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**The impact of information technology on
human resource performance**
Case study Mohamed Boudiaf University

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Dedication

First of all, praise to you, Allah , for your great bounty and your beautiful giving and generosity.

and no matter how much we praise to you, we will never be satisfied with your praise, and prayers and peace be upon the prophet Mohammed.

To that infinite letter of love, to the one whose tenderness I was satisfied and by her burial I took refuge, and by her light I was guided and by her sight I followed and what I fulfilled, to the one whose most desires to speak, and the eye flutters from her loneliness, and who wished to see me while I was fulfilling This success, and witted to this day to come to my mother and second mother.

To my shield, and in which I followed life, and in which the sea of knowledge and learning open for me, to whom I burned to light the path of success, the pillar of my life, and the chest of my wishes, my pride and my dignity, to my father, may God prolong his life.

To whom the heart reminds them before the pen writes, to those who shared with me the sweet and sour life under one roof

To my brothers Hicham & Imad & Nori
And my sisters hiba & mayssa & Fatima alzehrae
And to the family angels amine & dhia & najmo & Joude & baraa & mouad & wassim
To my grand Mother Hafsia

To my aunts and uncle and my cousins to everyone who bears the family name yahia & hadjab

To all those whom my pen did not realize, I say to them that you are distant and your love is not far from the heart, and you are present

abstract:

This study aims to highlight the impact of information technology on the performance of human resources at the University of M'Sila, Faculty of Economics, Commercial and High Management, M'Sila State, as the human resource has great importance in implementing the various activities entrusted to it, which organizations need to carry out their functions in an environment characterized by changes and developments, especially those What is happening in the information and communication technology that is witnessing this era, including the Internet, telephone, computer, electronic platforms, ...etc. This information development had a necessary need to keep pace with it, which will have a clear impact on performance within the institution by developing and improving it to achieve its goals. The study concluded by relying on the descriptive approach in describing the research variables and the analytical approach in analyzing some of the statistical results and analyzing the interview with the director of human resources in the college. level and improve it.

Keywords: information technology, information, information development, human resources performance, human resources management .

ملخص:

تهدف هذه الدراسة إلى ابراز تأثير تكنولوجيا المعلومات على الأداء الموارد البشرية بجامعة المسيلة كلية العلوم الاقتصادية والتجارية وعلو التسبير ولاية المسيلة ، حيث أن للمورد البشري أهمية كبرى في تنفيذ مختلف الأنشطة الموكلة إليه، والتي تحتاج إليها المنظمات للقيام بوظائفها في ظل بيئة تتميز بالتغيرات والتطورات خاصة تلك الحاصلة في تكنولوجيا المعلومات والاتصالات التي يشهدها هذا العصر، بما فيها شبكات الانترنت، الهاتف، الحاسب الآلي، المنصات الالكترونية ..الخ. وكان لهذا التطور المعلوماتي حاجة ضرورية لمواكبه ومسايرته، الأمر الذي سيكون له التأثير الواضح على الأداء داخل المؤسسة بتطويره وتحسينه لبلوغ أهدافها، وقد خلصت الدراسة بالاعتماد على المنهج الوصفي في وصف متغيري البحث والمنهج التحليلي في تحليل بعض النتائج الإحصائية و تحليل المقابلة مع مدير الموارد البشرية بالكلية اعتمدت عينة عشوائية من مجتمع الدراسة المكون من طلبة و أساتذة و عاملين خلصت الدراسة إلى أن استخدام تكنولوجيا المعلومات أثر على الأداء بالرفع من مستواه والارتقاء به نحو الأفضل.

الكلمات المفتاحية: تكنولوجيا المعلومات ، معلومات، تطور معلوماتي، أداء الموارد البشرية ،

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General introduction

General introduction

Most organizations seek to achieve success in their work and activities in order to build their position among other organizations. And constantly improving its performance in light of the environment in which it operates, as it constitutes a sub-ecosystem that includes several different departments, including the human resources department, which is considered one of the most important functions because it focuses on the most important element, which is the human element, which is considered its most valuable resource and the most influential in productivity. The organization is working to benefit from its resource by working on their development, training and development their competence and abilities to contribute to the latter in achieving its goals and profit.

And given that information technology is one of the most important developments and changes that have been found in the business environment, which has opened wide horizons for the development and improvement of organizations and the renewal of their methods and working mechanism in order to accomplish various functions and services in a more advanced and effective manner, what the world is witnessing of rapid technological transformations And the tremendous developments in the field of computer hardware, software, communication devices and their means, and the huge amount of information that grows and moves quickly and easily, which made information technology an important means in organizations and requires the latter of all kinds and sizes. Keeping pace with this tremendous progress, it is thus forced to apply information technology in the management of its human resources in line with the requirements of the times. its desired objectives.

From here, the problem of the study can be formulated in the following questions:

1. Problem:

Does information technology affect the human resources performance at the university of Mouhamed boudiaf- msila ?

partial questions :

- What is the reality of using information technology at Mohamed Boudiaf University of M'sila?
- How is the performance of human resources measured at Mohamed Boudiaf University of M'sila?
- What is the effect of using information technology on the performance of human resources at Mohamed Boudiaf University ?

2. Hypothesis:

General hypothesis:

Information technology has an effective impact on improving human resource management at The University of Mouhamed boudiaf- msila

partial hypotheses

- The reality of the use of information technology is witnessing an increase in the number of users and the development of used devices over time
- The performance of human resources at the university of mohamed boudiaf m'sila is measured within a set of standers that are applied to all its members
- The use of information technology has an impact on improving and increasing the performance of human resources at Mohamed Boudiaf University

3. reasons for choosing the topic :

- The tendency to study such topics and define their importance
- Considering technology An essential element of human resource management for any organization, it must be highlighted
- The subject is in line with the nature of the specialization
- The widespread use of information technology in most institutions is one of the most important reasons for choosing the topic
- The topic is current, whether it is related to information technology or human resource management

4. research aims :

- Highlighting the role of information technology in improving human resource management.
- Recognizing the extent to which modern means and technologies contribute to raising the performance of employees.
- Knowing the extent to which the electronic management of human resources contributes to creating a competitive advantage.
- Recognizing the contribution of information technology to the development of human resource management functions.

5. research importance:

This study is one of the important topics for dealing with two basic concepts: Human resource management and information technology, as well as enriching scientific research and the university library through this study In order to be a reference for students and also the importance of the technology factor in influencing the functions of human resource management and development and highlighting the importance of information technology in organizations.

6. The limits of the study:

I was limited to studying the relationship between information and communication technology and human resource performance at Mohamed

Boudiaf University, Faculty of Economics, Commercial and Management Sciences in Msila from
Through its employees from May 27, 2022 to June 13, 2022

7. Literature review:

➤ Arabic Studies:

- **first study:** entitled The role of information and communication technology in the rehabilitation of Algerian institutions Small and medium, prepared by the student **Siham Abdel Karim**

Place of study: the state of Algeria

Study time: 2012/2013

Nature of the study: PhD thesis, University of Algiers

Study method: descriptive method

Study tools: a political questionnaire tool

Objectives of the study: to find out that the use of TIC is important in the rehabilitation of small and medium-sized enterprises or not

the most important results obtained:

Information and communication technology is one of the most important applications of safety technology This technology has evolved with the development of its various components represented in hardware and software Fill them with the applications of information and communication technology in the year of the information that is included in the data processing and convert it into extended information in limiting decisions

- **second study:** entitled the role of information technology in improving human resource management in the organization by the student: **Kadri Sara**

Place of study: Oum El Bouaghi

Study time: 2017/2018 - Study nature: A supplementary note to obtaining a master's degree in Sociology, Human Resources Development and Management

Study method: descriptive method

Study tools: The questionnaire is directed to a number of (30 workers in the Directorate of Post and Wire Correspondence). Wireless and digitization

Objectives of the study, highlighting the role of information technology in improving human resources management, identifying the extent to which modern means and technologies contribute to raising the performance of employees, knowing the extent of the management's contribution

E-HR to create a competitive advantage.

The most important results obtained:

Most of the institutions use the means of communication by phone, fax, e-mail

Institutions need to keep pace with technological development

The number of institutions recorded a delay in the use of technology.

- **Third study:** entitled The role of modern technology in improving the effectiveness of human resource performance in Sports institutions by the student: **Khoja Elias**

Place of study: M'Sila

Study time: 2019/2020

Study method: descriptive method

Study tools: The questionnaire tool is directed to a sample of 50 employees in the Directorate of Youth and Sports

Objectives of the study:

Recognize the role of information technology in achieving the effective performance of human resources in organizations sports.

The trend towards relying on modern curricula and programs that invest in sports institutions

The most important results obtained: the use of software and processors is effective in the sports institutions, and the development of technology and information is beneficial to the improvement of human resources within the sports institution.

➤ **Foreign Studies:**

- **first study:** entitled The role of information technology in supporting the application of total quality in the public sector in Malaysia Prepared by: **ang et la**

Place of study: Malaysia

Study time: 2001

Study method: descriptive method

Study tools: questionnaire

Study objectives: To identify the role played by information technology in supporting the application of tour management

The most important results obtained:

The importance of the use of information technology in the application of all dimensions of total quality management, especially an increase

Creativity, information, analysis as well as an emphasis on supplier quality, quality results.

- **second study:** entitled the relationship between the use of information technology and the application of total quality management industrial establishments. Prepared by **Martinez Lormte**

Study location: Spain

Study time: 2006

Study objectives: To identify the relationship between the use of information technology and the application of total quality management.

The most important results obtained:

The results of the study indicated that there is a direct relationship between the use of Information technology and the application of total quality management dimensions. The study also showed that the effect of using technology

Information in the application of the total quality dimension affects institutional performance in terms of operation and quality, When it does not affect performance related to profitability

8. Study difficulties:

Difficulty analyzing data

Difficulty obtaining information from the institution.

Study time is tight

9. Study Structure:

To answer the problem under study and to verify the validity of the hypotheses, we divided this research into two chapters that contain:

Chapter One: Information Technology

Chapter Two: The Performance of Human Resources

ChapterThree: Chapter three: A case study Faculty of Economic, Commercial and Management Sciences -University of M'Sil

Part One: Theoretical Framework

Chapter One: Information technology

1.What is information technology?

1.1. The time line of information technology

Since the dawn of modern computers, the fast change and growth in the amount of data created, shared, and consumed has transform the society. In a world that is interconnected, change happens at a startling pace. Have you ever wondered how this connected world of ours got connected in the first place?

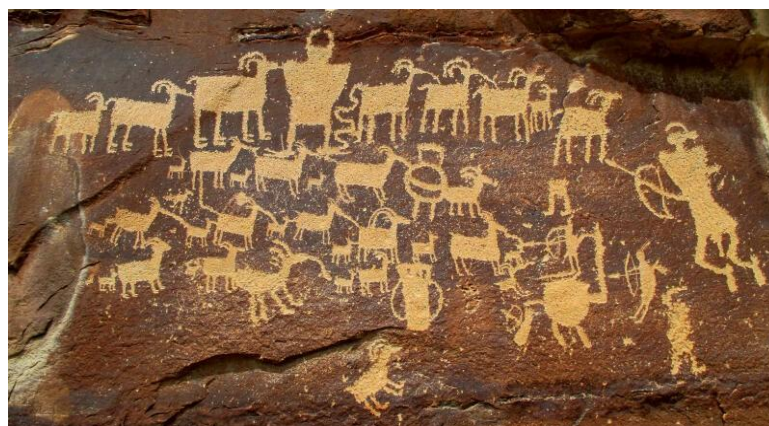
Information technology has been around for a long, long time. Basically as long as people have been around! Humans have always been quick to adapt technologies for better and faster communication

There are 4 main ages that divide up the history of information technology but only the latest age (electronic) and some of the electromechanical age really affects us today.(Pejman Kamkarian, 2016, p 2)

1.1.1.Pre-Mechanical

The earliest age of technology. can be defined as the time between 3000 B.C. and 1450 A.D. When humans first started communicating, they would try to use language to make simple pictures – petroglyphs to tell a story, map their

Figure 1.1 : Petroglyph in Utah



Source: Pejman Kamkarian, . " A Brief History of IT ". IT ComputerTechnical Support Newsletter:vol.2 No 29, 2016, p 2.

terrain, or keep accounts such as how many animals one owned, etc.

This trend continued with the advent of formal language and better media such as rags, papyrus, and eventually paper. The first ever calculator – the abacus was invented in this period after the development of numbering systems. .(Pejman Kamkarian, 2016, p 2)

1.1.2. Mechanical

The mechanical age is when we first start to see connections between our current technology and its ancestors. The mechanical age can be defined as the time between 1450 and 1840.

A lot of new technologies were developed in this era due to an explosion of interest in computation and information. Technologies like the slide ruler (an analog computer used for multiplying and dividing) were invented in this period.

Blaise Pascal invented the Pascaline, a very popular mechanical computer capable of adding, subtracting, multiplying, and dividing two numbers. Initially called the arithmetic machine, it was granted a royal privilege by King Louis XIV of France in 1649. .(Pejman Kamkarian, 2016, p 3)

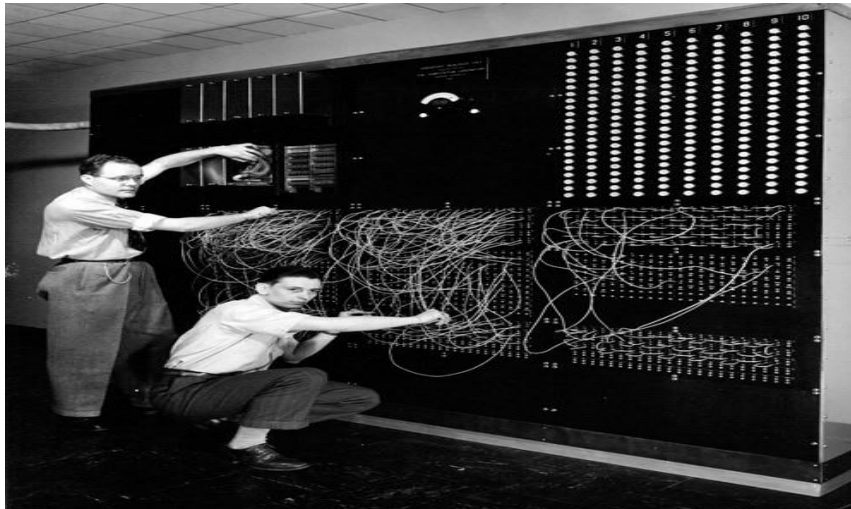
Figure 1.2 : Pascaline from 1652



Source: Pejman Kamkarian, . " A Brief History of IT ". IT ComputerTechnical Support Newsletter:vol.2
No 29, 2016, p 3.

1.1.3. Electro-Mechanic

Figure 1.3 : Engineers Work on A Harvard Mark 1 (1944)



Source: Pejman Kamkarian, . " A Brief History of IT ". IT ComputerTechnical Support Newsletter:vol.2
No 29, 2016, p 4.

The electromechanical age heralded the beginnings of telecommunications as we know it today. This age can be defined roughly as the time between 1840 and 1940.

Several revolutionary technologies were invented in this period such as the Morse code, telephone, radio, etc. All of these technologies were crucial stepping stones towards modern information technology systems.

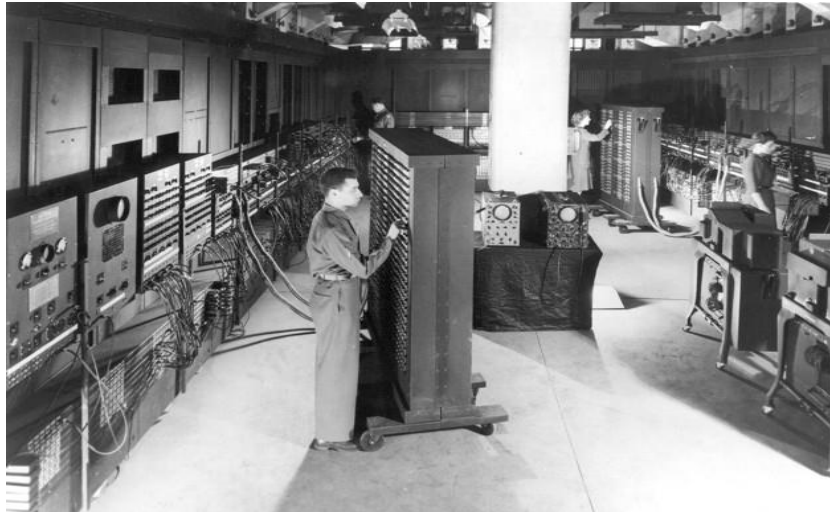
The first large-scale automatic digital computer in the United States was the Harvard Mark 1 created by IBM in 1944. This 8ft x 50ft x 2ft big computer weighed a whopping five tons and had to be programmed using punch cards. Its first use was by the Manhattan Project to simulate the feasibility of an implosion to detonate an atomic bomb. .(Pejman Kamkarian, 2016, p 4)

1.1.4.Electronic

These machines used electronic switches, in the form of vacuum tubes, instead of the electromechanical relays seen in the previous era. In principle the electronic

switches would be more reliable, since they would have no moving parts that would wear out, but the technology was still new at that time and the tubes were comparable to relays in reliability. The major benefit of electronic switches was that they could ‘open’ and ‘close’ thousands of times faster than relays.

Figure 1.4 : ENIAC Being Programmed (1940’s)



Source: Pejman Kamkarian, . " A Brief History of IT ". IT ComputerTechnical Support Newsletter:vol.2
No 29, 2016, p 4.

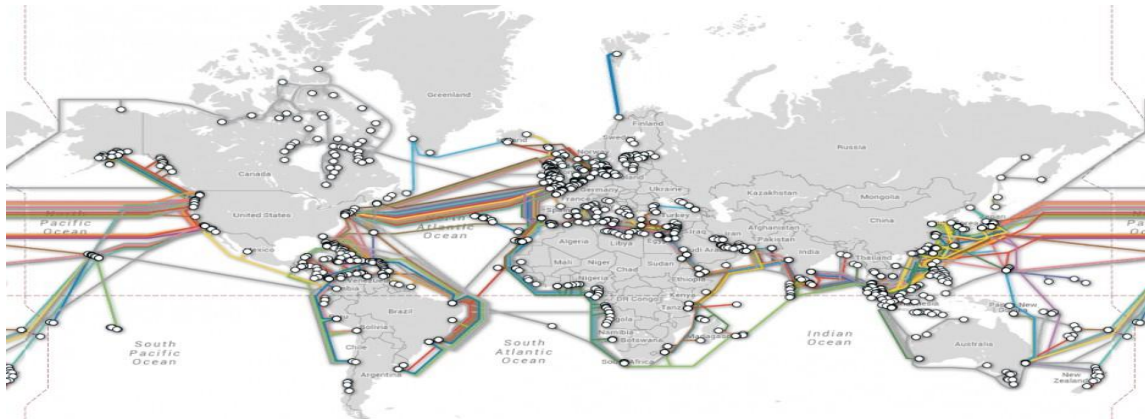
ENIAC (Electronic Numerical Integrator and Computer) was the first electronic general-purpose computer. It could solve a large class of numerical problems through reprogramming. Although it was designed and primarily used to calculate artillery firing tables for the United States Army's Ballistic Research Laboratory, its first programs included a study of the feasibility of the thermonuclear weapon.

1.1.5.Information Age and the Internet

The information age, made possible by the advent of electronic computers, is characterized by the shift from traditional industry to an economy based on information digitization. The onset of the Information Age is associated with the Digital Revolution, just as the Industrial Revolution marked the onset of the Industrial Age.

The Internet, synonymous with modern IT, was conceived of as a fail-proof network that could connect computers together and be resistant to any single point of failure. Because of decentralization, the Internet cannot be totally destroyed in one event. If large areas are disabled, the information can be easily rerouted. Its initial software applications were e-mail and computer file transfer.

Figure 1.5 : Map of submarine Gables That Connect Networks.



Source: Pejman Kamkarian, . " A Brief History of IT ". IT ComputerTechnical Support
Newsletter:vol.2 No 29, 2016. P 5.

Though the Internet itself has existed since 1969, it was with the invention of the World Wide Web in 1989 by British scientist Tim Berners-Lee and its introduction in 1991 that the Internet became an easily accessible network. The Internet is now a global platform for accelerating the flow of information and is pushing many, if not most, older forms of media into obsolescence.

A brief timeline of some other important events is listed below:

1984 – The first laptop computer enters the commercial market

1989 – World Wide Web (the internet) invented by Sir Tim-Berners Lee

1990 – A student at McGill University in Montreal develops the first search engine named Archie

1992 – Complete I.T. Founded

1993 – Benny Landau unveils the E-Print 1000 as the world’s first digital colour printing press – Xerox 914 is released as the first successful commercial plain paper copier

1996 – The Nokia 9000 Communicator is released in Finland as the first internet enabled mobile device

1998 – Google established – PayPal is launched, enabling large scale payment via the internet

2000 – Microsoft develop the first tablet computer

2001 – Digital Satellite Radio – Apple releases the iPod

2003 – WordPress, an open source website content management system is launched by Mike Little and Matt Mullenweg – LinkedIn is established

2004 – Emergence of Web 2.0 – Humans move away from consumers of internet material to active participation – Facebook established by Mark Zuckerberg

2005 – USB Flashdrives replace floppy disks – Google Analytics established – YouTube is launched as a video platform

2006 – Twitter is launched to the public

2007 – Apple Inc. debuts the iPhone – Amazon releases the Kindle, marking a new era in reading and book technology

2009 – Bitcoin is developed by unknown programmers under the name of Satoshi Nakamoto

2010 – Apple debuts the iPad – The beginning of responsive website design

2011 – 22 nanometre computer chips enter mass production

2012 – Quad-core smartphones and tablets are releases, offering faster processing power

2014 – 14 nanometre computer chips are released – The market for smart watches reaches 5 million

2015 – Apple releases the Apple Watch

2016 – Supercomputers reach 100 petaflops – Mobile devices overtake wired devices as a means of using the internet

2017 – 10 nanometre chips enter service.(Pejman Kamkarian, 2016, p 5)

1.2 Information technology Definition and Types

1.2.1 Information technology Definition

Information technology - like other new terms - especially with the emergence of the new economy has not received a unified definition. Rather, these definitions have multiplied and varied according to each one's vision of it, so we will include several definitions so that we can highlight the differences and agreement between them, to give in the last our definition.

- **first definition:** “Information technology refers to the means used to produce, process, store, retrieving and sending information, whether it is in the form of speech (audio), written or image (Michel Paquin,1990, p17).
- **second definition:** “Information technology is the use of modern technology to capture, process, store, retrieve, and communicate information, whether in the form of digital data, text, voice or picture" (Roger carter. 1991, P 08).
- **Third definition:** "Information technology is an appropriate product of coherence and integration between both computer technology and communication technology."(Muhammad Muhammad Al-Hadi, 1994, p 153).
- **Fourth Definition:** “All types of technology used in operating, transferring and storing information in electronic form, including computer technology, means of communication, interconnection networks, fax machines and other equipment that is heavily used in communications (Boumaila Souad and Fares Boubakour, 2004, p205).

From the above definitions, two important elements can be deduced:

First: Information technology is a field of technology that is concerned with information processing.

The second: focusing on the processes of polarization, storage and processing (information), and the transmission process (communication).

From my point of view, I see that information technology is:

that technology generated as a result of convergence or technological cohesion between information processing technology (information) and communication technology (satellite, fax, telephone, networks...etc) with the aim of collecting, storing, processing and biting information. Whether they are in the form of audio, symbols, shapes, graphics, text or images.

This can Expressing information technology in the following equation:

$$\text{information technology} = \text{computer} + \text{communication}$$

As for this, I found that the term information technology was associated with these types of technology, so we find the term “information technology”.

Information Technology (Information and Communication (TIC), or another term that refers more to dynamism

Which innovations this sector defines as: Information Technology (Media) and Modern Communication (NTIC) to further indicate the nature of this renewable and advanced technology. (Derek Anderson and Michel Greenhalgh, 1987, p17).

1.2.2 Information technology Types:

to obtain reference on the possibilities of strategic use of It, it is necessary to anow the set that comprises it. The following can be considered as IT (Artur Victoria, 2020, p 08)

Categories:

- a) Hardware technology;
- b) Information systems;
- c) Office automation;
- d) Computer engineering and design;
- e) Industrial automation;

This systematization of the most relevant set of Information Technology serves as a brief guide for researching the main strategic uses and must be constantly

updated, as any classification regarding Information Technology becomes obsolete quickly, due to the speed of advances in this area.

The following typology and examples of IT

a) Technologies related to information technology planning information technology methodologies; modelling of data and processes: methodologies for preparing the Informatics Master Plan,

b) Technologies related to systems development systems development methodologies; project management methodologies: program testing and debugging methodologies, systems analysis techniques; systems design techniques; prototype techniques; database design techniques, programming techniques,

c) Technologies related to software support operating systems, database management systems; teleprocessing software, utilities: performance monitors; programming language, application generators

e) Technologies related to hardware support - supercomputers; large computers; computer network; local networks; micro-mainframe connection; microcomputers; RISC architecture; graphic stations.

Having knowledge of the various types of existing IT, the next step is to understand how they can be used in organizations to support organizational strategies

1.3 Information technology features and characteristics

1.3.1 Information technology characteristics:

The information needs to be:

- Clear: present the fact clearly, not masking it among the ancillary facts.
- Precise: must have a high standard of precision and never present terms such as: "around...", "about...", "more or less ..."!
- c) Quick: arrive at the decision point in a timely manner so that it can have an effect on that decision. Information can be clear and accurate, but arrive late, losing its raison d'être.
- Targeted: whoever needs it and who will decide based on that information».

It is important to note that the number of vehicles (means) of information fundamentally influences the quality of the information. Quality tends to decrease as the number of information vehicles increases. (Artur Victoria,2020,p 03)

1.3.2 Information technology features :

- Information and communication technology saves time and effort because the information is transferred in a matter of seconds through the computer ;
- Develop individual creative abilities to learn. Giving the individual a sense of comfort and optimism when collecting information in an orderly and organized manner ;
- ICT is solving problems in traditional ways due to the huge amount of information ;
- Information and communication technology works on sensory and technical perception because computers are used in information technology. Information and communication technology allows the individual to communicate with any information he wants ;
- Fields that are used in information and communication technology Information and communication technology is used in many areas, including: miniature films that are concerned with the reproduction of information and the dissemination of this information and the return of recorded forms ;

ICT can be used in the field of computers in many libraries and information and documentation centers. It also enters the field of applications for telecommunications. (Randa Abdel Hamid, , ICT Research ,2019)

<https://mqaall.com/research-ict> Accessed at 11:45 on 05/17/2022

2. information technology system:

2.1. IT Components

The components of information technology is a complex mixture of individuals and technology that depends on sharing information that is reflected in some of its aspects in the form of special applications that enable to increase capabilities and help achieve goals, making it an important resource that is difficult to imitate easily.

The following is a review of these components (Al-Hawasi and Al-Barzanji, 2017, p 31), (Al-Abadi, 2006, p40)

2.1.1 Hardware and software:

Hardware and software are all tools involved in processing data such as computers of all kinds, as well as all devices attached to them, workstations, communication networks, transportation tools, and data storage. As for software components, they are symbolic instructions set by programmers or users to inform the computer system about the operations to be performed, and the hardware components can be described briefly, as they represent four main components that are tools (input, processing, output, and storage).

2.1.2 Human Resources:

Individuals are the most important element in the information technology system. They can be divided into two categories, the first, and constitutes the majority of those who are called end users, who deal with application programs as beneficiaries of them and their applications without going into the exact details of their programming processes. As for the second category, they are computer specialists who design computers and develop various programs, whether they are application programs or system programs.

2.1.3 Communication Networks:

It is the means used to send and receive data and information, as it consists of a group of stations located in different locations and linked to each other by means that allow the beneficiaries to conduct the process of sending and receiving. Communication networks are a huge group of text documents interconnected with each other on the Internet, and the reason for calling it the World Wide Web or the World Wide Web is due to the overlap of the many links between the documents that make up the sites of this network spread across the world in a way similar to the overlap of cobwebs, and the World Wide Web allows a web browser program Transferring all kinds of information, including programs, news, sounds, images, videos, as well as texts, using the mouse or keyboard.

2.1.4 Databases:

They are the repository that contains data, topics and files organized and interconnected with each other that describe all the processes and events taking place in the organization in all their details, and they are organized in the form of files and kept in magnetic computer containers independently of the programs that run and use this data The data saved in these rules constitute the raw or primary material from which knowledge and information are extracted, and the data processing base can be added, modified and constantly updated to keep pace with the emerging changes to help managers make their strategic decisions according to correct foundations, and so that the rest of the end users can carry out their work efficiently and effectively.

2.2 IT Functions

Information Technology Jobs Information technology is concerned with a number of jobs that emanate from the aforementioned components, and these jobs can be reduced to the following basic operations (Anderson & Post 2000, p 122).

2.2.1 Data acquisition:

This function is the first that information technology can provide through data aggregation and aggregation, and that data collection is the acquisition of data about the organization's operations and other events of the external environment and preparing it for processing from During data entry, recording and editing, individuals record this data on media (Younes, 2007, p 25)

Material such as paper or entered directly into the computer by individuals working in the system, and accuracy and quality are important matters in the process of entering data correctly and depend on them accuracy and quality System output.

2.2.2 Processing:

It is intended to perform various arithmetic and logical operations on the data and its transformation into information, as it includes the transformation, analysis and synthesis of all forms of data or information Processing involves multiple processes such as information processing, word processing, text-based documents including reports, news and correspondence, and image and sound processing.

2.2.3 Storage:

Information storage is an essential component of information systems, as grief is an information system activity in which data and information are preserved in an orderly manner for use as outputs when the beneficiary needs them, and storage helps computers preserve data and information for use at a later time.

2.2.4 Transmission:

It means sending information from one location to another, using and approving different mediums such as satellites, optical fibers, or otherwise

2.3 Information technology benefits and effects :

The effect and benefits of technology should, obviously, not be overlooked on our lives today. The 21st century is called the age of science and technology (and now data), particularly with the advancements and advances in new technology over the last few decades.

Since the advantages of this new technology that we enjoy today can at times seem unimaginable, and surreal. If they were asked what the future holds for them and their families, our forefathers would not have believed any of this.

I wonder how our lives have changed with information technology. But, we know in our subconscious that everything will come to a standstill without it. Not only businesses, but individuals, students, patients and each of us make our lives easier and more convenient using their applications.

You can now shop online or send e-mails, check for jobs or review research projects with a single click of a button; the list of all the things to do is long. In fact, information technology helps us advance rapidly towards greater efficiency and performance. (Smriti Tiwari, Benefits of Information Technology in our Daily Life, 2020) , <https://honestproscons.com/benefits-of-information-technology/> Accessed at 9:33 pm on 05/18/2022

So here's a list of the benefits of information technology:

➤ **Access to Information**

Abbreviated as www, the World Wide Web has turned the world into a social village. That is because, all kinds of information are available on the internet widely from around the globe. Although much of the news you get to see on social media is simply factual, images for specific news can also be seen. Not only is there more news available, but access to all these information is also straightforward.

All thanks to modern technology and computer companies like Dell, IBM, Apple, etc. In the comfort of their bed, one can get to read a book and have a cup of coffee. For this reason, eBooks are available on the internet. Modern technology has also replaced television radios, and even televisions have now been digitized to "LCD's" and "LED's."

➤ **New Jobs:**

The increasing demand of IT professionals around industries generates new opportunities every day. Several emerging economies around the world are setting new records now by enhancing their competence in this field. A greater number of people are now interested in jobs such as computer programming, system analysis, testing, developing software and hardware, and designing web applications.

➤ **Saves Time:**

Ever faced navigation issues in an unfamiliar city? Sure, as we move to a new location we've all faced these issues. If it's a business trip or a holiday; the new technology helps you to enjoy your trips by helping you navigate anywhere easily. One can search for a specific place, and then even identify its particular route. The program does rest itself. It won't even allow you to miss a single turn and it also shows you the traffic situation on your route.

➤ **Entertainment**

Widespread internet use on laptops, tablets, smartphones, iPods, and other devices has provided us unrestricted access to diverse entertainment channels. Remember the days when people had to wait on television for the Friday night broadcast or special telecast! Now you can easily and conveniently download and buy music, movies, TV shows, and games.

➤ **Communication**

Modern technology has replaced old technology, it's a fact. And without that replacement we cannot imagine our lives. Letters were less than a century ago the most common form of communication, but now no one will even think of writing a letter because why would you want a paperwork over a video call?

Instant messaging and photo and video sharing has never been so easy.

We have to understand that it's only the use of technology that makes it harmful otherwise nothing can beat the level of comfort in our lives that is because of technology.

Businesses are gaining maximum benefit from this and employees distributed across a wide range can now stay connected via internal chat rooms or open source apps.

➤ **Ease of Mobility**

Have you ever imagined your life without a car or a motorbike? Certainly not because technology has brought such things under our feet. It is easy to judge the value of a vehicle from the fact that the distance between the United States of America and Australia is approximately 15,187 kilometers but you can fly in only 16-17 hours.

Much less than in a day and trust me, these 16-17 hours of your life you will not ever regret. All this has been made possible by planes, electric trains and vehicles that are being invented every single day.

➤ **Cost Efficient**

Some of the technology's key objectives is making it more affordable and cheaper for people. Thanks to technology, people are seeing cost-efficiency these days. The equipment of such value is available at so much lower price we can't imagine. Most frequently, there is competition between two or more industries which leads to even lower prices.

➤ **Learning Techniques**

Bring a little fun into your classroom. You can develop your teaching skills and incorporate research approaches that will offer your students inspiration. Most apps and electronic devices are implemented to help educate the students. An individual can be amazed by the simplest example of a calculator. The solution comes with only one click, with several calculations and different binary operations.

➤ **Disabled are Empowered**

Nowadays modern science and technology has made almost everything possible. Recently, brails were discovered that operate on the electronic pulses. Artificial foot, smart sticks, and what not. Handicapped people are no longer disabled. They are certainly alongside the normal ones in the long run of success.

➤ **Globalization :**

Digital technology has eliminated the physical barriers between nations through their mutual ideas and opportunities. The rise of social media has encouraged communication, and the use of Facebook, Twitter and many other social networking platforms has allowed culturally diverse people to connect with each other. Users on the social media are now becoming 'global 'people. Improved Banking

No one ever imagined, less than a decade ago, that they would pay in bitcoins rather than dollars. Thanks to its usefulness, Cryptocurrency has recently become viral. Now no one will have to wait in a long line only to pay their utility bills.

➤ **AI (Artificial Intelligence)**

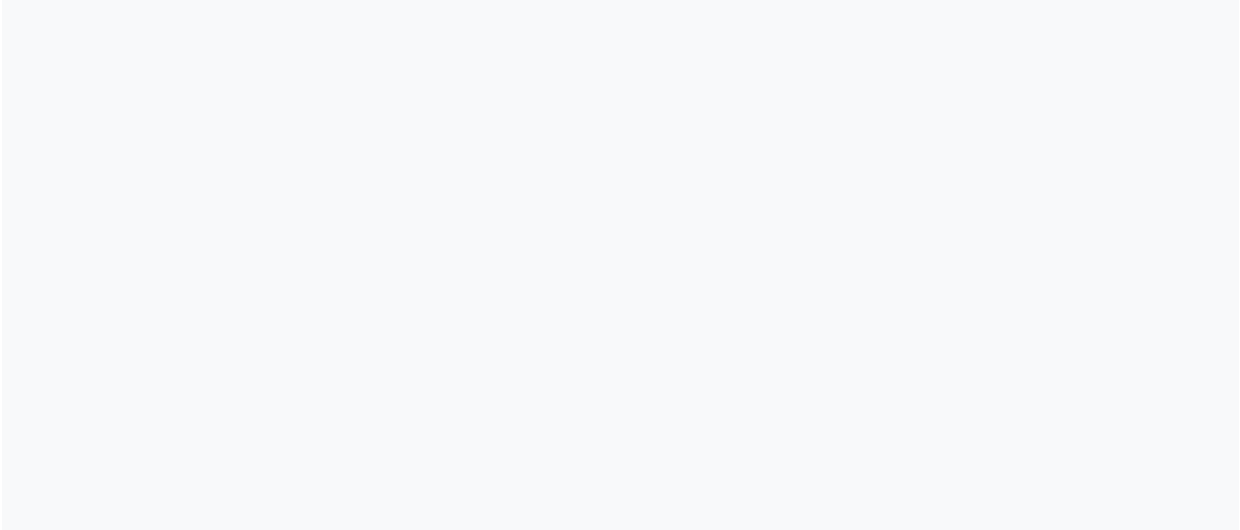
The new paradigm of artificial intelligence is quickly growing, and gaining prominence. The explanation behind this is that it will usher about a whole new age of change. No more people will have to worry as the chances are that an AI system will worry about how it can be enhanced. It will give the human race a break and potentially one of modern technology's greatest favor on humanity. . (Smriti Tiwari, Benefits of Information Technology in our Daily Life, 2020) , <https://honestprocons.com/benefits-of-information-technology/> Accessed at 9:45 pm on 05/18/2022

Chapter conclusion

We live in the 21st century surrounded by various types of information technologies that represent the code of life and its wonders in the survival or demise of institutions. The latter has enabled the spread of virtual, digital, remote, and many other expressions, and anyone who thinks they are just hallucinations inevitably becomes part of a lost world.

Being able to use IT once it has been acquired is a strategic bet and weapon for any institution to achieve excellence and make rational decisions, no matter what type of institution, as it has any modern idea of IT infused and beyond HR conventions ideas, become more adaptable and better quality than before. This is, of course, thanks to training, the philosophy of which has changed in our time, or to various measures, voluntary or enforced, by institutions to adapt to globalization and gain a competitive advantage, whether in their organizations, their employees, or their Work is always associated with the word “remote”.

It is impossible to measure success at the job level of owning electronics and embodying them in an organization by outcomes, even from information technology itself, because these facts require the same level of evidence.



Chapter Two: human
resource performance
Management

1. What is Human Resource Management ?

Imam Ali Ibn Abi Talib, may God be pleased with him, said: “If you want to reap for a year, plant wheat, and if you want to reap for ten years, plant a tree, and if you want to reap for a hundred years, teach a person.”

These words may have been said in the past, but they are valid in our time, as the human resource provided with knowledge is a central issue, and the secret of the organization’s success, but in light of a conscious management that seeks to provide qualified and specialized frameworks, it considers the factor an investment element, and returns continuous and assured profit along with its various functions .

1.1. Human resource management Definition and aspects

1.1.1 Meaning of HRM

- HRM is the art of Procuring, developing and maintaining competent workforce to achieve organisational goals effectively.
 - The process of employing people, developing their resources, utilising, maintaining & compensating their service in tune with the job & organizational requirements with a view to contribute to the goals of the organisation, individual & the society.(Sangeetha.N, Sscasc Tumkuru,2021, p 1).
- **Definition**
- **First definition:** According to Wendell L French “ the human resource management refers to the philosophy, policies, procedures, & practice related to the management of people within an organisation.

➤ **Secund definition:** According to Stephen P Robbins, HRM is a process consisting of the acquisition, development, motivation & maintenance of human resources.

1.1.2 Scope Of Hrm

The Scope of Human Resource management into the following aspects (Sangeetha.N, Sscasc Tumkuru,2021, p 1)

The Personnel Aspect:

This aspect of HRM is concerned with the manpower planning, recruitment, selection, placement, induction, transfer, promotion, demotion, termination, training & development, layoff & retrenchment, wage & salary administration, incentives, productivity etc.

The Welfare Aspect:

The welfare aspect is concerned with working conditions & amenities such as canteens, crèches, rest rooms, lunch rooms, housing, transport, education, medical help, health & safety, washing facilities recreation & cultural activities etc.

The Industrial Aspect

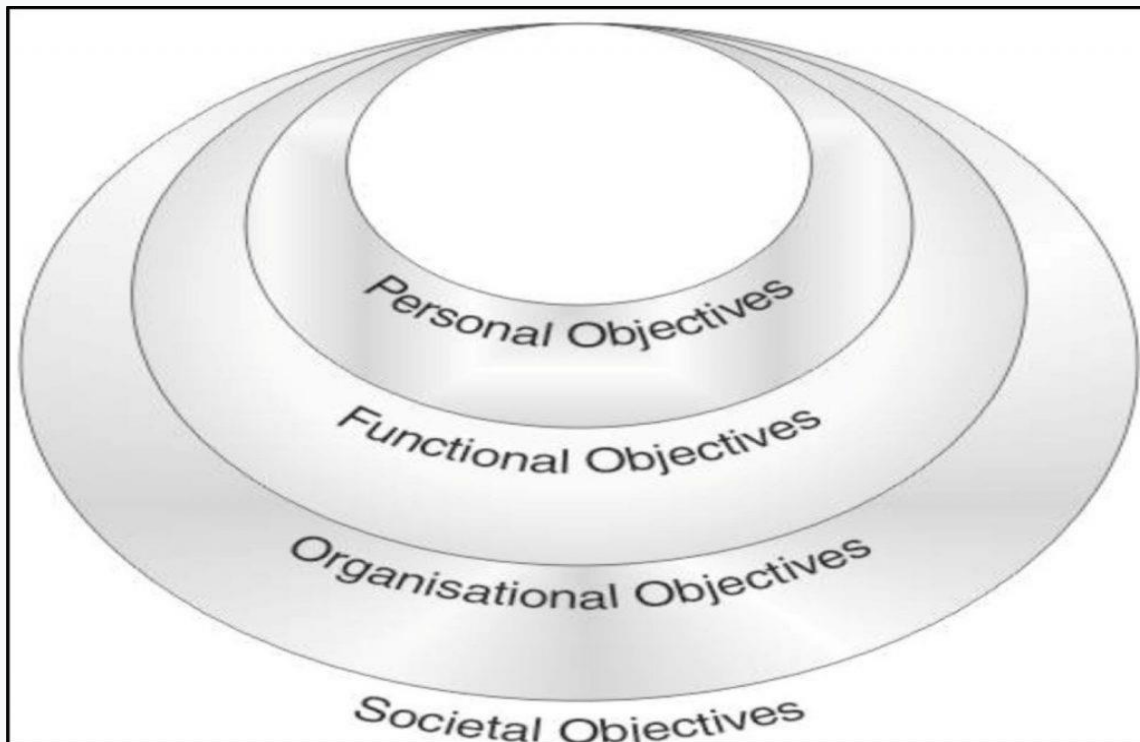
This aspect is concerned with employees. It includes union management relations, joint consultation, negotiating collective bargaining, grievance handling, disciplinary actions, settlement of industrial disputes etc.

1.2 Human Resource managment Objectives

The primary objective of HRM is to ensure the availability of competent and willing workforce for an organization. Beyond this, there are other objectives too. Specifically, HRM objectives are four fold: Societal, Organization, Functional and personal. (Aline Sampras, Objectives of HRM, 2019)

<https://www.hrmexam.com/2019/06/20/objectives-of-hrm/> , Accessed at 4:33 pm on 05/18/2022

Figure 2.1: Human Resource management Objectives



Source: Aline Sampras, Objectives of HRM, 2019,

<https://www.hrmexam.com/2019/06/20/objectives-of-hrm/> /Accessed at 4:33 pm on 05/18/2022

a. Personal Objectives:

To assist Employees in achieving their personal goals, at least in so far as these goals enhance the individual's contribution to the organization. Personal objectives of employees must be maintained, retained and motivated.

b. Functional Objectives:

To maintain the contribution of department at an appropriate level organization should fulfill the needs. Resources are wasted when HRM is either more or less sophisticated to suit the organizations demands.

c. Organizational Objectives:

To recognize the role of HRM in bringing about organizational effectiveness, HRM is not an end in itself but it is only a mean to assist the organization with its primary objectives organization.

d. Societal Objectives:

To be ethically & socially responsible for the needs and challenges of society while minimizing the negative impact of such demands upon the organization to use their resources for society's benefits in ethical ways may lead to restriction.

e. **Other objectives:**

- Accomplish the basic organizational goals by creating and utilizing an able and motivated workforce.
- To establish and maintain organizational structure and desirable working relationships among all the members of the organization.
- Develop co-ordination among individual and group within organization to secure the integration of organization.
- To create facilities and opportunities for individual or group development so as to match it with the growth of the organization.
- To attain an effective utilization of human resources in the achievement of organizational goals.
- To identify and satisfy individual and group needs by providing adequate and equitable wages, incentives, employee benefits and social security and measures for challenging work, prestige, recognition, security, status.
- To maintain high employees morale and human relations by sustaining and improving the various conditions and facilities.
- To strengthen and appreciate the human assets continuously by providing training and development programs.
- To consider and contribute to the minimization of socio-economic evils such as unemployment, under employment, inequalities in the distribution of income and wealth and to improve the welfare of the society by providing employment opportunities to women and disadvantaged sections of the society.
- To provide an opportunity for expression and voice management.
- To provide fair, acceptable and efficient leadership.

- To provide facilities and conditions of work and creation of favorable atmosphere for maintaining stability of employment.
- To create & utilize an able & motivated work force Establish & maintain sound organizational structure Create facilities attain an effective utilization Identify & satisfy individual & group needs.
- Maintain high employee morale Training & development Opportunity for expression Provide fair, acceptable and efficient leadership Facilities and conditions

1.3 Importance Of Human Resource Management

The importance of human resource management can be summarized as follows. (Sangeetha.N, Sscasc Tumkuru,2021, p 2)

1.3.1 Importance for the Organisation:

HRM is important for the organisation to the following:

- Good human resource practices help in attracting & retaining the best people in the organisation.
- In order to make use of latest technology the appointment of right type of persons is essential. The right people can be fitted into new jobs properly only if the management performs its HR function satisfactorily.
- Globalisation has increased the size of the organisation who employ thousands of employees in different countries. The performance of the company depends upon the qualities of the people employed. This has further increased the importance of HRM
- HR planning alerts the organisation to the types of people it will need in the short , medium & long run.

- HR development is essential for meeting the challenges of future. The importance of HRM has increased because of the shortage of really managerial talent in the country.

1.3.2. Importance for the employees

- HRM stress on the motivation of employees by providing them various financial & non-financial incentives.
- Right organisational climate is also stressed upon so that the employees can contribute their maximum to the achievement of the organisational objectives.
- Effective management of HR promotes team wok & team spirit among employees.
- It offers excellent growth opportunities to people who have the potential to rise.
- It also encourages people to work with diligence & commitment.

1.3.3. Importance for the society:

Good HR efforts lead to productivity gains (ration of output to input) to the society, since it enables the managers to reduce costs, save scarce resources, enhance profits & offer better pay, benefits & working conditions to employees.

2. performance management

2.1. performance management Definitions

General Definitions

- **Define performance:**

"The term performance belongs to the family of polysemous terms as Annick Bourguignon calls them by bag words, they correspond to many words, and carry wide interpretations."

In theory, it represents the center of strategic management, and it includes all the implications and connotations of performance, which is a strategic choice in certain periods.

From the perspective of the systems school, performance refers to the balance between the environment, the employees and the institution, by ensuring the ability to adapt and stability in the surrounding environment, and the positive impact on the psychology of workers.

And raising their morale, which ensures rational and optimal utilization of the resources available in the organization and thus achieving its goals

➤ **Define human performance**

Human performance: A series of behaviors executed to accomplish specific results (performance = behavior + results).(David Mcpeak, Human Performance, 2017) 2017 <https://incident-prevention.com/blog/human-performance-what-is-it-and-why-should-we-study-it/> ,Accessed at 7:53 am on 19/05/2022

➤ **Define Performance Management**

“The process of managing and assisting workers to operate with the efficiency and effectiveness necessary in order to achieve the objectives of the organization.”(Michael Armstrong, 2006, p 2).

Performance management often works to improve and develop the performance of employees, and to raise the added value to them, whether individually or within groups; So it is an integrated strategic process and the secret of the success of every organization.

From here, we conclude that performance is nothing but achieving the best goals and ruler results, which are usually called outputs with the least amount of available resources or the so-called inputs within a specified period of time.

2.2. performance management process

Performance management is a communication process by which managers and employees work together to plan, monitor and review an employee’s work objectives and overall contribution to the organization. More than just an annual performance review, performance management is the continuous process of setting objectives, assessing progress and providing ongoing coaching and feedback to ensure that employees are meeting their objectives and career goals.

There is much more to performance management than the annual performance review meeting. Performance management is a continuous process of planning, coaching and reviewing employee performance.(State Of Oklahoma, Performance Management Process hand book , 2014, p 1 -19)

Figure 2.2: Performance Management Process



Source: State of Oklahoma, , Performance Management Process hand book, Training and Development, Office Of Management and Enterprise Services, Title 62, Section 34, 2014, p 2.

2.2.1. Planning Phase Overview

The planning phase is a collaborative effort involving both managers and employees during which they will:

- Review the employee’s job description to determine if it reflects the work that the employee is currently doing.
- Identify and review the links between the employee’s job description, his or her work plan, and the organization’s goals, objectives and strategic plan.
- Develop a work plan that outlines the tasks or deliverables to be completed the expected results and the measures or standards that will be used to evaluate performance.
- Identify critical areas that will be key performance objectives for the year. The choice of areas may be determined by the organization’s strategic plan, by the employee’s desire to improve outcomes in a certain part of his or her job or by a need to emphasize a particular aspect of the job.

- Identify training objectives that will help the employee grow his or her skills, knowledge and competencies related to the work. Identify career development objectives that can be part of longer-term career planning. .(State Of Oklahoma, Performance Management Process hand book , 2014, p 2)

a) **Write S.M.A.R.T. Goals**

Often, the most difficult part of the planning phase is developing clear and appropriate language to describe performance objectives and measures or indicators of success. Supervisors need to ensure that the performance objectives are a good representation of the full range of duties carried out by the employee, especially everyday tasks that take time, but are often not identified as significant accomplishments

The objectives and indicators need to be S.M.A.R.T (Specific, Measureable, Attainable, Relevant, Time Based)

b) **Set Performance Standards**

While goals tell employees what they have to do, performance standards tell them how well they have to do it. Listed below are some principles of writing good standards that can be used effectively to evaluate employee performance:

- **Quality:** addresses how well the work is performed and/or how accurate or how effective the final product is. Quality refers to accuracy, appearance, usefulness or effectiveness.
- **Quantity:** addresses how much work is produced. A quantity measure can be expressed as an error rate, such as number or percentage of errors allowed per unit of work or as a general result to be achieved. When a quality or quantity standard is set, the criteria for Exceeds Standards should be high enough to be challenging, but not so high that it is unattainable.
- **Timeliness:** addresses how quickly, when or by what date the work must be produced. Timeliness standards should be set realistically.
- **Cost-effectiveness:** addresses dollar savings to the organization or working within a budget. Cost-effectiveness standards may include such aspects of

performance as maintaining or reducing unit costs, reducing the time it takes to produce a product or service or reducing waste.

- **Manner:** addresses the way or style in which a task is performed or produce

2.2.2 Coaching Phase Overview

Performance management includes coaching employees to address concerns and issues related to performance so that there is a positive contribution to the organization.

Monitoring day-to-day performance does not mean watching over every aspect of how employees carry out assigned activities and tasks. Managers should not micro-manage employees, but rather focus their attention on results achieved, as well as individual behaviors and team dynamics affecting the work environment.

During this phase, the employee and supervisor should meet regularly to:

- Assess progress made toward meeting performance objectives
- Identify barriers that may prevent an employee from accomplishing performance objectives and what can be done to overcome them
- Share feedback on progress relative to the goals
- Identify changes in the work plan that may be required as a result of a shift in organization priorities or when an employee is required to take on new responsibilities
- Determine if any extra support is required from the managers or others to assist the employee in achieving his or her objectives.(State Of Oklahoma, Performance Management Process hand book , 2014, p 3-4)

2.2.3 Reviewing Phase Overview

The performance assessment or appraisal meeting is an opportunity to review, summarize and highlight the employee's performance over the course of the review period. Self-assessment is a standard part of most performance appraisals. By using the performance plan and assessment form as a guide, employees can evaluate their performance in preparation for the appraisal meeting. This process can help identify gaps between the employee's self-perceptions and the manager's views and facilitate an in-depth discussion of performance issues.

Managers should review their performance management notes and other documentation generated throughout the year in order to more effectively assess the employee's performance. Only issues that have previously been discussed with the employee should be part of the assessment documentation and meeting. This helps ensure managers address performance issues as they arise and assures the employee there will be no surprises during the performance assessment meeting.

- Summarize the work accomplished relative to the goals set at the beginning of the performance period. This includes capturing key results, accomplishments and shortfalls for each objective.
- Document challenges encountered during the year and identify areas for training and/or development.
- Identify and discuss any unforeseen barriers to the achievement of the objectives. .(State Of Oklahoma, Performance Management Process hand book , 2014, p 5-6)

2.3. How do we measure performance?

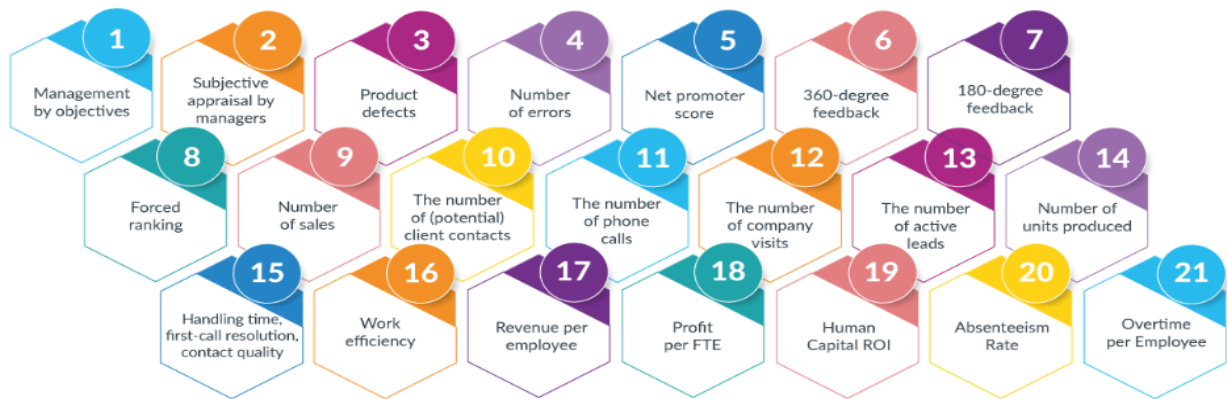
Employee performance metrics are key to tracking how well employees are carrying out their job. HR must have methods to measure the productivity and efficiency of employees. Tracking employee performance metrics benefit both the organization and the employee. We've listed 21 key performance indicators for employees that you should track, with examples.

Generally speaking, we can split employee performance metrics into four core categories. (Erik van Vulpen, 21 Employee Performance Metrics, 2016) <https://www.aihr.com/blog/employee-performance-metrics/> , Accessed at 6:11 am on 24/05/2022

- Work quality metrics
- Work quantity metrics
- Work efficiency metrics
- Organizational performance metrics

Figure 2.3 : Employee performance metrics

21 Employee Performance Metrics



Source : Erik van Vulpen, 21 Employee Performance Metrics, Article In Academy To Innovate HR, 2016 <https://www.aihr.com/blog/employee-performance-metrics/> Accessed at 6:11 am on 24/05/2022

➤ Work quality employee performance metrics

Work quality metrics reflect on the quality of an employee's performance. The most commonly used metric is a subjective appraisal by their direct manager.

1. Management by objectives

A way to structure the subjective appraisal of a manager is to use management by objectives. Management by objectives is a management model aimed at improving the performance of an organization by translating organizational goals into specific individual goals. These goals often take the form of objectives that are set by the employee and the manager.

The employee works towards these goals and reports back to the manager on their progress. These goals can even be given a certain weight (a number of points). Upon successful completion of these goals, points are awarded to the employee. In turn, managers are able to make goals more tangible and make performance reviews more data-driven.

2. Subjective appraisal by manager

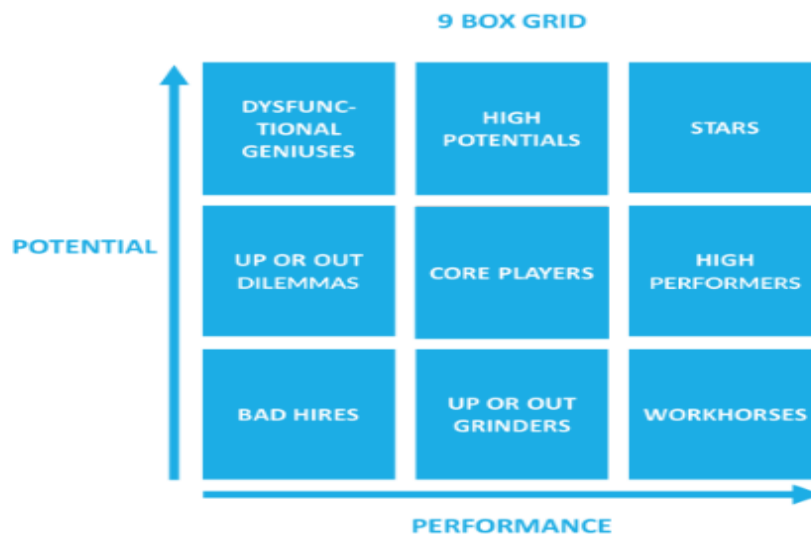
In most companies, employee performance evaluation happens twice a year in performance reviews. Employees are assessed on several criteria, the quality of their work being the most common.

An adaption of this scheme is the so-called 9-box grid. The 9-box grid is based on a 3×3 table in which the employee is assessed on performance and potential. Employees with high performance but low potential are perfect for their current function.

Employees in the top right corner, those who score high on both performance and potential, are often designated to quickly advance through the organizational ranks as they can add more value higher up the ladder.

This 9-box grid is an easy way to assess the current and future value of employees and is a helpful tool for succession management (i.e. you want to promote your high potentials). (Erik van Vulpen, 21 Employee Performance Metrics, 2016) <https://www.aihr.com/blog/employee-performance-metrics/> , Accessed at 6:15 am on 24/05/2022

Figure 2.4 : 9-box grid



Source : Erik van Vulpen, 21 Employee Performance Metrics, Article In Academy To Innovate HR, 2016 <https://www.aihr.com/blog/employee-performance-metrics/> Accessed at 11:01 am on 24/05/2022

3. Product defects

It is tricky to measure (production) quality objectively. An approach often used by more traditional manufacturing industries would be to calculate the number of product defects per employee or per team. Defect, or incorrectly produced products, are an indication of low work quality and should be kept as minimal as possible.

Even though increased standardization of production processes has rendered this metric almost useless, the approach to measuring employee performance can be applied to other areas, such as the example below.

4. Number of errors

The number of input errors could act as an alternative to the previously mentioned product defects. For example, software development teams could measure errors per thousand lines of code.

The same goes for the number of corrections in written work or the number of bugs in software code. Especially in computer programming, a single error can stop an entire program from working. This can have a major impact on the business, especially for companies who release weekly or monthly new software versions.

The conciseness of a piece of code is another important quality factor. If ten lines of code can produce the same computational result as 100 lines of code, the former is an indication of better quality.

5. Net promoter score

Net promoter score (NPS) can act as an indicator of employee performance. NPS is a number (usually between 1 and 10) that represents the willingness of a client to recommend a company's service to other potential clients. Clients who score a 9 or 10 are likely to be highly satisfied and will act as promoters for the company. This score is used regularly to assess sales employees, e.g. in car sales, where it is included in the final form customers need to sign.

The advantage of NPS is its simplicity. The disadvantage is that it is not uncommon for employees to instruct customers to give a certain rating (i.e. 9 or 10).

6. 360-degree feedback

360-degree feedback is another tool to measure employee performance. To assess an employee's score, his peers, subordinates, customers, and manager are asked to provide feedback on specific topics. This feedback often represents an accurate and multi-perspective view of an employee's performance, skill level, and points of improvement.

7. 180-degree feedback

180-degree feedback is a simpler version of the 360-degree feedback tool. In the 180-degree feedback system, only the employee's direct colleagues and manager provide feedback. The system is therefore often used by workers who do not manage people and/or do not have direct customer contact.

8. Forced ranking

Forced ranking (also called the vitality curve) is a way of ranking employees by asking managers to make a list of his best to his worst employee, in that order. This way, all the firm's employees are compared with each other and evaluated

on their performance. Each ranking is aimed at improving the workforce. The bottom 10% of the workforce can be fired and replaced by the top applicants from the company's talent pool, a practice that is claimed to lead to a significant improvement in workforce potential.

However, there has been a lot of criticism on this “rank and yank” approach and most companies stopped the practice, including General Electric, whose then-CEO Jack Welch popularized the practice. (Erik van Vulpen, 21 Employee Performance Metrics, 2016) <https://www.aihr.com/blog/employee-performance-metrics/> , Accessed at 6:43 am on 24/05/2022

➤ **Work quantity employee performance metrics**

As quantity is often easier to measure than quality, there are multiple ways to measure this employee KPI. The metrics used to judge quantity will vary between industries. Some jobs are more difficult to quantify, or not well suited for this method. For example, in many countries hospitals will have a cap on beds, set by the government. If so, doctors and nurses cannot be quantified for how many patients they permit. However, measuring how many days patients spend in beds would be more useful

9. Number of sales

The number of sales is a particularly easy way to pinpoint a sales employee's output. This holds especially true with ‘simple sales’. This means that, for example, organized street vendors only steer on the number of sales, because, when given sufficient time, the people with the best skills will sell the most in an hour on the same location. This is an example of an outcome metric.

However, when sales are more complex (i.e. a longer sales cycle), the number of sales becomes less reliable because lower frequency and randomness/luck will play a larger role in the successful outcome of the sale.

Complex sales cycles, like software solution sales (which can have a sales cycle of up to 1.5 years) are best measured by other metrics. These are so-called *process metrics*, as they represent the actions one needs to do that increase the chance of a successful sale. For example, the person who calls the most customers has, in the end, the best shot at making a successful sale. In this case, the number of phone calls would be a more reliable metric of long-term sales success.

Employee performance metrics like this include **10. the number of (potential) client contacts** one has, **11. the number of phone calls** one makes, **12. the number of company visits**, **13. the number of active leads**.

14. Number of units produced

Different industries have different ways to express their quantitative output. In traditional manufacturing, the number of units produced was often a reliable quantitative metric. In modern (service) organizations, similar metrics are still being used. For example, companies with employees in data entry roles sometimes monitor keystrokes per minute to ensure efficiency.

Another way to measure quantitative production is to track the number of lines of code that programmers produce (check, for example, this Quora question/discussion on “how many lines of code do professional programmers write per hour?”).

There are some obvious disadvantages to using a purely quantitative metric of production. Like in the previous example, only when one’s output is very simple and straightforward should such an output metric be used. An example would be the number of Rubik’s Cubes one can solve in an hour, as skilled Rubik’s Cubes solvers can solve over a hundred per hour.

As a side-note: when you have selected your relevant metrics, make sure to include them in a tactical HR dashboard or in your HR report.

15. Handling time, first-call resolution, contact quality, etc.

Contact centers are one of the most employee performance metrics-driven places. Employee KPI metrics include average handling time, which is the average time the customer is on the phone including when they are on hold, and first-call resolution, which is the number of callers whose problem is resolved the first time they called.

Others include contact quality, which is the rating a customer can give on the call, and service level which is a measure of how many calls are answered in what time (e.g 90% of calls are answered in 25 seconds). . (Erik van Vulpen, 21 Employee Performance Metrics, 2016) <https://www.aihr.com/blog/employee-performance-metrics/> , Accessed at 6:47 am on 24/05/2022

➤ **Work efficiency employee performance metrics**

The difficulty of both qualitative and quantitative employee performance metrics is that they do not say much on their own. When a programmer writes 40 lines of code an hour, they produce a lot of code, but that says nothing about the code's quality.

There should always be a balance between quantity and quality. This balance is measured in **16. work efficiency**, as this metric considers the resources (e.g. time and money: quantity) needed to produce a certain output (quality).

It is hard to achieve this balance, which is one of the reasons a lot of companies struggle with rating employees and with the performance review practice itself. Companies like Deloitte, GE, and Adobe scrapped performance reviews mainly because of this reason.

However, solid performance data will help organizations to predict future performance. (Erik van Vulpen, 21 Employee Performance Metrics, 2016) <https://www.aihr.com/blog/employee-performance-metrics/> , Accessed at 6:55am on 24/05/2022

➤ **Organization level employee performance metrics**

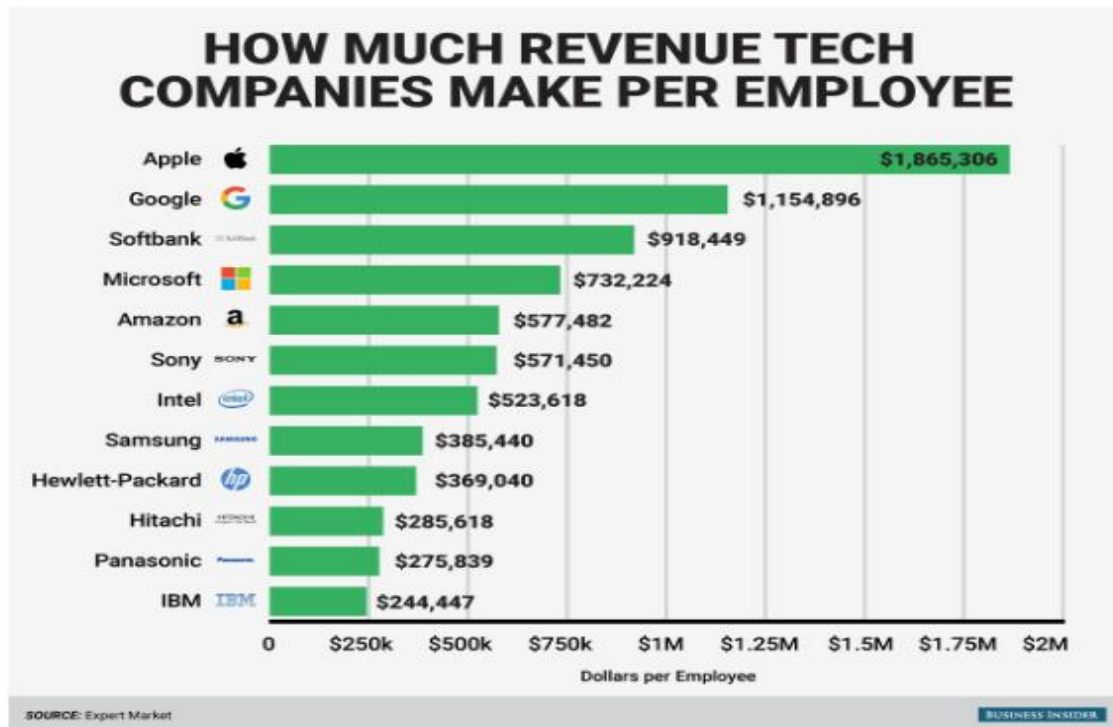
Organizations can also use employee performance metrics to assess their own competitiveness. These metrics are generally used to assess the efficiency of an entire workforce, as opposed to individual employees.

17. Revenue per employee

Revenue per FTE = Total revenue / FTE

This function calculates the revenue per FTE (full-time equivalent). This metric gives a ball-park estimate of how much an individual employee brings in. Low revenue and many employees give a lower rating than the combination of high revenue and fewer employees. This metric can also be used to benchmark companies. A famous example is the following infographic by Expert Market: .

Figure 2.5: Revenue Tech Companies Make Per Employee



Source : Erik van Vulpen, 21 Employee Performance Metrics, Article In Academy To Innovate HR, 2016 <https://www.aihr.com/blog/employee-performance-metrics/> Accessed at 11:34 am on 26/05/2022

In his book Exponential Organizations, Salim Ismail often refers to this metric. According to him, linear organizations have a linear function of employees and profit, while exponential organizations have an exponential function of employees and profit. That's one of the reasons why these organizations grow much faster.

18. Profit per FTE

$$\text{Profit per FTE} = \text{Total profit} / \text{FTE}$$

Profit per FTE is a similar metric to the previous one (17) but focuses on profit instead of revenue. A company's profit is its total revenue minus expenses. A high profit per employee is a solid metric of an organization's financial healthiness.

19. Human Capital ROI

The human capital ROI is an employee KPI metric that assesses the value of human capital (i.e. knowledge, habits, and social and personal attributes). By calculating the company's revenue (minus operating expenses and compensation and benefit cost) and dividing this number by the total compensation and benefit cost that the company pays its employees, you can calculate a human capital ROI.

20. Absenteeism Rate

Absenteeism and performance are two highly correlated constructs. Highly motivated and engaged employees take in general fewer sick days (up to 37% less, according to Gallup). Additionally, absent employees are less productive and high absenteeism rates throughout an organization is a key indicator of lower organizational performance.

21. Overtime per Employee

Overtime per FTE = Total hours of overtime / FTE

The average overtime per FTE is a final employee performance metrics. While companies may try to motivate employees with overtime, performance is likely to suffer overall, if staff end up being overworked. This in turn is likely to contribute to lower morale and weaken retention. . (Erik van Vulpen, 21 Employee Performance Metrics, 2016) <https://www.aihr.com/blog/employee-performance-metrics/> , Accessed at 7:00 am on 24/05/2022

Chapter conclusion :

In conclusion, human resources are one of the most important resources of the organization, as it is known as the art of following up, developing and maintaining competencies to achieve the goals of the organization effectively.

Human resources also enjoy many aspects, including personal, welfare, and union. It also has the importance of managing human resources.

Regardless of the depth of the link between the performance of human resources and the state of the institution, which is only realized by a group of specialists and thinkers in this field, the superficial vision of such a causal relationship is reflected through the conditions and the true image of the institution, since the performance of the human resource means the completion of work at the level of the organization efficiently and effectively. It requires an information and communication technology infrastructure, a sophisticated information system, and continuous development of capabilities.

Part two : Application framework

Chapter three:
A case study Faculty
of Economic,
Commercial and
Management Sciences
-University of M'Sila

After we got acquainted in the theoretical framework with the study variables of information technology and its impact on the performance of human resources, comes

This chapter is an attempt to project what has been theoretically studied to the Faculty of Economic, Commercial and Management Sciences at the University of M'sila Accordingly, the chapter was divided into three sections

1. introducing the institution under study
2. presenting the study methodology
3. analyze the study results

1. Introducing the institution under study

1.1. Introducing the Faculty of Economic, Commercial and Management Sciences at the University of M'sila

1.1.1. Faculty Establishment:

In 1988, the Department of Economy was established and included short-term training in accounting, taxation and inventory management, and in 1991 the Institute of Commercial Sciences was established, in the year 2001, according to Executive Decree No. 01-274 dated Jumada Al Thani 30, 1422 corresponding to 09/18./2001 with the establishment of the Faculty of Economic and Commercial Sciences and Management Sciences

1.1.2. Faculty Departments:

There are four departments in the faculty in addition to the basic database :

- Commercial Sciences: the year 2001 AD according to Executive Decree No. 01-274 dated 30 Jumada Al Thani 1422 corresponding to 09/18/2001 dated On the 29th with the establishment of the Faculty of Economic, Commercial and Management Sciences decree No. 128 of October 29, 2015 decree No. 136 of March 92, 2011 which includes the establishment of Faculty departments.

- Management Sciences: in Year 2001 by Executive Decree No. 01-274 of March 30 jumjadi II 1422 corresponding to the date 09/18/2001 with the establishment of the College of Economic, Commercial and Management Sciences decree No. 1128 October 2015 decree No. 136 dated March 02, 2011 which includes the establishment of Faculty departments.

- Economic Sciences: Decision No. 1128 dated October 29, 2015 Decision No. 136 March and March 2), 2011, which includes the establishment of Faculty departments.

- Accounting and Finance Sciences: Decision No 128, dated October 29, 2015 Decision No. 136 Mog and March 2, 2011 which includes the establishment of Faculty departments.

1.2. Faculty Organizational Structur

In accordance with the joint ministerial decision dated Rajab 08, 1425 corresponding to August 24, 2004, the organization determines Administrative for the university directorate, the college, the institute, the university annex and their common interests.

1.2.1. Faculty Dean

The college is responsible for its functioning and manages its human, financial and material means, and in this capacity he undertakes:

- It is the order to disburse the management credits delegated to him by the president of the university
- Appoints employees of the college for whom no other method of appointment has been decided.
- He assumes and exercises peaceful authority over all users under his authority
- Attends college council meetings,

1.2.2. Dean Deputy's :

➤ The Dean Deputy in charge of studies and issues related to students

responsible for the following tasks:

- Ensure the administration and Monitoring of the internship students records.
- Monitoring the progress of education activities and recommend to the Dean every measure to improve it.
- Manal International Illiteracy. Statistics for students.
- Collecting pedagogical media for the benefit of the Muslim woman and addressing it.

Help him in his tasks :

- Head of the Teaching Department.
- Head of the Education and Evaluation Department,
- Head of the Statistics, Information and Guidance Department.

➤ The Dean Deputy in charge of Post-graduation, Scientific Research and

External Relations, Responsible for the following tasks:

- Monitoring Postgraduate entrance exams.
- Ensuring the progress of the discussion of notes and theses after graduation.
- Monitoring the progress of scientific research activities.
- Implementation of programs to improve the level of professors and determine their information.

Help him in his tasks:

- Head of the Post-graduation Training Fellowship Department.
- Head of the research activities Monitoring department.
- Head of the Cooperation and External Relations Department.

1.2.3 The Faculty general secretariat

responsible for :

- Preparing a project human resources management plan for the faculty and ensuring its implementation.
- Managing the employees careers.
 - Executing and Preparing the Faculty budget project and including in it.
 - Ensure the implementation of the internal security plan for the college.

The faculty general secretariat to which the Office of Internal Security is affiliated includes the following departments:

- HR Department
- Budgeting and Accounting Department.
- scientific, cultural and sports activities Department.
- means and maintenance Department

1.2.4. Head of the department.

The head of the department helps:

➤ **The head assistant in charge of teaching and learning in graduation department**, performs the following tasks:

- Following up the registration and re-registration processes for internship students
- Monitoring the good conduct of education.

He is assisted by:

- head of teaching department.
- Head of the Evaluation and Education Department.

➤ **The head assistant in charge of post-graduation and scientific research department,**
performs the following tasks:

- Ensure the progress of education after graduation.
- Monitoring scientific research activities.

He is assisted by:

- Head of Higher Training Department for Post-graduation, and Post-graduation Specialized Post-graduation.
- Head of Monitoring research activities Department

1.2.5. The Faculty Library.

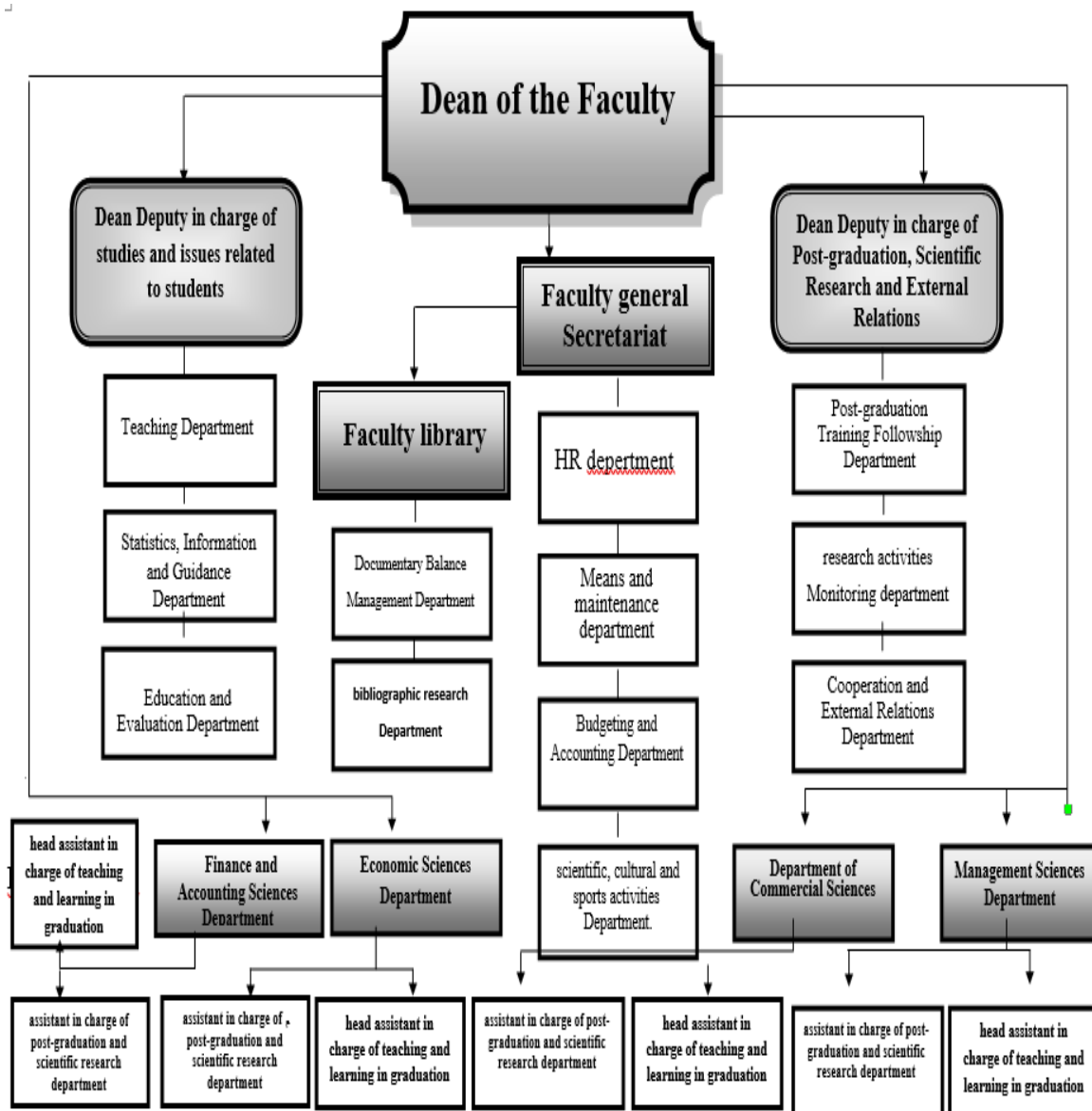
The Faculty library is in charged with the following:

- Suggesting university literature acquisition and documentation programs.
- Organizing the documentary balance using the latest methods of processing and arranging
- Maintenance of the documentary balance and continuous updating of the inventory process.
- Assisting professors and students in their bibliographic research.

The college library includes the following two departments:

- Department. Of Documentary Balance Management
- Department Of bibliographic research.

Figure 3.1 : Organizational Structure of Economics, commerce and Management Sciences Faculty



Source : Economics, commerce and Management Sciences Faculty

1.2. Technological and human resource infrastructure in the Faculty:

It is not possible for an organization to provide services, produce products, or generate profit without its human or material resources (technological means, communication, financial and infrastructure), which are considered a cornerstone to ensure its success in the future and we will mention them in the following :

Table 01: Statistics for employees and workers of the College of Economics, Commercial and Management Sciences 2021:

the number	Rank	N
1	master conductor	03
2	Documentary Chief Archivist	01
3	State engineer in IT	01
4	State engineer in statistics	01
5	Analyst conductor	06
6	conductor	05
7	Ancillary with university library	02
8	Assistant Engineer Level 1 in IT	02
9	archivist documentary	01
10	Ancillary Administration Assistant	04
11	Ancillary Administration	01
12	chief accountant	01
13	senior technician in IT	06
14	Documentary archival assistant	02
15	University library assistant	03
16	Principal management assistant	06
17	management assistant	05
18	Principal Department Clerk	02
19	Department Clerk	05
20	data storage assistant	02

21	office assistant	01	
22	Professional worker outside the category (maintenance worker)	01	02
23	Professional worker outside the category (administrative)	01	
24	professional worker Level 1 (maintenance worker)	02	02
25	professional worker level 3 (maintenance workers)	03	
26	Professional Worker Level 1 (Maintenance)	06	24
27	professional worker level 1 (administrative)	02	
28	Professional worker level 1 (cleaners)	08	
29	Professional worker level 1 (security agents)	08	
30	Full time guard (security agents)	06	
31	Full time guard (administrative)	02	08
32	Protection assistant Level 1 (security agents)	01	
33	Protection assistant Level 2 (security agents)	01	
34	Contracted Driver level 1	01	
101	total summation		

Source : Economics, commerce and Management Sciences Faculty,HR department

The faculty also has a large number of students and teachers distributed among the various departments of the college with different specializations and academic levels :

Tabel 02 : the number of students in each department

Department	Number of student
Commerce Sciences	846

Management Sciences	1821
Economics Sciences	1260
Finance and Accounting Sciences	1498
Total students	5425

Source : Prepared by the student based on student statistics

Table 03 : the number of teachers in each department

Department	Number of teachers
Commerce Sciences	38
Management Sciences	53
Economics Sciences	60
Finance and Accounting Sciences	39
Total teachers	190

Source : Prepared by the student based on teachers statistics

Tabel 04 : Table of information hardware available at the faculty

Hardware		
Computers	Num	Exploitation Date
Microcomputer (Desktop)De Ram 4gb Ddr3 Ram Hard Drive Capacity Sata500gb 7200tr/Min 3gb/S Characteristic Of Brand Hp Core I03 (3.30ghb, Cache) Size Of The Motherboard 6usb2.0 1rj-45idvi-D I Vga Port 1 Headphone Output 2 Micro I 19" Tft Screen Input	12	2017

<p>Type Of Keyboard Usb Bilingual (Fr/Ar) Brand Hp Mouse: Audio 1 Audio Output Wifi Access Card Cd/Dvd Reader/Writer Type Hp Brand Optics Licensed Operating System Professional Professional Authentic Desktop Computer Brand: Hp 202.</p>		
<p>MICROCOMPUTER 13 (3Ghz, 3MB Cache) Ou Plus Ram Ram :4GB DDR3 SDRAM Hard Disque: 500GB 7200rpm SATA 3.0 Gb/S Network Card. Ports 6 USB2.0 IDVI-D IVGA 1RJ-45 1 Audio Digital Out (SPDIF) 1 Audio In I Audio Out Imicrophone In 20 Inch LCD Screen Brand: HP LCD Bilingual Keyboard And Optical Mouse Brand: HP DVD Engraver.</p>	10	2018
<p>Microcomputer Brand: -Type And 4 GB DDR III RAM Size - Hard Drive Capacity: 500 GB 7200 RPM HDD Characteristic Of The Core 15 3.2Ghz Processor - Characteristic Of The Motherboard - Characteristic Of The Graphics Card: Integrated - Number Of USB Ports 04 Ports - Ethernet Ports: No - Wifi Access Card: Yes - CD/DVD Reader Type Of Screen : Screen Flat (TFT) 19" Keyboard Type: USB - Mouse: Optical USB</p>	09	2019- until naw
Printers		
Multifunction Laser Printer	01	2017
Multifunction Laser Printer CANON LBP 2900 LASER PRINT MONOCHROME 8 PPM	05	2018
Multifunction Laser Printer CANON LBP 6620, 3000	06	2019 -

Multifunction Laser Printer CANON 3016 PM +1635 GM CANON MONCROME LASER Printer 3010, 14 PAGES/mn		
Multifunction Laser Printer Riso Graph CZ 100 130 PM	01	2019

Source : Economics, commerce and Management Sciences Faculty

Table 05 : Information systems (software) available at the level of the
Directorate of Human Resources

Operating systems used	Exploitation Date
Windows XP Windows 2000 Windows vista Windows 7 32/64 bit	2007– 2019
Windows 7 Windows 8 Windows 10	2019 - Until now
Office tools used	Exploitation Date
office 2003 office 2007	2007 – 2015
office 2007 office 2010 office 2013 office 2016	2016 – Until now

Applications

“Application relating to the monitoring of archives

Fingerprint attendance registration System

Automated Badge Making System

Library Management System SYNGEB

SYNGEB allows access to the bibliographical search of all the documents present in the documentary fund of the library, this search can be carried out in two modes:

The SYNGEB system is a software dedicated to libraries. Complete and scalable, it allows you to manage all types of documents (books, periodicals, theses, articles and non-books). Used for several years by our library, it is designed to quickly and efficiently process any bibliographic document by fully integrating the documentary chain. Suitable for all types of libraries (university libraries, museum libraries, media libraries, documentation centres, etc.), this product complies with the requirements of ISBD and unimarc standards.

information system Progress

This platform is an information system that enables comprehensive management of all university affairs, and this is shown, for example, but not limited to:

- Registration, orientation and transfer of new students.
- Giving the student an account to follow throughout his academic path and inform him of all his pedagogical matters.
- Comprehensive preservation of the student’s academic path.
- Formulating schedules for the time distribution and hourly volume for professors.
- Managing the deliberations process.

The Algerian University is counting on this platform to be a comprehensive information system that provides an integrated database on students and professors.

Source : Economics, commerce and Management Sciences Faculty

3.1. 3. Faculty HR performance measurement method :

In accordance with the provisions of Article 05 of Executive Decree 19-165 of 27/05/2019 specifying the modalities of employee evaluation

Relying on the annual employee evaluation card, I found that there are criteria for rating workers , and these criteria are mentioned as follows :

1.3.1. Respect public duties and basic legal duties, including the following:

- Honesty and impartiality
- Executing the assigned tasks
- Commitment to time and discipline Respectful and responsible behavior .
- Tact in his relationship with officials, co-workers, subordinates and users of the public facility

1.3.2. Professionalism (Occupation Efficiency) , including the following

- Control of the field of activity, methods, techniques and related procedures
- Analytical, summarizing and problem solving capabilities
- Written and verbal abilities
- Anticipation, adaptability and innovation capabilities

1.3.3. Effectiveness and profitability, including the following

- Achieving set goals
- Effectiveness in the performance of tasks and the deadline for their implementation

1.3.4. Service method including the following:

- Teamwork spirit
- Communication ability
- Initiation spirit and dynamism

2. presenting study methodology and interview analysis

My aim through this part to mention the various methodological aspects that we have adopted in The study and its objectives, which helped us to address the problem of the study through our reliance on a clear and appropriate scientific methodology, in addition to our reliance on the interview tool that was prepared in a way that helps collect data in its design, what was dealt with in the theoretical aspect and also what was addressed in previous studies, taking into account some Points as clarity of phrases to facilitate understanding, as they were presented for review with the supervisor and through his opinions and directions that contribute to the design of the interview questions and this is in order to ensure that its phrases actually measure what they were set to measure, the safety and accuracy of the verbal and scientific formulation of the question phrases, and the extent to which they include the problem of the study and it We have added and changed some phrases.

2.1. the study methodology :

It is important that the scientific methodology be in line with the general framework in order to achieve its objectives and address the problem posed, and this is through the use of an appropriate scientific method

I relied for these study on The descriptive analytical method, which is an approach that attempts to reach accurate and detailed knowledge of the elements of the problem or the existing phenomenon in order to reach a better and more accurate understanding or to set the basics and future procedures for it, and this is to find out more details about the topic or phenomenon, and aims This approach aims to provide information and facts about the problematic subject of the research and to determine its significance

The importance of using the descriptive analytical approach in the field aspect of this study is highlighted by addressing the study and realistic and field analysis of the impact of using information technology and it relation with the HR prformens

2.2. study sample:

The study sample consists of an expert in the field of study, mainly represented by the director of the HR department of the University of M'sila, who can perceive the subject of the study as belonging to most of this category, in addition to the students and professors and teachers statistic using information technology at the the Economics, commerce and Management Sciences Faculty at University of M'sila, who are random individual from different department

2.3. Data collection and tools :

2.3.1. The desk survey : which is devoted to the theoretical study and its purpose is to find out what the Arab and foreign references dealt with this subject, as well as previous articles, studies, and the internet sites as a secondary sources

2.3.3. interview : This tool was used to get close to the Directorate of Human Resources at the Economics, commerce and Management Sciences Faculty , so that the topic was presented and the respondents were encouraged to express their thoughts and opinions completely freely without fear of interruption or objection, and directing the interview to specific elements of interest and observe the work methods in processing the research in addition the results obtained from the use of information platforms statistics as Primary sources

2.3.4. Observation: It relied on observation to establish initial assumptions that can be verified through completed scientific research. It was also used to monitor the employees of the Human Resources Directorate, especially at the level of the computer media cell, their performance and the extent to which they benefit from information and communication technology in performing their jobs.

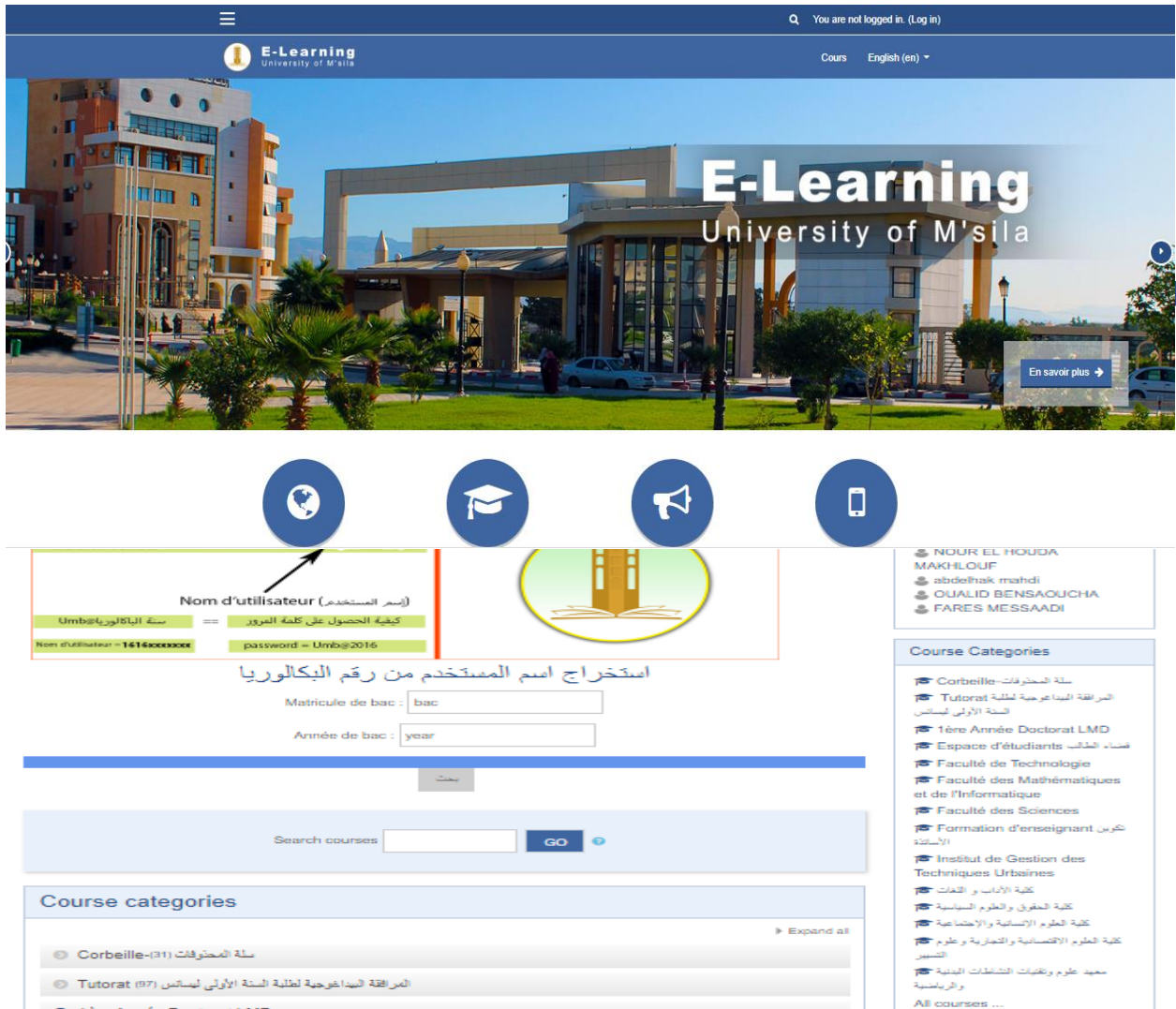
3. analyze the study results

3.1. Presenting the use of information platforms analytic results:

3.1.1. Moodle platform :

E-learning is an Information and Communication Technology for Education (ICTE). The Cellule de distance learning and distance education, invites all university teachers to register on the Moodle platform, in order to publish their courses.

figure 3.1: Moodle (E-learning) web page



Source : <https://elearning.univ-msila.dz/moodle/?lang=en>

User stats result from 2018 to 2021:

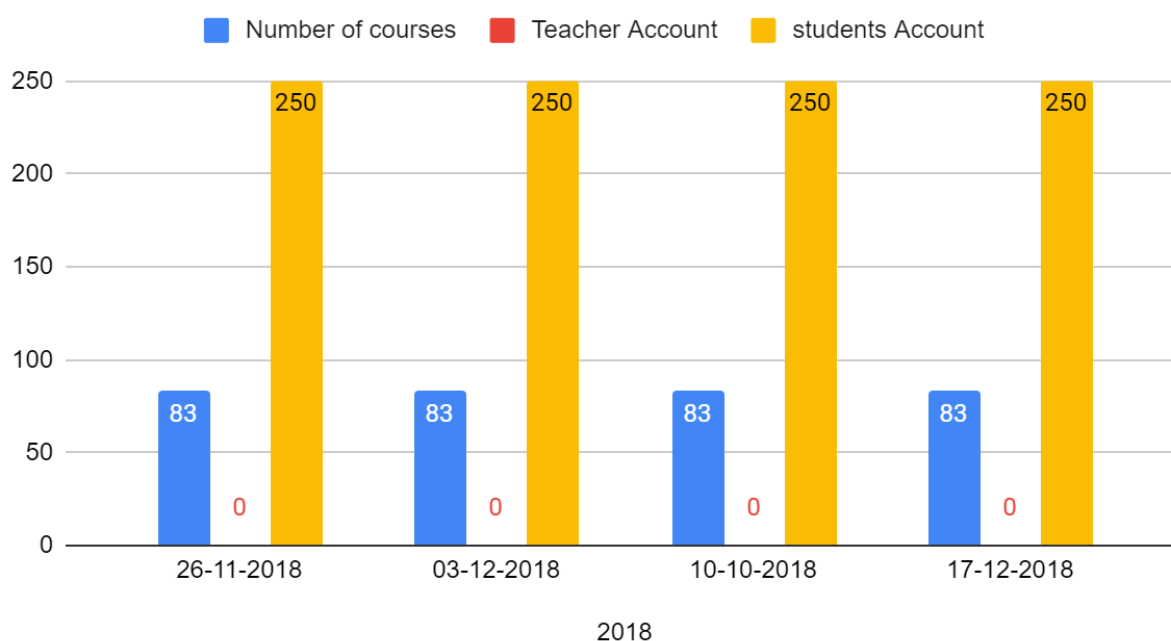
Table 06 : Moodle usage stats Year 2018

Date	MOODEL		
	Number of courses	Teacher Account	students Account
26-11-2018	83	0	250
03-12-2018	83	0	250
10-10-2018	83	0	250
17-12-2018	83	0	250

Source : Prepared by the student based on model statistics

Figure 3.2: Moodle usage stats Year 2018

Number of courses, Teacher Account et students Account



Source : Prepared by the student based on model statistics

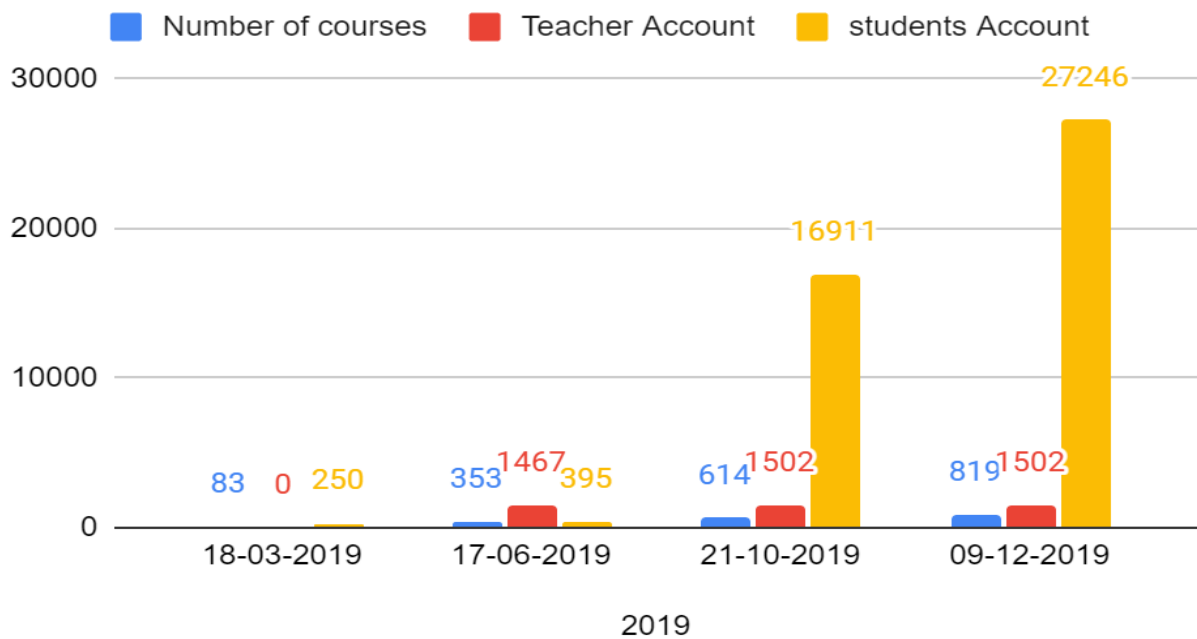
Analysis : I note from the figure that the average rate of use is fixed because the platform is still in the beginning of use, so the demand for it is a significant percentage for the courses placed on the platform of up to 250 ,As for the students, we notice that there are 83 users. As for the teachers, 0 user throughout the year

Table 07 : Moodle usage stats Year 2019

Date	MOODEL		
	Number of courses	Teacher Account	students Account
18-03-2019	83	0	250
17-06-2019	353	1467	395
21-10-2019	614	1502	16911
09-12-2019	819	1502	27246

Source : Prepared by the student based on model statistics

Figure 3.3: Moodle usage stats Year 2019



Source : Prepared by the student based on model statistics

Analysis : I notice from the figure that the average usage rate is changing steadily because the platform has entered into use and has been approved

Its users are at a high rate, as for the courses placed on a platform that has witnessed an increase of 819 courses

As for the students, I notice that there is a significant increase in 27,246 users. As for teachers, 1502 are user throughout the year

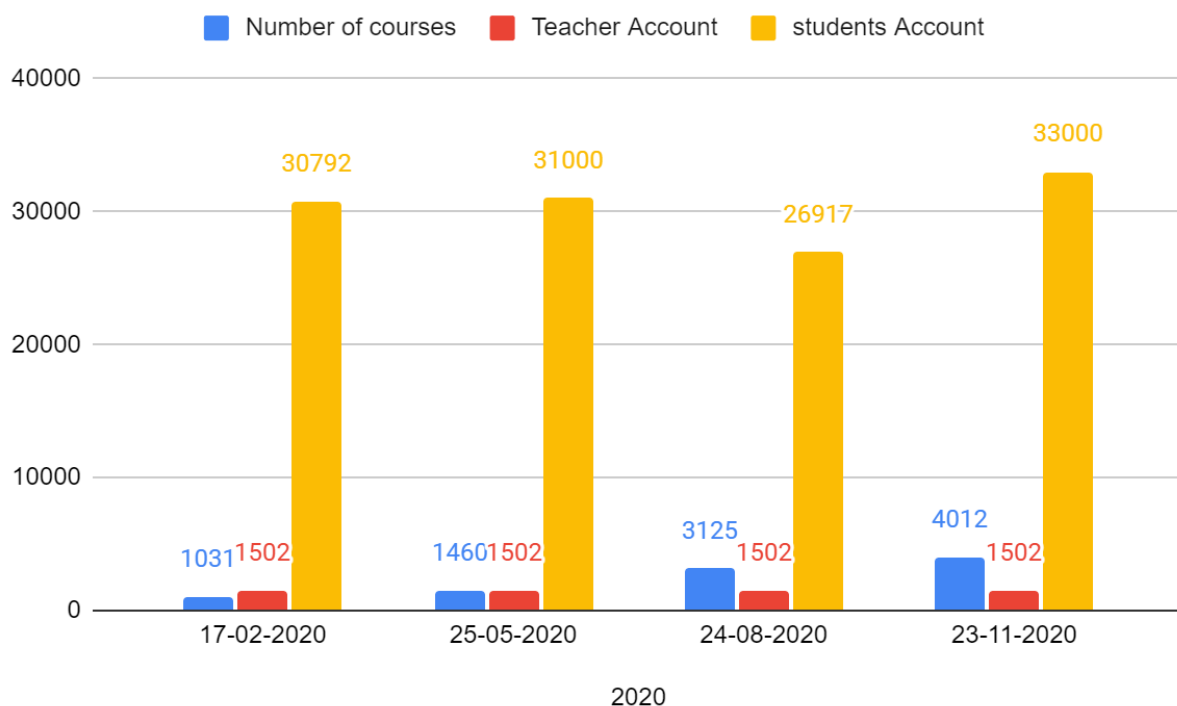
Table 08: Moodle usage stats Year 2020

Date	MOODEL		
	Number of courses	Teacher Account	students Account
17-02-2020	1031	1502	30792
25-05-2020	1460	1502	31000
24-08-2020	3125	1502	26917

23-11-2020	4012	1502	33000
------------	------	------	-------

Source : Prepared by the student based on model statistics

Figure 3.4: Moodle usage stats Year 2020



Source : Prepared by the student based on model statistics

Analysis: I notice from the figure that the average rate of use continues to rise because the platform has proven that its use improves performance, speed and time in completing tasks and has been adopted as an effective tool in providing lessons

Its users are at a high rate. As for the courses placed on the platform, it continues to increase, reaching 4012 courses

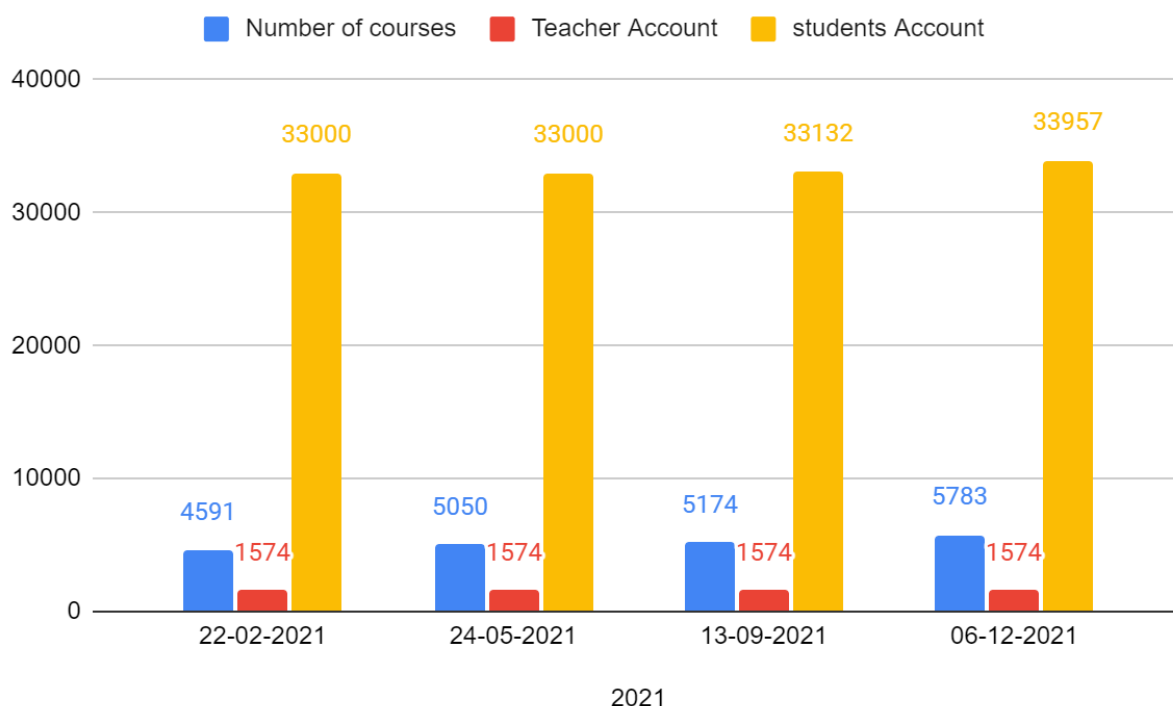
As for the students, I notice that there is a significant increase in 33,000 users. As for the teachers, it is a constant 1502 user throughout the year

Table 08: Moodle usage stats Year 2020

Date	MOODEL		
	Number of courses	Teacher Account	students Account
22-02-2021	4591	1574	33000
24-05-2021	5050	1574	33000
13-09-2021	5174	1574	33132
06-12-2021	5783	1574	33957

Source : Prepared by the student based on model statistics

Figure 3.5: Moodle usage stats Year 2020



Source : Prepared by the student based on model statistics

Analysis: I notice from the figure that the average rate of use continues to rise because the platform has proven that its use improves performance, speed and time in completing tasks and has been adopted as an effective tool in providing lessons

Its users are at a high rate. As for the courses placed on the platform, it continues to increase, reaching 5783 courses

As for students, I notice a continuation of the rise to 33,957 users. As for professors, the increase has returned to another 1574 users, due to the enrollment of new professors and teachers

3.1.2. Email services static :

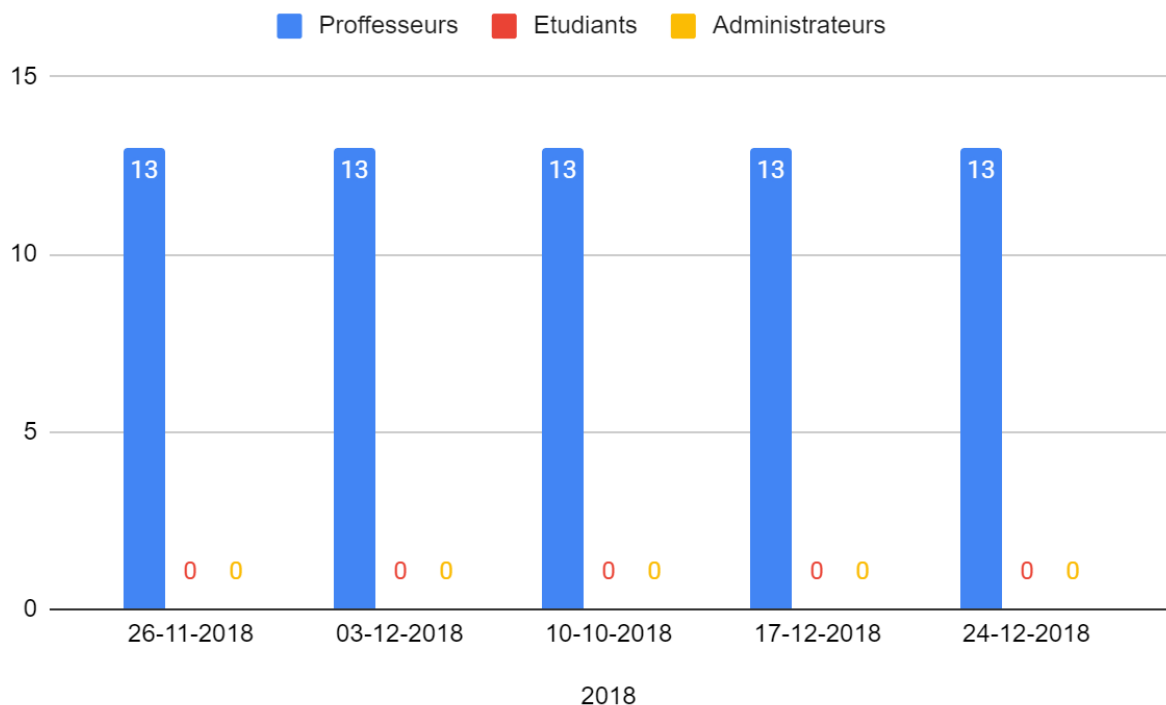
Also known as webmail, online email service providers enable users to send, receive and review e-mail from their Web browsers. Email services offer easy access and storage of e-mail messages for users who are not connected to the Internet from their usual location.

Tabel 09 : Email services usage stats Year 2018

Date	Emailservices		
	Professeurs	Etudiants	Administrateurs
26-11-2018	13	0	0
03-12-2018	13	0	0
10-10-2018	13	0	0
17-12-2018	13	0	0

Source : Prepared by the student based on email services statistics

Figure 3.6 : Email services usage stats Year 2018



Source : Prepared by the student based on email services statistics

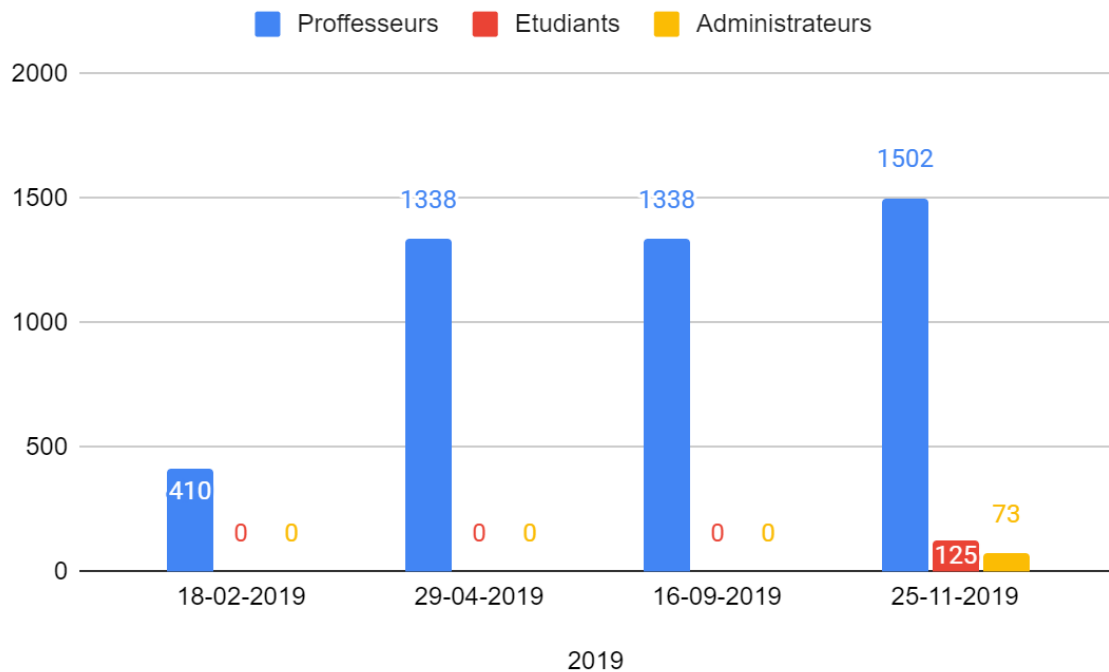
Analysis: Note from the figure that the average rate of use of the email service is limited to professors only, Its users are at a high rate, estimated at 13 users. As for students and administrators, they are not used in the performance of their tasks yet

Tabel 10 : Email services usage stats Year 2019

Date	Emailservices		
	Professeurs	Etudiants	Administrateurs
18-02-2019	410	0	0
29-04-2019	1338	0	0
16-09-2019	1338	0	0
25-11-2019	1502	125	73

Source : Prepared by the student based on email services statistics

Figure 3.7 : Email services usage stats Year 2019



Source : Prepared by the student based on email services statistics

Analysis:

Notice from the figure that the average rate of use of the e-mail service is increasing dramatically. Its users are high, amounting to about 1502 users.

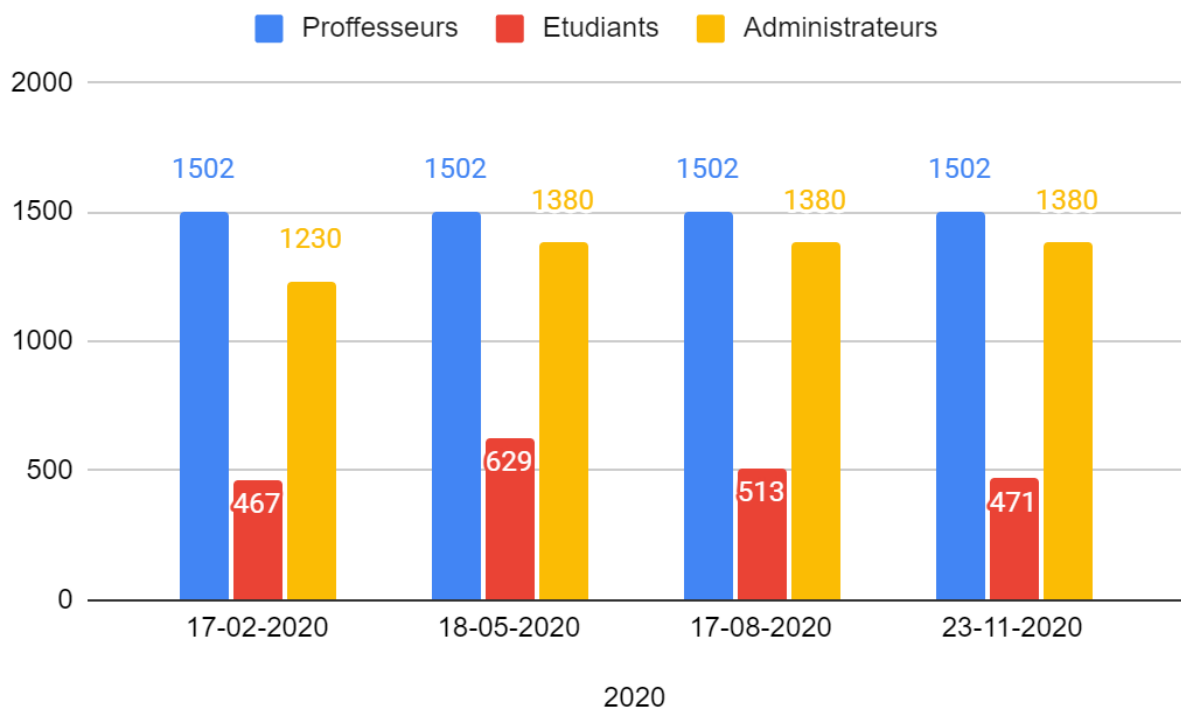
I also notice the beginning of its use about 125 student users and 73 administrative users.

Tabel 11 : Email services usage stats Year 2020

Date	Emailservices		
	Professeurs	Etudiants	Administrateurs
17-02-2020	1502	467	1230
18-05-2020	1502	629	1380
17-08-2020	1502	513	1380
23-11-2020	1502	471	1380

Source : Prepared by the student based on email services statistics

Figure 3.8 : Email services usage stats Year 2020



Source : Prepared by the student based on email services statistics

Analysis: Note from the figure that the average rate of use of the e-mail service

Its users are in a fixed proportion to the professors, which amounted to 1502 users

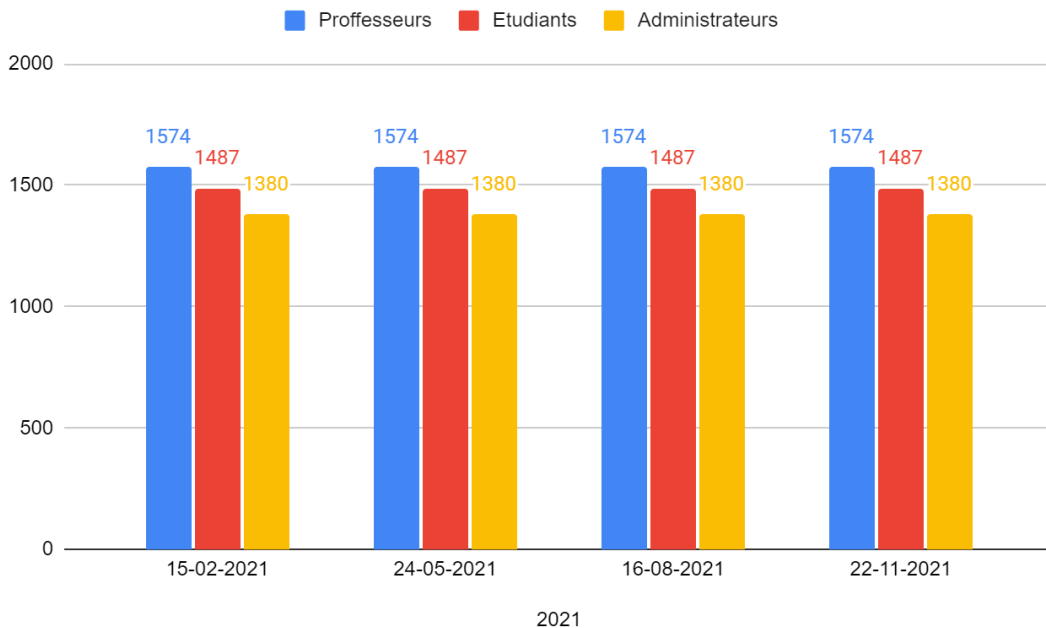
We also see a significant increase in its use for students, with 629 users and about 1380 users for administrators

Tabel 12 : Email services usage stats Year 2021

	Emailservices		
Date	Professeurs	Etudiants	Administrateurs
15-02-2021	1574	1487	1380
24-05-2021	1574	1487	1380
16-08-2021	1574	1487	1380
22-11-2021	1574	1487	1380

Source : Prepared by the student based on email services statistics

Figure 3.9 : Email services usage stats Year 2021



Source : Prepared by the student based on email services statistics

Analysis: Note from the figure that the average rate of use of the e-mail service Its users will continue to increase with regard to administrators, reaching 1574 users, I also notice the continued increase in its use significantly for students, with 1487 users, and the stability of administrators with 1380 users and these information tech has proven that its use improves performance, speed and time in completing tasks and has been adopted as an effective tool

3.1.3. Progress platformer:

This platform is an information system that enables comprehensive management of all university affairs, and this is shown, for example, but not limited to:

Registration, orientation and transfer of new students.

Giving the student an account to follow throughout his academic path and inform him of all his pedagogical matters.

- Comprehensive preservation of the academic path.
- Formulating schedules for the time distribution and hourly volume for professors.
- Managing the deliberations process.
- Career path management
- Upgrade Configurations and Training Courses
- Nomination competitions

The Algerian University is counting on this platform to be a comprehensive information system that provides an integrated database on students and professors

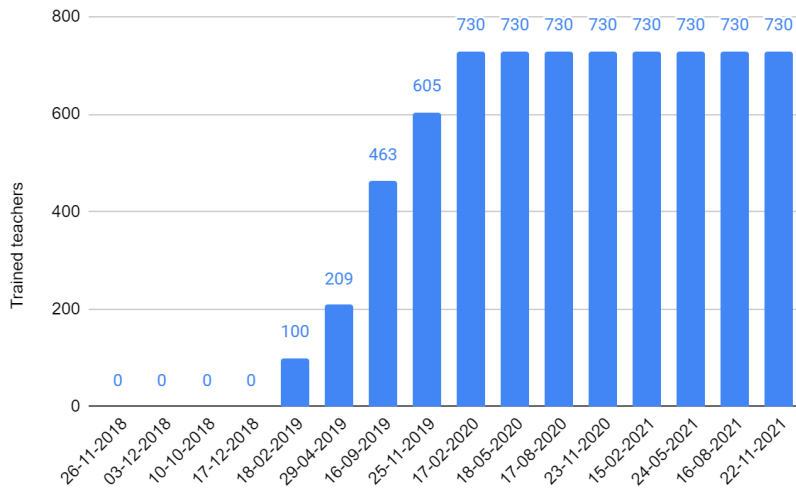
In the following content, we will present the statistics of the last four years in terms of teacher training on the Prograss platform

Table 13: the average number of trained teachers in the last four years 2018. 2019 2020. 2021

Date	Trained teachers
26-11-2018	0
03-12-2018	0
10-10-2018	0
17-12-2018	0
18-02-2019	100
29-04-2019	209
16-09-2019	463
25-11-2019	605
17-02-2020	730
18-05-2020	730
17-08-2020	730
23-11-2020	730
15-02-2021	730
24-05-2021	730
16-08-2021	730
22-11-2021	730

Source : Prepared by the student based on Progress statistics

Figure 3.10 : the average number of trained teachers in the last four years 2018. 2019 2020. 2021



Source : Prepared by the student based on Progress statistics

Analysis: I note that the average teacher training rate in 2018 is completely non-existent, due to the beginning of the launch of the digital platform

After that, we note the training of 100 professors at the beginning of 2019 until it reaches 605 teachers by the end of the same year, and for this reason, there is an increase in the need to train professors on the use of modern information technology

In 2021 and 2022, I notice an increase in the same number of trained professors, about 730

Therefore, we consider the method proven to be effective in digital training and improving HR performance

3.2. presenting the interview result :

The following conditions were relied upon when formulating the interview to build questions

- clear and accurate
- Observe the logical sequence of questions;
- Paragraphs should be worded clearly and avoid vague questions;
- Avoid double meaning of the paragraph.

3.2.1 Structuring interview questions

In this section, we will discuss the structure of the study questions, what they focused on, and how they were divided.

3.2.2. Study tool "Interview"

In our study, we relied on the interview tool in order to collect information related to the study, through which a set of questions is asked to the chosen expert. Or a group of people on the other hand, for the purpose of collecting the information necessary for the study, and the questions are either closed or open and are prepared through a set of steps, perhaps the most important of them (determining the purpose of the interview, pre-preparation for the interview and including questions as well as identifying people who agree with the research, carrying out the interview from while conducting and recording the information).

3.2.3. Structuring the interview axes

The study interview questions are structured as follows:

First: a start introduction

In it, the various rationales of the study questions addressed to the members of the research sample were clarified, while informing them that the data that they will submit aims at the field projection of the scientific study.

Second: The study questionnaire was divided into the following:

The first axis: the performance of human resources

The second axis: the information technology used

3.2.4. Study steps:

The study steps are in the following:

- The first step : An expert in the field of study who is the director of human resources at the college was selected, as he is fully familiar with the subject of the study.

The second step: After diagnosing in general the use of information technology and its impact on the performance of human resources, an interview guide was prepared with appointments with the study sample and the selection of the appropriate time.

The third stage: in which the traditional analysis of the interview will be conducted, by preparing a comprehensive summary table of all the expert's answers, and this will allow us to determine my personal view of his statements.

study tool analysis

In this requirement, the interview that was conducted will be analyzed, and it has been divided into two sections as follows:

Presenting the merits of the study;

traditional interview analysis;

Show the reasons for conducting the interview

In this requirement, we will show how and with whom the interview was conducted, and we can summarize this in the following table:

Table 14: represents the reasons for conducting the study interview

expert	The date and duration of the interview	Circumstances of the interview	Interview Objectives
Director of Human Resources at the Faculty of Economic, Commercial and Management Sciences	09/05/2022 Date : Duration: 40 minutes	The conditions in which the interview was conducted were excellent in terms of treatment and in terms of the enormous enrichment of information related to the subject of the study.	This interview was conducted in order to know the new information technology used and to evaluate the performance of the human resource, as well as the reality of the application of information technology in service institutions.

Analyze the interview

After we conduct the interview with the study sample, it will be analyzed and the most important answers given by the expert regarding the study's axes will be shown.

First: Analysis of the first axis

Here, the expert's answers related to the first axis, which we summarized in the following table,

Table 15 : represents the expert's answers related to the first axis

Phrase	answer	Analysis
How is employee performance measured?	Through an annual card that contains a set of criteria on the basis of which the employee's performance is evaluated (attendance, discipline, speed of work performance,	The annual card is an evaluation tool approved for periodically measuring the performance of employees

	accuracy in achievement).	
What are the criteria for evaluating employee performance?	.Respect public duties and basic legal duties Professionalism (Occupation Efficiency) Effectiveness and profitability Service method	The ability to evaluate workers depends on several criteria that allow collecting information about the performance of employees
How do you see the adaptation of human resources with modern technology?	Modern technology has imposed itself on the administration, as it has become an urgent necessity for the administration to use a modern information system to keep abreast of developments in societies, and this is to employ graduates of institutes and automated media to keep pace with technological development.	The administration cannot maintain a certain technology because it is characterized by rapid change and development, so it is forced to adapt to it
What jobs exist at the level of human resources in the field of information technology?	Jobs : State engineer in computer media, assistant country engineer in computer media (level 1 and 2), senior technician in computer media, data archiving assistant The interests: the Department of Networking and Digitization at the college level, the Department of Statistics,	The existing jobs are characterized by diversity and lack of jobs because they do not need a large number of human resources to manage the existing information technology

Source: Prepared by the student based on the interview

Here, the various answers of the expert related to the information technology used will be analyzed as summarized in the following

Tabel 16 : number representing the expert's answers related to the second axis

Phrase	answer	Analysis
What is the most important information technology used in the faculty ?	It is represented in the computer, printers, various LANs, communication networks, e-training, moodel, progres, education platforms, mooc, Edmond and others, and the databases used in electronic archiving	The college has a technological infrastructure Enormous and sophisticated that allows easy communication and transfer of information between departments and departments, as well as education and training of good workers
What are the aspects covered by the information technology used?	Almost all administrative operations between departments and departments at the college level include administrative correspondence, various instructions, invitations and meetings, electronic display screens for various administrative decisions and the timing of students of various levels and specializations. The inclusion of lessons and videos on the level of electronic platforms by professors for the benefit of students	Technology is used in all aspects, not just a specific aspect
Where does the importance of these modern technological means emerge?	By ensuring good conduct and a degree of accuracy in performance	Modern technology is an essential tool in the progress of performance and ensuring accuracy and speed

<p>What is the role of electronic platforms in organizing human resources?</p>	<p>Managing the recruitment process and nomination competitions Career path management Configurations and Promotions Training Courses Managing and following up students' progression and providing online lessons</p>	<p>Electronic platforms are considered one of the most important aspects of modern technology, as it seeks to build an integrated electronic system between departments, departments, colleges and various universities, and to develop education and university achievement.</p>
<p>What is the difference between old and new used technology?</p>	<p>In the past: consumption of time, material and financial resources (paper, clips, etc.), slow performance, the need for a large number of workers (human resources) in present : speed in performance and accuracy in work, reducing the use of material and also human resources, accuracy and good implementation</p>	<p>There is a clear difference between modern and old technology that stands out in terms of employee performance in terms of the material resources used and the number of human resources</p>

Source: Prepared by the two students based on the interview

3.3. Testing the Research Hypothesis:

- **Hypotheses number one:** The reality of the use of information technology is witnessing an increase in the number of users and the development of used devices over time

To conform this hypothesis, I relied on the statistics of the number of users of Moodle platforms and the e-mail service , and the observation of daily work within the Faculty of Economic Sciences, University of M'Sila

As the results showed an increase in the users of this technology, it is impossible to dispense with information technology in all daily work and operations, Therefore, it can be said that the First hypothesis is confirmed

- **Hypotheses number two** : The performance of human resources at the university of mohamed boudiaf m'sila is measured within a set of standers that are applied to all its members

Depending on the results of the interview with the expert (human resources manager) within the Faculty of Economic Sciences, University of M'Sila, the performance of human resources is measured through the annual performance evaluation card according to standards related to the nature of work, such as attendance, discipline, speed of work performance and accuracy in achievement. Therefore, it can be said that the second hypothesis is confirmed

- **Hypotheses number three**: The use of information technology has an impact on improving and increasing the performance of human resources at Mohamed Boudiaf University

This hypothesis can be confirmed by relying on the statistics of the number of trainees in the Prograss platform, which has increased continuously during the last four years, which proves that information technology has an impact on improving the performance of human resources and supporting them in an interview with the Director of Human Resources, who confirmed that information technology includes all administrative processes between the interests of the college and its departments and Facilitate the process of communication between them, accuracy and speed in performance and reduce the use of material resources within the Faculty of Economic Sciences, University of M'Sila

Therefore, it can be said that the third hypothesis is confirmed

I can say that the general hypothesis is conformed based on the results of the partial hypothesis Therefor conformed that **Information technology has an effective impact on improving human resource management at The University of Mouhamed boudiaf- msila**

Chapter conclusion :

The field study was mainly targeted on the relationship between information and communication technology and human resource performance in Service Institutions, University of Mohamed Boudiaf Faculty of Economics, and this is through the statistics of the use of electronic platforms and an interview with the director of human resources at the faculty, about The uses of information and communication technology and its impact on improving the performance of human resources, as the study revealed in this chapter on several aspects related to the field of study as its origins, its divisions, and its organizational structure. human and technology resources



General conclusion

General conclusion ;

The study of the use of information and communication technology is a broad field where many economic, social, and economic dimensions overlap.

Cultural and technological, where has the latter become used within the daily work that affects many machines, including service institutions, and through our attempt in this study to identify the impact of the use of information and communication technology on the performance of resources

Humanity and the relationship between them, through processing and analyzing a set of statistics on some electronic platforms and the strength of the link between them and the extent of

Its contribution to improving performance, and thus we touched on the case study of the Faculty of Economics at Mohamed Boudiaf University in light of different dimensions.

Through its results supported by many previous studies that addressed this problem

Study results: The study reached a set of results, the most important of which are:

A study of a statistically significant relationship between the use of information technology and the performance of human resources

Emphasizes the importance of focus and healthcare in human development.

- Studying the relationship between human financial resources and (the use of programs, the use of electronic platforms)

Databases, software compatibility, communication networks).

technology

- The study shows that the impact of the use of information and communication technology and resource performance

Human Enhancement of human performance

-Information technology helps in developing human resource management

-Modern technology contributes to raising the performance of employees

-Information technology greatly contributes to increasing the performance of human resources, and it can be measured in many ways

Suggestions and recommendations:

- Preparing programs and training courses for various administrative levels to be able to work with information and communication technology;

Attracting and selecting qualified and trained human competencies capable of using information and communication technology;

Working on developing and expanding the information and communication technology infrastructure on a permanent and continuous basis in line with the nature of the work;

Linking the various administrative levels to provide information in a timely and appropriate form



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references

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بطاقة تقييم الموظف بعنوان سنة: 2019

طبقا لأحكام المادة 05 من المرسوم التنفيذي 19-165 المؤرخ في 27/05/2019 المحدد لكيفيات تقييم الموظف
اسم ولقب المستخدم: محمد بن عبد المطلب تاريخ ومكان الميلاد: 1983/11/01 سلمان المسيلة
الرتبة الحالية: ص.ص. صرف تاريخ التعيين في الرتبة الحالية: 2016/11/09
الرتبة الاصلية (رتبة اول تعين): ع.و.ا.د.ا.ر.ة تاريخ التعيين في الرتبة الاصلية: 2006/12/02
الدرجة الحالية: 2 تاريخ السريان: 2016/10/01

01- النقطة المرقمة

الفقرة الممنوحة	سلم التقيظ	معايير التقيظ
		01- احترام الواجبات العامة والواجبات القانونية الاساسية
01	01	- الامانة وعدم التمييز
02	02	- تنفيذ المهام الموكدة له
01	01	- الالتزام بالتوقيت والانضباط
01	01	- السلوك المحترم والمسؤول
01	01	- اللباقة في علاقته بالمسؤولين السلميين وزملاء العمل والبرؤوسيين ويستعمل الرافق العام
06	06	المجموع الجزئي ا
		02- الكفاءة المهنية
02	02	- التحكم في مصادر نشاطه والتمتع باللياقة والاحكام ذات الصلة
01	01	- قدرات التحليل والتخيص وحل المشاكل
1.5	1.5	- قدرات التميز الكتابية والشفهية
0.5	0.5	- قدرات الاستدلال والتكيف والابتكار
05	05	المجموع الجزئي ب
		03- الفعالية والبروزية
01	01	- تحقيق الاهداف المحددة
02	02	- الفعالية في تادية المهام واحال تنفيذها
03	03	المجموع الجزئي ج
		04- كفاءة الخدمة
02	02	- روح العمل الجماعي
02	02	- القدرة على التواصل
02	02	- روح المبادرة والدينامية
06	06	المجموع الجزئي د
20	20	المجموع العام
		01- التقديرات ذات الطابع العام من طرف المسؤول السلمي المباشر او المسؤول السلمي الاعلى

رأي المعني حول النقطة المرقمة
التوقيع

محمد بوضياف

القسم	سنة أول	سنة ثانية	التخصص	سنة ثالثة	سنة رابعة	سنة خامسة	سنة سابعة	سنة ثامنة	سنة تاسعة	سنة عاشر	مجموع القسم
العلوم التجارية	362	146	تسويق تجارة دولية	40	34	74	40	39	39	103	846
				39	40	74	34	39	103		
				320	320	74	320	320	103		
				337	337	74	337	337	103		
				233	233	74	233	233	103		
				233	233	74	233	233	103		
				233	233	74	233	233	103		
				233	233	74	233	233	103		
				233	233	74	233	233	103		
				233	233	74	233	233	103		
العلوم الاقتصادية	377	173	اقتصاد كفي اقتصاد دولي اقتصاد تقدي وبني اقتصاد	41	16	184	41	16	16	268	1260
				16	127	184	16	127	268		
				127	127	184	127	127	268		
				173	173	184	173	173	268		
				377	377	184	377	377	268		
				377	377	184	377	377	268		
				377	377	184	377	377	268		
				377	377	184	377	377	268		
				377	377	184	377	377	268		
				377	377	184	377	377	268		
علوم المالية والمحاسبة	226	330	اقتصاد تقدي وبني اقتصاد تقدي وبني اقتصاد تقدي وبني اقتصاد تقدي وبني اقتصاد تقدي وبني اقتصاد تقدي وبني اقتصاد تقدي وبني اقتصاد تقدي وبني اقتصاد تقدي وبني اقتصاد تقدي وبني	291	0	291	291	0	0	278	1498
				0	0	291	0	0	278		
				0	0	291	0	0	278		
				0	0	291	0	0	278		
				0	0	291	0	0	278		
				0	0	291	0	0	278		
				0	0	291	0	0	278		
				0	0	291	0	0	278		
				0	0	291	0	0	278		
				0	0	291	0	0	278		
علوم اللسانيات	3132	3132	سنة ثالثة سنة رابعة سنة خامسة	3132	3132	3132	3132	3132	3132	1017	1017
				3132	3132	3132	3132	3132	1017		
				3132	3132	3132	3132	3132	1017		
علوم الماسر	2293	2293	سنة ثالثة سنة رابعة سنة خامسة	2293	2293	2293	2293	2293	66	66	
				2293	2293	2293	2293	2293	66		
مجموع الكلية	5425	5425	سنة ثالثة سنة رابعة سنة خامسة	5425	5425	5425	5425	5425	1083	1083	
				5425	5425	5425	5425	5425	1083		

إحصائيات أساتذة كلية العلوم الاقتصادية والتجارية وعلوم التسيير حسب القسم وحسب
الرتبة

01 - قسم العلوم التجارية .

رتبة الأستاذ					الرتبة	العدد
أستاذ مساعد قسم ب	أستاذ مساعد قسم أ	أستاذ محاضر قسم ب	أستاذ محاضر قسم أ	أستاذ		
01	01	03	22	11		
38						المجموع

02- قسم العلوم الاقتصادية .

رتبة الأستاذ					الرتبة	العدد
أستاذ مساعد قسم ب	أستاذ مساعد قسم أ	أستاذ محاضر قسم ب	أستاذ محاضر قسم أ	أستاذ		
03	07	07	26	10		
53						المجموع

03- قسم علوم التسيير .

رتبة الأستاذ					الرتبة	العدد
أستاذ مساعد قسم ب	أستاذ مساعد قسم أ	أستاذ محاضر قسم ب	أستاذ محاضر قسم أ	أستاذ		
02	09	11	28	10		
60						المجموع

04- قسم العلوم المالية والمحاسبة .

رتبة الأستاذ					الرتبة	العدد
أستاذ مساعد قسم ب	أستاذ مساعد قسم أ	أستاذ محاضر قسم ب	أستاذ محاضر قسم أ	أستاذ		
00	04	10	19	06		
39						المجموع

05- المجموع العام.

رتبة الأستاذ					الرتبة	العدد
أستاذ مساعد قسم ب	أستاذ مساعد قسم أ	أستاذ محاضر قسم ب	أستاذ محاضر قسم أ	أستاذ		
06	21	31	95	37		
190						المجموع

تصريح شرفي

بالالتزام بمعايير الأمانة والنزاهة العلمية في إعداد مذكرة الماستر

أنا الممضي اسقله:

الطالب (ة)*:.....أيمن يحيى..... المولود(ة) بتاريخ:.....1998/06/24..... ب:.....المسيلة.....

الحامل لبطاقة التعريف الوطنية (أور.س.) رقم:.....206689688... الصادرة بتاريخ:.....2021/05/02..... عن:.....المسيلة.....

المسجل بالسنة الثانية ماستر شعبة:.....علوم التسيير..... تخصص:.....إدارة أعمال..... خلال السنة الجامعية:.....2022/2021.....

والمعد لمذكرة الماستر التي تحمل عنوان** :.....

.....THE IMPACT OF INFORMATION TECHNOLOGY ON HUMAN RESOURCES PERFORMANCE

أصرح بشرفي أنني إلتزمت بمراعاة معايير الأمانة والنزاهة العلمية المطلوبة في إنجاز مذكرة الماستر المذكور أعلاه.

حررت بتاريخ:.....08.../...06.../...2022.....

التوقيع والبصمة

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