

# The Reality of using Information Technology at M'sila University from the perspective of employees

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**Abstract:** This study aims to diagnose the reality of the use of information technology at the University of M'sila. To achieve this, the most important basic concepts related to information technology were addressed as a theoretical framework, where five components of information technology were adopted, represented by hardware, software, databases, networks, and people. The questionnaire was used as a tool to collect data from the study sample consisting of 44 individuals in addition to interviewing other specialists. After testing the study hypothesis, it was reached that the administration of the University of M'sila seeks to use information technology applications adequately from the perspective of a sample of its employees.

**Keywords:** Information Technology; Higher Education.

## 1. Introduction

Currently, the majority of institutions in the industrial, commercial, and service sectors have become essential due to the use of information technology. However, the service sector is the most impacted, particularly those that handle information as inputs or outputs, such as higher education institutions. In reality, the term "information technology" is not as obscure as it may seem, particularly in the context of universities, where it is employed extensively. Nevertheless, the current emphasis has shifted from the mere ownership of information technology to the development of applications that can enhance a variety of functions. Nothing is at stake when one possesses numerous processors, networks of all kinds, big data, and other components without demonstrating their practical application.

### 1.1. Research Problematic

Similar to other national universities, the University of M'sila in Algeria is endeavouring to establish itself as a digital university by aligning itself with international universities in terms of information technology practices. Due to this objective, it becomes increasingly enthusiastic about all applications and opportunities that enable it to achieve it. The administration of this university has leveraged numerous capabilities to establish the e-site as a critical focal point. This research was conducted to diagnose the reality of IT practices at the University of M'sila. and the primary inquiry that can be posed in this context is:

**What is the reality of using information technology tools at the University of M'sila from the perspective of a sample of employees?**

*1.2. Hypothesis*

To answer this question, the following main hypothesis was formulated:

**The administration of the University of M'sila seeks to use information technology applications adequately from the perspective of a sample of its employees.**

*1.3. Literature Review*

*1.3.1. Vesić, D., Laković, D., & Vesić, S. Lj. (2023)*

Use of Information Technologies in Higher Education from the Aspect of Management. This study aims to introduce novel module models for instructing information technology in higher education, concluding that the programs must be modified to align with contemporary technological advancements.

*1.3.2. Pandey, S. A. (2021)*

Information Communication Technology Tools.

This research aimed to identify the different tools of information and communication technology and their various applications. The results indicated the diversity of information and communication technology tools, which expands the ways in which they are used.

*1.3.3. Alfahad, F. N. (2012):*

Effectiveness of Using Information Technology in Higher Education in Saudi Arabia.

This research aimed to assess the efficacy and efficiency of information technology in higher education at King Saud University, Saudi Arabia. The findings of this study indicate a favourable impression of IT's function in augmenting student access and boosting the quality of teaching and learning.

This study diverges from previous studies in its treatment methodology. Most prior studies examine the topic solely from a pedagogical standpoint or neglect to consider the multifaceted aspects of information technology and the statistical methodologies employed at the specific time and location of the research.

**2. Basic concepts of information technology**

*2.1. Definition of Information Technology*

Information Technology (IT) is a technology that uses computers to gather, process, store, protect, and transfer “information”. (Dario IlijaRendulic, 2011, p. 01)

Information Technology, or IT, means all the technology—including computers and telecommunications—that is used to deal with data and “information”. (Nwosu, 2008, p. 13)

Information technology refers to any technology utilised for the creation, processing, and distribution of information essential for corporate performance. Information technology is crucial for the business sector as a management instrument to enhance information processing for the production of goods and services for profit. (Nikoloski, December 2014, p. 303)

From the different viewpoints, IT means all the technology—including computers—that is applied to processing, storing, and transmitting information efficiently and effectively.

*2.2. Components of Information Technology Infrastructure:*

IT infrastructure plays an important role in the operation of every firm. (Nyrhinen, 2006, p. 04)

The subsequent section will elucidate the concept of IT infrastructure and its components.

The information technology infrastructure supports the decentralised operational and administrative computing framework. Concealed from the application-centric realm of end-users, technological infrastructure integrates and enables efficient data flows. Information technology infrastructure encompasses not only the mechanics of data systems but also the personnel who provide support for user and enterprise computing. (Klodiana Goricaand, lavdosh, & others, 2014, p. 125).

Information technology components are people, data, hardware, software, and networks.

This study defines IT components as follows:

2.2.1. *People: the most important part, as they make end users more productive*

2.2.2. *Network: there are three types (Dario Ilija Rendulic, 2011, p. 04)*

- Intranet - a smaller network, closed version of the internet to which only certain (authorized) people are granted access (members of an organization).
- Extranet – an intranet version, to which only certain people are granted access (not exclusively members of an organization, but also outsourced experts for performing common tasks).
- World Wide Web (WWW)—one of the services that can be used on the Internet that enables us to view and search contents in the form of web pages.

2.2.3. *Software*

- The equipment that processes the data to create information is called hardware. It includes the keyboard, mouse, monitor, system unit, and other devices. Hardware is controlled by software. (Jamison, 2004, p. 05). set of commands that are "understandable" to the computer; instructions to it, palpable parts, giving orders what to do (Dario Ilija Rendulic, 2011, p. 01).

2.2.4. *Hardware*

- Computer components that are physical, touchable pieces of equipment.
- It consists of a system unit, input/output, secondary storage, and communication devices.

2.2.5. *Data: (Deshpande & Surabhi, 2010, p. 03)*

- Data may be viewed as some disconnected collection of facts about a domain that have little intrinsic interest.
- is simply the discernible difference between alternative states of a system.

2.2.6. *Research Method*

Research is motivated by a profound necessity or curiosity and, at times, to formally validate an observation or viewpoint. Research is a systematic endeavour to discover, validate, or corroborate a series of assumptions or ideas. The approach employed for particular research will be dictated by the nature of the problem and the research domain and kind. This study employs a descriptive research method.

2.3. *Data Collection*

In any research, it is essential to delineate both the types and sources of data to be gathered. The data required to fulfil the research objectives. The core data for this research will be gathered through a survey conducted at M'sila University. A questionnaire method was chosen to provide uniform and consistent data collecting. The questions in the questionnaire were crafted to generate realistic and comprehensive primary data, including interviews with computing engineering professionals.

2.3.1. *Interview*

A one-on-one interview was conducted between the interviewee and the researcher at the interviewee's office. Each interview lasted between 10 and 20 minutes. We do five interviews.

A semi-structured interview guide will be employed to get data from five computing engineers due to the following reasons:

- the method offers high response quality,
- combines questioning, cross-examination, and probing approaches

### 2.3.2. the questionnaire

The data required to fulfil the research objectives. The core data for this research will be collected via a survey conducted at the designated M'sila University. A questionnaire method was chosen to provide uniform and consistent data collecting. The questions in the questionnaire were intended to generate authentic and comprehensive primary data.

A survey questionnaire was developed and disseminated to respondents to gather primary data for the study. The study employed a methodological technique utilising closed-ended questions in the questionnaire. Continuous questions, utilising a continuous scale for responses, were constructed in the questionnaire design. The Likert scale is utilised, requiring respondents to express their level of agreement or disagreement with a series of assertions. Each scale item often has five response categories, ranging from "completely disagree" to "completely agree" [Likert (1932)]. All 48 elements were assessed using a five-point scale.

## 3. Sampling design

The proposed research focusses on individuals employed as managers at M'sila University. The survey was administered across 7 faculties and 2 institutes.

The sample size comprises 44 individuals. A considerable number of respondents were reluctant to disclose their perceptions in relation to their knowledge.

The research data was gathered using a questionnaire and analysed with the statistical software 'Statistical Package for Social Sciences' (SPSS) version 20 for Windows.

A total of 59 questionnaires were issued to the managers of M'sila University, and 44 completed questionnaires were returned. Table No. 1 summarises the years of work experience, educational attainment, and university position.

Table 1. Distribution of questionnaire

|   | Item               | Category           | Frequency | Percent |
|---|--------------------|--------------------|-----------|---------|
| 1 | Level of education | Master             | 5         | 11.4    |
|   |                    | phd                | 7         | 15.9    |
|   |                    | others             | 32        | 72.7    |
| 2 | Experience         | Less than 5 years  | 18        | 40.9    |
|   |                    | From 5 to 10 years | 15        | 34.1    |
|   |                    | From 11to 15 years | 4         | 9.1     |
|   |                    | More than 15 years | 7         | 15.9    |
| 3 | Profession         | Teach managers     | 11        | 25      |
|   |                    | Just mangers       | 33        | 75      |

source: SPSS outputs

## 4. Data Analysis Tools

This test is done on the SPSS software version 22.

- A **frequency distribution table** is an arrangement of the values that one or more variables take in a sample. Each entry in the table contains the frequency or count of the

occurrences of values within a particular group or interval, and in this way, the table summarizes the distribution of values in the sample.

- **Mean:** The average value of the entire set of numbers
- The **standard deviation** shows how much variation or "dispersion" there is from the "average" (mean, or expected value). A low standard deviation indicates that the data points tend to be very close to the mean.
- The **coefficient of variation** (CV) is defined as the ratio of the standard deviation to the mean. It is a helpful statistic in comparing the degree of variation from one data series to the other, although the means are considerably different from each other.
- **T-tests:** tests for the means of continuous data One sample. Underlying these tests is the assumption that the data arise from a normal distribution.
- **The Shapiro-Wilk** test for normality.

5. Test the hypothesis

**H0:** Administration of faculties under study doesn't have enough application of information technology.

**H1:** Administration of faculties under study have available enough application of Information Technology.

Before testing this hypothesis, we need to know the nature of the data. The table n° 02 presents a one-sample test of normality hypothesis as below:

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Table 2. One -Sample Test of Normality

| Mean IT | Tests of Normality |                |              |    |       |
|---------|--------------------|----------------|--------------|----|-------|
|         | MEAN VALUE         | Std. Deviation | Shapiro-Wilk |    |       |
|         |                    |                | Statistic    | df | Sig.  |
|         | 3.34               | 0.45           | 0.958        | 44 | 0.108 |

source: SPSS outputs

The table above shows that the sig of information technology is (0.108) more than 0.05. According to Shapiro-Wilk's test, that means the data of Information Technology is normality. So directly, the hypothesis is tested with a student test (t), as below:

Table 3. One-Sample (t) Test

|         | One-Sample Test |    |                 |                 |                                           |        |
|---------|-----------------|----|-----------------|-----------------|-------------------------------------------|--------|
|         | Test Value = 3  |    |                 |                 |                                           |        |
|         | t               | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference |        |
|         |                 |    |                 |                 | Lower                                     | Upper  |
| Mean IT | 5.018           | 43 | 0.000           | 0.34375         | 0.2056                                    | 0.4819 |

source: SPSS outputs

From the table above, we find the value of sig is 0.000. it less than 0.05. So we refuse the null hypothesis, and we accept alternative hypotheses, which are:

**The administration of the University of M'sila seeks to use information technology applications adequately from the perspective of a sample of its employees.**

6. Result Analyses

The table below summarizes the component of Information Technology at Msila

University.

Table 4. Resume of IT Components

| IT Components | Detail at M'sila University                                                                                                      |
|---------------|----------------------------------------------------------------------------------------------------------------------------------|
| Hardware      | the physical components of a computer                                                                                            |
| Software      | Programs: G _pedagogy, Progress, Moodle, ...                                                                                     |
| Data          | better means of information of data messages provides to users of this information (students, teachers, managers, workers, etc.) |
| Communication | Internet (social media like Facebook and YouTube and others, but no effectiveness) intranet, extranet                            |
| People        | University training.                                                                                                             |

source: SPSS outputs

As the table above shows, the faculties of the university use hardware, software, and data. Furthermore, there are communication tools and people getting trained from the university (IT components).

Table 5. Comparative interview among engineers

|                     | Engineer of computing 1                                        | Engineer of computing 2           | Engineer of computing 3 | Engineer of computing 4                                        | Engineer of computing 5            |                       | Agreement                             | disagreement |
|---------------------|----------------------------------------------------------------|-----------------------------------|-------------------------|----------------------------------------------------------------|------------------------------------|-----------------------|---------------------------------------|--------------|
| Experience          | Between 5 and 10 years                                         |                                   | Less than 5 years       | Between 5 and 10 years                                         |                                    | 5                     |                                       |              |
| Training            | university                                                     |                                   |                         |                                                                | university                         |                       |                                       |              |
| Software            | G _pedagogy, Progress                                          |                                   |                         |                                                                |                                    | G _pedagogy, Progress |                                       |              |
| communication       | Internet (Facebook, Cite of faculty, Email) INTRANET, EXTRANET |                                   | Internet (Linkedn.. )   | Internet (Facebook, Cite of Faculty, Email) INTRANET, EXTRANET |                                    |                       | Cite of                               | Linked in    |
| Programs for:       | Manager, students, and teachers                                |                                   |                         |                                                                |                                    |                       |                                       |              |
| Purpose of using IT | To earn the time<br>To make work easy                          |                                   |                         |                                                                | To integrate the whole departments |                       | To earn the time<br>To make work easy |              |
| Programs using      | not                                                            | ERP: enterprise resource planning |                         |                                                                |                                    |                       | ERP: Enterprise resource planning     |              |

source: Prepared by researchers.

The data analysis from the comparative interview with engineers (Table 3) indicates that the Information Technology process is uniformly implemented across all faculties and

institutions, except for Communication, where the primary distinction lies in the use of social networking platforms such as "LinkedIn." Additionally, certain programs do not utilise ERP (Enterprise Resource Planning). We have accepted the primary alternative premise that the administration of faculties have sufficient available application or information technology infrastructure.

To conduct result analyses, we employed statistical methods like the mean, standard deviation, coefficient of variation (CV), and observations.

**Note:**  $CV = (\text{Std. deviation} \div \text{Mean}) \times 100$ .

Table 6. Rank of KM requirements

| Items                                                                                                                          | Mean | Std. deviation | Coefficient of variation (CV) | Rank |
|--------------------------------------------------------------------------------------------------------------------------------|------|----------------|-------------------------------|------|
| 1 Computers and accessories are enough to finish the work on time.                                                             | 3.30 | 1.193          | 36.15                         | 6    |
| 2 Software is updated on request concurrently                                                                                  | 3.30 | .978           | 29.64                         | 3    |
| 3 Emails are the most used in communication.                                                                                   | 3.41 | 1.187          | 34.81                         | 5    |
| 4 The information is available to users on the college website.                                                                | 3.14 | 1.212          | 38.60                         | 7    |
| 5 The department uses social media to communicate with the users.                                                              | 3.36 | 1.059          | 31.52                         | 4    |
| 6 New software is available to facilitate the storage and retrieval of information when needed                                 | 3.77 | .912           | 24.19                         | 1    |
| 7 Coordination between the various administrators and the computing officer at the faculty is coordinated on a permanent basis | 3.45 | .901           | 26.12                         | 2    |
| 8 You get regular training and configurations on using computing.                                                              | 3.02 | 1.191          | 39.44                         | 8    |
| Information Technology                                                                                                         | 3.34 | 0.45           | 13.59                         |      |

source: Prepared by researchers based on SPSS outputs.

The administration of faculties has sufficient uses of information technology as indicated in the preceding table. On average, there is a mean of 3.34 and a standard deviation of 0.45, indicating that most university administrations possess new software designed to enhance the storage and retrieval of information as required. Furthermore, there exists ongoing coordination among various administrators, with the computing officer at the faculty maintaining consistent communication. However, users have not yet received adequate training or instruction on computing operations, and electronic faculty sites fail to supply sufficient data necessary for users. Computing engineers were enquired about information technology.

## 7. Conclusion

After we have tackled the most important concepts related to IT, its components, tested the study hypothesis, and analyzed its results practically. We are going to present the study results and the possible suggestions as follows:

### 7.1. The study results

The administration of faculties possesses sufficient uses of information technology. The hardware (computers and accessories) and software (G pedagogy, Progress, Moodle, etc.) are sufficient to complete the task punctually, making emails the predominant mode of contact. The department utilises social media to engage with users. Moreover, the M'sila University website offers all necessary information for educators, students, and staff promptly.

### 7.2. Suggestions

- Employees should take part in making decisions.
- For continual improvement, it is advisable to listen to the university employees opinions and suggestions.
- Enable employees to do their work effectively.
- Take care of the application and the evaluation of data.
- Activate and exploit the Progress program.
- Expand and spread the internet over classes and join it with the university central administration.
- Rehabilitate and give courses to the informatics engineers of the faculties on how to use updated IT with the help of a broad range of experts.

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