (2) to enable

government organizations to connect employees, suppliers and customers and (3) transform government operations also including government relations -

Government .. "(Jhonston, 2001).

The first and third definition insists on the adoption and use of ICT by government to

transform its relations with various partners such as citizens, businesses and social institutions. The second definition puts more emphasis on the transformation of

modes of governance that can allow ICT. Even if the definition of digital administration is constantly changing, two ideas emerge from all these definitions and

that can be applied on the evolution of digital administration in Morocco:

1 - The adoption and integration of information

technology and communication in the business processes of government. This adoption pushes governments to adopt new modes of governance us

part of a deliberate policy of opening and modernization of management tools;

2 - The transformation of government relations with all

stakeholders internal and external citizens (individuals and firms), suppliers, employees, communities, and regions, associations and other stakeholders.

2.2 General framework for the development of Digital Administration

Different authors emphasize the near-requisite

organizational and environmental success of the implementation of digital administration (St. Amant, 2003, Anderson, 2000). These different requisites are

inserted into a conceptual framework divided into four phases: 1. The phase **information**, 2. The phase of the **interaction**, 3. The phase of the **transaction** and 4. The

phase of integration. This framework is often used to assess the maturity of the digital administration of a country (Parado, 2002).
Studies on the evolution of

digital administration show that the governments of industrialized countries have reached the phase of interaction or the transaction phase by making minor

organizational changes (St. Amant 2003).

The fourth phase implies that ICT are highly integrated to support the integration of

services and new
organizational structures.
Another way to define the
digital administration is using
the main stakeholder of e-

government project, which
may be:

- Intra-organizational:

Projects aimed at improving
the effectiveness and

efficiency of its internal processes and organization performance;

- Organizations - Citizens (O-C): Projects that aim to

improve and distribute the
process of providing public
services to citizens
(individuals and businesses);

- Organizations -
Enterprises (O-E): Projects aimed at improving relationships and interactions with businesses and freelance

workers who provide services
/ products;

- Inter-organizational (O-O): Projects that aim to
achieve the link and inter-

organizational integration
between different
administrations through a
single entry ("one-stop
servicing").

2.3 The project of the Digital Administration in Morocco: State of the art and future trends.

Morocco, like most African countries would face the effects of globalization that are reflected by the opening of borders and the dismantling of tariffs and customs in 2010

(Maryniese and Savoye, 2002)
. Economic openness imposes
imperatives of
competitiveness and overall
performance. The Ministry of
Modernisation of Public

Sector ³(MMSP), created to modernize government

³ Department creates tools to

modernize management and labor within public sector institutions in Morocco. Since its creation, the department works to implement modern management tools and

piloting various modernization
projects in various administrations.

management tools and work. The ICT are at the heart of this upgrade and are used by the Department of modernizing the public sector as a lever for change and a factor of major

restructuring of each administration (Anderson, 2002).

The different trends across the world show that in the

coming years, the intelligence and knowledge are the main source of economic wealth of countries (West, 2001). These two factors are of extreme importance for the

competitiveness of Morocco at international level (Ourzik, 2005). In its modernization plans, the Moroccan government is more interested in the development

and redefinition of the government operating as a network and synergy rather than marginally, to promote the exchange of information. Having become aware of all

issues of ICT and their impact on the modernization of the administrative institutions, the Moroccan government did not remain quite foreign to that fact. Different directions

are taken, we cite for example:
1 - The need to improve relations between administrations and users, which at the same time is a democratic necessity and is an

essential component of the modernization of the State, 2 - Simplification of administrative procedures, 3 - Better use of information technology to simplify the

formalities and particularly by intensive use of ICT.

Since 2002, several initiatives have been taken and have lead to positive developments in

several areas. Thus, at the initiative of the Moroccan government, the e-government committee was formed in February 2003 in order to contribute to the

implementation of the national program of "e-Government". Under the leadership of this committee, many projects were initiated which lead to some concrete

achievements and development of the first online services such as E-Customs , E-bds of the National Fund of Social Security and E-Justice.

Currently, the Moroccan government has embarked on a gradual process of computerization of its services. Most of the computerized procedures

have a scope within Ministerial although some of them, such as projects of the Integrated Management of State Personnel allows data exchange at ministerial level.

In this context, to strengthen the coordination of the national strategy and action of the Moroccan government in this area, an extensive program of promotion and

development of new technologies in the administration has been initiated through the Department of Public sector modernization. The program

is called **IDARATI**:
Computerisation of the
Departments of
Administration and
networking technologies
through adequate

information). The following figure shows the evolution of online service offered by Moroccan Administrations.

See fig 1 on PDF online

2.4 Emergence of digital administration, and impact on the evolution of ICT skills

There are very few studies focusing on understanding the development of "new business" following the integration of ICT in the Moroccan administration.

Most available studies pointed the classical categories of professions related to information technology and communication, namely the traditional crafts of computer

and information systems. In this context, our literature review suggests a state of the art research on job and professions related to ICT, and we considered the main

contributions as a repository
that we could compare the
results empirical
investigation.

The European model (ITA, 2000) structural analysis of job-related ICT, offers a classification and nomenclature. All researchers in the field of technology

Information and
communication agreement on
a standard for defining
competencies related to
information technology and

communication called e-skills with three levels, namely:

- **Digital Literacy**, which includes all the skills to use basic information

technology and communication as a learning tool in everyday life and work;

- **The ratings for uses** that involve the ability to

use technological tools in
the work situations of
the most common and
the ability to update
these competencies
when working

procedures,
organizational
arrangements or
applications change;

- **The professional qualifications of**

information technology
and communication
which are required in
the sector of information
technology and
communication in order

to design, develop,
implement, manage or
make day technological
applications.

The European Commission proposes a model for mapping professions related to information technology and communication that relies on four main groups of

occupations and jobs as shown in figure below. This classification is taken into account in our study to understand the changing structure of jobs related to

ICT within the Moroccan government.

At the center, we find the occupations classified as "hard core" of the core skills

of computing: software specialists, networks and systems. A first peripheral group consists of professional Internet and multimedia, which combines skills in

graphic, artistic or editorial. A second peripheral group consists of business related applications of information technology and communications with generic

common to many companies
and organizations: ERP,
systems management
customer relationship
platforms of electronic
commerce, electronic

exchange of business data and e-government. Professionals in this category are mostly graduates of training courses for advanced or intermediate. Among the technical skills of

these professionals, in addition to hardware and software aspects are the skills related to network design, communication protocols, transmission of data

integration software and
hybrid systems.

3. Empirical Study

3.1 Research methodology and approach

Researchers in management
an implementation of ICT
consider two possible
orientations to undertake a
study on changes in jobs
related to the integration of

information technology and communication (Thietard, 1989). First, a study on the content, and secondly, a study on the process. The orientation of the former

tends to highlight the elements that make up the research topic studied by cons, processual orientation tends to explain the evolution and behavior of the studied

object in time. In this study, the various issues under consideration attempt to explain the skills and jobs emerged following the integration of ICT within the

Moroccan government. The nature of research questions point us to adopt an approach to research on the content. Besides the nature of the research object, we took the

approach of research action as a basis for our empirical investigation. Indeed, for over fifty years a specific approach in management science that is called action research has

emerged and developed in the world, including from the United States. In 1986 at a symposium at the National Institute for Educational Research in France,

researchers have defined
action research as follows: "...
*This is research in which there
is a deliberate transformation
of reality; Searches with a dual
objective: to transform reality*

and generate knowledge about these changes ... "(Hugon and Seibel, 1988). For Lewin (2001), research action is defined as a search comparing the conditions and effects of

different forms of social action
and leading to social action.

The response to our general
research questions will be
greatly facilitated by adopting
research action approach.

3.2 Architecture of the questionnaire

We relied on a questionnaire for collecting information from government surveyed.

The questionnaire is divided into four parts.

Part 1 (Identification of the respondent): This part of the collection of data on the

administration surveyed while differentiating their status (Administration Office or Department). The information on the

respondent are also requested in this part.

Part 2 (Identification of projects): This section concerns the various projects

to integrate information technology and communication within the administration. In this part, we are interested in the nature of these projects and

their strategic importance in the process of modernization of the Moroccan administrations.

Part 3 (of the existing state of information and communication technologies): In this part of the questionnaire, we focus on solutions and technology

choices implemented in the administration. The term Back Office, means different processes and areas of integration of information technology in internal

administration. The term front office refers to the various processes of communication between the administration and its various

external partners (Citizen, National, Business, etc. ...).

Part 4 (Impact of the integration of ICT projects on the creation of jobs): In

this part of the questionnaire,
we investigated the impact of
integrating information
technology and
communication on
developments trades and jobs

in the Moroccan
administration. We relied on
a repository of trades and jobs

developed in the project
MEDA2⁴ which includes a

⁴ Support the development of

vocational training in the areas of information technology and communication. This project is funded by 75% by the European Community.

comprehensive list of jobs and professions related to information technology and communication existing in

Morocco. The following table presents a complete list of 21 trades included in this study.

See table 1 on PDF online

3.3 Final sample of the study and characteristics of the respondent

The sampling procedure
pursued in this study was

non-probability type⁵. This sampling procedure is

⁵ According to Tremblay (1991), the

procedure uses a non-probability sampling method that does not assess the probability for each unit of the population considered to be sampled, or to ensure that all units of the

population of be included in the
sample.

described by Tremblay (1991). This type of sampling gave us the opportunity to select a set of Moroccan government representative of our study. We relied on the

following criteria for the
development of our study
sample:

1 - Relevance of integration projects in the administration,

2 - Importance of the role of government in the public sector,

3 - Importance Administration regarding

its accession to the E-Morocco 2010. The following table lists the administrations concerned by our study.

See table 2 on PDF online

In total, we were able to drive
50 semi - structured
interviews with senior
officials of the Moroccan

administration. The average duration of these interviews did not exceed 2h:00 minutes.

4. The development of empirical results of the study

In this section, we focus on the development results of the

study and answer the various questions of the study.

4.1 Development of descriptive statistics and indicators on the basis of relevant administrations.

4.1.1 The basic specifications on project integration

The following table presents the characteristics of the

integration projects of information technology and communication within the sample surveyed. We have analyzed three important features: The **mode of**

integration and
implementation of projects,
the **nature** of projects and
finally the **average** time of
completion.

See table 3 on PDF online

The nature and purpose of development projects line of the administration are

presented in the following figure.

See fig 2 on PDF online

The previous figure shows that development projects are dominated by online services to citizens. 28% of the projects concern the development of exchanges

between government and business, and finally 17% of the projects concern the exchange of data between administrations. The following figures shows the

relative importance of factors
for the decision-making
integration of information
technology and
communication within
government surveyed.

See fig 3 on PDF online

The analysis of this graph clearly shows the emergence of three factors supporting the decision to integrate

technology projects within the Moroccan administration:

- Improved performance and efficiency of the

administration: This factor refers to the process of modernization that is currently the master project within

Moroccan
administration;

- The completion of the implementation of the strategy of the

administration on its
master IT plan

- The integration of the
administration's
strategy in E-Morocco
2010.

The availability of resources, the total involvement of various parties in the project and clear identification of needs are classified among the first factors encountered by

those responsible for the success of integration projects of information technology and communication within the Moroccan government.

4.1.2 The technical characteristics of ICT projects within the Moroccan administration.

This section is reserved to the development of basic statistics on existing applications in the information systems of administrations that have

participated in our sample. The following table shows the different areas of Back Office Automation government and their level

of efficiency and
modernization.

See table 4 on PDF online

The following figures show the different technologies used for the management of databases, operating system and development language used

See fig 4 on PDF online

Different administrations
have experienced an
organizational structure with
(department, division,

service) identified. The following table shows the importance of jobs and trades that contributed to the success of different

integration projects Front
Office.

See table 5 on PDF online

The following table shows the ICT professions and jobs that have been important for the success of back office integration projects.

See table 6 on PDF online

**4.2 Identifying the nature of
the jobs created through the**

integration of ICT in the Moroccan Administration.

The following table shows in a qualitative way the nature of jobs created or Impacted in

government following the integration of information technology and communication.

5. Conclusion

Analysis of the results of the study shows that in the Moroccan administration, there are ten jobs that are strongly impacted by the introduction of new

information technologies and communication and which are:

1. Database Administrator;
2. Administrator systems;

3. Security Officer;
4. Administrator websites;
5. Project Manager functional;
6. Application Developer;
7. Architect Information System (Newly created);

8. Operator input;
9. E-consultancy (Newly created);
10. Trainer;

Besides the aspect related to the identification of jobs and

trades mainly ICT, our various semi-structured interviews revealed the following points:

See table 7 on PDF online

The integration of ICT in the Moroccan administration can be characterized as hybrid. The use of external providers is observed in most cases. The projects involve

integrated ICT applications
integrated automation of the
ICT master plan.

- The concept of e-government is in its

beginning stage in the Moroccan administrations. Based on the model of St. Amant (2003), we find that these integration projects are in

the phase of information
and that other phases
have not yet commenced
due to non-
implementation of
projects and timeliness of

outputs. The success of this integration project depends primarily on the willingness of different administrations.

The qualitative analysis of the needs of Human Resources, ICT has enabled the identification of a set of specific jobs. It also helped to identify a set of jobs mainly in

the emerging field of Internet, Tele-services, offshoring, remote training and regulatory aspects, so that quantitative analysis of jobs identified helped to highlight

the most important jobs in terms of numbers and qualifications frameworks and the associated skills.

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