**The People's Democratic Republic of Algeria**

**The Ministry of Higher Education and Scientific Research**

**University of Blida 2**

**Faculty of Economics, Business and Management Sciences**

**Department of Management**

# The Role of Knowledge Management in Improving Public Health Services: Case of Algeria

Thesis submitted in partial fulfillment of the requirements for the degree of PhD in public management

**Submitted by**

MAGBI Mimouna

**Under the supervision of**

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Dr. FERRAT Isma

**Academic Year 2025-2026**

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**Academic Year 2025-2026**

# DEDICATION

**To my immediate and extended family,**

**To all my acquaintances and friends,**

**I dedicate this humble work.**

# ACKNOWLEDGMENT

All praise is due to Allah, Lord of the Worlds. May blessings and peace be upon the noblest of messengers, our Master Muhammad.

We praise and thank Allah, the One, the Most Compassionate, the Bestower. By His power, all difficulties are eased, and by His grace, all distress is relieved. We thank Him for enabling us to complete this work, and we ask that He grant us His continued blessings.

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# Abstract:

**BACKGROUND:** Enhancing service quality within health facilities remains a central objective, with the performance of healthcare professionals being a decisive factor. Knowledge management (KM) has emerged as a crucial mechanism for enhancing organizational efficiency and maintaining high-quality service delivery. Over the past decades, public health institutions have increasingly implemented KM frameworks to achieve optimal performance outcomes. This study aims to investigate the role of knowledge management in enhancing public health services at university hospital centers in Algeria.

**METHODS AND TOOLS:** This study adopted a quantitative research approach, emphasizing numerical data and statistical analysis to produce objective and generalizable results. A cross-sectional survey design was employed, with primary data collected through a structured questionnaire. The questionnaire, considered the main instrument for data collection, consisted of 63 items organized into three principal axes. It was distributed to healthcare workers in the Algerian University Hospital Centers in both paper-based and electronic formats. The collected data were analyzed using JASP software, employing a range of statistical techniques to generate meaningful insights and ensure the reliability and validity of the findings.

**RESULTS:** The main findings of the study indicate that:

- There is a statistically significant relationship between knowledge management processes and the quality of public health services at the significance level ($\alpha \leq 0.05$)
- There is a statistically significant effect of knowledge management processes on the quality of public health services in Algerian University Hospital Centres at the significance level ($\alpha \leq 0.05$).

- Knowledge acquisition has no statistically significant effect on the quality of public health services in Algerian University Hospital Centres at the ($\alpha \leq 0.05$) level.
- Knowledge creation has a statistically significant effect on the quality of public health services in Algerian University Hospital Centres at the ($\alpha \leq 0.05$) level.
- Knowledge sharing has no statistically significant effect on the quality of public health services in Algerian University Hospital Centres at the ($\alpha \leq 0.05$) level.
- Knowledge storage has no statistically significant effect on the quality of public health services in Algerian University Hospital Centres at the ($\alpha \leq 0.05$) level.
- Knowledge application has a statistically significant effect on the quality of public health services in Algerian University Hospital Centres at the ($\alpha \leq 0.05$) level.

**CONCLUSION**: Processes of knowledge management, especially knowledge application and knowledge creation, are essential factors in improving the quality of healthcare services provided at the university hospital centres in Algeria. These findings emphasize the necessity of integrating structured KM strategies into institutional policies to enhance organisational and service quality. Future research should further investigate the mechanisms through which KM practices influence healthcare outcomes, with particular attention to contextual factors such as institutional culture, technological infrastructure, and workforce capacity. Such studies would help develop more sustainable and adaptable KM frameworks tailored to the needs of public health institutions in Algeria and similar settings.

**KEYWORDS:** Knowledge management, Knowledge management processes, The quality of health service, Pubic health services, University Hospital Centres.

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## List of abbreviations

| KM | Knowledge Management |
|---|---|
| **AI** | Artificial Intelligence |
| **IoT** | Internet of Things |
| **KA** | Knowledge Acquisition |
| **KC** | Knowledge Creation |
| **KS** | Knowledge Sharing |
| **KST** | Knowledge Storage |
| **KAP** | knowledge application. |
| **KMP** | Knowledge Management Processes |
| **LO** | Learning Organization |
| **RBV** | Resource-Based View |
| **CKO** | Chief Knowledge Officer |
| **LO** | Learning Organization |
| **RBV** | Resource-Based View |
| **CKO** | Chief Knowledge Officer |
| **CIO** | Chief Information Officer |
| **CEO** | Chief Executive Officer |
| **IT** | Information Technology |
| **ICT** | Information and Communication Technologies |
| **GDP** | Gross Domestic Product |
| **CEO** | Chief Executive Officer |
| **UNCTAD** | United Nations Conference on Trade and Development |
| **HKM** | Healthcare Knowledge Management |
| **ASTHO** | Association of State and Territorial Health Officials |
| **EBMP** | Evidence-Based Medical Practices |
| **HER** | Electronic Health Record |
| **UHC** | University Hospital Centers |
| **JASP** | Jeffreys's Amazing Statistics Program |
| **SPSS** | Statistical Package for the Social Sciences |
| **HER** | Electronic Health Record |
| **M** | Mean |
| **SD** | Standard Deviation |
| **CI** | Confiedence Interval |

# GENERAL INTRODUCTION

# Introduction

Public Health services represent a cornerstone of social welfare and sustainable development, as they ensure equitable access to essential medical care, promote population health, and safeguard communities against disease and health crises. They are not only vital for reducing health disparities and protecting vulnerable populations but also for strengthening social cohesion and economic stability. The effectiveness of public healthcare provision directly impacts life expectancy, workforce productivity, and overall national resilience in the face of epidemiological and demographic challenges.

Public health systems worldwide are undergoing profound and complex transformations, driven by escalating costs of care, demographic shifts, and rapid scientific and technological progress. The aging of populations in many countries, accompanied by higher morbidity rates and growing expectations for health and social services, has intensified the demand for effective and sustainable healthcare delivery. At the same time, healthcare providers face persistent constraints, including limited financial resources, shortages of specialized professionals, and heightened competitiveness. This reality places healthcare systems in a difficult position: they must simultaneously uphold responsiveness and maintain cost containment while delivering increasingly sophisticated and high-quality services. Meeting this dual challenge requires not only structural and organizational innovation but also the systematic integration of knowledge into healthcare processes, technologies, and management practices.

Within this context, knowledge management (KM) has emerged as a critical approach to ensuring the efficiency, effectiveness, and sustainability of healthcare organizations. By enabling the systematic creation, storage, sharing, and application of knowledge, KM strengthens the capacity of hospitals to respond to complex demands and crises. For healthcare institutions, KM is not

merely a managerial tool; it is a strategic imperative that underpins service quality, fosters innovation, and enhances organizational resilience. Through the deliberate mobilization of tacit knowledge- embedded in the expertise and experience of healthcare workers- and explicit knowledge -captured in systems, regulations, and procedures- KM allows organizations to bridge gaps, improve decision-making, and continuously refine their performance.

The quality of nursing and consultation services illustrates the direct link between KM and patient satisfaction. Hospitals must overcome persistent barriers, such as underdeveloped human resource capacities, to improve service delivery and meet community expectations. Strengthening staff competencies, nurturing motivation, and fostering a culture of knowledge sharing are essential to these efforts. KM provides a structured mechanism for achieving these objectives, offering processes for acquiring, disseminating, and applying knowledge to enhance both the quality of healthcare and the accountability of professionals.

In Algeria, the need for effective knowledge management in the public health sector is particularly evident in University Hospital Centers (UHC). As advanced and multifunctional institutions, UHCs serve as central actors in addressing this need. Their mission extends beyond the provision of specialized healthcare services; they are also responsible for medical education and scientific research, working in close collaboration with faculties of medicine, pharmacy, and allied health institutions. This dual role of healthcare care delivery and academic training positions them as a knowledge-intensive organization that generates, absorbs, and disseminates a significant volume of knowledge. Effectively managing this knowledge is essential not only for improving service quality but also for fulfilling their broader educational and research responsibilities.

Algerian university hospital centers embody both the opportunities and the challenges of knowledge management in the healthcare sector. On the one hand, they possess abundant resources in the form of professional expertise, organizational systems, and external networks. On the other hand, the absence of systematic KM practices risks leaving this potential underutilized. To unlock its value, institutions must distinguish between information and meaningful knowledge, identify knowledge with real strategic utility, and ensure its availability to healthcare professionals. By doing so, these organizations can enhance their capacity to innovate, adapt, and deliver high-quality services in an environment where health remains society's most vital asset.

❖ **The Problem to Be Addressed**

From the preceding, the relevant question that can be asked is:

**Do knowledge management processes affect the quality of public health services in Algerian University Hospital Centers?**

❖ **Several sub-questions raised include the following**

- Is there a statistically significant effect of knowledge acquisition on the quality of public health services in Algerian University Hospital Centers at the ($\alpha \leq 0.05$) level?
- Is there a statistically significant effect of knowledge creation on the quality of public health services in Algerian University Hospital Centers at the ($\alpha \leq 0.05$) level?
- Is there a statistically significant effect of knowledge storage on the quality of public health services in Algerian University Hospital Centers at the ($\alpha \leq 0.05$) level?
- Is there a statistically significant effect of knowledge sharing on the quality of public health services in Algerian University Hospital Centers at the ($\alpha \leq 0.05$) level?

- Is there a statistically significant effect of knowledge application on the quality of public health services in Algerian University Hospital Centers at the α≤0.05 level?

❖ **Study Hypotheses:**

To address the questions that have been raised, the hypotheses of the study can be formulated as follows:

➢ **The main hypothesis**

- There is no statistically significant effect of knowledge management processes on the quality of public health services in Algerian University Hospital Centers at the (α≤0.05) level.

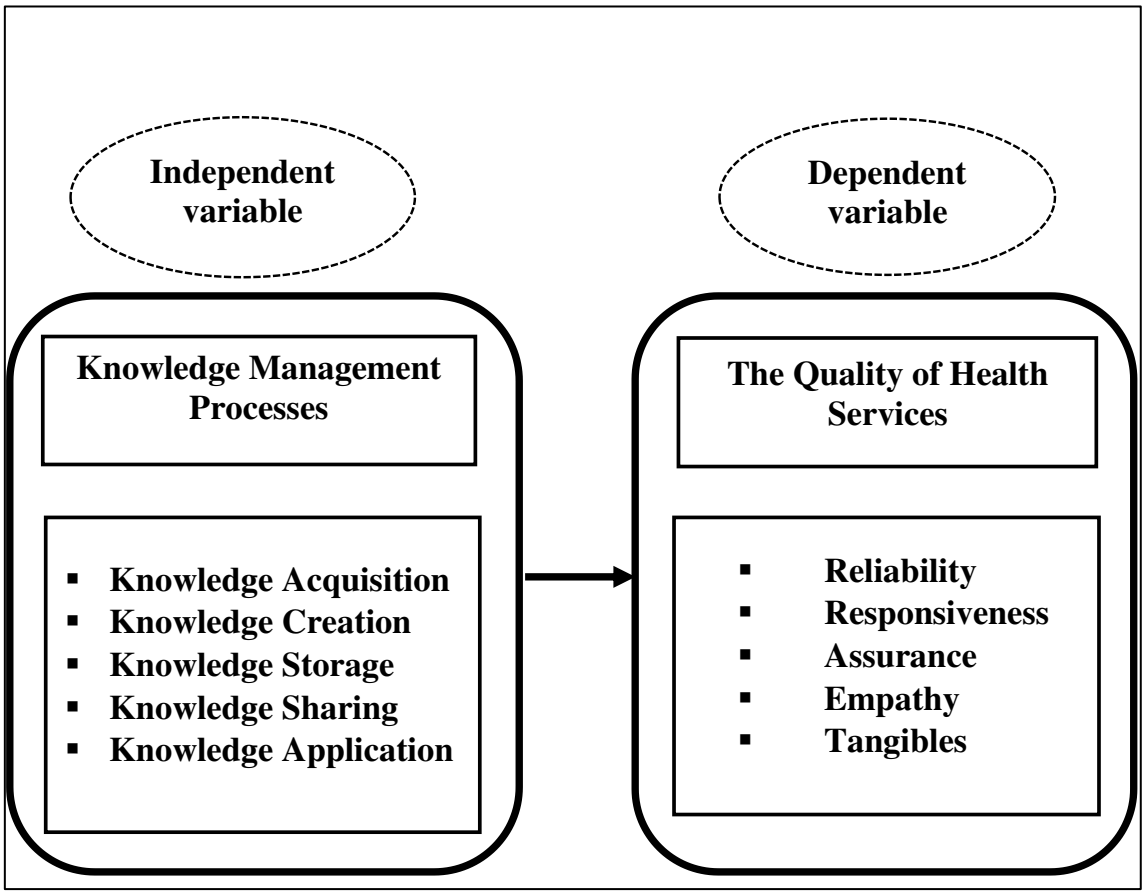
➢ **Sub-hypotheses**

- H1: There is no statistically significant relationship between knowledge management processes and the quality of public health services in Algerian University Hospital Centers at the (α≤0.05) level.
- H2: There is no statistically significant effect of knowledge acquisition on the quality of public health services in Algerian University Hospital Centers at the (α≤0.05) level.
- H3: Knowledge creation has no statistically significant effect on the quality of public health services in Algerian University Hospital Centers at the (α≤0.05) level.
- H4: Knowledge storage has no statistically significant effect on the quality of public health services in Algerian University Hospital Centers at the (α≤0.05) level.
- H5: Knowledge sharing has no statistically significant effect on the quality of public health services in Algerian University Hospital Centers at the (α≤0.05) level.
- H6: Knowledge application has no statistically significant effect on the quality of public health services in Algerian University Hospital Centers at the (α≤0.05) level.

### ❖ Study model

Figure 01 presents the model developed from the literature review and the hypotheses that will be analyzed in this study. It illustrates Knowledge Management processes, including knowledge acquisition, knowledge creation, knowledge sharing, knowledge storage, and knowledge application, as well as their relationships with the quality of public health services.

**Figure 01:** Conceptual Model of Study




**Source:** Prepared by the researcher based on the hypotheses of the study

## ❖ Importance of the Study

This study is significant for its contribution to the scientific literature on the relationship between knowledge management and the quality of public healthcare services, particularly within the Algerian context, which faces growing challenges in its health sector. It provides a theoretical and analytical framework for understanding how knowledge management processes, including

knowledge acquisition, generation, storage, sharing, and application, influence the efficiency and effectiveness of healthcare services.

Moreover, the study enhances the understanding of how knowledge can improve healthcare performance, thereby elevating the quality of services provided. This is accomplished by showcasing several successful international experiences in implementing knowledge management within the healthcare sector.

Additionally, the study aims to assess the readiness of Algerian healthcare institutions to adopt knowledge management practices. This will pave the way for future research focused on improving strategies for integrating knowledge management processes into various healthcare settings.

## ❖ Study Objective

The study aims to achieve the following objectives:

- To presente a theoretical framework for knowledge management and health services.
- To review the literature addressing the definition and meaning of knowledge and knowledge management in healthcare to clarify the notion of “healthcare knowledge management”.
- To find out the importance attached to the subject and how seriously KM has been adopted in the Algerian University Hospital Centers
- To examine whether knowledge management processes (acquisition, creation, sharing, storage, and application) are available at the Algerian University Hospital Centers.
- To assesse the quality of health services (responsiveness, reliability, assurance, empathy, and tangibility) provided by Algerian University Hospital Centers.
- To measure the healthcare workers perception of knowledge management and its contribution to service quality.

- To identify the impact of knowledge management Processes (acquisition, creation, sharing, storage, and application) on the quality of health service at the Algerian University Hospital Centers.
- To investigate the knowledge management processes that most contribute to enhancing the quality of health services in Algerian University Hospital Centers.
- To provide recommendations based on the findings of the current study.

## ❖ Previous Studies

"Foreign studies" refers to academic research and scholarly work conducted outside the Arab world. It focuses on subjects that aim to understand and analyze different global perspectives beyond the Arab region.

On the other hand, "Arab studies" specifically emphasize the unique characteristics, developments, and contributions of the Arab region.

Both foreign studies and Arab studies play significant roles in advancing knowledge and fostering academic exchange between different regions and cultures.

### ➢ Arab Studies

1. **Study of Hayder Khathyer Jawan 2012**: an article titled **"Impact of Knowledge Management on the Quality of Health Service: An Empirical Study in the Year-Hussein Hospital / Karbala"[1].**

This study focuses on improving the quality of health services in hospitals, specifically examining the role of knowledge management. The study identifies a problem: while hospitals possess knowledge, they often fail to utilize it effectively to improve service quality due to inadequate management practices and unclear relationships between knowledge

[1] Hayder Khathyer Jawan, Impact of Knowledge Management on the Quality of Health Service: An Empirical Study in the Year-Hussein Hospital / Karbala, Iraqi Journal for Administrative Sciences, Volume 8, Issue 31, 2012, pp. 250- 268.

management and healthcare quality. The study analyzes the effect of knowledge management on the dimensions of health service quality, proposing the hypothesis that there is a significant relationship between knowledge management and the dimensions of health service quality. The study aimed to achieve the following objectives:

- To provide a conceptual framework for the relationship between knowledge management and the quality of healthcare services.
- To identify the impact of knowledge management on improving the quality of healthcare services.
- To propose appropriate recommendations for investing in knowledge management to achieve quality healthcare services at the studied hospital.

This study selected Al-Hussein General Hospital in Karbala as the research site. A questionnaire was used as the primary data collection tool from a sample of 37 healthcare professionals at Al-Hussein General Hospital in Karbala. The collected data was analyzed using specific statistical methods to test the hypothesis and assess the impact of knowledge management on various aspects of healthcare quality. Based on the analysis results, the study drew several conclusions:

- There is a significant positive relationship between knowledge management and the quality of healthcare services.
- There are meaningful effects between knowledge management and the dimensions of the quality of health service.
- The study found that knowledge management practices improve service quality, including reliability, responsiveness, and safety.

The study recommended establishing administrative units dedicated to knowledge management within hospitals to enhance the quality of healthcare services.

**2. Study of Mohammed Nawaf Mohammed Al-Bqour (2014): A PhD thesis titled "The Impact of applying Knowledge Management Processes on the Quality of Health Services from the Employees' Perspective: An Empirical study on the Jordanian Private Hospitals Awarded Accreditation[1]**

This study addressed the problem of understanding the impact of applying knowledge management processes on the quality of health services in accredited Jordanian private hospitals from the employees' perspective. The study aimed to measure the impact of knowledge management processes (diagnosis, generation, storage, distribution, and application) on the dimensions of health service quality (responsiveness, reliability, assurance, compassion, and tangible elements) in Jordanian private hospitals.

In this study, the primary tool used for data collection was a structured questionnaire. This questionnaire was developed and then distributed to the study population, which consisted of workers in supervisory employment (394), with 379 valid responses collected. Data analysis was conducted using SPSS software. The study generated multiple findings based on the analysis of the data, the most crucial are:

- Knowledge management processes have a statistically significant effect on the quality of healthcare services.
- Significant differences exist in the employees' attitude towards knowledge management processes by gender (except for distribution).
- No significant differences were found in attitude by age, except for distribution and application.

[1] Mohammed Nawaf Mohammed Al-Bqour, The Impact of applying Knowledge Management Processes on the Quality of Health Services from the Employees' Perspective: An Empirical study on the Jordanian Private Hospitals Awarded Accreditation, PhD thesis, Faculty of Graduate studies, Department of management, The World Islamic Science Education University, Jordan, 2014.

- No significant differences in perceptions of service quality by gender, experience, or age, except for tangible elements.
- Years of experience influence attitudes only regarding distribution.

The study recommended investing in accumulated knowledge within hospitals, establishing knowledge management units, conducting periodic evaluations of staff knowledge, and developing new dimensions of service quality to enhance performance.

3. **Study of Anaam Abdul-Zahra Dosh and Abas Mazal AL-Mochrif (2015): An Article titled "The Impact of Knowledge Management in the Improvement of Health Services- the Case Study of Al-Sadr Hospital Medical[1]-.**

This study seeks to ascertain the relationship between the content and operations management knowledge and quality of health services in the Al Sadr Teaching Hospital/province of Najaf ،and to detect the type of relationship that combines these variables ،model was built supposedly shows the nature of the relationship between the content of knowledge management and represented by (tacit knowledge and knowledge virtual) processes of knowledge and represented by (generated and stored، distributed and applied) as two independent variables ،and the dimensions of quality and represented by (speed of response ،reliability ،and ease of access and get the service ،empathy) as the dependent variable.

To validate the hypothesis, the research model used the search form questionnaire prepared for this purpose as the primary data collection, which was distributed among a sample of hospital staff consisting of 75 physicians of various specialties and the oldest residents.

[1] Anaam Abdul-Zahra Dosh and Abas Mazal AL-Mochrif, The Impact of Knowledge Management in the Improvement of Health Services- the case study of Al-Sadr Hospital Medical-, The Islamic College University Journal, Volume 1, Issue 34, 2015, pp. 277- 341.

Reaching a search for a set of conclusions was the most important:

There is an effect of the presence of a large and significant function of the content of knowledge and its operations on the quality of health services.

Knowledge distribution and application processes were the most influential in enhancing the performance of health services. Based on these findings, the study concluded that strengthening knowledge management could substantially improve the efficiency of services provided.

4. **Study of Hamza Baali and Salah Mahrez (2019): An Article titled "The Role of Knowledge Management and Information Technology in Improving the Quality of Health Services in Algeria"**[1].

This paper aims to clarify the role of information technology and knowledge management in enhancing the quality of health services provided by healthcare institutions, making a theoretical contribution to this subject. This is further enhanced by the administrative leadership's understanding of the importance of information technology in improving the quality of health services. It identifies the dimensions and quality of health services.

The research found several results, notably the large and positive role of information technology in health services by reducing the cost of communication, as well as the positive side of medical cards for patients, and the use of technology in telemedicine.

5. **Study of Mohanad Talab Sowadi and Abas Mazal AL-Mochrif (2021):** An Article titled **"The Role of Knowledge Management in Improving**

[1] Hamza Baali and Salah Mahrez, The role of knowledge management and information technology in improving the quality of health services in Algeria, Beam Journal of Economic Studies, volume 3, issue 2, 2019, p. 257-272.

**the Quality of Health Services: A Case Study in Al-Sadr Medical Hospital in Najaf Al-Ashraf"[1].**

The study examines the relationship between knowledge management content and processes and the quality of health services at Al-Sadr Teaching Hospital in Najaf Governorate. It focuses on implicit and explicit knowledge and knowledge processes such as generation, storage, distribution, and application as independent variables. Quality dimensions, including speed of response, reliability, ease of access, and empathy, are considered dependent variables. The study aimed:

- To validate the hypothetical research model.
- To verify the relationship between knowledge management processes (knowledge generation, storage, distribution, and application) and the quality of health services.
- To identify the impact of explicit and implicit knowledge on improving service quality dimensions, such as responsiveness, reliability, and ease of access.
- To propose strategies to enhance the application of knowledge management in healthcare institutions to improve service quality.

This study selected Al-Sadr Teaching Hospital in Najaf Governorate as the research site. A questionnaire was used and distributed to 75 specialist physicians and senior residents. Multiple linear regression analysis was employed to examine the relationship between content dimensions, knowledge processes, and the quality of health services, testing the validity of the main and sub-hypotheses. In addition, simple linear regression analysis was used to explore potential effects between variables, with the t-test determining the

[1]Mohanad Talab Sowadi and Abbas Muzel AL-Mochrif, The Role of Knowledge Management in Improving the Quality of Health Services: A Case Study in Al-Sadr Medical Hospital in Najaf Al-Ashraf, AL Ghary Journal of Economic and Administrative Sciences, Volume 17, Issue 4, 2021, pp. 44- 107.

significance of the simple correlation and the F-test determining the significance of the regression equation. $R^2$ was used to explain the effect of independent variables on the dependent variable. The study yielded several conclusions, the most significant of which was:

- There are significant positive effects of explicit and implicit knowledge and their management processes on the quality of health services.
- The relationship between knowledge management and healthcare service quality was statistically significant, suggesting that better knowledge management leads to improved service quality.

The study recommended the establishment of specialized knowledge management units within hospitals to support continuous improvement in service quality.

6. **Study of Mahmoud Mohamed Ahmed Abdurrahman Halali (2022):** An article titled **"Knowledge Management Processes as a Gateway to Achieving Quality Healthcare Services: A Case Study Applied to Family Health Centers in Alexandria Governance"**[1].

The study examines how knowledge management operations can improve the quality of healthcare services offered at family health centers. It focuses on understanding the role of knowledge management in addressing challenges faced in healthcare service delivery and how it can be leveraged to improve service quality. It aimed to:

- To analyze the relationship between knowledge management practices, a modern administrative approach, and the improvement of health care quality in family medicine centers.

[1] Mahmoud Mohamed Ahmed Abdurrahman Halali, Knowledge Management Processes as a Gateway to Achieving Quality Healthcare Services: A Case Study Applied to Family Health Centers in Alexandria Governance, The Social Service Journal, volume 74, issue 2, 2022, p321-368.

_ To measure knowledge management's impact on healthcare services' efficiency and effectiveness.

_ To propose strategies for improving the application of knowledge management in healthcare to enhance service quality.

In this study, the primary tool used for data collection was a structured questionnaire. This questionnaire was distributed to 166 healthcare workers in family health centers in Alexandria Governorate to gather their opinions and insights on the impact of knowledge management on the quality of healthcare services.

The study concluded that:

_ There is a significant correlation between the implementation of knowledge management practices and the quality of healthcare services, with knowledge management contributing to 61% of the improvement in service quality.

_ Knowledge distribution and application processes were the most influential factors in enhancing healthcare service quality.

_ The study found that effective knowledge management is essential for providing high-quality healthcare services and recommended integrating these practices to address current challenges in the healthcare sector.

7. **Study of Mohamed Moneeb Mahmood Al-Dabbagh and others (2022):** An article titled **"Knowledge Management Processes and its Reflection on Quality of Health Service / A Pilot Study of the Opinions of a Sample of Workers in Ibn Al-Atheer Teaching Hospital for Children in Mosul"**[1].

The study addressed the challenges that health organizations face when attempting to improve the quality of healthcare services. It specifically focused

[1] Mohamed Moneeb Mahmood Al-Dabbagh et al, Knowledge Management Processes and their Reflection on Quality of Health Service / A Pilot Study of the Opinions of a Sample of Workers in Ibn Al-Atheer Teaching Hospital for Children in Mosul, Kut College Journal, special issue, 2022, p168-181.

on the role of knowledge management operations, including knowledge generation, storage, distribution, and application. The main issue identified was the lack of effective knowledge management practices and their impact on the quality of healthcare services at Ibn Al-Atheer Teaching Hospital for Children in Mosul. The study aimed:

- To identify the relationship between knowledge management processes (generation, storage, distribution, and application of knowledge) and health service quality.
- To assess the awareness and understanding of knowledge management among the staff.
- To evaluate knowledge management's impact on healthcare services' efficiency and effectiveness.

To achieve these goals, the study utilized a structured questionnaire distributed to a sample of 36 staff members at the hospital. The collected data were analyzed using statistical methods, specifically the SPSS software (version 23). The analysis included tests for correlation and regression to determine the relationships and effects between the variable of knowledge management and healthcare service quality. The study reached a set of conclusions, the most important of which is that:

- There is a significant positive correlation between knowledge management processes and health service quality.
- Each of the knowledge management processes—knowledge generation, storage, distribution, and application—individually contributes positively to improving the quality of healthcare services.
- Among the knowledge management processes, knowledge distribution had the strongest impact on the quality of healthcare services.

_ The study concluded that effective implementation of knowledge practices is crucial for enhancing the overall quality of healthcare services in hospitals.

The study recommended that the hospital administration demonstrate a growing interest in knowledge management processes and work to implement them more effectively, particularly in knowledge generation. Additionally, the hospital must develop a knowledge management strategy.

8. **Study of Abrar Faleh Al-Salami (2024):** An article titled **"The Role of Knowledge Management Processes in Developing Health Services - Literature Review of the Topic-"[1]. This study examines how Knowledge Management Processes can contribute to the development and improvement of health services. It focuses on reviewing the literature on the subject of "Knowledge Management Processes and Health Services". It provides an analysis of the emergence of studies and research trends in the literature on the subject, tracing their development. The study aimed to achieve several objectives, such as:

_ To explore the development of topics and research trends related to "knowledge management processes and health services".

_ To identify key Arab and foreign studies addressing the literature on "knowledge management processes and health services".

_ To track the digital index of literature on "knowledge management processes and health services" in search engines and databases.

The study employed a literature review methodology, utilizing both descriptive and analytical approaches to examine existing publications available in Arabic and foreign languages. It also reviewed research published using databases such as Google Scholar, IEEE Xplore, and others, as well as

[1]Abrar Faleh Al-Salami, The Role of Knowledge Management Processes in developing health services-Literature Review of the Topic-, Arab Journal for Scientific Publishing, Volume 7, Issue 69, 2024, p22-47.

conferences, workshops, and scientific societies that addressed the subject. The literature review covered studies published over the last eighteen years, from 2006 to 2023. "The study yielded the following key results:

- Highlighting the substantial impact of knowledge management on enhancing health services, especially in the decision-making processes within the healthcare sector.

- Identifying various research topics such as the challenges and barriers of knowledge management in healthcare, the influence of knowledge management on service quality, and the role of IT in healthcare knowledge management.

- Concluding that efficient knowledge management processes are vital for the ongoing improvement of healthcare services.

The study recommended further integrating knowledge management processes within healthcare institutions. This integration should focus on customer needs and utilize information systems and technology to keep pace with developments in service provision, ultimately improving the quality of health services.

9. **Study of Salah Ali Saeedan Al-Mansour et al (2025):** An article titled "**The Knowledge Management Processes and their Role in improving the Quality of Health Sector: An Applied study at King Khalid Hospital in Najran"**[1]

This study addresses the growing need to improve the quality of health services in Saudi Arabia, in light of increasing demand, rapid development, and challenges in efficiency and effectiveness. It investigates the role of knowledge

[1] Salah Ali Saeedan Al-Mansour, Ibrahim Muhammad Ali Saada, and Nada Mohamed Hafez Ibrahim, The Knowledge Management Processes ant its Role of in improving the Quality of Health Sector: An Applied study at king Khalid Hospital in Najran, The Scientific Journal of Business and Environmental Studies, Volume 16, issue 1, 2025, P281-309,

management in enhancing the quality of health services at King Khalid Hospital. The study aimed to achieve several objectives, such as:

- To identify the impact of knowledge management Processes (diagnosis, generation, storage, transfer, distribution, and application) on the quality of health service at King Khalid Hospital in Najran.
- To measure the employees' perception of knowledge management and its contribution to service quality.
- To analyze the relationship between knowledge management and various dimensions of service quality (responsiveness, reliability, assurance, empathy, and tangibility).

The study employed a descriptive-analytical approach. A questionnaire was used as the primary data collection tool, distributed to random sample of 300 employees working at King Khalid Hospital in the Najran region, with their various job titles (doctor, nurses, technicians, support services staff, and administrators). The collected data were analyzed statistically to test the research hypotheses. The study resulted in the following key findings:

- Employees at King Khalid Hospital showed a high level of awareness regarding knowledge management concepts and processes (M= 3.76).
- The perceived quality of health services was also high from the employees' perspective (mean = 3.75).
- Knowledge management processes had a statistically significant effect on the quality of healthcare services across its dimensions.

The study recommended encouraging staff at King Khalid Hospital to actively exchange knowledge among themselves to foster a collaborative work environment and ensure the successful completion of tasks according to their respective specializations.

**10. Study of Amnah Mubarak Alluqmani and Hana Ali AlDahawi (2025)**: An article titled **"Knowledge Management Strategy and Health Sector (Review of the Literature)**[1]

This study provides a comprehensive review of the literature related to knowledge strategy in the healthcare sector, stemming from the importance of integrating both fields to enhance the quality of healthcare services and improve the efficiency of institutions operating in this vital sector. The study addressed the development of concepts related to the terms "knowledge management strategy" and "healthcare sector", documented their initial appearance in both Arabic and foreign intellectual production, and reviewed the most prominent relevant conferences and scientific associations. The study set out to achieve multiple objectives, including:

- To explore the role of knowledge management strategies in enhancing the quality and effectiveness of healthcare services.
- To describe ways to integrate knowledge management into global and local health policies.
- To promote the translation of knowledge into policies, practices, and improved health outcomes.

The study employed a descriptive and analytical approach, relying on documentary analysis of global health strategies, World Health Organization reports, and secondary data sources. No primary data collection was mentioned. The study focused on a content analysis of literature published in Arabic and English between 2004 and 2024, analyzing secondary sources such as theses, studies, plans, articles, conference proceedings, and workshops, with precise digital tracking of terms through various databases and search engines.

[1] Amnah Mubarak Alluqmani and Hana Ali AlDahawi, Knowledge Management Strategy and Health Sector (Review of the Literature), International Journal of Research and Studies Publishing, volume 6, issue 69, p157-188.

The study found that knowledge management strategies enhance decision-making, improve health outcomes, increase efficiency, and support innovation in healthcare. It plays a key role in facilitating better access to information and knowledge sharing, thereby bridging the gap between research and healthcare practices. The World Health Organization continues to focus on this area through periodic knowledge management strategies.

The study recommends adopting and institutionalizing knowledge management practices within global and national health systems to ensure sustainable improvement in service quality, decision-making, and organizational learning.

- **Foreign studies**

1. **Study of Toba Bryant (2002):** An article titled **"Role of Knowledge Management in Public Health and Health Promotion Change"**[1]

This study examined the role of various forms of knowledge management in shaping public health and health promotion policies, with a focus on the gap in understanding how scientific, interactive, and critical knowledge contribute to policy development and the challenges faced by health promoters in influencing policy changes. The study aimed to achieve three main objectives:

1- To analyze how various forms of knowledge (scientific, interactive, and critical) influence the development of public health promotion policies.
2- To examine the relationship between knowledge, political ideology, and the success of policy advocacy efforts.
3- To propose a framework that integrates diverse forms of knowledge to guide policy change in health promotion.

[1] Toba Bryant, Role of Knowledge Management in Public Health and Health Promotion Change, HEALTH PROMOTION INTERNATIONAL, volume 17, issue 01, 2002, p.89-98.

Data were collected through document reviews and in-depth interviews with key informants, including professional policy analysts and community activists. Case studies on housing and healthcare policy in Toronto, Canada, were used to illustrate the role of knowledge in the policy change process. The analysis was guided by a conceptual framework of policy change, which classified knowledge as instrumental, interactive, or critical, and coded policy shifts as normal, paradigmatic, or gradual paradigmatic change. The findings revealed that:

- Different types of Knowledge, such as scientific studies (instrumental knowledge), anecdotal evidence (interactive knowledge), and alternative perspectives (critical knowledge), play essential roles in influencing policy decisions.
- Political identity and ideology significantly affect the receptivity of government to the knowledge presented by civil society actors.
- The success of policy advocacy efforts often depends on the alignment of knowledge, the prevailing political ideology, and the identity of the advocates.

Based on the previous insights, the study recommends that health promoters strategically combine instrumental, interactive, and critical knowledge to effectively influence policy changes, remain attentive to dominant policy paradigms and ideological barriers, and foster collaboration between experts and community members to ensure more responsive and equitable health promotion policies.

2. **Study of Amararachchi J.L. and others (2013):** An article titled **"Knowledge Management Framework for Achieving Quality of Healthcare in Developing Countries"**[1]

This study investigated the severe shortage of medical experts in rural and remote health institutions in developing countries and its direct impact on healthcare quality, with a focus on evaluating the effectiveness of Knowledge Management Systems (KMS) in enhancing clinical activities in such settings. The study aimed to achieve multiple objectives, including:

- To identify the factors influencing knowledge management initiatives in healthcare.
- To develop a conceptual framework to support the design of a clinical Knowledge Management System (KMS) for improving healthcare quality in rural and remote areas.

Using a case study methodology, data were collected through surveys distributed to physicians in 105 health institutions in the rural and remote Kandy district of Sri Lanka, yielding a 55.2% effective response rate. Data analysis combined descriptive statistics to examine the factors affecting access to clinical knowledge, and regression analysis was used to test their significance.

The findings highlighted a strong correlation between difficulties in accessing information or knowledge and reduced healthcare quality. Furthermore, the attitude of medical practitioners, infrastructure availability, and the presence of effective medical information systems and software are critical factors influencing the success of Knowledge management in health organizations. The study also notes that overloaded medical practitioners in rural areas face challenges in effectively utilizing knowledge systems.

[1]Amararachchi J.L, Perera H.S.C, and Pulasinghe. K, Knowledge Management Framework for Achieving Quality of healthcare in Developing Countries, IEEE Xplore, 2013, p.1-6. doi:10.1109/ICCMA.2013.6506167.

Based on these results, the study recommended the adoption of KMS in healthcare institutions across developing countries, supported by investments in IT infrastructure, reliable communication networks, and information systems to facilitate knowledge sharing and ultimately improve the quality of healthcare delivery.

3. **Study of Frank Chikhata and Orpah Onwards Chivivi (2017):** An article titled **"The Significance of Knowledge Management in Improving the Quality of Health Care in the Public Sector in Zimbabwe"**[1]

This study investigated the impact of knowledge management on the quality of healthcare delivery in public health facilities in Zimbabwe, with a particular focus on critical outcomes such as newborn mortality reduction, patient retention on antiretroviral therapy (ART), and improved access to antenatal care (ANC) and child immunization.

Employing an explanatory research design, the study collected quantitative data through questionnaires administered to 209 nurses across health facilities in Manicaland Province, using a cluster random sampling approach. The data were analyzed through descriptive statistics and hypothesis testing via simple linear regression.

Findings revealed that:

- Knowledge management has no significance in reducing newborn mortality.
- Information technology does not substantially improve the retention of pregnant women in ANC.
- There is a positive relationship between knowledge management processes and patient retention on ART.

[1]Frank Chikhata and Orpah Onwards Chivivi, The Significance of Knowledge Management in Improving the Quality of health care in the Public Sector in Zimbabwe, Information and Knowledge Management, volume 07, issue 05, 2017, p.16-30.

- Human capital had a significant impact on the access to immunization for children under one year in health facilities.

Based on the previous study findings, the study recommended that the Ministry of Health and Child Care (MoHCC) strengthen the integration of knowledge management alongside other interventions to improve healthcare outcomes. Furthermore, the ministry is advised to maximize the use of information technology, particularly through patient-level electronic monitoring systems for ART, and to enhance human resource management strategies to motivate healthcare workers and encourage knowledge sharing, thereby improving child immunization coverage.

4. **Study of Leila Shahmoradi and others (2017):** An article titled **"Knowledge Management Implementation and the Tools Utilized in Healthcare for Evidence-Based Decision Making: Systematic Review"**[1]

This study examines the growing importance of effective knowledge management in the healthcare sector, with a particular focus on how the implementation of knowledge management systems (KMS) and tools can enhance evidence-based decision-making. The main objectives were:

- To investigate the implementation of knowledge management in healthcare.
- To explore the tools used for managing knowledge in healthcare to facilitate evidence-based decision-making.
- To identify opportunities and barriers to the implementation of a knowledge management tool in healthcare.

Data were collected through a systematic review of research conducted between 2005 and 2015, drawing on four databases (PubMed Central, EBSCOhost, Health Technology Assessment, and Google Scholar), two open-

[1]Leila Shahmoradi, Reza Safadari, and Worku Jimma, Knowledge Management Implementation and the Tools Utilized in Healthcare for evidence-Based Decision Making: Systematic Review, Ethiop J Health Sci, volume 27, issue 05, 2017, p.541-558.

access journal websites, and Google Scholar. A total of 44 articles were analyzed and synthesized, with findings organized under themes related to implementation, tools, and associated opportunities and barriers.

The results indicated that knowledge management is becoming increasingly critical due to the growing volume of healthcare data and the need for informed clinical decision-making. Key tools identified include clinical decision support systems (CDSS), electronic health record systems (EHR), and communities of practice, which play significant roles in managing and disseminating knowledge effectively. However, challenges such as technological limitations, low motivation among healthcare workers, and organizational barriers hinder successful implementation.

Based on these findings, the study recommended the adoption of advanced information and communication technologies (ICT), CDSS, HER systems, and communities of practice as essential strategies for improving knowledge sharing and promoting evidence-based decision-making, ultimately enhancing the quality and safety of patient care.

5. **Study of Mochamat Nurdin and others (2019):** An article titled **"Knowledge Management in Rumah Tunggu Kelahiran (RTK) in Health Services in Sinjai District"**[1]

The study investigated the implementation of knowledge management in Rumah Tunggu Kelahiran (RTK) as a means to enhance health service performance in Sinjai District, with particular emphasis on reducing maternal mortality rates by improving access to health services for pregnant women in remote areas. The objectives of this study were threefold:

- To analyze the application of knowledge management in RTK.

[1]Mochamat Nurdin et al, Knowledge Management in Rumah Tunggu Kelahiran (RTK) in Health Services in Sinjai District, Advances in Health Sciences Research, volume 27, 2019, p.222-226.

- To identify the dimensions of knowledge management that contribute to health service performance.
- To examine the impact of these practices on service delivery.

Employing a qualitative phenomenological approach, the research collected data through observation, document review, and purposively selected interviews. The analysis followed the stages of data reduction, data presentation, and conclusion/verification.

The findings revealed four key dimensions of knowledge management:

- Building knowledge through personal experience, non-formal training, and peer guidance.
- Holding knowledge through references from schools, lectures, and parental advice.
- Pooling knowledge via Internet access and social interaction.
- Using knowledge, which is shaped by local cultural values such as sipakatau, sipakainge, and sipakelebbi.

These processes collectively support the improvement of RTK's service performance.

The study concluded with a recommendation to strengthen RTK's knowledge management by adopting more structured systems and formal training programs, while also leveraging technology to enhance the quality and efficiency of maternal health services, particularly for women in remote areas.

6. **Study of Eslyne Jane Fleurissaint and others (2020):** An article titled **"The Role of Knowledge Management in Healthcare Service Quality in Haiti"**[1]

[1]Eslyne Jane Fleurissaint, Selma Altindis, and Cigdem Ugan, The Role of Knowledge Management in Healthcare Service Quality in Haiti, Pakistan Journal of Medical & Health Sciences, volume 14, issue 01, 2020, p.407-410.

The study addressed the problem of poor integration and limited effectiveness of knowledge management systems in Haitian hospitals, which negatively affects the quality of healthcare services.

The main objective of this study was to analyze healthcare professionals' perceptions of Knowledge Management processes in hospitals and to assess their effectiveness as tools for improving healthcare quality in Haiti.

To achieve this aim, a questionnaire was administered to 295 healthcare professionals, including 54.2% nurses and 45.8% doctors, across three major hospitals in Port-au-Prince. Data were collected using a Likert-scale survey and analyzed through correlation, regression, t-tests, ANOVA, and Tukey tests with SPSS.

The findings revealed that most healthcare professionals perceive knowledge storage as highly useful; however, they found the current implementation of knowledge management systems to be less beneficial in practice. A moderate correlation was identified between knowledge management processes (creation, storage, sharing, usage) and the perceived benefits of hospital information systems, though their practical use remains limited.

The study concludes with a recommendation to establish an integrated and comprehensive knowledge management system, supported by both national policy and hospital leadership, to enhance the quality of healthcare services.

7. **Study of Raza Rabiei and others (2020):** An article titled **"Knowledge Management Status in a Non-Government public Hospital: The Current Status and Improvement Solutions**[1]

[1] Raza Rabiei, et al, Knowledge Management Status in a Non-Government public Hospital: The Current Status and Improvement Solutions, Journal of Health Management and Informatics, volume 7, issue1, 2020, p.26-32.

The study investigated the Knowledge Management status of a non-governmental private hospital in Tehran. It identifies that KM dimensions, especially technology, have an inappropriate status, with significant room for improvement. The study aimed to accomplish various objectives, such as:

- To determine the current Knowledge Management status of a non-government private hospital in Tehran.
- To provide solutions for improving the KM framework in the hospital.

A cross-sectional study with 171 clinical and administrative staff. Data were collected using a valid questionnaire with four sections: demographic information, KM process, technology, and people. Data analysis was conducted using SPSS version 20, employing both descriptive and analytical statistics.

The study resulted in the following key findings:

- The overall KM status in the organization was moderate (3.12 out of 5).
- The people dimension had the best status (3.14 out of 5), while technology had the worst (2.72out of 5).
- There was a significant correlation between people and technology (r=0.59), but no significant relationship between processes and technology

The study recommended that hospital managers improve technology infrastructure by providing the necessary hardware and software. Additionally, involving all staff in the KM process will enhance the hospital's knowledge capabilities, improving the quality of healthcare services.

8. **Study of Sanjib Raj and Parzdyut Kumar Borah (2020):** An article titled **"An Insight into Practiced Knowledge Management Framework in Hospitals: A Case Study of Hospitals in Guwahati, Assam"**[1]

[1] Sanjib Raj and Parzdyut Kumar Borah, A Insight into Practiced Knowledge Management Framework in Hospitals: A Case Study of Hospitals in Guwahati, Assam, IOSR Journal of Business and Management, Volume 22, Issue 10, 2020, p. 45-54.

# Introduction

This study examines the application of knowledge management (KM) in hospitals in Guwahati, Assam, with a focus on the systematic processes necessary to enhance hospital performance and healthcare service delivery. It highlighted the lack of a formal KM framework in these institutions. The objectives were to assess the KM frameworks adopted by hospitals, identify existing patterns of KM practices and models, examine the role of KM in corporate strategy and culture, and propose a broad framework to enhance organizational performance.

Using a stratified random sampling method, data were collected from 120 healthcare administrators across 30 hospitals through the use of structured questionnaires. The analysis focused on six KM enablers: strategy, culture, data capture processes, leadership, technology, and corporate politics, with findings presented as a percentage response.

Results showed that KM in Guwahati hospitals remains rudimentary, primarily limited to record-keeping and training activities. Although KM is valued, it is not fully embedded in hospital operations, with only half of the respondents reporting the presence of a formal KM program. Technology use is minimal, and most hospitals lack a structured KM framework. Leadership emerged as a critical factor, with middle management driving KM initiatives in 58.3% of hospitals.

The study recommended the development of a structured KM framework, enhanced use of technology for data capture and knowledge sharing, and the cultivation of a supportive corporate culture. Additionally, greater involvement of hospital boards and senior leadership is crucial to align KM initiatives with organizational strategy and ensure sustainable improvements in healthcare delivery.

9. **Study of Daviq Ayatulloh and others (2023**): An article titled **"The Effect of Knowledge Management in Healthcare Services: A Systematic Review"**[1]

This study addressed the problem that healthcare facilities face in ensuring service quality, with particular focus on the performance of health workers, which is significantly influenced by effective knowledge management. Despite its potential, the extent to which knowledge management enhances healthcare services remains unclear.

This study aimed to analyze the effectiveness of knowledge management in healthcare services, assess its role in supporting decision-making and improving healthcare outcomes, and provide evidence-based insights for integrating knowledge management practices in hospitals and health facilities.

A systematic review was conducted using databases such as Scopus, PubMed, ScienceDirect, CINAHL, and ProQuest, covering the period 2016-2020. Quality assessment tools included the Center for Review and Dissemination (CRD), Joanna Briggs Institute Guidelines, and the PRISMA checklist, resulting in the inclusion of 13 eligible articles.

Findings indicate that knowledge management improves information and knowledge processes, enhances healthcare workers' decision-making abilities, strengthens performance and service quality, and contributes to better patient outcomes, while also fostering collaboration and organizational learning.

Based on these results, the study recommended that healthcare institutions adopt structured knowledge management systems to enhance decision-making, improve service quality, and promote continuous learning among health workers.

[1] Daviq Ayatulloh, Nursalam, and Ninuk Dain Kurniawati, The Effect of Knowledge Management in Healthcare Services: A Systematic Review", Jurnal Pendidikan keperawatan Indonesia, volume 9 issue 1, 2023, p102-116.

10. **Study of Anamarija Kejžar and others (2023):** An article titled **"The Impact of Knowledge Management on the Quality Services in Nursing Homes"**[1]

This study addressed the challenges faced by nursing homes, including staff shortages, increasing demands, and high expectations from residents, highlighting the need for innovative strategies to improve service quality.

The study investigates the impact of Knowledge Management practices, namely knowledge creation, storage, transfer, and implantation, on the quality of services in nursing homes, while also comparing the practices adopted in Slovenian state-owned nursing homes that employ the E-Qalin quality management model with those in private nursing homes that operate with their own quality systems.

Data were collected through surveys completed by 80 nursing professionals from four nursing homes in Slovenia and analyzed using linear regression to identify relationships between variables.

The results demonstrated significant positive relationships between KM practices (Knowledge creation, storage, transfer, and implantation) and service quality, whereas knowledge storage was positively associated with service quality only in nursing homes without the E-Qalin certificate. Furthermore, teamwork and multidisciplinary approaches were found to be essential for effective KM and for driving quality improvements.

The study recommended implementing KM practices, particularly by fostering teamwork and involving residents in care planning, as a key strategy to improve service quality in nursing homes.

[1] Anamarija Kejžar, Vlado Dimovski, and Simon Colnar, The Impact of Knowledge Management on the Quality Services in Nursing Homes, Frontiers in Psychology, Volume 13, 2023, p.01-14.

11. **Study of Nuno Pereira and Cristina Fernandes (2025):** An article titled **"Knowledge Management in Health organizations: A systematic Literature Review"**[1]

This study addressed the fragmented nature of healthcare knowledge, which poses major challenges for effective management as organizations attempt to balance responsiveness and cost containment while ensuring high-quality care. Its objectives were:

- To explore the effectiveness of KM tools in healthcare organizations, and analyze their impact on KM practices,
- To identify key research lines and clusters within the field.
- To propose an integrative framework with future research directions.

Data were collected from the Web of Science (WoS) database, focusing on journal articles published between 1999 and 2023, resulting in a final sample of 69 articles. Through content analysis, the study found:

- KM tools, including digital platforms, Artificial Intelligence (AI), telemedicine, blockchain, the Internet of Things (IoT), networks of practice, and electronic health record (EHR) systems, significantly enhance efficiency and effectiveness.
- Five thematic clusters were identified: synergy, digital transformation, challenges, human resources, and social networks.
- Growth in publications and citations shows increasing scientific interest, especially after 2020.
- Empirical studies are becoming more prevalent in the field.

The study recommended that healthcare organizations strategically adopt and integrate KM tools to improve efficiency, overcome fragmented knowledge,

[1]Nuno Pereira and Cristina Fernandes, Knowledge Management in Health organizations: A systematic Literature Review, Journal of the Knowledge Economy, 2025, p. 1-73. https://doi.org/10.1007/s13132-025-02760-3.

balance technological and human resources, and ensure sustainability while maintaining high-quality care.

- **Aspects of Benefit from Previous Research:**

This study has drawn significant insights from the previous studies in multiple ways, including:

- Defining the main variables and sub-variables of the study and exploring potential relationships between them.
- Establishing the theoretical framework that underpins the study.
- Refining the study problem and emphasizing its significance.
- Identifying the most appropriate methods for diagnosing the study population.
- Determine the appropriate statistical techniques for data analysis.
- Previous studies also contributed to the development of a well-structured questionnaire.

- **What Distinguishes the Current Study from Previous Research**

The present study is set apart from earlier research in several key respects. First, it was conducted in Algeria, a context that differs substantially from the Western and Broader Arab environments in which most prior studies were undertaken. Second, unlike the majority of studies that focused on the private healthcare sector, this research examined knowledge management within the public health sector. Third, it concentrated specifically on University Hospital Centres, which are characterised by distinctive structural and functional features compared to other public health institutions in Algeria. These UHCs are distributed across various provinces but share affiliation with the central region.

Furthermore, the study drew on a relatively large sample that encompassed healthcare workers of diverse occupational categories, in contrast to many earlier studies that relied on smaller or more narrowly defined samples. Most importantly, the study conceptualized the independent variable, Knowledge

management, through five dimensions: knowledge acquisition, knowledge creation, knowledge storage, knowledge sharing, and knowledge application. This multidimensional framework offers a more comprehensive approach than previous studies, which often focused on only a subset of these dimensions or approached them from different angles.

This study also stands out for employing JASP, an innovative, free, and open-source program, in the analysis of the obtained data.

❖ **Study difficulties :**

Like all research endeavours, we encountered several challenges during the course of this study. The most significant among them were:

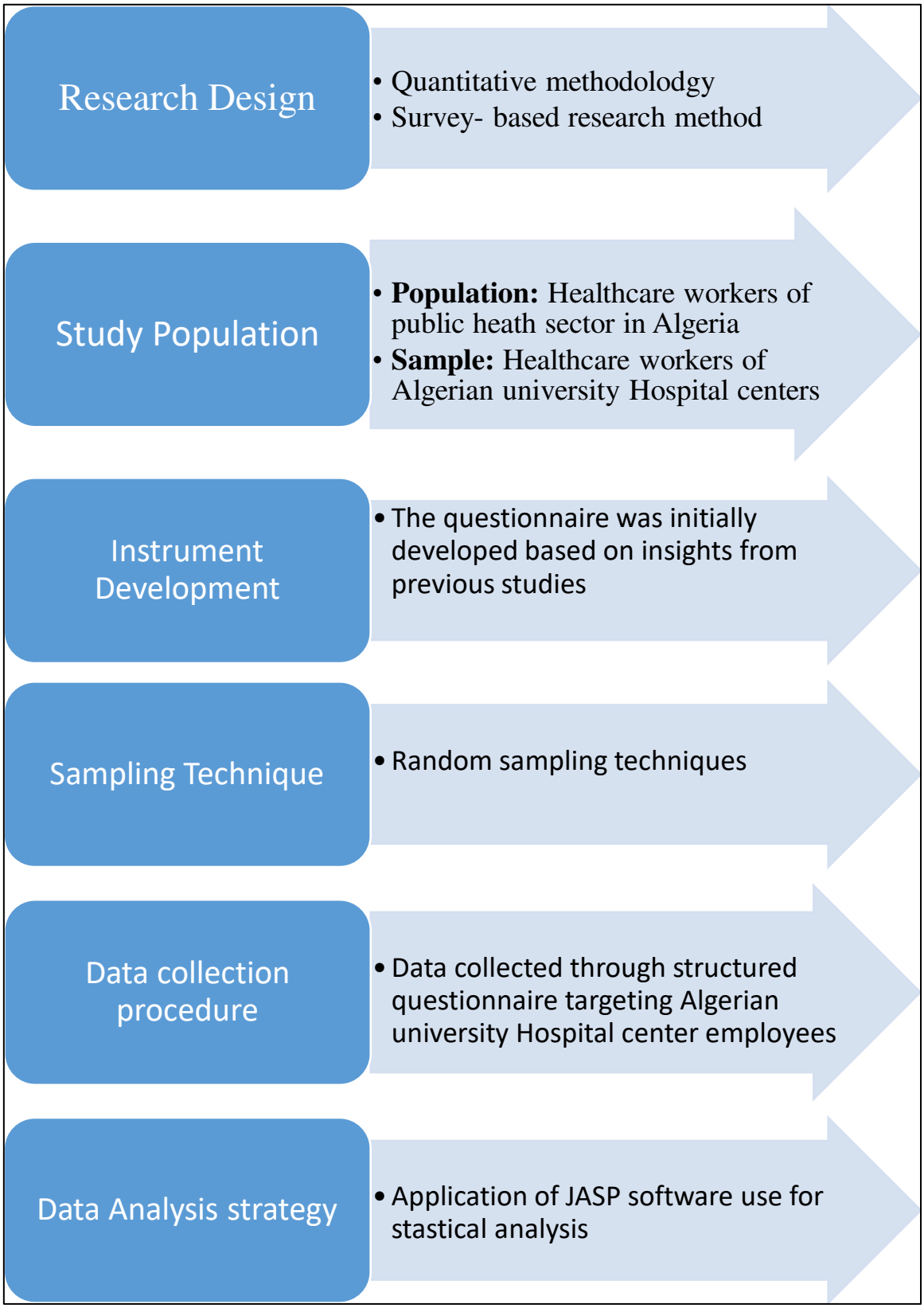
- Limited availability of English-language resources and references related to knowledge management and public health services in Algerian libraries.
- Inability to access international databases, obtain citations from reputable journals and well-known researchers, and download recent articles related to the study variables, mainly due to technical issues with the SNDL platform and, at times, the lack of access credentials for major academic databases.
- Language barrier, as the study was conducted in English, which is considered a second foreign language in Algeria, and is not commonly used in academic research at the national level.
- Lack of a survey culture within the Algerian university hospital centers in general, and particularly among the study sample, which affected the response rates and engagement.
- Access restrictions to certain departments within the selected university hospital centers, which in some cases forced the researchers to shift to alternative departments.
- Operational and logistical challenges, including low questionnaire return rates, limited engagement with the electronic version attached to the paper-based form, and frequent turnover of medical and paramedical staff in the university hospital centers under study, and the significant distance between the hospital centers and the researchers' place of residence.

- One of the main difficulties encountered in this research was the lack of funding for the applied component of the study, whether from the internal university sources (research teams or laboratories) or from external institutions (public or private).

❖ **Methodology of research:**

This study examines the relationship between knowledge management (KM) processes and the quality of public health services by assessing healthcare workers' perceptions. A quantitative methodology is adopted, employing a survey-based research approach. Previous studies investigating the impact of knowledge management on improving health services have demonstrated the effectiveness of this methodology in this context. Figure 02 presents a diagram summarizing the methodological approach and data analysis procedures employed in the study, with a detailed description of each stage provided in the subsequent subsections.

**Figure 02:** Overview of the Research Methodology




**Source:** Prepared by the researcher

❖ **Operational Definition of Terms**

- **Knowledge Management:** it encompasses all organizational practices that facilitate the acquisition, creation, storage, sharing, and application of knowledge to enhance institutional effectiveness and innovation.
- **Knowledge Acquisition:** The process of obtaining valuable knowledge from various sources and transforming it into something practical.
- **Knowledge Creation:** the process that involves developing new ideas and solutions that contribute to organizational growth.
- **Knowledge Storage**: The process involves saving important knowledge in an organized way so it can be easily found and used later.
- **Knowledge Sharing:** The process involves passing on knowledge and skills to others, enabling everyone to learn and perform their jobs more effectively.
- **Knowledge Application:** the process that involves using organizational knowledge to enhance work processes, develop new products, improve services, and increase efficiency.
- **The Quality of Health Services:** The degree to which healthcare delivery meets established professional standards and effectively improves patient outcomes.
- **Reliability:** The ability to provide consistent and dependable healthcare services
- **Responsiveness**: The willingness and ability to help patients and provide prompt service.
- **Assurance**: The ability of healthcare providers to inspire trust and confidence.
- **Empathy:** The provision of caring and individualized attention to patients.
- **Tangibles:** The physical facilities, equipment, and appearance of healthcare personnel

### ❖ Structure of the Thesis

To address the research problem and meet its objectives, the study is organized into four chapters: three theoretical ones and one applied chapter. The first theoretical chapter covers key concepts of knowledge management, including its processes, models, and strategies. The second chapter provides definitions and concepts related to the services sector, especially public and healthcare services, emphasizing their importance, characteristics, and levels, as well as models for measuring their quality. The third chapter examines knowledge management in healthcare institutions, discussing both theoretical ideas and various international experiences. Lastly, the applied chapter assesses the current state of knowledge management and its role in enhancing healthcare service quality at the university hospital centers in the central region, which serve as the study site. This chapter also details the research methodology, defines the study sample, and describes its characteristics, enabling us to test the hypotheses and ultimately answer the research problem, along with relevant recommendations and future prospects from the study.

# Chapter One:

## Knowledge Management: An Overview and Basic Concepts

## Introduction:

Knowledge has become the cornerstone of today's rapidly evolving economic landscape. In a world where traditional resources, such as capital and labor, while still important, are no longer the sole drivers of progress, knowledge stands out as a vital asset that fuels innovation, enhances competitiveness, and fosters sustainable growth. Its strategic importance spans individuals, organizations, and nations, making it a critical resource for achieving differentiation and maintaining relevance in dynamic markets.

The unique value of knowledge lies in its ability to bridge gaps, solve complex problems, and open pathways to new opportunities. Unlike static resources, knowledge evolves and grows through sharing, collaboration, and application, becoming a powerful catalyst for innovation and advancement. This intrinsic potential makes systematic knowledge management not just a necessity but a fundamental pillar for success in the modern era.

As the global economy becomes increasingly interconnected and technology-driven, the ability to effectively manage and utilize knowledge is now a decisive factor in achieving long-term success. Knowledge management enables individuals and organizations to harness the collective intelligence within their networks, preserving valuable insights, fostering creativity, and enhancing decision-making. For nations, it is a cornerstone for building intellectual capital, driving research and development, and shaping sustainable economic policies.

By recognizing the pivotal role of knowledge and implementing effective strategies for its management, entities at all levels can unlock hidden potential, maximize efficiency, and achieve a competitive edge.

Whether leveraging tacit expertise, capturing explicit information, or fostering an environment of continuous learning, knowledge management enables innovation, growth, and resilience in an ever-changing world.

This chapter clarifies and elaborates on the key concepts of knowledge and the processes involved in knowledge management. It will also discuss the most prominent models and strategies associated with knowledge management. Additionally, we will outline the requirements for effective implementation of knowledge management and explore various methods for measuring its impact.

## 1. Conceptual Framework of Knowledge

In light of the significant changes in the economy and the growing acknowledgment of the crucial role knowledge plays in various economic and social domains, knowledge and its applications have become strategic priorities. This transition has positioned knowledge at the center of institutional efforts, particularly for organizations seeking innovation, competitiveness, and excellence.

### 1.1. Concept of knowledge

#### 1.1.1 Definition of knowledge

The traditional idea of knowledge has been a central topic of debate since ancient Greek philosophy, particularly in the contrast between rationalism and empiricism. In empiricism (represented by philosophers like Aristotle and Hume), knowledge is gained through experience, specifically through observational experience, where knowledge is constructed from initial observations. In contrast, in rationalism (represented by philosophers such as Plato, Descartes, and Kant), knowledge is obtained through deductive reasoning, a process that uses

reason to filter perceptions[1]. Regardless of the philosophical approach, knowledge fundamentally involves the mental processes of comprehension, understanding, and learning, which, while centered in the mind, are shaped by interactions with the external world and others[2].

J.Y. PRAX describes knowledge as "the emergence of a coupling, a balance between the cognitive being (individual) and their environment (society)" [3]

Knowledge is defined “as a resource, an element of the system’s wealth, as variable structuring formally the complexity of evolution routes and innovation mechanisms”[4]. It is also defined as “information combined with experience, context, interpretation, and reflection”[5].

Most of the previously mentioned definitions align with one of the two perspectives identified by Empson (2001), who distinguished between two broad alternative views of knowledge: one conceptualizing knowledge as an asset, and the other considering knowledge as a process. The former perspective assumes that knowledge is an objectively definable commodity, emphasizing the need to identify valuable knowledge effectively within the organization. In contrast, the latter perspective views knowledge as a social construct, suggesting that it cannot be managed as an objective entity but

[1] Steve Fuller, Knowledge management foundations, Butterworth–Heinemann, U.S.A, 2002, pp 30-31.
[2] David Griffiths and Serge Koukpaki, Are We Stuck with Knowledge Management? A Case for Strategic Knowledge Resource Development, Chapter in: Organizational Learning and Knowledge: Concepts, Methodologies, Tools and Applications, volume 1, INFORMATION SCIENCE REFERENCE, Hershey, New York, 2012, p 2.
[3] Meriem CHERFOUH, La conception d'un modèle descriptif des pratiques du Knowledge management au sein des entreprises algériennes certifiées ISO 9001, Thèse du Doctorat, École des Hautes Études Commerciales d’Alger, Algérie, 2014/2015, p. 128.
[4] Pierluigi Catalfo, Methodological Accounting Tools for the Evaluation of Intangibles Management in Research Institutions: Some Empirical Remarks, Journal of Service Science and Management, issue 08, 2015, p. 639.
[5] Thomas H. Davenport, David W. Long, and Michael C. Beers, Successful Knowledge Management Projects, Sloan Management Review, volume 39, issue 2, 1998, p 43.

rather must be cultivated through social interactions[1]. The differences between these two perspectives are shown in Table 1-1 below.

**Table 1-1:** Alternative perspectives on knowledge in organizations

| Perspective | Knowledge as an asset | Knowing as a process |
|---|---|---|
| **Purpose of research** | Normative<br>To identify valuable knowledge and to develop effective mechanisms for managing that knowledge within organizations | Descriptive<br>To understand how knowledge is created, articulated, disseminated, and legitimated within organizations |
| **Disciplinary foundations** | Economics | Sociology |
| **Underlying paradigm** | Functionalist | Interpretive |
| **Epistemological Assumptions** | Knowledge as an objectively definable commodity | Knowledge as a social construct |
| **Models of knowledge transmission** | Exchanges of knowledge among individuals are governed by an implicit internal market within Organizations | Knowledge is disseminated and legitimated within organizations through an ongoing process of Interaction among individuals |
| **Main levels of analysis** | Organization and its knowledge base | An individual in social context |

**Source:** HAN Lai, Reconceptualising knowledge seeking in knowledge management: towards a knowledge seeking process model, PHD thesis, University of Northumbria at Newcastle, England, 2011/ 2012, p. 44.

## 1.1.2 Knowledge Hierarchy

For a better understanding of KM, it is useful to clarify the relationship between data, information, and knowledge. One of the most confusing aspects of the practice is clarifying exactly what constitutes knowledge,

[1] Laura Empson, Introduction: Knowledge management in professional service firms, Human Relations, SAGE Publications, Volume 54, Issue 7, pp 813-814.

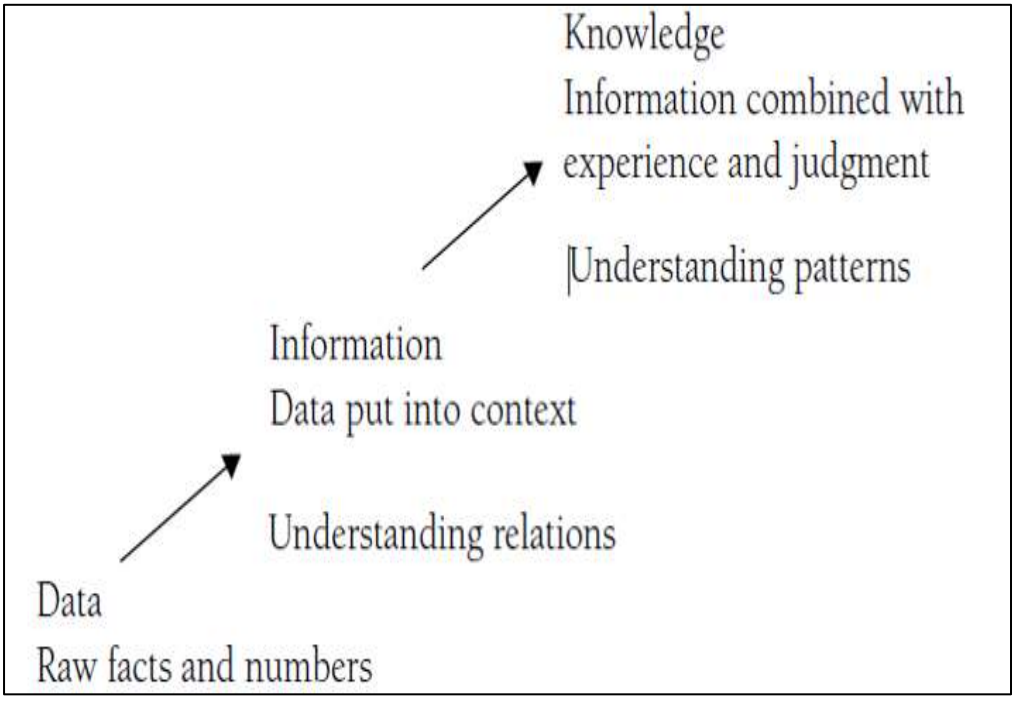
information, and data. Although the academic community has spent decades debating the issue, these definitions and concepts apply[1] :

- Data: The nature of data is raw and without context. It simply exists and has no significance beyond its existence. It can exist in any form, usable or not. A spreadsheet typically begins by storing data.
- Information: Information is data that has been given meaning through context. A spreadsheet is often used to organize and present information from the data stored within it.
- Knowledge is information combined with understanding and capability; it lives in people's minds. Typically, knowledge provides a level of predictability that usually stems from the recognition of patterns. Knowledge guides action, whereas information and data can merely inform or confuse.

The evolution of epistemology parallels the modern understanding of the knowledge creation hierarchy, which progresses from data to information to knowledge, as illustrated in Figure 1-1.

[1] Todd R. Groff, Thomas P. Jones, Introduction to Knowledge Management: KM in Business, Butterworth Heinemann, Elsevier, 2003, pp. 2-3.

**Figure 1-1**: From Data to Knowledge




**Source:** Ian Watson, Applying Knowledge Management: Techniques for Building Corporate Memories, Morgan Kaufmann Publishers, San Francisco, CA, 2003, p. 7.

### 1.1.3 Characteristics of Knowledge

Knowledge is a renewable, reusable, and accumulating resource of value to the firm when applied in the production of products and services. Knowledge cannot be stored in computers; it can only be stored in the human brain. According to Fahey and Prusak (1998), knowledge is what a knower knows; there is no knowledge without someone knowing it[1].

McDermott (1999) has stipulated what differentiates knowledge from data and information. According to him, six characteristics of knowledge make it different from these two[2] :

[1] Petter Gottschalk, Strategic knowledge management technology, Idea group publishing, London, 2005,p 58.

[2] Pradyut Kumar Borah et al, Practical Application of Knowledge Management Models: Assessing Existing KM Models from the perspective of private Hospitals of North East India, Palarch's Journal of Archaeology of Egypt/Egyptology, volume 18, Issue 10, 2021, p 820.

- Knowing is a human act: knowledge is inherently tied to human perception, understanding, and action. It reflects personal or collective engagement with the world.
- Knowledge is the residue of thinking: the outcome of cognitive processes –an accumulation of insight, conclusions, and understanding derived from thought.
- knowledge is created in the present moment: it emerges dynamically, influenced by the immediate context, environment, and interaction between individuals or groups.
- knowledge belongs to communities: it is not confined to individuals but exists within social groups, reflecting shared experiences, culture, and practices.
- knowledge circulates through communities in many ways: knowledge is shared and disseminated through conversations, storytelling, collaboration, documents, and other forms of communication within a community.
- New knowledge is created at the boundaries of old: the evolution of knowledge occurs when existing ideas intersect, interact, and adapt to new situations or perspectives.

Knowledge is characterized also by a set of features, as follows[1]:

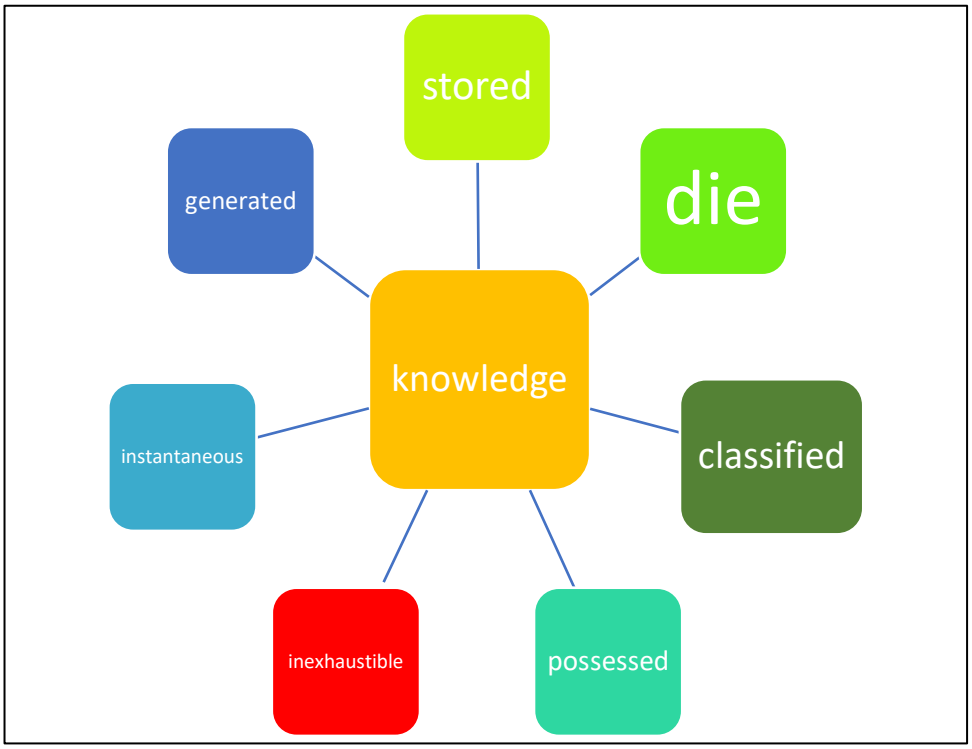
- Knowledge generation: an organization with intellectual capabilities can generate knowledge, often driven by innovative individuals who sustain creativity and innovation.

[1] Khanouche, Saliha, The Role of Information and Communication Technology in Developing E-Government Services: A Case Study of Some Municipalities in the Wilaya of Medea, unpublished PhD thesis., Business Administration Specialization, Department of Management Sciences, Faculty of Economic, Commercial, and Management Sciences, Yahia Fares University of Medea, Algeria, 2019/2020, p. 30.

- Knowledge mortality: knowledge can fade or be lost over time. While some is documented in books and journals, much dies with individuals or becomes obsolete as new knowledge emerges.
- Ownership of knowledge: valuable knowledge, such as patents and trade secrets, can be owned and safeguarded by an organization to enhance its wealth.
- Knowledge storage: knowledge can be stored using various available tools, prepared for that purpose, from traditional media like paper to advanced technological solutions.
- Classification of knowledge: Knowledge has been classified into implicit knowledge (tacit), which is personal and experience-based, and explicit knowledge, which is documented and recorded.
- Knowledge sharing: modern methods and technologies enable the unrestricted dissemination of knowledge across time and space.

There are other characteristics of knowledge that can be summarized in the following Figure 1-2.

**Figure 1-2:** Characteristics of knowledge




**Source:** BIDI Said and RADJEF Nacera, Applying Knowledge Management in Modern Business Organizations: Requirements, Strategies, and Challenges, Scientific Research Bulletins, volume 12, issue 2, 2024, pp.274-275.

## 1.2 Types of knowledge

Knowledge takes various forms. Edvinson and Malone (1997), both organizational experts, categorize knowledge into individual, structural, and managerial. They regard structural knowledge as codified into manuals and reports, and organizational knowledge as the organization's learning activity. Structural knowledge builds on data available in databases, data warehouses, and the other fluid, intangible, personalized entities that exist only in biological human brains[1].

[1] Andreea M. Serban, Jing Luan, Overview of Knowledge Management, New Directions for Institutional Research, volume 2002, issue 113, 2002, p9.

### 1.2.1 Classification based on the nature of knowledge

According to Nonaka (1991), Knowledge can be divided into two types. Depending on where it resides, Knowledge is classified into explicit and tacit. Tacit knowledge is deeply rooted in action and an individual's commitment to a specific context – a craft or profession, a particular technology or product market, or the activities of a work group or team. Tacit knowledge consists partly of technical skills –informal, hard-to-pin-down skills captured in the term "know-how." At the same time, tacit knowledge has a significant cognitive dimension. It consists of mental models, beliefs, and perspectives so ingrained that we take them for granted and, therefore, cannot easily articulate them. Thus, these implicit models profoundly shape how we perceive the world[1].

The Explicit Knowledge is the knowledge that can be articulated in formal language, including grammatical statements, mathematical expressions, specifications, manuals, etc., and can be transmitted across individuals formally and easily. Explicit knowledge can be easily codified, documented, and transferred[2]. It can also be digitized, which speeds up the process of finding and applying them[3]. Table 1-2 summarizes the features and sources of explicit and tacit knowledge.

[1]Ikujiro Nonaka, the knowledge Creating Company, Harvard Business Review, 2007, p 165.

[2]Huijeong Kim, Byung Il Park, Omar Al-Tabbaa, and others, **Knowledge transfer and protection in international joint ventures: An integrative review**, International Business Review, ELSEVIER, 2024, p3,

[3] Strugar Ivan and Fakleš Davor, Knowledge Management in Knowledge Society, Conference Paper In: Proceedings of the ENTRENOVA - Enterprise Research Innovation Conference, Rovinj, Croatia, 8-9 September 2016, IRENET - Society for Advancing Innovation and Research in Economy, Zagreb, 2016, p.276.

**Table 1-2:** Explicit Versus Tacit Knowledge

| | **Explicit Knowledge (Documented)** | **Tacit Knowledge (Know-how embedded in people)** |
|---|---|---|
| **Features** | Easily codified<br>Storable<br>Transferable<br>Easily expressed and shared | Personal<br>Context-specific<br>Difficult to formalize<br>Difficult to capture, communicate, and share |
| **Sources** | Manuals<br>Policies and procedures,<br>Databases and reports | Informal business processes and communications<br>Personal experiences<br>Historical understanding |

**Source:** Andreea M. Serban, Jing Luan, Overview of Knowledge Management, New Directions for Institutional Research, volume 2002, issue 113, 2002, p. 10. https://doi.org/10.1002/ir.34

### 1.2.2 Classification based on the compounds of knowledge

There is another classification of knowledge according to the compounds; the revised Taxonomy reorganizes knowledge categories into four, compared to three in the original framework. These include[1]:

- Factual knowledge (basic elements of a subject) forms data and information.
- Conceptual Knowledge (interrelations among elements within a structure).
- Procedural knowledge (methods and processes), techniques such as algorithmic and heuristic procedures used in expert systems or by experts who are responsible for solving certain problems.

[1] David R. Krathwohl, A Revision of Bloom's Taxonomy: An Overview, Theory into Practice, volume 41, Number 4,2002, p 214.

_ Metacognitive knowledge (awareness of and knowledge about one's own cognition).

This fourth category introduces a distinction not previously emphasized, expanding the scope of the knowledge dimension. The four categories, along with their subcategories, are shown in the Table below.

**Table 1-3:** Types of Knowledge in the Revised Taxonomy

| Category | Description | Subcategories |
|---|---|---|
| **Factual knowledge** | Basic elements required to engage with a discipline or solve problems | – Knowledge of terminology<br>– Knowledge of specific details and elements |
| **Conceptual Knowledge** | Understanding relationships among elements within a system to enable coherent functioning | – Knowledge of classifications and categories<br>– Knowledge of principles and generalizations<br>– Knowledge of theories, models, and structures |
| **Procedural Knowledge** | Knowing how to perform tasks, including methods, techniques, and criteria for application. | – Knowledge of subject-specific skills and algorithms<br>– Knowledge of subject-specific techniques and methods<br>– Knowledge of criteria for determining when to use appropriate procedures |
| **Metacognitive Knowledge** | Awareness of one's own cognition, including strategies, task knowledge, and personal understanding. | _ Strategic knowledge<br>_ Knowledge about cognitive tasks, including appropriate contextual and conditional knowledge<br>_ Self-knowledge |

**Source:** David R. Krathwohl, A Revision of Bloom's Taxonomy: An Overview, Theory Into Practice, volume 41, Number 4, 2002, p 214.

### 1.2.3 Classification Based on the Source of Knowledge

Perhaps Long and Fahey (2000) classify knowledge based on the source from which it originates and the foundation it relies on within the organization and work. The classification follows a perspective that distinguishes between individuals, groups, and organizational systems as sources of knowledge, and it is structured around three main criteria[1]:

- **Human knowledge:** This type of knowledge includes individuals know-what, know-how, and know-why. It is reflected in personal skills or expertise, which can be either tangible (such as manual skills) or abstract cognitive abilities (like analytical thinking). Individual knowledge typically consists of both explicit and tacit knowledge.
- **Social knowledge:** This kind of knowledge exists only in relationships between individuals or within groups. Social or collective knowledge is mainly tacit knowledge shared by team members and develops only because team members work together. Its presence is reflected by its ability to collaborate effectively.
- **Structured knowledge:** This is embedded in an organization's systems, processes, tools, routines, and practices. Knowledge in this form is explicit and often rule-based. A key distinction between structured knowledge and the first two types of knowledge is that structured knowledge is assumed to exist independently of individual knowers. It is, instead, an organizational resource. However, to be complete, this knowledge has to be in the heads of individuals.

## 1.3 Sources of knowledge

Since knowledge is a strategic asset for any organization, understanding and managing it is crucial. Knowledge sources are often

[1] Petter Gottschalk, OP CIT, p.69.

classified into main categories: external and internal sources. These sources can be identified as follows:

### 1.3.1 Internal knowledge sources

Internal knowledge sources are invaluable for organizations, providing insight and expertise that drive innovation and enhance performance. Internal knowledge refers to the information and skills an organization generates through its employees, teams, operational processes, and daily interactions. Internal knowledge sources stem from individual expertise, personal experiences, beliefs, and underlying assumptions of individuals within an organization. While often challenging to articulate, these sources hold significant value[1].

### 1.3.2 External knowledge sources

External knowledge encompasses knowledge acquired from sources external to a firm or organization[2]. External sourcing also refers to seeking knowledge from entities such as[3]:

- Participating in conferences to engage with emerging trends and research.
- Consulting experts to gain specialized insights.
- Reviewing academic journals, industry publications, and digital resources to stay informed about advancements.
- Monitoring media outlets for relevant economic, social, and technological developments.

[1]Inai Dulliyah Abdullah and others, Knowledge Sources: Key Factors for an Organization in Creating New Invention and Innovation, International Journal of Academic Research in Business and Social Sciences, Volume 10, Issue 11, 2020, p 1131.
[2] Inai Dulliyah Abdullah and others, OP CIT, p 1131.
[3]Michael J. Marquardt, Building the learning organization: Mastering the 5 Elements for corporate learning, 2nd edition, Davies-black publishing, U.S.A, 2002, pp. 144- 145.

- Recruiting talent with diverse expertise to introduce fresh perspectives.
- Collaborating with other organizations to share knowledge and resources through alliances and joint ventures.
- Analyzing data from customers, suppliers, competitors, and other stakeholders[1].
- From universities or research centers[2].

### 1.3.3 Knowledge repositories

While other classifications relied on the so-called knowledge repositories and their designated areas, which refer to systems where information or scholarly works of members of a particular institution are deposited for safekeeping, access, use, and dissemination, these are information technology-based systems designed to capture, store, index, and disseminate information and knowledge. Repositories are essentially being used for the acquisition, preservation, and dissemination of locally generated scholarly information. Repositories are increasingly becoming podiums for publishing original and peer-reviewed content in an open-access environment[3]. There are three types of knowledge repositories: paper documents, computer-based documents/databases, and self-memories[4]:

- Paper documents incorporate all hard copy documents and are organization-wide and group-wide references in central repositories,

[1] Sandeep Goyal, Manju Ahuja, and Atreyi Kankanhalli, Does the Source of External Knowledge Matter? Examining the Role of Customer Co-Creation and Partner Sourcing in Knowledge Creation and Innovation, Information and Management, Volume 57, Issue 6, 2020, p. 2.
[2]Ibid.
[3]De-Graft Johnson Dei and others, Knowledge Repositories for Managing Knowledge in Learning Organizations, The Electronic Journal of Knowledge Management, volume 22, issue 1,2024, p 4.
[4] Murray E. Jennex, Knowledge Management: Concepts, Methodologies, Tools and Application, Information Science reference, Hershey, New York, 2008, pp. 46-47.

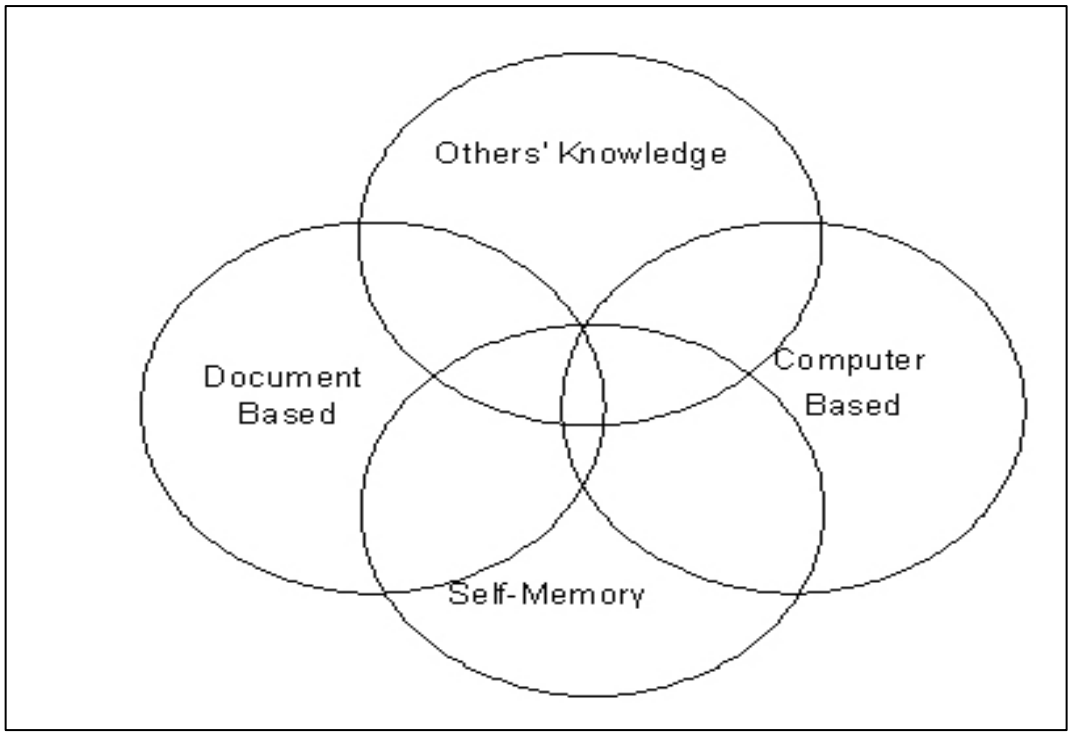
such as a corporate library. Examples include reports, procedures, pictures, videotapes, audio cassettes, and technical standards.

- Computer-based documents/databases include all computer-based information maintained at the workgroup level or beyond. These may be made available through downloads to individual workstations, central databases, or file systems. Additionally, computer documents include the processes and protocols built into the information systems. These are reflected in the interface between the system and the user, by who has access to the data, and by the formats of structured system inputs and outputs. New aspects of this type of repository are digital images and audio recordings. These forms of knowledge provide rich detail but require expanded storage and transmission capacities.
- Self-memory includes all paper and computer documents that are maintained by an individual, as well as the individual's memories and experiences. Typical artifacts include files, notebooks, written and unwritten recollections, and other archives. These typically lack an official basis or format. Self-memory is determined by what is important to each person and reflects his or her experience with the organization.

Repositories have overlapping information and knowledge, as shown in the Figure 1-3 Paper documents are indexed or digitized and stored in computer databases or files. Self-memory utilizes both paper-based and computer-based documents/databases, while computer databases or files are printed and stored. Spheres for self-memory and others' memory suggest that organizations comprise many individuals and that the knowledge base encompasses multiple self-memories. Finally, the relative size of each sphere depends on the nature of the organization.

Organizations that are highly automated and/or computerized are expected to have a greater dependence on computer-based repositories, while other organizations may rely more on paper-based or self-memory-based repositories.

**Figure 1-3:** Knowledge Repositories




**Source:** Murray E. Jennex, Knowledge Management: Concepts, Methodologies, Tools and Application, Information Science reference, Hershey, New York, 2008, pp. 46-47.

## 2. Theoretical Foundations of Knowledge Management

Research and practice in the field of Knowledge Management (KM) have expanded significantly. The emergence and development of KM have been both rapid and, at times, somewhat fragmented. As multiple disciplines have contributed to its evolution, definitions of KM remain diverse and contested. Therefore, a comprehensive review of KM literature is essential to develop a thorough understanding of the field. This includes

addressing key questions such as: What constitutes KM? What are its origins and developmental trajectories? What dominant themes and perspectives characterize this domain? This section aims to address these questions by providing a structured overview of Knowledge Management.

## 2.1 Concept Knowledge Management

### 2.1.1 Evolution towards Knowledge Management

"Knowledge Management" today encompasses a wide range of techniques, methods, and epistemologies, including information management, communication capture and management, database management, and visualization[1]. Although the knowledge itself is as ancient as human existence, its formal application as a business practice can be traced back to the emergence of a well-educated workforce following World War II. Since then, knowledge management has evolved into practices and philosophical approaches[2]. Its history is extensive, with the concept of the "knowledge worker" being introduced by Peter Drucker as early as the 1960s. The following outlines the evolution of knowledge management over the past fifty years, highlighting key milestones and influential thinkers along the way, including[3]:

- 1986 – publication by Swedish knowledge management pioneer Karl-Erik Sveiby of The Know-How Company (with Tom Lloyd).

[1] Claire R. McInerney and Ronald E. Day, Rethinking Knowledge Management, Springer, Verlag Berlin Heidelberg, 2007, p 4

[2] Carl Frappaolo, Knowledge Management, Capstone Publishing (a Wiley company), United Kingdom, 2002, p.23.

[3] David J. Skyrme, Knowledge Management: Approaches and Policies, 2002, p. 2. Available https://www.semanticscholar.org/paper/Knowledge-Management-%3A-Approaches-and-Policies-Skyrme-Skyrme/6a2a27795cf8700c5c7c1a78e6e338fc5f610ff6

- 1987 – 'Managing the Knowledge Assets into the 21st Century' round table (between US academia, business, and government) – one of the first nationwide efforts to harness intellectual capital.
- 1991 – appointment of Leif Edvinsson as Vice President of intellectual capital for Skandia, arguably the first formal board-level appointment related to knowledge management
- 1991 – publication of seminal Harvard Business Review article by Ikujiro Nonaka on the 'knowledge-creating company', later expanded and published as a book with Hirotaka Takeuchi (1995)
- 1993 – 'Intellectual capital: your company's most valuable asset' – article by Tom Stewart in Fortune that helped raise awareness of knowledge management in the world of business
- 1995 – first business seminars and conferences in the USA e.g. Knowledge For Strategic Advantage – co-sponsored by Arthur Andersen and the American Productivity and Quality Center, held in Houston.
- 1996 – first business conferences in Europe
- 1998 – The World Bank chooses the theme Knowledge for Development as the topic for its annual World Development Report.

The timeline mentioned above highlights the rapid growth and influence of knowledge management (KM), particularly following its wider promotion since 1996. Although KM originated in the industrial sector, the service sector also began to adopt KM practices in the 1990s. Similar to how re-engineering and quality management transitioned from business to the non-profit sector, knowledge management was viewed as a means for government, education, and service agencies to operate more efficiently using technological tools. As distributed computer systems were implemented in organizations beyond industry, knowledge artefacts became

increasingly recognized as vital in what is known as a "knowledge society." After 2000, establishing knowledge management programs became a strategy for governmental entities and NGOs to stay aligned with trends from the profit sector[1].

### 2.1.2 Definitions of Knowledge Management:

Defining KM has been a significant challenge for researchers and theorists due to its multidisciplinary nature, which encompasses a variety of fields. Different authors have widely used the term to describe a broad range of practices and organizational strategies related to the creation, capture, dissemination, and effective reuse of knowledge. These practices aim to achieve specific goals and improve organizational performance[2].

According to Chambers 20th Century Dictionary, Knowledge is "assured belief, that which is known, information, instruction, enlightenment, learning, practical skill, acquaintance, cognizance, etc." Management is the "manner of directing or use of anything. The definition of KM, according to one of the experts, is "Knowledge Management caters to the critical issues of organizational adoption, survival, and competence in the face of increasingly discontinuous environmental change. Essentially, it embodies organizational processes that seek a synergistic combination of data and information processing capacity of information technologies and the creative and innovative capacity of human beings"[3].

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[1] Claire R. McInerney and Ronald E. Day, Rethinking Knowledge Management, Springer, Verlag Berlin Heidelberg, 2007, p 4.

[2] Abir AMARANI, Knowledge Management & Culture, PhD thesis (non-published), Management of Organisations, Management, faculté des Sciences Economiques, Commerciales et de Gestion, Université Mustapha Stambouli, Mascara, Algérie, 2020/2021, p 13.

[3] K. Nageswara Rao and KH Babu, Knowledge Mapping and Management, chapter 12: Information Manager/Librarian to Knowledge Manager: Change of Role, published by IRM Press, USA, 2002, p.115.

The World Health Organization (WHO) has defined Knowledge Management as “A set of principles, tools and practices that enable people to create knowledge, and to share, translate and apply what they know to create value and improve effectiveness”[1].

The definition currently used by the British Medical Association and taken from the American Productivity and Quality Centre for Knowledge Management was " the systematic process of identifying, capturing, and transferring information and knowledge people can use to create, compete, and improve.”[2]

Knowledge management was initially defined by (Nonaka and Takeuchi, 1995; Pasternack and Viscio 1998; Pfeffer and Sutton 1999; Ruggles and Holtshouse 1999) as “the process of applying a systematic approach to the capture, structuring, management, and dissemination of knowledge throughout an organization to work faster, reuse best practices, and reduce costly rework from project to project.”[3]

The definitions of knowledge management provided by various authors are not universally agreed upon, and there have been other proposed definitions, making it difficult to cover and present all of them. Therefore, the most commonly used definitions in the literature have been compiled in the following table.

[1] Sanjib Raj and Pradyut Kumar Borah, An Insight into Practiced Knowledge Management Framework in Hospitals-A Case Study of Hospitals in Guwahati, Assam, IOSR Journal of Business and Management (IOSR-JBM), Volume 22, Issue 10, 2020, p. 46,

[2] Davide Nicolini, John Powell, Paul Conville and Laura Martinez-Solano, managing knowledge in the healthcare sector: A review, International Journal of Management Reviews, Blackwell Publishing Ltd, USA, volume 10, Issue 3, 2007, p 245.

[3] Dalkir Kimiz, Knowledge management in theory and practice, 2nd edition, MIT Press, England, 2011, p. 4.

**Table 1-4:** Definitions of Knowledge Management

| Author (s) | Definition |
|---|---|
| **Nonaka and Takeuchi, 1995** | Knowledge management was initially defined as the process of applying a systematic approach to the capture, structuring, management, and dissemination of knowledge throughout an organization to work faster, reuse best practices, and reduce costly rework from project to Project |
| **Petrash, 1996** | Knowledge management is getting the right knowledge to the right people at the right time so they can make the best decisions. |
| **Wiig, 1997** | Knowledge management is the systematic, explicit, and deliberate building, renewal, and application of knowledge to maximize an enterprise's knowledge-related effectiveness and returns from its knowledge assets. |
| **Quintas et al., 1997** | KM is to discover, develop, utilize, deliver, and absorb knowledge inside and outside the organization through an appropriate management process to meet current and future needs. |
| **O'Dell and Grayson, 1998** | Knowledge management is a strategy that a firm develops to ensure that knowledge reaches the right people at the right time and that those individuals share and utilize the information to enhance the organization's functioning. |
| **Davenport and Prusak, 1998** | Knowledge management is a process of collecting, distributing, and efficiently utilizing knowledge resources. KM is an attempt to do something useful with knowledge, to accomplish organizational objectives by structuring people, technology, and knowledge content. |
| **Bassi, 1999** | KM is the process of creating, capturing, and using knowledge to enhance organizational performance |
| **Wah,1999** | Knowledge management (KM) is about adding actionable value to information by filtering, synthesizing, and summarizing it, and developing personal usage profiles to help individuals access the information they need to take action. |
| **Prax, 2000** | Knowledge Management is a process of creating, |

| | |
|---|---|
| | enriching, capitalizing on, and disseminating knowledge, which involves all stakeholders and the organization as both consumers and producers. |
| **Liebowitz and Wilcox, 2000** | … the ability of an organization to manage, store, value, and distribute knowledge. |
| **Von Krogh, Ichijo, and Nonaka, 2000** | A systematic approach to managing and leveraging an organization's knowledge assets, which involves identifying, capturing, evaluating, retrieving, and sharing all of an enterprise's information assets**.** |
| **Alavi and Leidner,2001** | KM is managing the corporation's knowledge through a systematic and organizationally specified process for acquiring, organizing, sustaining, applying, sharing, and renewing both the tacit and explicit knowledge of employees to enhance organizational performance and create value. |
| **Sveiby,2001** | The art of creating value from an organization's intangible assets. |
| **Bounfour, 2003** | Knowledge management is a set of procedures, infrastructures, and technical and managerial tools designed to create, share, and leverage information and knowledge within and around organizations. |
| **Gant, 2010** | The process through which organizations generate value from their intellectual and knowledge-based assets |
| **Hislop, Bosua, and Helms, 2018** | A range of practices used by organisations to identify, create, represent, distribute, and enable the adoption of insights and experiences |
| **Bakri, 2024** | Knowledge management is the systematic process of creating, sharing, using, and managing the knowledge and information of an organization |

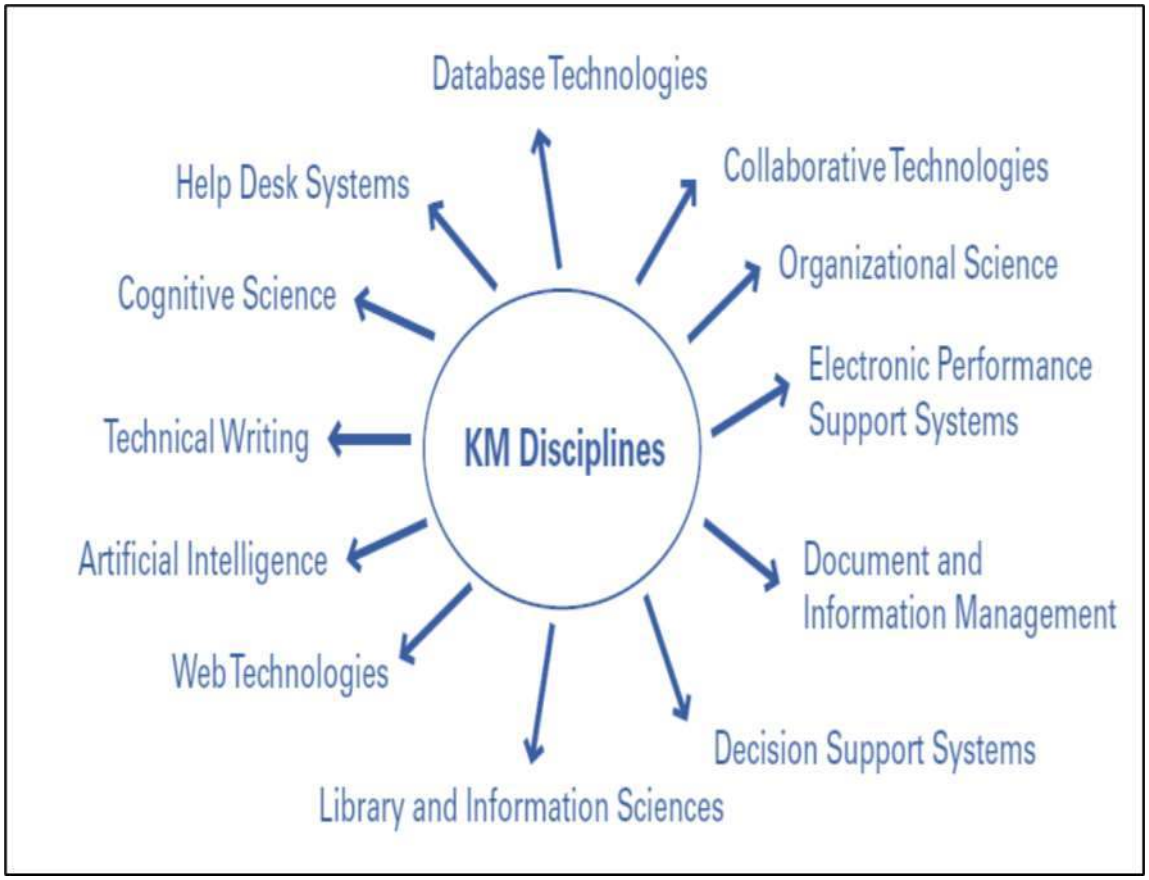
**Source:** prepared by the researcher based on various studies

According to the definitions cited in the table above, knowledge can be defined as the cumulative outcome of systematically utilizing data and information, supported by the expertise and skills of individuals within the organization, to transform these resources into actionable results that inform decision-making.

### 2.1.3 Components of knowledge management

Over the past decade, knowledge management (KM) has become a pervasive concept and set of practices, integrating into the fabric of organizational and managerial processes across various sectors, which have been the site of numerous innovative KM practices .KM is a combination of various techniques, tools, and strategies, and a multidisciplinary approach is necessary to comprehend and effectively manage such a complex structure[1], as illustrated in Figure 04.

**Figure 1-4**: Interdisciplinary nature of KM




**Source:** Strugar Ivan and Fakleš Davor, Knowledge Management in Knowledge Society**,** Conference Paper in Proceedings of the ENTRENOVA - Enterprise Research Innovation Conference, Rovinj, Croatia, 8-9 September 2016, IRENET - Society for Advancing Innovation and Research in Economy, Zagreb, 2016, p. 276.

[1] Strugar Ivan and Fakleš Davor, OP CIT, p. 276.

The discipline of knowledge management has three major components[1]:

- People**:** who create, share, and use knowledge, and who collectively comprise the organizational culture that nurtures and stimulates knowledge sharing.
- Processes: the methods to acquire, create, organize, share, and transfer knowledge.
- Technology: the mechanisms that store and provide access to data, information, and knowledge created by people in various locations.

KM is a set of professional practices that improves the capabilities of the organization's human resources and enhances their ability to share what they know. In essence, knowledge management involves not only the production of information but also the capture of data at its source, the transmission and analysis of this data, as well as the communication of information based on or derived from the data to those who can act on it.

## 2.2 Knowledge Management: importance, objectives, and benefits

Knowledge management is regarded as a fundamental approach that contributes to fostering innovation, strengthening decision-making processes, and enhancing the competitiveness of organizations in the present era. Accordingly, understanding its significance, objectives, and benefits deepens and reinforces the comprehension of its role in achieving institutional excellence.

### 2.2.1 The Importance of Knowledge Management

Knowledge management (KM) holds significant importance for organizations as it begins with generating and utilizing information within the organization. In today's complex and interconnected corporate environment, knowledge has emerged as a vital asset, significantly

[1] Bolarinwa, Oladimeji Akeem, Salaudeen, Adekunle Ganiyu, and Akande, Tanimola Makanjuola, OVERVIEW OF KNOWLEDGE MANAGEMENT APPLICATIONS IN HEALTH CARE DELIVERY OF DEVELOPING COUNTRIES, Academic Research International, volume 3, issue 3, 2012, pp. 38-39.

contributing to an organization's success[1]. The concept of KM stems from the knowledge-based perspective of the organization, rooted in the resource-based view (RBV) of strategic management. This philosophy, as outlined by Penrose (1959), posits that an organization's ability to achieve a competitive advantage lies not merely in the resources it possesses but in how effectively these resources are utilized to deliver value and services. The RVB also emphasizes that internal resources, rather than external factors, are key to explaining long-term differences in organizational profitability. Knowledge Management (KM) is crucial for enhancing responsiveness, flexibility, productivity, innovation, and decision-making capabilities within an organization. Egbu, Hari, and Renukappa (2002) noted that KM acts as a foundation for technological evolution and process improvement, ultimately benefiting the organization. Carrillo and Chinowsky (2006) illustrated that KM contributes to business growth by securing additional projects and clients. Additionally, Yang, Chen, and wang (2012) emphasized its role in promoting innovation and creativity, which helps organization maintain their competitive edge[2]. Moreover, KM facilitates the optimal utilization of intellectual capital, transforming it into a strategic tool for value creation. By integrating intellectual capital into financial analyses and leveraging it to gain a competitive advantage, organizations can maximize their potential[3].

[1] Sufyan Areed, Said A. Salloum, and Khaled Shaalan, The Role of Knowledge Management Processes for Enhancing and Supporting Innovative Organizations: A Systematic Review. In: Al-Emran Mostafa, Shaalan Khaled, Hassanien Aboul Ella, (eds) Recent Advances in Intelligent Systems and Smart Applications, Studies in Systems, Decision and Control, vol 295. Springer, Cham, 2021, p 143.

[2]Muhammad Usman et other, The Importance and Implication of Knowledge Management and Its Impact on Organizational Performance, Abasyn Journal of Social Sciences, Volume 13, Issue 1, 2020, pp. 395-396.

[3] Nilüfer Rüzgar and Mehmet Yazici, The Importance of Knowledge Management in Managerial Decision Making, In: Theory and Practice in Social Sciences, Publisher: ST. KLIMENT OHRIDSKI UNIVERSITY PRESS, 2020, p. 569.

### 2.2.3 The Main Objectives of KM

Mochamat Nurdin et al (2020) identified the primary purpose of knowledge management as an effort "to make a company act intellectually by facilitating its creation by channeling quality knowledge"[1], and according to the study by Davenport and Prusak, most knowledge management (KM) projects have one of three aims[2]:

- Making knowledge visible and demonstrating its role in an organization, primarily through maps, handbooks, and hypertext tools,
- Developing a knowledge-intensive culture by promoting and consolidating behaviors such as knowledge sharing, and actively seeking and offering knowledge,
- Building a knowledge infrastructure: establishing a network of connections among people, providing space, time, tools, and encouragement to interact and collaborate.

These objectives are not standalone; rather, they serve as a foundation for broader organizational goals. As Çapar (2003) pointed out, knowledge management seeks[3]:

- To produce new information within the organization,
- To bring valuable information from external sources to the organization,
- To use the accessible information in organizational decisions,

[1] Mochamat Nurdin et al, Knowledge Management Rumah Tunggu Kelahiran (RTK) in Health Services in Sinjai District, Advances in Health Sciences Research, ATLANTIS PRESS, volume 27, 2020, p 224.
[2] Amararachchi J.L et al, Knowledge Management Framework for achieving Quality of Healthcare in the Developing Countries, Conference paper in 2013 International Conference on Computer Medical Applications (ICCMA), Publisher: IEEE, Sousse, Tunisia, 2013, p. 2.
[3] Nilüfer Rüzgar and Mehmet Yazıcı, op. cit., pp. 566-567.

- Information through documents, databases, and software (ie, Present organizational information assets),
- Social culture and the growth of knowledge with incentives facilitation (more macro level)
- Evaluating organizational knowledge to intellectual capital,
- Transformation and measurement through information management.

### 2.2.3 Benefits of knowledge management

Knowledge management provides significant advantages for both public service organizations and companies. Some of its key benefits include[1]:

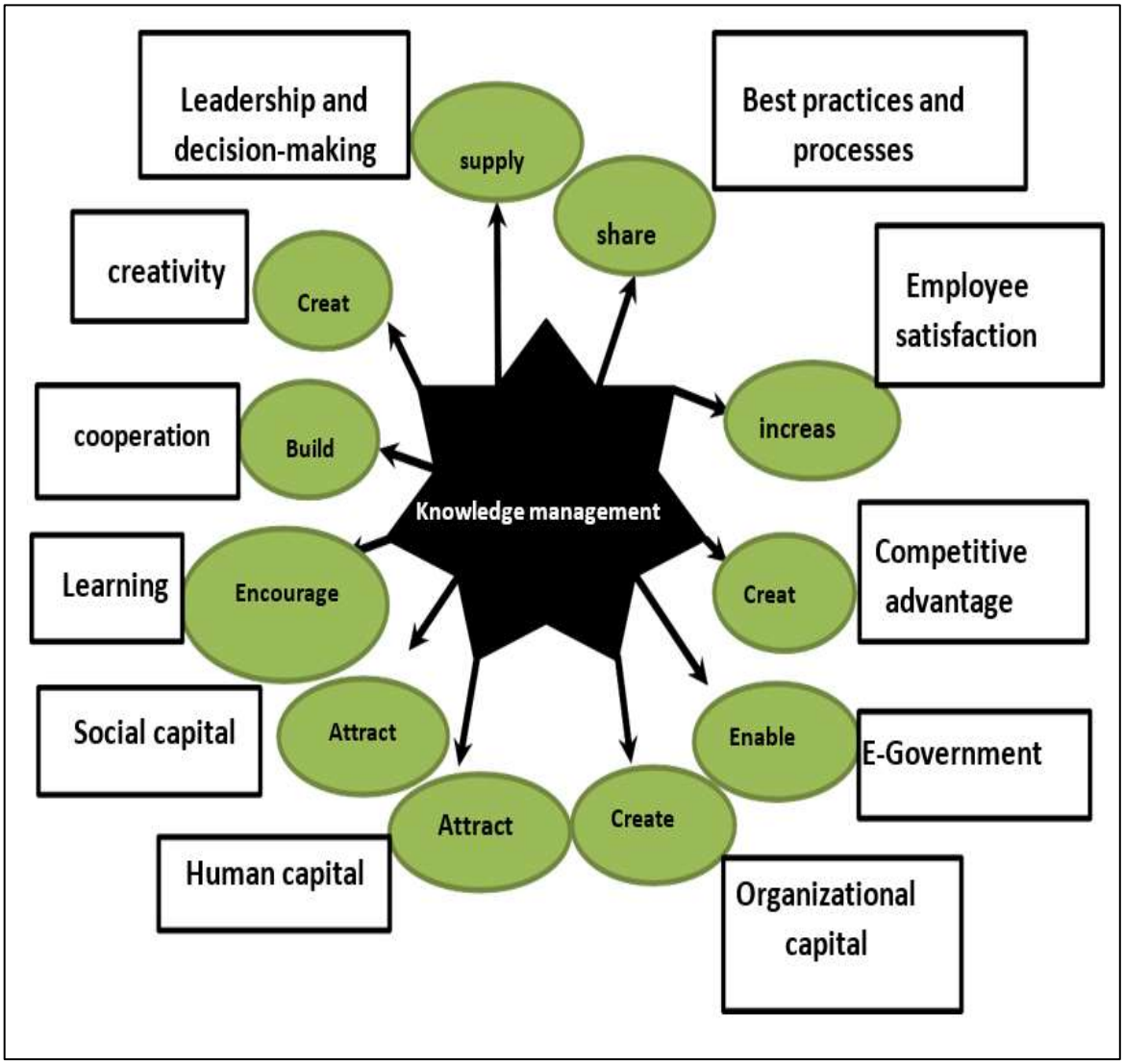
- Time and cost savings; a well-structured knowledge repository allows companies to access and apply existing knowledge in different contexts, which leads to reduced time and cost expenditures.
- Increase in knowledge assets: A centralized knowledge source enhances accessibility for employees, improving the overall knowledge utilization process within the organization. This, in turn, fosters creativity and innovation while enabling employees to develop their competencies.
- Adaptability; companies will be able to adjust to changes in the business environment that occur easily, ensuring greater flexibility and responsiveness.
- Increasing productivity**;** Reusing existing knowledge in the development of processes or products enhances efficiency, ultimately boosting overall productivity.

The benefits of knowledge management are evident in both quantitative performance indicators, such as cost reduction, increased profit margins,

[1]Mochamat Nurdin et al, Knowledge Management Rumah Tunggu Kelahiran (RTK) in Health Services in Sinjai District, Advances in Health Sciences Research, ATLANTIS PRESS, volume 27, 2020, p 224.

and expanded market share, or qualitative outcomes, including higher employee loyalty, empowerment, motivation for innovation and creativity, and improved idea management[1]. The following figure provides a summary of these benefits:

**Figure 1-5:** Benefits of knowledge management




[1] GOURI Hicham, Knowledge Sharing and Individual Performance: The Mediation Role of Organizational Memory, PhD Thesis, Specialty: Human Resource Management, Department of Management Sciences, Faculty of Economic Sciences, Commercial Sciences, and Management Sciences, Mustapha Stambouli University of Mascara, Algeria, 2023/2024, p. 80.

**Source:** Robert Neilson, Knowledge Management and the Role of the CKO, chapter book, in Ramon Barquin, Alex Bennet and Shereen Remez, Knowledge Management: A Catalyst for Electronic Government, Management Concepts, Vienna, 2001, p. 9.

## 2.3 KM Requirements

Commonly cited requirements for knowledge management include organizational culture and leadership, human resources, organizational structure, and information technology, all of which are further explained in this subsection.

### 2.3.1 Organizational Culture and Leadership

All organizations have cultures, i.e., sets of norms and values that collectively guide the behavior of their employees. Culture varies considerably between organizations and serves as a significant differentiating factor among firms. Within an organization, culture is also a powerful force, obviating the need for many rules since it encourages employees to behave in certain ways. Culture is neither inherently good nor bad, but it may foster values and behaviors that support or impede certain organizational objectives[1].

Culture can be summed up in one word: community. It is a result of the way people interact with each other. Just like families, villages, schools, and clubs, businesses rely on patterns of social interaction that either support them over time or lead to their downfall. They are founded on shared interests and mutual responsibilities, thriving on collaboration and strong, mutually beneficial relationships. Organizations are comprised of individuals, and each business has a unique culture that defines how people interact with one another. Culture encompasses the values, attitudes, and

[1] Heather A. Smith and James D. McKeen, Instilling a knowledge-sharing culture, Queen's University School of Business, Kingston, Ontario, Canada, 2011, p 3.

behaviors of an organization[1] - simply put, as one member of a focus group described it, "Culture is how we do things around here."[2]

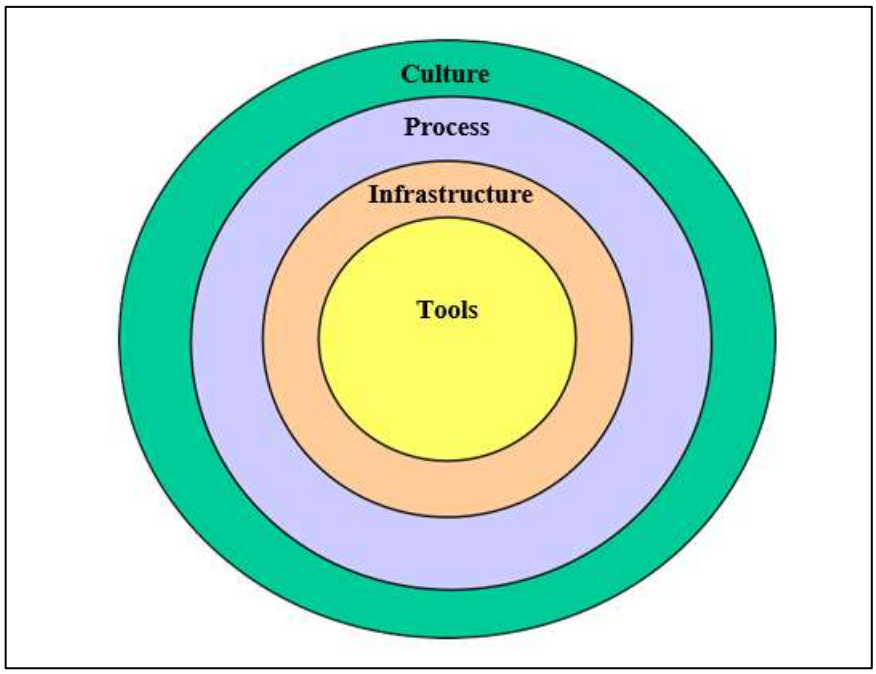
It is also defined in Webster's New Collegiate Dictionary as "an Integrated pattern of human behavior that includes thought, speech, action, and artifacts and depends on man's capacity for learning and transmitting knowledge to succeeding generations."

Culture is crucial in organizations because it strongly influences human behavior and is difficult to change. It exerts its influence in numerous subtle ways, from the types of people hired to the kinds of questions and comments accepted. It also affects the formal and informal expectations placed on staff, the focus of reward systems, interactions among people, and when they feel comfortable asking for help[3].

As depicted in Figure 06, culture is a dominant mechanism within an organization, exerting influence over all other facets of organizational existence and shaping what is deemed desirable, feasible, and realistic. Consequently, an organization's culture will influence its knowledge management efforts and incline employees towards specific knowledge-sharing behaviors.

**Figure 1-6**: Culture Influences Activities in All Aspects of the Organization

[1]Goffee, Rob and Gareth Jones, "What holds the modern company together?", Harvard Business Review, 1996, p. 134.
[2]John Kotter, Leading Change - Why Transformation Efforts Fail,- Harvard Business School Press, Boston, 2007, p. 8.
[3] Smith, Heather and James McKeen, Installing a knowledge-sharing culture, Queen's University School of Business, Kingston, 2002, p. 4.

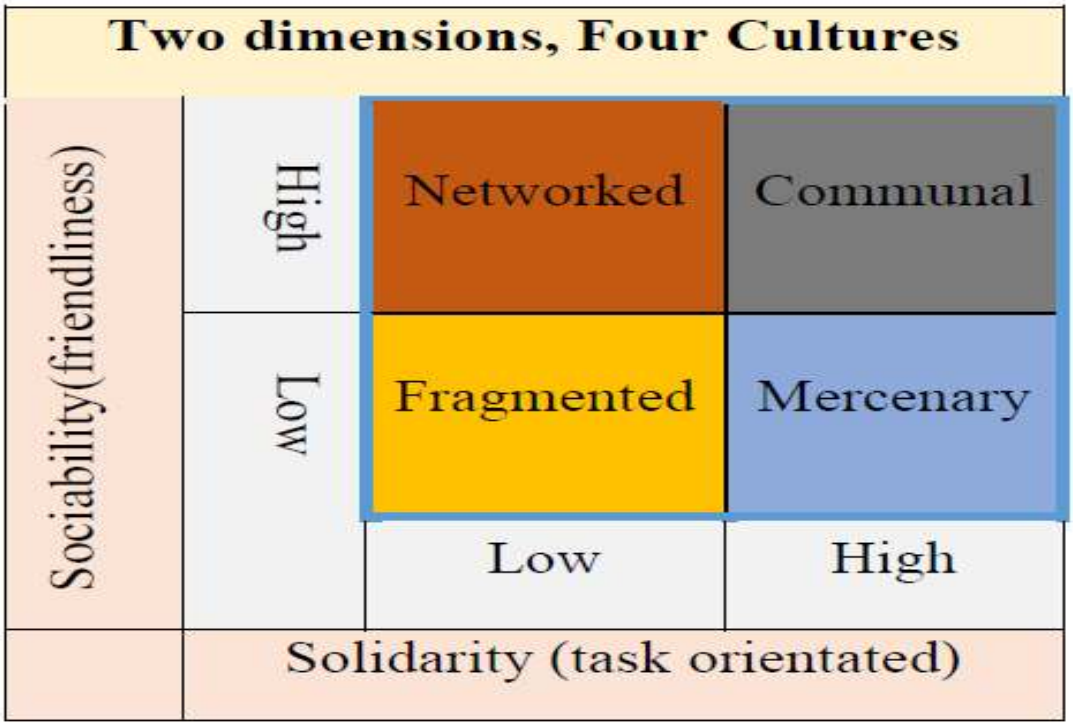



**Source:** Smith, Heather and James McKeen, Installing a knowledge-sharing culture, Queen's University School of Business, Kingston, 2002, p. 4.

As hard as it is to delimitate culture, researchers argue in favor of the idea that culture, and especially corporate culture, is closely related to communication and a state of shared understanding in a community. This process enables the information to be shared, transforming it into an organizational tool that facilitates the maintenance or development of culture according to its needs or required characteristics. The stored cultural tools may serve to further guide and build the future organizational culture within the company; however, if not stored, this information may be lost over time, and the values may lose their importance or be replaced. Dalkir argues that cultures may be analyzed more easily if they are divided into types[1].

**Figure 1-7:** The Four Basic Types of Organization Culture

[1]Bahareh Beyk and Claudia Halas, Knowledge Management Strategy: A case study of the Erasmus Medical Center, available on https://www.academia.edu/9883577/Knowledge_Management_Strategy_A_case_study_of_the_Erasmus_Medical_Center




**Source:** Goffee, Rob and Gareth Jones, "What holds the modern company together?" Harvard Business Review, 1996, p. 134.

According to Figure 07, we can see that people tend to build community, and their participation also depends on their habits or goals. Dalkir (2011) argues that the types of cultures are based on solidarity or the sociability of the group. Communal culture is considered to give its participants a sense of belonging; this culture indulges leadership, but members are rarely heard from. The networked culture favors contact, but the close connection can keep people from criticism, which is detrimental to performance. The mercenary culture often meets its members' goals and objectives, but their actions can sometimes be harsh, particularly towards those with poor performance or towards other members. The fragmented culture implies that tasks are more individual, and people work in a more task-oriented manner, while the downside of this culture is its lack of cooperation among members.

Leadership sets the tone for the corporate culture, and as culture is the product of the team's acquired knowledge, it will eventually define the

necessary leadership on its own. A visionary leader is needed as the first step in creating a learning organization (LO)[1]. Leadership is the primary social and educational role played by the leader when interacting with workers within the same organization. The leader must possess the power and ability to influence workers to direct their behavior, enabling the organization to achieve its Knowledge Management Initiative and its goals. For the success of the reciprocal relationship between the leader and the workers, a set of managerial skills must be available, which management scholars agree on as important for the success of the leader's management and the performance of all tasks assigned to him accurately and quickly, and can be summarized as follows[2]:

- Self-leadership skills: Skills are the ability to build the character of workers to become leaders, such as mental traits, lofty principles, innovation, and self-control.
- Intellectual leadership skills: This skill depends on the leader's awareness of his duties and how to deal with crises facing the work and the organization together through deep and critical thinking of his ideas and trying to provoke others' ideas in different ways to reach sound decisions on clear scientific grounds. This is also reflected in the leader's ability to think logically, make correct judgments, and predict and make the right decisions.
- Human leadership skills: Administrative leaders must spend a significant amount of time with employees, as well as their interaction with them on an ongoing basis through meetings

[1] Eirini Bougoulia and Michail Glykas, Knowledge management maturity assessment frameworks: A proposed holistic approach, Knowledge and Process Management, published by John Wiley & Sons Ltd, Volume 30, Issue 4, p 371.

[2] Zainab Salah Wahab, Knowledge Management Processes and their Impact on Leadership Skills: An Exploratory Study of the Opinions of a Sample of Managers in the Iraqi General Cement Company, Al-Qadisiyah Journal for Administrative and Economic Sciences, Volume 24, Issue 1, 2022, pp. 79- 80.

(scheduled and unscheduled) and face-to-face contacts, that are effective human skills and produce managerial leaders, and increase their motivation towards workers and help them develop leading to achieving the best performance in the desired goals.

In the context of knowledge management, various leadership roles have been identified, each with specific responsibilities[1]:

- Chief knowledge officer (CKO): A strategic, senior management position focused on promoting, communicating, and facilitating KM practices in the corporation. The highly visible CKO typically reports directly to the CEO but may report to the CIO.
- Knowledge analyst: A tactical, lower- to midlevel position that involves learning and personally disseminating the best practices of the organization. Knowledge analysts may utilize technologies to accumulate and manage knowledge, but these technologies are intended for their personal use only. The risk of relying on knowledge analysts is that they can walk away with the corporation's best practices, leaving no record for those left behind to follow.
- Knowledge engineer: A tactical, lower-level position that is focused on collecting information from experts and representing it in an organized form, typically in computer-based systems, that can be shared and stored in the corporation. Knowledge engineers often serve as the interface between employees and computer technologies, such as expert systems—programs that mimic the decision-making abilities of experts.
- Knowledge manager: A tactical, mid-level position that involves coordinating the work of knowledge engineers and analysts,

[1] Bryan Bergeron, Essentials of Knowledge Management, John Wiley & Sons, New Jersey, 2003, p. 43.

especially in larger corporations. Knowledge managers may report to the CKO, CIO, or the Chief Executive Officer CEO.

These roles are integral to the successful implementation of the Knowledge Management initiative, as they facilitate the effective capture, organization, and dissemination of knowledge within the organization. By leveraging these leadership positions, organizations can enhance their capacity for innovation, improve decision-making processes, and maintain a competitive advantage in the knowledge-driven economy.

### 2.3.2 Human Resources

Individuals within an organization are seen as social catalysts for knowledge management or key contributors to knowledge creation and sharing. Employees form the core of any organization, making them vital to its success. Since they are the ultimate users of systems and technology, they require relevant skills, task expertise, a positive attitude, a constructive mindset, and an inclusive culture. They are important because any change or introduction of new technology affects the workforce. McDermott (1999) highlights the importance of individuals in the knowledge-sharing process, which must be activated to encourage participation in activities. This process requires extra time and may risk losing power and status. Therefore, it is crucial to evaluate organizational culture and individual readiness for adopting new and innovative technologies. Generally, individuals are viewed as contributors with skills, knowledge, motivation, self-awareness, support, learning and social networks, dialogue, coordination, and innovation. They generate knowledge within the organization, and much of the organizational knowledge is stored in their minds; thus, even a small change in their roles can significantly impact overall performance. These effects have contributed to a market shift from heavily worker-centric industries toward knowledge-based industries, with

more educational opportunities. Although the concept of knowledge workers has existed for a long time, few organizations have explicitly defined this role. Ruggles (1998) explains that individuals should dedicate about 50% of their time and effort to knowledge management. People within organizations generally need to align with the organizational culture. Changing organizational culture requires shifting attitudes and dismantling old traditions. Therefore, human factors must be considered as the main drivers of organizational change in knowledge management. These considerations have led to the development of the concept of knowledge workers. Furthermore, to implement knowledge management effectively, human resources must contribute to forming a knowledge management team, develop a knowledge management plan, establish rules for knowledge management, execute knowledge management activities, and continuously improve the plan[1].

### 2.3.3 Organizational Structure

The organizational structure, which is intrinsically connected to organizational culture and facilitates collaboration[2], gains heightened importance in an era of intensified competition and rapid technological change, where the efficient transfer of knowledge within organizational boundaries is crucial[3]. Stoner and Wankel define organizational structure as "the arrangement and interrelationship of the parts and positions of a company", with particular emphasis on the configuration of organizational

[1] Manoucher Ansari, Hossein Rahmany Youshanlouei, and Mohammad Mirkazemi Mood, A Conceptual Model for Success in Implementing Knowledge Management: A Case Study in Tehran Municipality, Journal of Service Science and Management, Issue 5, 2012, pp.215-216.

[2] Anita Kothari et al, Lessons from the business sector for successful knowledge management in health care: A systematic review, BMC Health Services Research, volume 11, issue 173, 2011, p. 4.

[3] Manoucher Ansari, Hossein Rahmany Youshanlouei, and Mohammad Mirkazemi Mood, OP CIT, p. 215.

components and their interconnections. Broader definitions describe it as "the established pattern of the relationships between the component parts of an organization, outlining both communication, control, and authority patterns". In this sense, organizational structure distinguishes the units of an organization and delineates the relationships among them, with particular emphasis on communication and control[1].

Beyond this relational role, organizational structure determines the coordination of diverse tasks, the mechanisms of decision-making, and the allocation of responsibilities over material, human, and knowledge resources. A structure must be sufficiently flexible to enhance knowledge distribution and extend collaboration beyond traditional organizational boundaries toward innovative and knowledge-creating domains. Formalization and decentralization are critical factors influencing coordination, cooperation, and knowledge creation. Conversely, highly centralized structures may impede communication between units, restrict the dissemination of ideas, and delay decision-making due to rigid and time-consuming communication channels. Ensuring the fluidity of communication pathways is thus essential for the effective distribution of knowledge, making organizational structure a cornerstone in the successful implementation of Knowledge management[2].

In this regard, Mintzberg identifies five fundamental structural configurations: the simple structure, the machine bureaucracy, the professional bureaucracy, the divisionalized forms, and the adhocracy. Each form differs in its prime coordinating mechanism, the organizational component that serves as its key part, and the type of decentralization it employs. These distinctions highlight the differential impact of each structure on knowledge flows and communication effectiveness[3]. Table 07

[1] Janusz Marek Lichtarski, Organizational Structure and Knowledge Management, Argumenta Oeconomica, Volume 1, Issue 22, 2009, p. 88.
[2] Manoucher Ansari, Hossein Rahmany Youshanlouei, and Mohammad Mirkazemi Mood, OP CIT, p.215.
[3] Fred C. Lunenburg, OP. Cit., p. 03.

summarizes the five structural configurations. Each organizational form is discussed in turn.

**Table 1-5:** Mintzberg's Five Organizational Structures

| Structural Configuration | Prime Coordinating Mechanism | Key Part of Organization | Type of Decentralization |
|---|---|---|---|
| **Simple structure** | Direct supervision | Strategic apex | Vertical and horizontal centralization |
| **Machine bureaucracy** | Standardization of work processes | Technostructure | Limited horizontal decentralization |
| **Professional bureaucracy** | Standardization of skills | Operating core | Vertical and horizontal decentralization |
| **Divisionalized form** | Standardization of outputs | Middle line | Limited vertical decentralization |
| **Adhocracy** | Mutual adjustment | Support staff | Selective decentralization |

**Source**: Fred C. Lunenburg, Organizational Structure: Mintzberg's Framework, International Journal of Scholarly Academic, Intellectual diversity, volume 14, issue 01, 2012, p. 04.

According to Ostroff, horizontal organizational structures are particularly suited to the information era, as they provide greater flexibility in adapting to rapid environmental and competitive changes. The successful implementation of knowledge management similarly depends on adopting flexible structures and dismantling conventional control mechanisms. Furthermore, management's tolerance for error is closely linked to policies that favor lean structure, thereby enabling significant decision-making at

multiple organizational levels[1]. In sum, organisational structure constitutes a decisive factor that can either facilitate or hinder knowledge management within organizations[2].

### 2.3.4 Information Technology

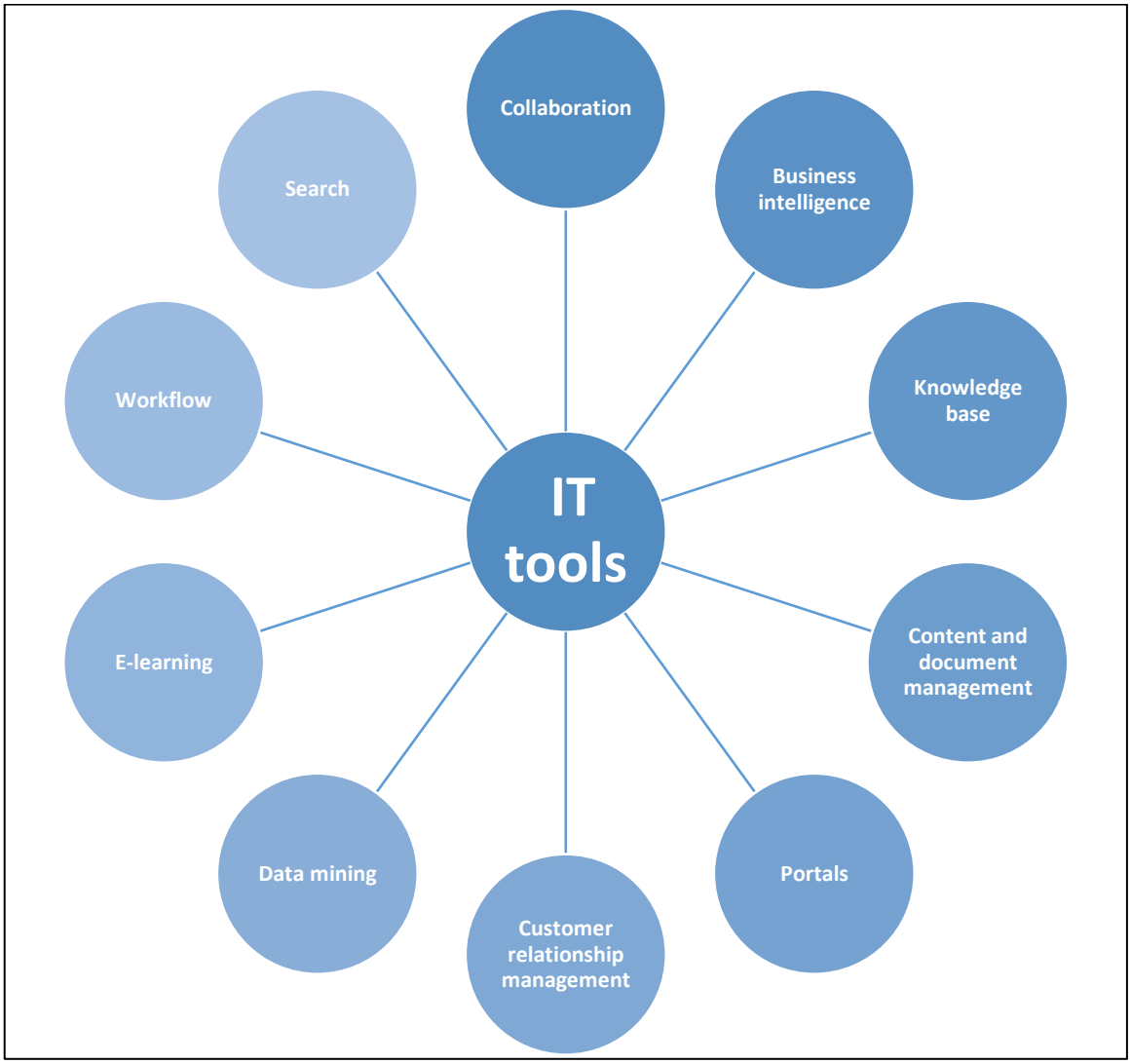
Information Technology (IT) serves as a crucial infrastructure and key element in achieving effective knowledge management. It enables individuals to connect with others through various IT tools. Information Technology facilitates the searching, managing, retrieving, and restoring of information. Additionally, it enhances coordination and communication among members within an organization[3]. According to Luan and Serban (2002), IT tools can be categorized in several ways, which is summarized in the figure below:

[1] Manoucher Ansari, Hossein Rahmany Youshanlouei, and Mohammad Mirkazemi Mood, OP CIT, p.215.

[2] Abubakar Mohammed Abubakar, et al, Knowledge management, decision-making style and organizational performance, Journal of Innovation & Knowledge, issue 4, 2019, pp. 106.

[3] Roozbeh Hojabri et al, Knowledge Management in an Iranian Health Organization: Investigation of Critical Success Factors, International Journal of Industrial Distribution & Business, volume 5, issue 4, 2014, p. 34.

**Figure 1-8:** The IT tools category can be used to support KM




**Source:** Prepared by the researcher based on Zainab Abdulshaheed Mohsen, Main Ali, and Akram Jalal, The Significance of Knowledge Management Systems at Financial Decision-Making Process, International Journal of Business and Management, volume 6, issue 8, 2011, p. 132.

Information Technology, as a major infrastructure in knowledge management, can provide facilities to make the KM implementation process easier[1]:

- Simplicity of technology
- Ease of use
- Suitability to users' needs

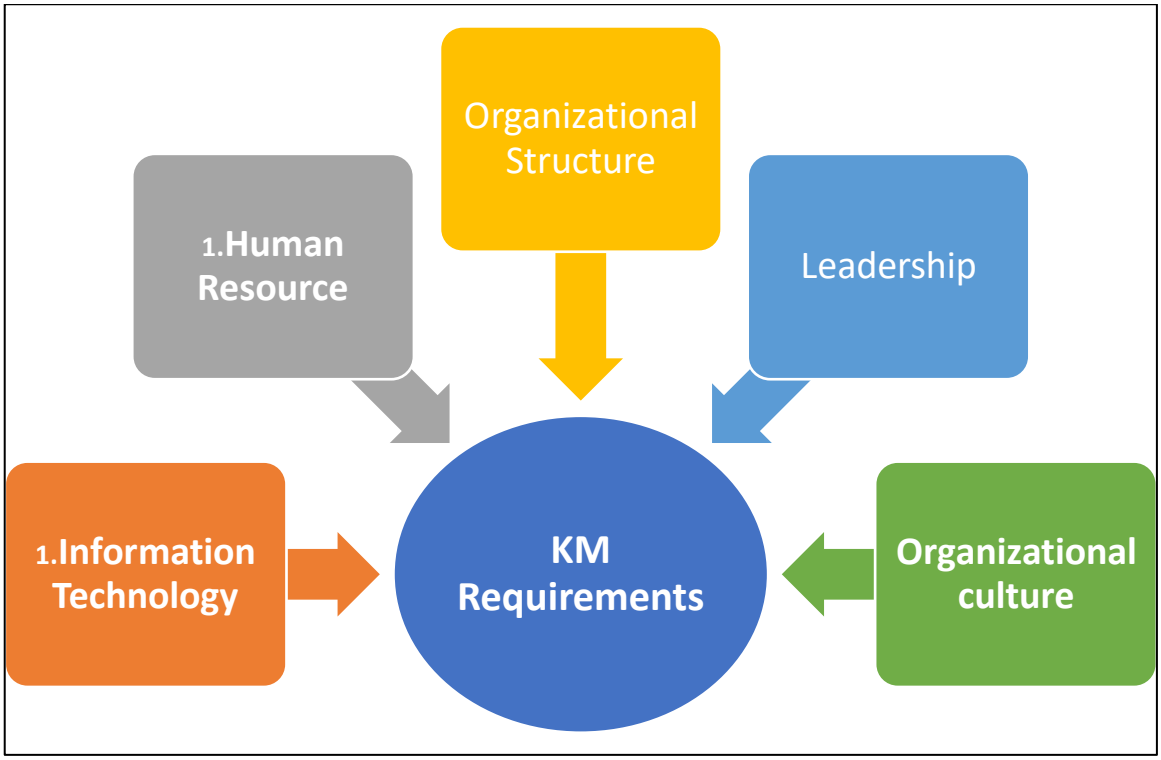
[1] Roozbeh Hojabri et al, OP Cit., p. 34.

_ Relevance of knowledge content

_ Standardization of knowledge structure or ontology

From the above, it can be concluded that prior to the implementation of Knowledge Management, several crucial requirements must be fulfilled to ensure the success of the KM initiative, which are presented in Figure 1-9.

**Figure 1-9**: Illustrates the most crucial KM requirements




**Source:** Prepared by the researcher

### 3. Knowledge Management (its Processes, Strategies, and Core Models)

To achieve effective knowledge management and ensure successful implementation, it is essential to follow systematic and sequential steps and collaborate with information technology, which adds significant value. This section will identify processes that enhance knowledge and prepare it for use, acknowledging that organizations rely on different methods in each process that suit their specific operations. It also aims to highlight the most important knowledge management models and key KM strategies.

### 3.1 Knowledge management processes:

Knowledge management processes are essential practices that organizations perform to process and develop their knowledge assets. Some studies label KM processes as activities, practices, or capabilities, while others refer to them as KM processes. Even though they have been labeled differently, they refer to the same concept. Studies have addressed different models of KM processes[1], as presented in Table 08

**Table 1-6:** KM processes according to some References

| | KM Processes | | | | |
|---|---|---|---|---|---|
| **References** | **Process 1** | **Process 2** | **Process 3** | **Process 4** | **Process 5** |
| Skyrme (1998) | Sharing | Creation | | | |
| (Alavi and Leidner, 2001) | Creation | Capture/ Storge | Sharing | Application | |
| (Parent et al., 2007) | Generation/ Creation | Dissemination | Absorption | Transfer | |
| (Beesley and Cooper, 2008) | Generation/ Creation | Sharing/ dissemination | Transfer | Adoption | Generative learning |
| (Zack et al., 2009) | Creation | Sharing | | | |
| (Jayasingam et al., 2013) | Acquisition | Dissemination | Utilization | | |
| (Ho et al., 2014) | Creation | Accumulation | Sharing | Utilization | Internalization |
| (Lin, 2015) | Organizational memory | Sharing | Absorption | Receptivity | |
| (Lyu et al., 2016) | Acquisition | Storge, transfer, and share | Application | Creation | |

**Source**: Ghadah Lafi Alharbi and Ghadah Lafi Alharbi, The effects of knowledge management processes on service sector performance: evidence from Saudi Arabia, Humanities and Social Science Communication, volume 11, issue 378,2024, p. 3.

[1] Ghadah Lafi Alharbi and Ghadah Lafi Alharbi, OP Cit, p.3.

Different models interpret knowledge management (KM) in various ways, particularly in terms of the concept and the number of processes involved. However, the widely accepted view of KM includes four essential processes: the internal creation of knowledge or external acquisition, capturing and storing that knowledge in the organizational repository, sharing and disseminating it across different levels of the organization, and applying the acquired knowledge. This study outlines these processes as knowledge acquisition, creation, sharing, storage, and application.

While these processes are interconnected, they are distinct and often function as part of a continuous KM cycle. Knowledge acquisition and creation enable the capture of knowledge, which is subsequently stored and shared to facilitate its application. The application of knowledge generates new insights and lessons learned, thus fostering an ongoing cycle of KM and continuous improvement. This study adopts this definition of KM. The characteristics of the five KM processes can be described as follows:

### 3.1.1 Knowledge Acquisition

Knowledge acquisition refers to all the activities that organizations rely on to obtain knowledge, encompassing the processes of acquiring knowledge from various sources, such as experts, specialists, competitors, and information bases, through learning, scientific research, and technical development[1].

Acquisition of knowledge also refers primarily to the strategies, tools, and methods used to locate and gather information. Various locations and tools could be utilized for this step. Search engines, database

[1] Zainab Salah Wahab, Knowledge Management Processes and their Impact on Leadership Skills: An Exploratory Study of the Opinions of a Sample of Managers in the Iraqi General Cement Company, Al-Qadisiyah Journal for Administrative and Economic Sciences, Volume 24, Issue 1, 2022, p.79.

management systems, and document management systems show the technological aspects that represent one side of the KM coin. Through KM, there is a vivid opportunity for breadth and depth of knowledge that extends beyond textbooks and class notes[1].

In 2010, a group of Middle Eastern researchers (Mohammad, Abu Hamdeh, and Sabri, 2010) proposed a conceptual framework for the acquisition of both tacit and explicit knowledge. The authors identified six sources of tacit knowledge acquisition[2]:

- Interviews: a personal conversation that allows individuals to share their expertise.
- Socialization: the process of learning through interaction and shared experiences with others.
- Observation: learning by watching others perform tasks
- Monitoring programs: programs that track and assess actions to capture knowledge.
- relationships and trust: developing connections with knowledgeable individuals to facilitate the exchange of knowledge.
- solving sample problems: using real-life examples to apply and acquire knowledge.

According to them, these sources can be used to elucidate tacit knowledge that is difficult to express, such as insight, intuition, hunches, inherent talent, skills, and experiences, which are essential for expertise. The authors emphasize socialization as a key feature in acquiring tacit knowledge. They strongly recommend that organizations hold regular

[1] Michele Biasutti and Heba EL-Deghaidy, Using Wiki in teacher education: Impact on knowledge management processes and student satisfaction, Computer and Education, issue 59, 2012, p. 863.
[2] Abdoulaye Kaba and Chennupati K. Ramaiah, Measuring Knowledge Acquisition and Knowledge Creation: A Review of the Literature, Library Philosophy and Practice (e-journal), University of Nebraska, Lincoln, N°4723, 2020, p 6-7.

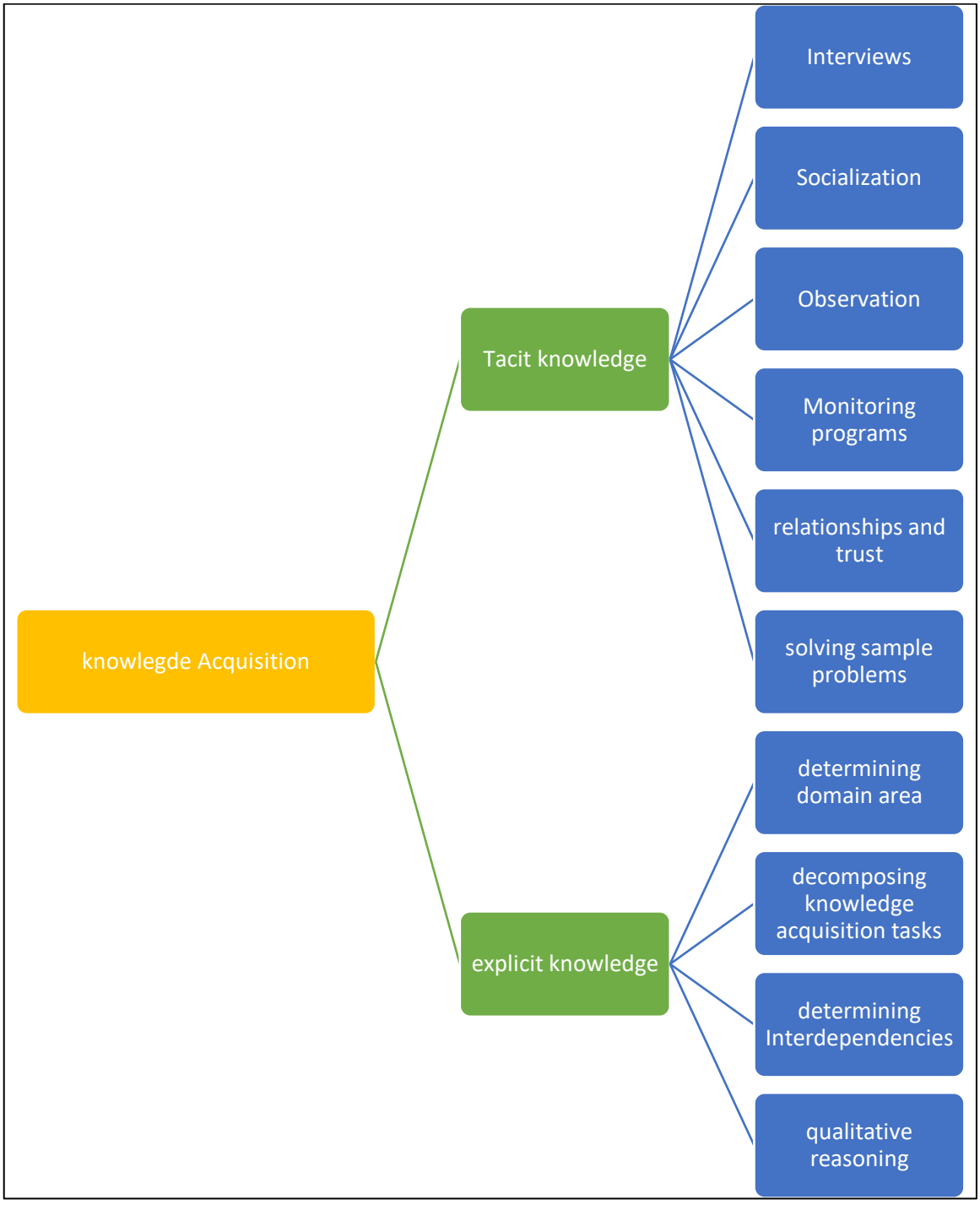
meetings to acquire tacit knowledge directly from experts. For explicit knowledge acquisition, the authors proposed four tasks, which are[1]:

- determining domain area: defining the specific field of knowledge.
- decomposing knowledge acquisition tasks: breaking down complex knowledge tasks into manageable parts
- determining Interdependencies: recognizing the relationships between different pieces of knowledge.
- qualitative reasoning: using non-quantitative methods to reason and analyze knowledge.

These tasks are crucial in acquiring and organizing explicit knowledge effectively.

[1] Abdoulaye Kaba and Chennupati K. Ramaiah, OP.CIT, p07

**Figure 1-10:** Ways of acquiring tacit and explicit knowledge




**Source:** prepared by the researcher

### 3.1.2 Knowledge Creation

In the previous section, we discussed the acquisition of knowledge. Based on that discussion, we understood that knowledge acquisition results in the production of new knowledge. Therefore, knowledge acquisition is

an essential step that precedes the process of knowledge creation. It is very challenging, if not impossible, to create and produce new knowledge without understanding the nature and characteristics of the problem.

According to Alavi and Leidner (2001), knowledge creation involves developing new content or replacing existing content within an organization's tacit and explicit knowledge. Through social and collaborative processes, as well as individual cognitive processes, knowledge is created, shared, amplified, expanded, and justified in organizational settings[1].

Brainstorming is another common method of generating ideas. It is more effective than individuals working alone, as it provides an opportunity for teamwork and stimulates employees to generate ideas spontaneously, either in solving problems or creating new knowledge through intensive interaction and discussion among workers. Organizations must excel in their knowledge-creation process, as it is this new knowledge that provides them with a competitive advantage over their competitors[2]. Employees need to be motivated and capable of contributing to the development of new ideas or generating effective solutions to problems[3]. To motivate employees, a reward system is often employed to recognize those who generate innovative ideas, acquire new knowledge, and develop

[1] Maryam Alavi and Dorothy E. Leidner, Knowledge Management and Knowledge Systems: Conceptual Foundation and Research Issues, MIS Quarterly, Volume 25, Issue 01, 2001, p. 116.

[2]Cheng Sheng and Lee Kuan Yew Wong, Development and validation of knowledge management performance measurement constructs for small and medium enterprises, Journal of Knowledge Management, 2015, Volume 19, Issue 4, p. 715.

[3]GIRMA AYALEW ASEGIDEW, Knowledge Management on Organizational Performance: The Mediating Role of Organizational Learning (Evidence from The Amhara Region Agricultural Research Knowledge Management Processes measurement, PhD thesis, DEPARTMENT OF MANAGEMENT, COLLEGE OF BUSINESS AND ECONOMICS, BAHIR DAR UNIVERSITY, ETHIOPIA, 2024/2025, p. 23.

effective solutions. The rewards given are either monetary or non-monetary incentives, which can help to boost employees' satisfaction[1].

### 3.1.3 Knowledge Sharing

The knowledge-sharing process is the key to enhancing the externalisation and dissemination of knowledge. Examples of knowledge-sharing activities include job rotations and cross-functional teams, which involve moving employees across different roles or departments, as well as seminars, study sessions, training, discussion groups, electronic conferencing, and email. Knowledge sharing can provide knowledge seekers with access to the necessary knowledge, thereby improving knowledge acquisition. Three pillars can help 'sharing' become effective and sustainable: trust and mutual respect, knowledge tagging, and community recognition. This brings attention to the other side of the KM coin, represented in the social aspect. Communities of practice and learning communities are two of the most common terms that describe the social aspects formed in KM. Within a community, members share experience and exchange tactics and explicit knowledge. Throughout this process, conflicts and disagreements are likely to arise. The specific activities of sharing and exchanging encourage the community to question and make sense of their experiences[2]. Nevertheless, several obstacles can hinder or slow down this process, with motivation being one of the most significant. For this reason, many scholars emphasize that individuals should be rewarded for the knowledge they possess and exchange with others[3].

[1] Cheng Sheng and Lee Kuan Yew Wong, op cit, p. 716.
[2] Michele Biasutti and Heba EL-Deghaidy, op cit, p 863.
[3] Janusz Marek Lichtarski, Organizational Structure and Knowledge Management, Argumenta Oeconomica, Volume 1, Issue 22, 2009, p. 86.

**Figure 1-11:** Knowledge Sharing Tools




**Source:** Prepared by the researcher

### 3.2.4 Knowledge Storage

Empirical Research has demonstrated that organizations continuously create and acquire knowledge, but tend to forget or lose track of it over time. This phenomenon underscores the crucial importance of effective knowledge management, particularly in terms of storage, organization, and retrieval, which is often referred to as organizational memory[1]. organizational memory encompasses various forms of knowledge, including written documents, electronic databases, expert systems, procedural knowledge, and organizational processes.

Organizational memory integrates both explicit knowledge —such as written documentation, codified human knowledge in expert systems, structured data in electronic databases, and documented organizational procedures and processes —and tacit knowledge, which is acquired by

[1] Maryam Alavi and Dorothy E. Leidner, OP. Cit., p.118.

individuals or a network of individuals[1]. While explicit knowledge can be systematically stored, it often resides in unstructured documents, including memos, notes, and meeting minutes, making proper storage and management essential[2].

Stewart (1997) has proposed five general categories for knowledge storage, which are[3]:

- Lessons learned: Checklists of successes, mistakes, or failures that might be applied to other projects.
- Company experiences and policies: Process maps and workflows, plans, procedures, principles and guidelines, standards, policies, performance measures, stakeholder and customer profiles, products and services (including features, functionality, pricing, sales, and repair).
- Competitor and supplier intelligence: Continuously updated company profiles and news from commercial and public sources and wire services, call reports from salespeople, attendees' notes from conferences and conventions, an in-house directory of experts, and news about regulations.
- Company products and processes: Technologies, inventions, data, publications, processes, strategies, cultures, structures and systems, effective organizational routines and procedures.
- Corporate yellow pages: Capabilities of employees, consultants, and advisers to the organization who know JavaScript and have worked with specific clients.

[1] Zainab Salah Wahab, OP Cit., p. 79.
[2] Samina Nawab, Tahira Nazir, Muhammad Mohsin Zahid, and Syed Muhammad Fawad, Knowledge Management, Innovation and Organizational Performance, International Journal of Knowledge Engineering, Volume 1, Issue 1, 2015, p. 45.
[3] Michael J. Marquardt, Building the Learning Organization, 2nd edition, Davies-Black Publishing, U.S.A, 2002, pp 155-156.

### 3.1.5 Knowledge Application

Applying knowledge involves using it to solve problems and make informed decisions. The knowledge that does not contribute to addressing the organization's core challenges holds little value. To achieve a return on investment in knowledge, it must be systematically integrated into decision-making processes and decision-support systems. The primary objective of knowledge management is to ensure the practical application of knowledge, thereby enhancing organizational performance and delivering improved services[1].

The application process encompasses retrieving and using knowledge, supporting decision-making, and facilitating problem-solving across various scenarios. Furthermore, it enhances the ability to assign individuals to appropriate roles, optimize productivity, establish professional communities, improve workflows, and provide necessary training to address current challenges[2].

Weiss (1998) made significant conceptual advancements in this domain, distinguishing various purposes of application. He identified several key functions, including[3]:

- Raising an issue: bringing attention to critical topics that require discussion or intervention.
- Formulating new policies or programs: developing a structured initiative based on acquired knowledge.

[1] Abubakar Mohammed Abubakara et al, Knowledge management, decision-making style and organizational Performance, Journal of Innovation & Knowledge, volume 4, Published by Elsevier, 2019, p.106.

[2] Rizwan Saeed Mirza, Knowledge Management and Clinical Framework for Cross Country Healthcare Organizations, Master Thesis, Department of Interaction and System Design, School of Engineering, Blekinge Institute of Technology, Ronneby, Sweden, 2009, p. 9.

[3] Samina Nawab, Tahira Nazir, Muhammad Mohsin Zahid, and Syed Muhammad Fawad, OP CIT, p. 45.

- Evaluating alternatives: assessing different options to determine the most effective course of action.
- Improving existing programs: refining current strategies to enhance efficiency and effectiveness.
- Mobilizing support: gaining stakeholder engagement and consensus for initiatives.
- Changing ways of thinking: encouraging shifts in perspectives through knowledge.
- Planning new research: identifying gaps and setting directions for future investigations.

### 3.2 Knowledge Management Strategies

Three distinct interpretations associated with the term "KM strategy" were identified in the literature. The most common interpretation was understood as an approach to knowledge management, reflecting the diversity of perspectives found in the field and highlighting the absence of consensual models. A second meaning was associated with strategic management. Where the KM strategy was defined as a "knowledge strategy", it was considered a critical element of competitive strategies based upon knowledge. A third meaning, typically employed in practical contexts, was interpreted as a strategy for KM implementation. Collectively, all three meanings were utilized to shed light on the relationship among technology, knowledge management, and strategy, and were subsequently employed in the development of the ontology[1].

[1] Andre Saito, Katsuhiro Umemoto and Mitsuru Ikeda, A strategy-based ontology of knowledge management technologies, JOURNAL OF KNOWLEDGE MANAGEMENT, volume 11, issue 1,2007, P.98.

Knowledge management strategy could help to[1]:

- Increase understanding and awareness of knowledge management;
- Improvement of senior staff commitment;
- Transfer good knowledge management practice;
- Provide a map of where the organization is now, future requirements, and the strategy to reach goals.

### 3.2.1 Codification and Personalization Strategy

The two primary approaches to knowledge management are guidance for individuals and systems. Hansen (2002) highlights two key strategies: personalization and codification. The personalization strategy promotes the flow of knowledge within organizations by fostering interaction and networking among individuals, thereby facilitating the exchange of tacit knowledge. In contrast, the codification strategy focuses on capturing, coding, storing, and distributing explicit knowledge to achieve organizational objectives. Thus, knowledge management strategies within the organization are not solely reliant on documenting knowledge, but can also be implemented through interpersonal engagement[2]. According to Fong (2009), both personalization and codification strategies can co-exist within the organization, with the optimal balance between the two determined by the specific roles and functions of different units in the parent organization. Hansen et al (1999) proposed an 80-20 split, suggesting that one strategy should dominate, accounting for 80% of the knowledge management approach, while the other serves as complementary support with a 20% share. They argued that most

[1] Mohamed Abdalla Elamein Boshara, Peter Charles Woods, and Nour Eldin Mohamed Elshaiekh, Knowledge Management Support to Public Health in Humanitarian Emergency, Research Square, 2020, p 5.

[2] Khaled Algahtani, KNOWLEDGE MANAGEMENT PRACTICES IN THE KINGDOM OF SAUDI ARABIA PUBLIC SECTOR ORGANISATIONS, PhD Thesis, University of WOLVERHAMPTON, 2019, p. 20.

organisations adopt this ratio, warning that striving for equal excellence in both strategies may result in failure. However, Koenig (2001) challenged the rigidity of the 80-20 framework, contending that a 50-50 balance does not inherently lead to failure. His research demonstrated that successful organizations often place equal emphasis on both personalization and codification, advocating for a flexible balance point within the 20-80 or 80-20 range, tailored to the unique needs and priorities of the organization[1].

**Table 1-7:** KM Strategies adapted

| **Instrument and Strategies of KMS** | |
|---|---|
| Coding Strategy | Personalization Strategy |
| System decision support | Initiatives for spontaneous knowledge transfer |
| Groupware | Mentoring |
| Document repositories | Equipment/Communities of Practice |
| Knowledge Maps | Groupware |
| Workflows | Yellow pages |
| Shared databases | Discussion Forums |

Source: Khaled Algahtani, KNOWLEDGE MANAGEMENT PRACTICES IN THE KINGDOM OF SAUDI ARABIA PUBLIC SECTOR ORGANISATIONS, PhD Thesis, Philosophy, University of WOLVERHAMPTON, 2019, p 20.

The table above illustrates the complementary roles of the coding strategy and the personalization strategy in knowledge management. The coding strategy focuses on formalizing explicit knowledge, while the personalization strategy facilitates the sharing of tacit knowledge. Achieving a balance between these two approaches allows for a more comprehensive knowledge management system tailored to the

[1] Patrick S.W. Fong and Cecilia W. C. Kwok, Organizational culture and knowledge management success at project and organizational levels in contracting firms, Journal of Construction Engineering and Management, volume 135, issue 12, 2009, p 8.

organization's specific needs. However, academics agree that both the personalization and codification strategies have negative and positive impacts (Table 1-8).

**Table 1-8**: Positive and negative effects of knowledge strategies

| Strategy | Positive side | Negative side |
|---|---|---|
| **Personalization** | Low risk of imitation<br>Low investment in IT, High rate of innovation<br>Sense of ambiguity | Difficult to communicate<br>Difficult to store<br>Reluctant to share<br>Knowledge has no protection through IPRs<br>Knowledge loss due to labor turnover |
| **Codification** | No knowledge loss due to labor turnover<br>Protection through IPRs<br>Easy to communicate<br>Easy to store | High investment in IT, a large space to keep documents<br>High risk of imitation by competitors |

**Source:** Sajjad M Jasimuddin and Zuopeng (Justin) Zhang, Knowledge management strategy and organizational culture, The Journal of the Operational Research Society, volume 65, Issue 10, 2014, p 1491.

### 3.2.2 Alternative Knowledge Management Strategies

Michael Earl (2001) proposed a distinct taxonomy of knowledge management strategies based on the findings of a five-year study. His framework delineates seven specific schools of knowledge management, each representing a strategic approach to managing organizational knowledge. Earl's primary objective was to assist executives in selecting appropriate KM strategies aligned with their organizational goals, structural framework, and prevailing technological, behavioral, or economic

orientations. To categorize these schools, he employed three overarching perspectives – technological, behavioral, and economic - as the primary classification criteria. Further analysis of these perspectives led to the identification of seven distinct KM schools[1].

The technocratic perspective, emphasizing an IT-based approach, comprises three specific schools: the systems school, the cartographic school, and the engineering school. The systems school primarily focuses on codifying knowledge into databases, facilitating its reuse as a strategic organizational resource. This approach necessitates technological support, particularly through knowledge-based systems. The cartographic school, on the other hand, is centered on knowledge mapping and the development of knowledge directories. Here, technology plays a crucial role in identifying and cataloging existing knowledge and expertise within an organisation. The third technocratic school, the engineering school, extends the principles of business process reengineering, leveraging IT systems to provide contextual knowledge and streamline operational processes and procedures[2].

Within the second category, economic, there exists a single school known as the commercial school. Earl (2001) classifies this school as economic due to its explicit emphasis on both safeguarding and capitalizing on the firm's intellectual assets to generate revenue streams. This perspective underscores the importance of knowledge as a strategic economic resource that must be managed to maximize financial returns[3].

[1]Micheal Earl, "Knowledge management strategies: toward a taxonomy", Journal of Management Information Systems, Volume 18, Issue 1,2001, p 218.
[2] John P. Girard, Taming enterprise dementia in public sector organizations, International Journal of Public Sector Management, Volume 18, Issue 6,2005, p 37.
[3]Deborah A. Blackman and Steven Henderson, Knowing ways in knowledge management, The Learning Organization, volume 12, issue 2, 2005, p. 160.

The final category in Earl's (2001) taxonomy is the behavioral group, which is rooted in the social sciences and emphasizes the social dynamics of knowledge creation, dissemination, and utilization. This perspective highlights the human-centric nature of knowledge management, focusing on collaboration, connectivity, and organizational awareness. Unlike the technocratic and economic school, the behavioral approach recognizes that knowledge management extends beyond technological infrastructures, relying heavily on interpersonal interaction and cultural dynamics within an organization. Many scholars and practitioners regard this category as the "people-oriented" group, reinforcing the notion that effective knowledge management is contingent upon fostering an environment that encourages communication, trust, and shared learning experiences. By prioritizing human engagement and social networks, the behavioral schools emphasize that knowledge is not merely an asset to be stored and retrieved but a dynamic process that thrives through continuous interaction and collective intelligence[1].

In addition to the above works, numerous other research studies on KM strategies have been conducted. Murray (2000) suggested eight KM approaches, which are similar to the seven schools identified by Earl (2001): intellectual capital, knowledge as individual skills, philosophical, technological, strategic, process, team, and knowledge agent approaches, as well as the combination of these approaches. Mentzas (2001) identified two broad approaches for KM: the product approach and the process approach[2]. These different strategies may be displayed for comparison in Table 1-9 below

[1] John P. Girard, Taming enterprise dementia in public sector organizations, OP CIT, p 539.
[2] HAN Lai, OP CIT, p p: 39-40

**Table 1-9:** KM Strategies

| Authors | Year | KM strategy |
|---|---|---|
| Murray | 2000 | - The intellectual capital<br>- Knowledge as individual skills<br>- Philosophical<br>- Technological<br>- Strategic<br>- Process<br>- The teams and knowledge agents approach<br>- The combination of the approaches |
| Earl | 2001 | • Technocratic approach (IT-based approach):<br>- Systems school<br>- Cartographic school<br>- Engineering school<br>• Economic approach:<br>- Commercial school<br>• Behavioral approach:<br>- Organizational school<br>- Spatial school<br>- Strategic school |
| Mentzas | 2001 | - The product approach<br>- The process approach |

Source: HAN Lai, Reconceptualizing knowledge seeking in knowledge management: towards a knowledge seeking process model, PhD thesis, University of Northumbria at Newcastle, England, 2011/ 2012, p. 40.

### 3.3 The Most Widely Used KM Models

The area of KM has been described as multifaceted, with several studies focusing on various perspectives, resulting in an incremental number of definitions and models. Generally speaking, from their origins, KM focuses on three main perspectives: business, cognitive or knowledge science, and

process, particularly in relation to technology[1]. These three main perspectives are illustrated in Table 12.

**Table 1-10:** The main KM perspectives used to develop the selected KM models

| **Knowledge management perspective** | **How knowledge is treated** | **The main purpose of KM from the KM perspective** | **Examples of literature and models that predominantly sit within the KM perspective** |
|---|---|---|---|
| Cognitive and Knowledge Science | Within individuals and for individuals or teams, Knowledge is developed and transformed through human-facilitated change. | To provide human interaction and social exchange of knowledge | Wiig's Model, Demarest's Model, and the KTA Model, Boisot's Model, Hedlund and, Nonaka's model, Choo's Model |
| Business | Knowledge is mainly managed explicitly through documentation, policies, and procedures. | To compose, attain, and distribute both tacit and explicit knowledge by disseminating it tangibly | SECI Model, Demarest's Model, Boisot's Model, Hedlund's, and Nonaka's Model. |
| Process or Technological | Knowledge is captured in depositories and made available through the technological process. Knowledge is mainly managed with ICT solutions. | To capture knowledge at each process stage and consider ICT for its control and management | Stankosky and Baldanza Model Frid's Model, |

[1] Enis ELEZI and Christopher BAMBER, A Guiding Conceptual Framework for Individualized Knowledge Management Model Building, Management Dynamics in the Knowledge Economy, Volume 6, Issue 3, 2018, p.374.

**Source:** Enis ELEZI and Christopher BAMBER, A Guiding Conceptual Framework for Individualized Knowledge Management Model Building, Management Dynamics in the Knowledge Economy, Volume 6, Issue 3, 2018, p.374; DOI 10.25019/MDKE/6.3.01.

From the points discussed in the table above, a model from each perspective of knowledge management was selected to be explained in the following section.

### 3.3.1 The Wiig's Model

Karl M. Wiig is one of the pioneers in the field of KM and was among the first to publish a series of texts that assembled relevant management concepts. His KM cycle examines how knowledge is created and utilized by individuals or organizations. The model is highly favored in KM because it addresses organizational structure and encompasses common business areas found in most organizations. He proposes that the foundation of KM comprises how knowledge is created, used in problem-solving and decision-making, and manifested cognitively and in culture, technology, and procedures[1]. Developed in 1993, this model is characterized by four major phases: "build, hold, pool, and apply"[2].In this model, Wiig portrays individual functions and activities as sequential steps. However, this representation is a simplification, as some functions and activities may be performed in parallel. Additionally, the model for cycling back to repeat earlier functions and activities, but with different emphasis and detail, follows an iterative approach[3].

[1] Haradhan Kumar Mohajan, The Impact of Knowledge Management Models for the Development of Organizations, Journal of Environmental Treatment Techniques, Volume 5, Issue 1,2017, P.18.

[2] Sebastian Ion CEPTUREANU, KNOWLEDGE CYCLES AND KNOWLEDGE MANAGEMENT, International Conference KNOWLEDGE-BASED ORGANIZATION, GE-BASED ORGANIZATION, Volume XXII, No 1, 2016, p.173.

[3] Karl M. Wiig, Knowledge Management Foundations: Thinking about Thinking: How People and Organizations Create, Represent and Use Knowledge, SCHEMA PRESS, Arlington, Texas, 1993, p. 53.

- **Building knowledge:** It consists of obtaining, analyzing, reconstructing, synthesizing, organizing, codifying and modeling knowledge. It starts with its acquisition through a variety of means, such as, personal experience (experiential learning), formal education or training, and sources such as, books, peers, etc. Knowledge building phases are conducting market research, competitive intelligence studies, synthesizing lessons learned, or documenting frequently asked questions (FAQs) in order to post them on a website. At an organizational level, knowledge acquisition can be done by hiring people or through research and development projects[1].
- Pooling knowledge: It consists of coordinating, assembling, accessing, and retrieving knowledge. It indicates knowledge coordination that primarily relies on setting a knowledge resource network structure, which is responsible for making certain resources available. Coordinating is formed to create collaborative teams that work with specific content to establish a 'who knows what' network. Assembling is the process of gathering knowledge sources into a background library or repository to facilitate later access/retrieval. It typically requires the formation of collaborative teams to work with particular content in order to create a 'who knows what' network. Access and retrieval can provide knowledge from the repository or through consultation with knowledgeable individuals about complex problems, obtaining a second opinion from an expert, or discussing a challenging case with a peer. A collection of information about locating knowledge in documents, databases, and expert networks is needed from all employees. Therefore, knowledge is acquired and built from various sources, including experts and advisers, training

[1] Haradhan Kumar Mohajan, A Comprehensive Analysis of Knowledge Management Cycles, Journal of Environmental Treatment Techniques, Volume 4, Issue 4, 2016, p.126.

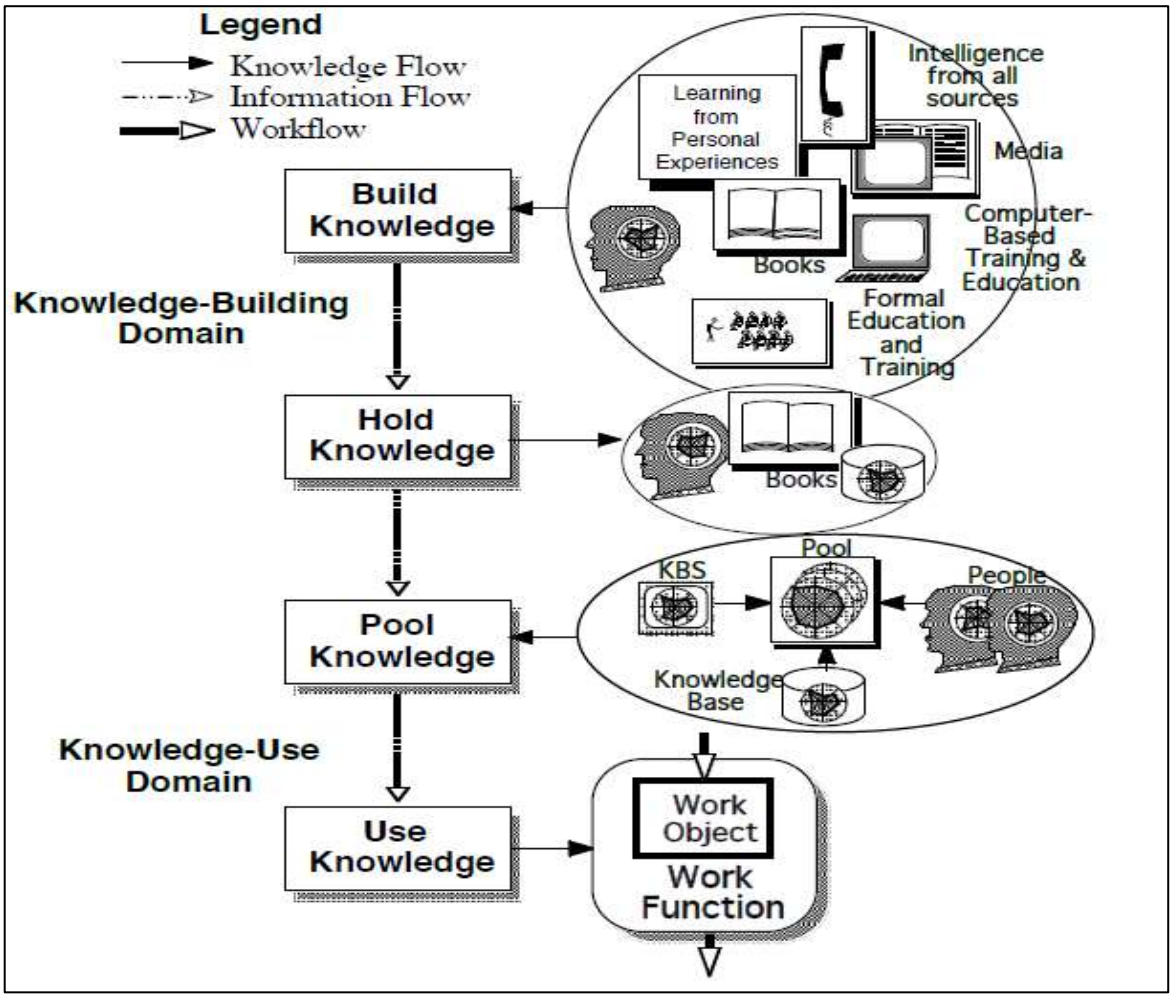
courses, procedures and instructions, research, books, media, inspections, and observations[1].

- Pooling knowledge: At the organization level, pooling knowledge involves coordinating, assembling, accessing, and retrieving knowledge. It relies on a structured knowledge resource network to make resources available. Coordination involves forming collaborative teams to establish a "who knows what" network. The process of assembling focuses on creating repositories for easier access in the future. Social interactions, such as brainstorming, apprenticeships, and consulting with peers, also facilitate knowledge pooling. Access and retrieval occur through repositories or by consulting experts for opinions or solutions. Employees contribute to locating and organizing knowledge from diverse sources, including training, research, media, and observation. This enables individuals to find solutions either via repositories or expert networks[2].
- Using knowledge refers to utilizing knowledge to generate benefits. This involves applying practical knowledge to routine tasks, production, services, and decision-making at various management levels. Routine tasks rely on automatically applied compiled knowledge. Services involve identifying problems, evaluating potential consequences, selecting suitable knowledge, exploring alternatives, assessing solutions, and implementing the chosen ones[3].

[1] Haradhan Kumar Mohajan, The Impact of Knowledge Management Models for the Development of Organizations, OP CIT, p.18.
[2] Haradhan Kumar Mohajan, A Comprehensive Analysis of Knowledge Management Cycles, OP CIT, pp 126-127.
[3] M. Max Evans, Kimiz Dalkir and Catalin Bidian, A Holistic View of the Knowledge Life Cycle: The Knowledge Management Cycle (KMC) Model, Electronic Journal of Knowledge Management, Volume 12, Issue 2, 2014, p. 88.

One of the advantages of Wiig's (1993) model is that it considers knowledge processing at three levels: the individual, the group, and the organization[1]. The following figure represents the stages of the Wiig model.

**Figure 1-12:** The Wiig model




**Source:** Karl M. Wiig, Knowledge Management Foundations: Thinking about Thinking: How People and Organizations Create, Represent and Use Knowledge, SCHEMA PRESS, Arlington, Texas, 1993, p. 53.

### 3.3.2 The SECI Model

Nonaka and Takeuchi's (1995) epistemological dimension of tacit knowledge has provided a leap forward in the way knowledge is viewed. Instead of viewing tacit knowledge as merely an embodied/personal/individual type of knowledge that cannot be expressed,

[1] Ebid.

these researchers have paved the way for recognizing tacit knowledge as a type of knowledge with immense potential and value in a corporate organizational setting. According to Nonaka and Takeuchi, tacit knowledge can be externalized and made explicit. This idea forms the basis of their knowledge conversion theory, which finds application in the SECI model, according to which knowledge is socialized (tacit to tacit), externalized (tacit to explicit), combined (explicit to explicit), and internalized (explicit to tacit) in a continuous, spiraling process[1].

- Socialization (tacit-to-tacit): Socialization involves sharing tacit knowledge through natural, face-to-face interactions, such as brainstorming, mentoring, or casual meetings. Whiteboard is an intuitive and effective way to create and share knowledge; its main limitation is that the knowledge often remains uncaptured and resides solely in the participants' minds. This makes it a limited and time-consuming method for disseminating[2].
- Externalization (explicit to tacit): Externalization involves converting tacit knowledge (TK) into explicit knowledge (EK) through institutionalized rules, standardized storage, and expert collaboration. It enables efficient problem-solving by sharing ideas, experience, and concepts, turning ideas into practical applications. For example, organizational strategies emerge when collective tacit knowledge is transformed into explicit plans and tactics[3].
- Combination (explicit-to-explicit): This type of combination involves reorganizing explicit knowledge into new forms, such as

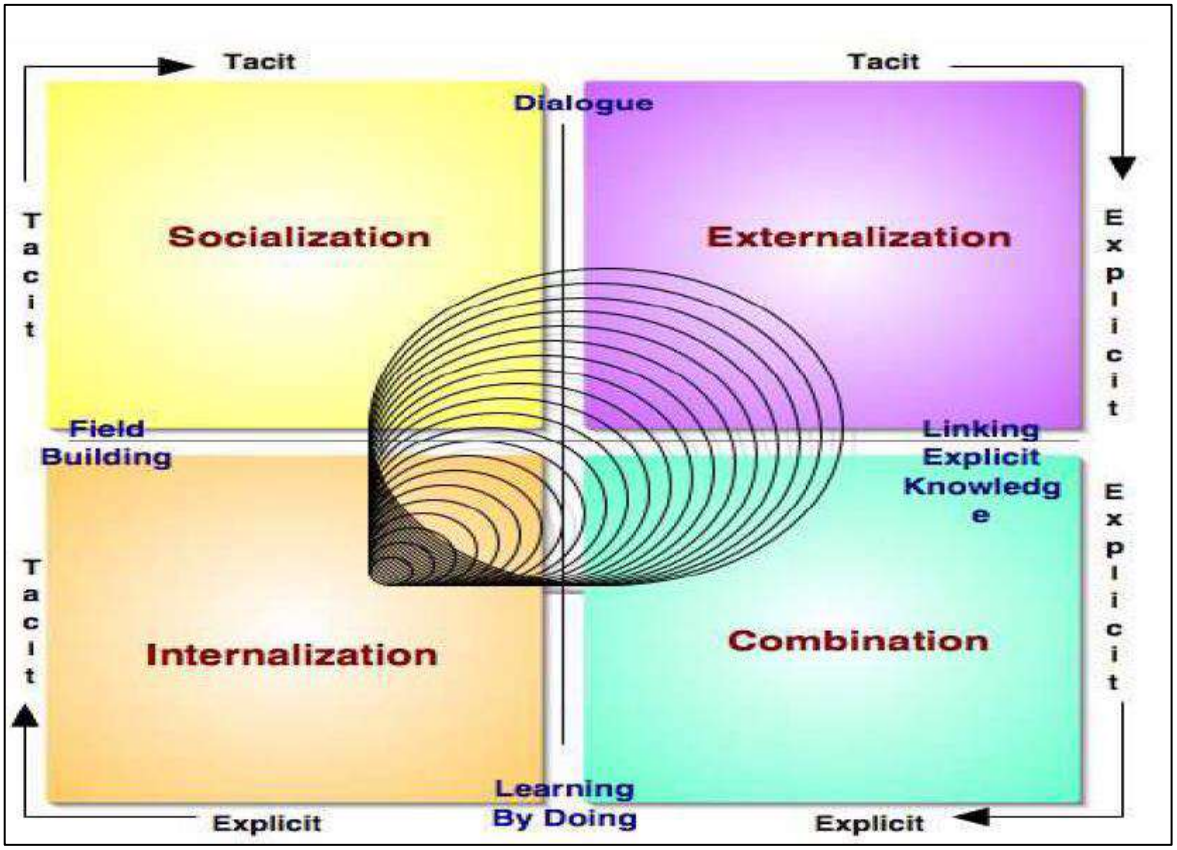
[1] Aderonke O. Adesina and Dennis N. Ocholla, The SECI Model in Knowledge Management Practices: Past, Present and Future, South African Journal of Information Studies, Volume 37, Issue 3, 2019, p. 3.
[2] Kimiz Dalkir, KNOWLEDGE MANAGEMENT IN THEORY AND PRACTICE, Elsevier Butterworth–Heinemann, 2005, p. 54.
[3]Haradhan Kumar Mohajan, Knowledge is an Essential Element in the Present World, International Journal of Publication and Social Studies, volume 01, issue 01, 2016, p.9.

reports, trend analyses, summaries, or databases. It doesn't create new knowledge but reconfigures existing knowledge into systematic formats. Examples include populating databases, categorizing concepts, or converting knowledge into new media, such as tutorials or training courses. This process makes explicit knowledge more accessible and suitable for teaching or content transfer[1].

- Internalization (explicit to tacit): Internalization is the process of turning explicit knowledge into tacit knowledge through practice, training, and exercises. It fosters understanding and builds a learning culture as individuals conceptualize findings and generate new insight. Documentation supports this process by helping individuals internalize experiences and expand their tacit knowledge base[2].

Figure 1-13: The SECI model

[1] Kimiz Dalkir, OP CIT, p55.
[2] Haradhan Kumar Mohajan, Knowledge is an Essential Element at Present World,OP CIT, p10.




**Source:** Aderonke O. Adesina and Dennis N. Ocholla, The SECI Model in Knowledge Management Practices: Past, Present and Future, South African Journal of Information Studies, Volume 37, Issue 3, 2019, p. 3.

The SECI Model process is depicted in Figure 1-13. This simple matrix model presumes that knowledge transfer in organizations is simple and straightforward, but it has been argued that it can be more complicated and complex than it seems. Even though each of these modes may independently create knowledge, the organizational knowledge creation processes only occur when all four modes are organizationally managed and dynamically interact. This process, which is highly iterative, constitutes a 'knowledge spiral' that occurs mainly through informal networks of relations within the organization, starting from the individual level, then moving up to the group (collective) level, and eventually to the organizational level. It creates a 'spiraling effect' of knowledge

accumulation and growth, which promotes organizational innovation and learning[1].

### 3.3.3 The Frid's Model

According to Frid's (2003) knowledge management framework, the knowledge management maturity assessment aims to measure the level of knowledge management maturity and implementation of knowledge management[2], which can be divided into five levels as follows:

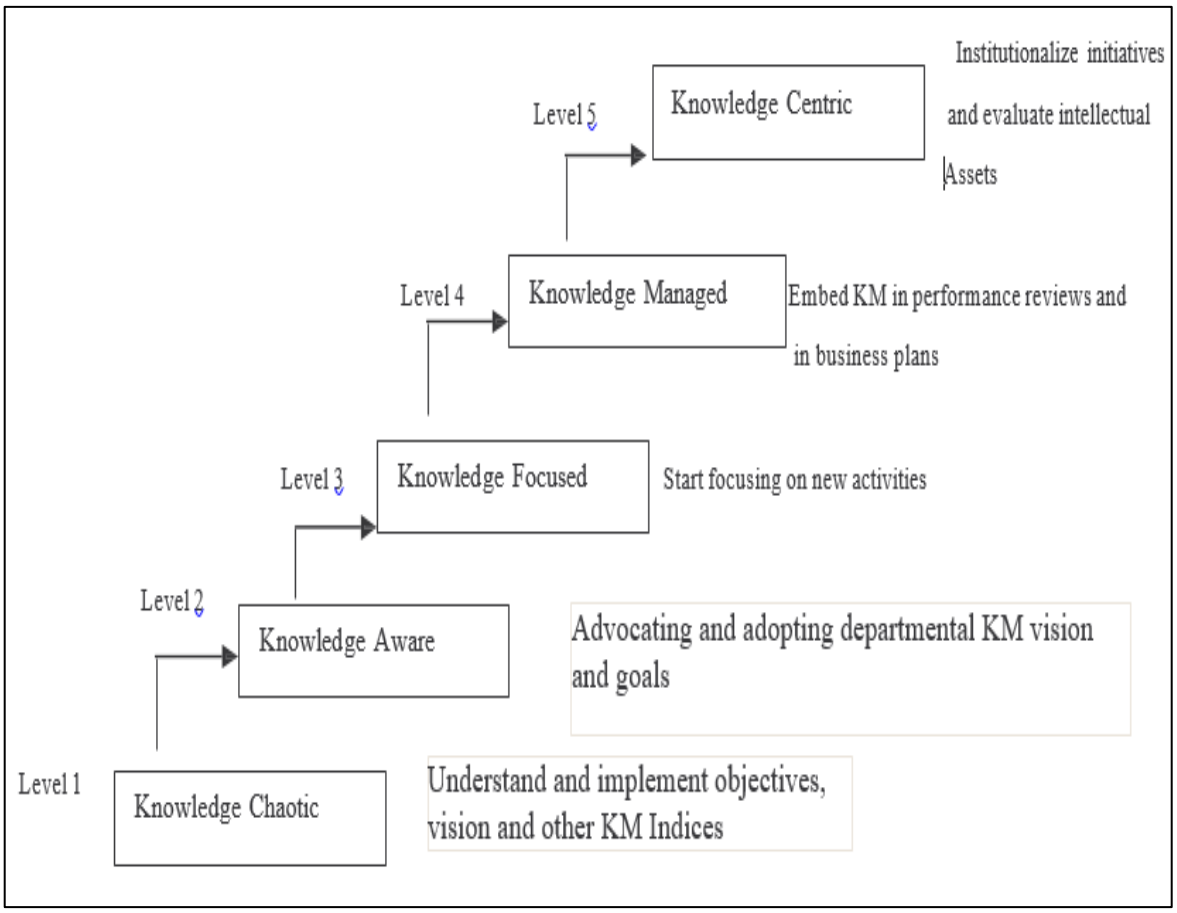
- Knowledge chaotic: suggests that organizations at this level are in the process of understanding and implementing the Frid framework for knowledge management, which encompasses knowledge management vision, knowledge management objectives, and knowledge management indices. The organization should focus on advocating and adapting departmental knowledge management vision and goals as well as performing Frid's framework knowledge management maturity assessment[3].
- Knowledge aware: suggests that organizations at this level are a step higher than those at knowledge chaotic. Additionally, to understand and implement Frid's framework for knowledge management, the organization should focus on developing a knowledge management roadmap and working collaboratively with the knowledge management office. This will enable them to advocate for and adopt a departmental knowledge management vision and goals, as well as perform the Frid framework maturity assessment[4].

[1] Haslinda Abdullah and A. Sarinah, A Review of Knowledge Management Models, The Journal of International Social Research, Volume 2, Issue 9, 2009, p. 190.
[2]Dana Indra Sensuse and Elin Cahyaningsih, Knowledge Management Models: A Summative Review, International Journal of Information Systems in the Service Sector, Volume 10, Issue 1, 2018, p 75.
[3] Haslinda Abdullah and A. Sarinah, OP CIT, p 193.
[4] Ibid, p 193.

- Knowledge-focused: It indicates that organizations must cover the consolidation of features at the lower two levels and begin to focus on new activities. Organizations at this level must enhance knowledge management by[1]:
  - process engineering;
  - Supporting the initial knowledge management infrastructure;
  - Services and training;
  - Supporting early adopters and the knowledge community;
  - Monitor and report on administrative indicators;
  - Including knowledge management within budgets.
- Knowledge managed: This involves integrating knowledge management practices into performance reviews and business plans. Organizations should adopt the fundamental activities outlined in levels one, two, and three, while ensuring that knowledge management becomes an integral part of their performance evaluation and planning processes[2].
- Knowledge-centric**:** This indicates that organizations should focus on successful initiatives and assess their intellectual assets. Since the last level represents the highest in knowledge management maturity, organizations should focus on specific activities, such as establishing successful initiatives and evaluating knowledge assets. These activities distinguish knowledge from other levels of understanding[3].

**Figure 1-14:** Frid's Knowledge Management Model

[1]GOURI Hicham, KNOWLEDGE SHARING AND INDIVIDUAL PERFORMANCE: THE MEDIATION ROLE OF ORGANIZATIONAL MEMORY, PhD Thesis (unpublished), Department of Management Science, Faculty of Economic Science, Commercial Science, and Management Sciences, Mustapha Stambouli University of Mascara, 2023-2024, p 68.
[2] Dana Indra Sensuse and Elin Cahyaningsih, OP CIT, p.75.
[3] GOURI Hicham, OP CIT, p 75.




**Source:** Dana Indra Sensuse and Elin Cahyaningsih, Knowledge Management Models: A Summative Review, International Journal of Information Systems in the Service Sector, Volume 10, Issue 1, 2018, p 95.

### 3.3.4 Different Models of Knowledge Management

Several KM models have been proposed, and these are considered from the practical perspectives that underlie the need for organizing principles to form a general framework that identifies and categorizes different activities in the KM process. The KM models demonstrate a process that enables organizations to employ a more collective and systematic approach to data mining, capture, storage, refinement, codification, utilization, update, and utilization, thereby enhancing organizational effectiveness. Some of the Models and their thrust areas are summarized below.

**Table 1-11:** KM Models and their Major Components

| KM Models | Major Components |
|---|---|
| Johari Window Model of Joseph Luft and Harry Ingham (1995) | Represented in a two-by-two matrix form. This model employs the interactions between two sources of information, the Self and others. |
| Von Krogh and Roos Model (1995) | It differentiates between individual and social knowledge |
| Kogut and Zander's KMM (1996) | Emphasis on structuring knowledge for discourse and coordination among individuals with varied expertise, and replicating it. |
| The Choo Sense-Making KM Model (1998) | Emphasizes three components in the KM process, viz.<br>a) sense-making,<br>b) knowledge creation and<br>c) decision-making |
| The Boisot KM Model (1998) | Social Learning Cycle (SLC) that adopts the I-Space to model the dynamic flow of knowledge through a series of six phases as<br>a) Scanning,<br>b) Problem-Solving,<br>c) Abstraction<br>d) Diffusion<br>e) Absorption<br>f) Impacting |
| Bridging Epistemologies Model of S.D.N. Cook and J.S. Brown (1999) | This model stands on four pillars, viz:<br>a) Concepts: Knowing and understanding of the activity<br>b) Stories: Records of how things are to be done<br>c) Skills: Ability to execute the task<br>d) Genre: The context under which a task is to be performed |
| Capability Maturity Model by Frid (2003) | A 5 Level Model with levels signifying the processes in an organization<br>a) Initial/Adhoc<br>b) Repeatable<br>c) Defined<br>d) Managed<br>e) Optimising |

| | |
|---|---|
| The 7-Circle KMM of Ologbo and Nor (2015) | Emphasis on the seven Circles as<br>a) Initiative/Strategy<br>b) Recognition<br>c) Choosing KM People,<br>d) Adoption of KM Mechanism,<br>e) Choosing the Right Technology,<br>f) Coordination for Interaction and<br>g) Motivation System for successful KM Process |

**Source:** Pradyut Kumar Borah et al., Practical Application of Knowledge Management Models: Assessing Existing KM Models from the Perspective of Private Hospitals of North East India, Palarch's Journal of Archaeology of Egypt/Egyptology, Volume 18, Issue 10, 2021, pp 821-822.

Thus, the models evolved over the years, incorporating different levels and processes, which is again the result of applying KM in diverse sectors.

## Chapter summary

Today, knowledge is considered a fundamental intangible resource whose role in the success of business organizations has steadily increased. This shift has transformed the business environment from a traditional economy based on land, labor, and capital into a knowledge-based economy. Knowledge, whether tacit or explicit, with its distinct characteristics, advantages, and diverse sources, has become an indispensable resource. Consequently, managing it has become a matter of critical importance, giving rise to knowledge management (KM) as a strategic tool that enhances organizational efficiency and adaptability to rapid challenges.

The chapter emphasizes multiple definitions of KM and its components, beginning with the collection and analysis of information and extending to its application for improving organizational performance, in order to generate added value, ensure survival, and achieve competitive advantage. The chapter further explains KM processes, the requirements for implementing KM, particularly the supportive role of information technology tools, and the main KM models designed for organizations. In addition, it explores the KM strategy.

Based on this discussion, it is evident that KM constitutes a cornerstone for improving performance across several critical sectors, most notably healthcare services. This provides a foundation for the transition to chapter two, which will focus on clarifying the relationship between KM and the enhancement of healthcare services, highlighting its impact on the quality of healthcare delivery.

# Chapter Two:

## Health Services: General Framework

## Chapter Introduction

Public services occupy a central place in most states because they address essential societal needs and underpin collective welfare. Owing to their strategic nature and distributional impact, governments have historically reserved selected services for exclusive or partial public provision and have modernized delivery to build and sustain citizen trust. Among these services, the health sector is pivotal: the availability, accessibility, acceptability, and quality of health care shape individual well-being, labor productivity, and social cohesion, and are widely used as indicators of socio-economic development.

This chapter defines public services and, more narrowly, health services, and traces their institutional evolution as state responsibilities expanded from security and defense to the proactive provision of social goods. It distinguishes between models of provision (fully public, publicly financed with mixed provision, and regulated private participation) and links them to the policy objectives of equity, efficiency, financial protection, and accountability. Because health care is a basic human need across political and economic systems, states invest human, technical, and financial resources in health institutions and regulate markets to correct failures such as information asymmetry, externalities, and barriers to access.

Conceptually, the chapter adopts a public-economics lens complemented by a rights-based perspective. It treats health services as merit goods with significant spillovers, justifying public financing and stewardship even when provision is mixed. It also recognizes the legal framing of health as a fundamental right in many constitutions and international instruments, which anchors policy commitments to universal and fair access.

# 1. The Service Sector – Concepts and Significance

The services sector has become a defining feature of contemporary economies, reflecting its large share of employment and its substantial contribution to aggregate output. This marks a departure from earlier views that relegated services to a tertiary rank and underestimated their role in wealth creation due to the intangible nature of their outputs.

## 1.1 The Importance of the Service Sector and Drivers of Its Economic Growth

### 1.1.1 Understanding the Service Sector

The Service sector, also known as the "tertiary" or "residual" sector, was of lesser importance during the 19th and early 20th centuries, when the shift from agriculture to industry was in full swing. Since the end of World War II, however, the Service sector has become the largest[1].

The service sector provides services, rather than producing material commodities. Activities in the service sector include retail, banks, hotels, real estate, education, health, social work, computer services, recreation, media, communications, electricity, gas, and water supply.

Service activities sit at the center of a sweeping economic transformation comparable to the eighteenth-century Industrial Revolution, the rise of medieval guilds, and the earlier transition from hunting and gathering to settled agriculture that enabled towns and writing. Today's drivers—computers, robotics, and fully automated factories—are rapidly shrinking the demand for manual labor in manufacturing, while machinery, fertilizers, pesticides, and bioengineering similarly reduce labor needs in agriculture. Consequently, a growing share of livelihoods depends on service work. Yet, despite service-oriented structures in most advanced economies, the role of services in growth and structural change

[1] Victor R.Fuchs, The Service Economy, NATIONAL BUREAU OF ECONOMIC RESEARCH, NEW YORK, 1968, p. 25.

remains underexamined. Commonly defined as all activities outside primary production and manufacturing, the service sector—long recognized as essential to any functioning economy—remains, as Riddle (1986) observed, "one of the least understood" components of the global system[1].

### 1.1.2 The Economic Significance of Services

Since the 1980s, advanced economies have shown growing interest in service activities, largely because services became the principal source of job creation after the 1973 oil shock. Yet the spatial dynamics of service location long remained understudied. Recent attention reflects a strategic imperative: to compete globally, countries must acquire and deploy service capabilities—especially knowledge- and information-intensive business services—cheaply, quickly, and efficiently. The rise of services is also reshaping the international economy. Production has internationalized, and globally produced goods now compete in integrated markets, a process enabled and mirrored by the parallel internationalization of services. As a result, cross-border trade in business services has expanded, challenging older views of services as inherently non-tradable[2].

In historical perspective, the services sector accelerated following the Industrial Revolution and, in many economies, now constitutes the core of the modern system—analogous to the role of industry in the industrial era and agriculture in traditional economies. Individuals interact with services daily across communication, transport, education, health care, and finance, delivered by institutions such as banks, hospitals, hotels, and universities. Because the customer is integral to the production of most services, organizations have shifted toward customer-centric strategies that prioritize understanding

[1] Anita Kon, SERVICE INDUSTRIES AND SERVICE ECONOMY, Textos para discussão 63, FGV EESP - Escola de Economia de São Paulo, Fundação Getulio Vargas (Brazil), 1997, p. 1.
[2] Anita Kon, op. cit., pp. 2-3.

preferences, tailoring offerings, and closing gaps between performance and expectations. Empirical studies indicate that retaining existing clients is substantially less costly than acquiring new ones, reinforcing investments in quality management and relationship maintenance[1].

Statistical evidence underscores the sector's macroeconomic weight: by 1996, services accounted for roughly 79% of global GDP and 76% of total employment. Together, these patterns confirm the centrality of services to growth, structural change, competitiveness, and employment in contemporary economies[2].

### 1.1.3 Factors Behind the Expansion of the Service Sector

Several factors have contributed to the growing importance of the services sector, which can be summarized as follows[3]:

- Rising demand for both traditional and modern services has increased the participation and effort of workers in the sector to meet expanding needs. This shift has led to a structural reallocation of labour away from industry and agriculture toward services.
- The growing need among organizations—both public and private, industrial and agricultural—for specialized services has reinforced the sector's role as a key support for economic activities.

[1] Soufiane Boussaleh, "Al-tahakkum fi jawdat al-khidma al-bankiyya: Dirasa naw'iyya kammiyya fi al-Bank al-Watani al-Jaza'iri (BNA)" [Quality control of banking services: A qualitative-quantitative study at the National Bank of Algeria (BNA)], PhD thesis, University of Tlemcen, 2016, p.7.

[2] Zéithaml Valatie and Bitner Mary, Services Marketing, Integrating Customer Focus Across the Firm, 2nd edition, International Edition, Irwin McGraw-Hill, Boston, 2000, p. 6.

[3] Rabah Al-Wafi, "Athar istikhdam al-idara al-iliktruniyya ala jawdat al-khidamat fi al-muassasat al-umumiyya al-jaza'iriyya: Qita' al-adala namudha-jan" [The impact of utilizing electronic management on the quality of services in Algerian public institutions: The justice sector as a model], PhD Thesis, University of M'Sila, 2019, p. 116-117.

- The perception among investors that the services sector offers higher profitability compared to other sectors has attracted significant capital and entrepreneurial interest.
- The sector's rapid growth potential, which in many countries exceeded 50% of total economic activity by 1988, encouraged greater entry of firms and individuals into service-related activities, while employment and investment in industry and agriculture declined.
- The increasing reliance of tangible goods on complementary services, particularly post-sale services such as maintenance and warranty, has further stimulated expansion.
- Greater cultural, health, educational, financial, and banking awareness among individuals has fueled demand for diversified and higher-quality services to meet their evolving needs.

**Table 2-1:** Reasons for the Growth of the Services Sector

| Cause | Effect |
|---|---|
| **-Rising living standards** | Substitution of self-provided services with market services |
| **More vacation time** | Travel and cultural services |
| **Increased female labor force participation** | Household support services (childcare, eldercare, domestic help) |
| **Higher life expectancy** | Health and long-term care services |
| **Greater product complexity** | After-sales support, technical assistance, warranties |
| **Environmental concerns and resource constraints** | Environmental consulting, efficiency services |
| **Proliferation of new products** | Intermediaries/agents; renting, sharing, training, installation services |

**Source:** Soufiane Boussaleh, "Al-tahakkum fi jawdat al-khidma al-bankiyya: Dirasa naw'iyya kammiyya fi al-Bank al-Watani al-Jaza'iri (BNA)" [Quality control of banking services: A qualitative-quantitative study at the National Bank of Algeria (BNA)], PhD thesis, University of Tlemcen, 2016, p.7.

Collectively, these factors illustrate how structural, technological, and social changes have positioned the service sector as a primary driver of modern economic development.

## 1.2 The Concept of Services

Services are economic activities that generate value through intangible performances rather than the transfer of physical goods, and they are characterised by intangibility, heterogeneity, inseparability, and perishability. They are co-produced with users across market and public domains, increasingly enabled by digital delivery and data-intensive processes.

### 1.2.1 Service in Human History

Before telling the story of the service field, a brief retrospective on the centuries of human history preceding its emergence is necessary. Humans have walked the earth for approximately 250,000 years. Service activities of many types have been essential aspects of the evolution of human culture and civilisation, certainly long before 20th-century scholars directed attention to the service economy. Services are performed for people, meaning that service activities are embedded in the five social institutions sociologists describe as fundamental to human civilisation: family, education, government, economy, and religion (Poponoe, 1980). Most classifications of service entities would describe education, government, and religion as services (Fisk, Grove, and John 2008). Additionally, despite the economy's reliance on agriculture and manufacturing, instrumental services such as finance, transportation, and communication were vital to the growth of human civilization. Finally, in addition to being the essential biological and social unit of human culture, the family is also the fundamental unit of service. Services involve human relationships and interactions, the underpinnings of which are learned within the context of the family institution. In summary, the services provided within the

five fundamental social institutions were crucial to the development of human culture and civilisation[1].

Vandermerwe and Rada coined the term servitization in 1988 to describe the trend, undertaken by an increasing number of corporations in almost all industries, of moving from offering pure products to also including services in their offerings. Martinez et al. defined servitization as "the strategic innovation of an organization's capabilities and processes to shift from selling products to selling an integrated product and service offering that delivers value in use"[2]. Servitization has changed the competitive environment and has created new conditions for competition between companies. Today, companies are not only competing with firms from the same industry but also with those across industries. A company is no longer defined as either a manufacturer or a service provider, but often as a mix of both.

### 1.2.2 Definitions and Interpretations

To grasp the essence of service activities, it is essential to understand the theoretical concepts of service.

The Latin root of service is "servus," which means "slave, servant, or serf," while the Latin root of science is "scientia," which means "knowledge." In ancient Latin, then, "servus scientia" would mean slave knowledge. The etymology of these two words has taken remarkably different paths over the centuries. The term "service" has evolved from referring to people in subservient roles to broadly referring to activities performed for others. (For some people, the word service may still possess a negative connotation that undermines their willingness to learn more about the service economy.) Meanwhile, the term "science" evolved from meaning knowledge in general to meaning specific kinds of knowledge that are discovered through rigorous

[1] Raymond P. Fisk and Stephen J. Grove, The Evolution and Future of Service Building and Broadening a Multidisciplinary Field, Handbook of Service Science, Service Science: Research and Innovations in the Service Economy, 2010, p 642.

[2] Veronica Martinez et al, Challenges in transforming manufacturing organizations into product-service providers, Journal of Manufacturing Technology Management, Volume 21, Number 4, 2010, pp. 451-452.

methods of inquiry[1]. The term "Service" refers to the provision of various services in the English language. Additionally, the meaning of the word has provided us with a clear understanding of its significance in economic practice over the past few decades[2].

Services are “economic activities performed by one party to another. Often time-based, these performances bring about desired results to recipients, objects, or other assets. In exchange for money, time, and effort, service customers expect value from access to labour, skills, expertise, goods, facilities, networks, and systems”[3].

### 1.2.3 Key Characteristics of Services

Characteristics of services are defined in various ways by various authors. According to Lovelock (2004), the four most often mentioned characteristics of services include intangibility, variability (or heterogeneity), inseparability, and perishability, collectively known as the IHIP framework. Additionally, the role of the customer as both an input and a co-producer of services is increasingly acknowledged[4].

❖ Intangibility

The concept that services are immaterial and therefore intangible has a long-standing tradition. The first author to highlight the immaterial and inseparable nature of services was Say in 1836. Regan (1963) further developed this idea by defining services as "activities, benefits, or satisfactions that are offered for sale

[1] Raymond P. Fisk and Stephen J. Grove, The Evolution and Future of Service Building and Broadening a Multidisciplinary Field, Handbook of Service Science, Service Science: Research and Innovations in the Service Economy, 2010, p 643.
[2] Dilafruz Abidovna Xudoyberdiyeva, MANAGEMENT OF THE SERVICES SECTOR AND ITS CLASSIFICATION, International Scientific Journal Theoretical & Applied Science, Volume 78, Issue 10, 2019, p 656.
[3] Jochen Wirtz and Christopher Lovelock, Services Marketing: People, Technology, Strategy, Ninth Edition, World Scientific Publishing, Hackensack, USA, 2022, p. 6.
[4] Peter Madzik and Miroslav Hrnciar, Quality of Services with Respect to Their Unique Characteristics – The Field of Education, Athens Journal of Education, Volume 2, Issue 1, 2015, p. 66.

or are provided in connection with the sale of goods." In 1981, Theodore Levitt proposed using the degree of intangibility to differentiate between products and services. However, other studies suggest that intangibility alone cannot reliably distinguish all products from services[1].

❖ Inseparability

Inseparability is taken to reflect the simultaneous delivery and consumption of services, and it is believed to enable consumers to affect or shape the performance and quality of the service[2].

❖ Heterogeneity

Heterogeneity of services refers to the challenges in standardizing those services. It is linked to various aspects, including the production of outcomes, the performance variations among different providers or individuals, and the performance consistency over time. Additionally, heterogeneity is influenced by the diverse involvement of customers in the service transformation process[3].

❖ Perishability

The fourth characteristic of services discussed in the literature is perishability. Generally, services cannot be stored or carried forward to future periods. Onkvisit and Shaw (1991) suggest that services are "time-dependent" and "time-important," which contributes to their perishability. Hartman and Lindgren argue that the issue of perishability primarily concerns the service provider. Consumers typically become aware of this issue only when there is a

[1] Sabine Moeller, Characteristics of services – a new approach uncovers their value, Characteristics of services – a new approach uncovers their value, Volume 24, Issue 5, 2010, p 361.
[2] Russell Wolak, Stavros Kalafatis and Patricia Harris, An Investigation into Four Characteristics of Services, Journal of Empirical Generalisations in Marketing Science, Volume 3, 1998, p. 26.
[3] Sabine Moeller, OP CIT, p 363.

limited supply and they have to wait to receive the service[1]. The following table summarizes the key characteristics of services as identified by notable authors.

**Table 2-2:** Major Characteristics of Services

| | | GRONROOS, 2007 | FITZSIMMONS, 2006 | LOVELOCK, 2001 | KASPER, 2000 | GLYN, 1995 | ZEITHAML, 2003 | SCHNEIDER, 2004 | EDVARDSSON, 2000 | FISK, 2000 | KOTLER, 2007 | TÉBOUL, 2006 | SAMII, 2001 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 major characteristics of services | Intangibility | | x | | x | x | x | x | x | x | x | | x |
| | Variability | x | x | x | x | x | x | x | | x | x | x | x |
| | Inseparability | x | x | | x | x | x | x | x | x | x | x | x |
| | Perishability / *unstorability | | x | x* | x* | x | x | | x | x | x | | x |
| customer is input and co-producer of the service | | x | x | x | | | | | x | | | | |
| Service is a process (set of activities) | | x | | x | | | | | | | | X | |

**Source**: Peter Madzik and Miroslav Hrnciar, "Quality of Services with Respect to Their Unique Characteristics – The Field of Education," Athens Journal of Education, Volume 2, Issue 1, 2015, p. 67.

### 1.2.4 Types of Services and Their Distribution Channels

- Business Services The first type of service is business services. The most basic definition would be services that support the daily functioning and activity of any business, but are not a commodity. Take, for example, IT services. In today's digital age, every business requires a technological setup. The individuals who provide IT support to a company are offering a service in exchange for compensation. There are other similar services that any business enterprise may require for the smooth functioning and management of its activities. Some such services include banking, warehousing, insurance, communication, and transport, among others.

[1] Russell Wolak, Stavros Kalafatis and Patricia Harris, OP CIT, p. 27.

- Personal Services Personal services are commercial activities that are provided to individuals according to their individual needs. The service here is highly personalised to the customer. So, there can be no uniformity in the services. The service provider will tailor their service to meet the personal needs of each customer. Some examples of personal services include catering, hotel and accommodation, medicine, and various artistic endeavors (such as painting, sculpting, etc.). As you will notice, all these services fulfil the personal needs of the customers.
- Social Services, and when talking about types of services, we come to social services. These are essential public services. The government or other such non-profit organizations provide them. These services aim to achieve social equality in society by providing the underprivileged with the necessary support. The service is not provided for a profit motive but as a social cause. Social services encompass a range of sectors, including education, sanitation, medical facilities, housing, and others.

## 1.3 The Role of Services in Socioeconomic Development

As services have become the most significant contributor to global gross domestic product (GDP), their importance in supporting economic growth is increasingly evident. In many countries, the service sector has gained attention for promoting employment, facilitating industrial upgrading, and fostering broad-based economic and social development.

### 1.3.1 Services as Drivers of Economic Growth

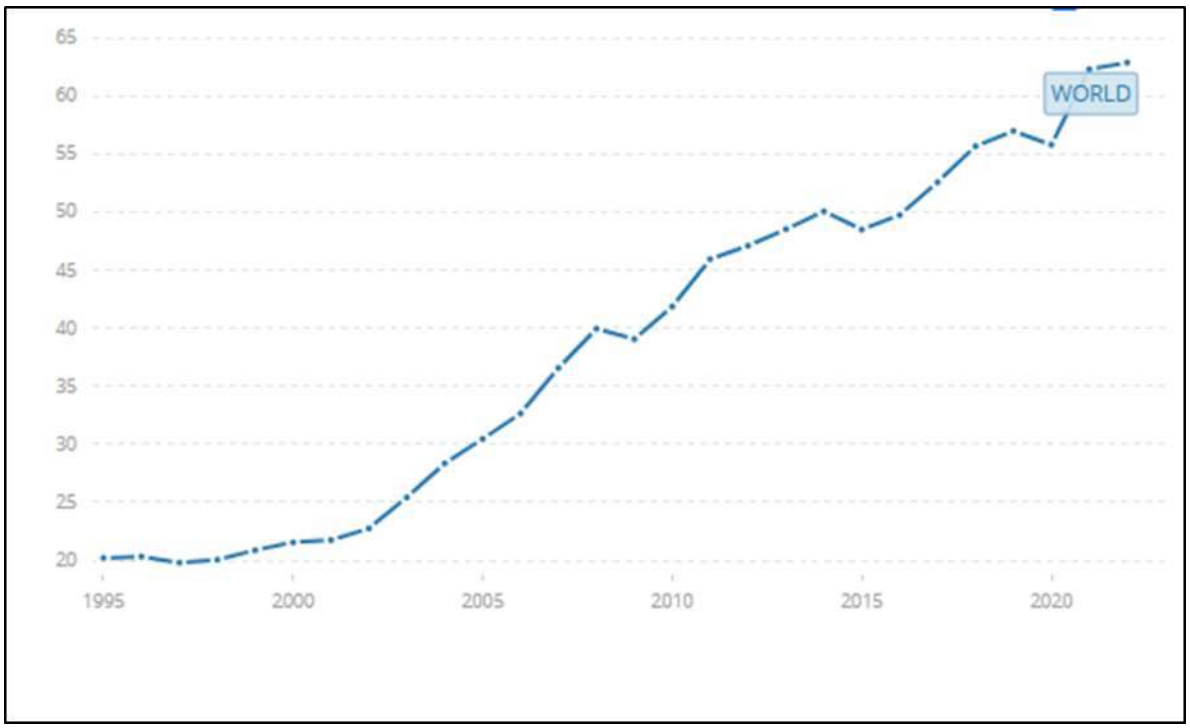
Following the Industrial Revolution and the subsequent industrial development, the services sector experienced rapid growth, transforming most economies into service-based ones. Today, the services sector is considered the backbone of the modern economy, just as industry was the backbone of the

industrial economy and agriculture was the backbone of the traditional economy[1].

Services play a pivotal role in the economic development of states, both domestically and internationally, through trade relations among nations. The dominant share of services constitutes one of the most striking features of the transformation experienced by the global economy in recent decades. Indeed, the service sector has undergone significant evolution, becoming increasingly integral to the economic activities of enterprises to the extent that it now represents one of the primary sources of wealth in modern societies. The growing importance of services is evident in their annual growth rate of 5.4% since 2005, outpacing that of goods trade. Currently, services account for more than two-thirds of global Gross Domestic Product (GDP). They contribute between 60% and 70% to the GDP of developed countries and continue to grow in developing nations, where they represent approximately 50% of GDP in many cases and around 45% in several least developed countries. The significance of the tertiary sector is reflected in the added value it brings to overall trade[2]. The following chart illustrates the evolution of the services sector's contribution to global added value.

[1] Rabah Al-Wafi, op cit, p.113.
[2] BELAMRI WASSILA AMEL et HITALA MAAMAR, L'AGCS : Un instrument juridique garantissant la libéralisation du commerce international et de l'investissement direct étranger dans le secteur des services, Revue Droit international et développement, Volume 10, Issue 01, 2022, p. 610-611.

**Figure 2-1:** Global value added of the services sector in the current US dollars from 1995 to 2023




**Source:** World Bank national accounts data and OECD National Accounts data files, retrieved from https://data.worldbank.org/ on 11 April 2025 at 11:00.

The chart above illustrates the substantial growth in global value added by the services sector from 1995 to 2023. Over this period, the industry expanded from approximately $20 trillion to over $60 trillion, highlighting a clear trend towards service-oriented economies.

This upward trajectory underscores the transition from an industrial-based economic structure to one dominated by services. Despite significant global disruptions, most notably the 2008 financial crisis and the COVID-19 pandemic in 2020, the services sector demonstrated strong resilience and a remarkable capacity for recovery. This reaffirms its role as a key contributor to global GDP and a pillar of modern economic development.

### 1.3.2 The Impact of Services on Employment

According to a study by the United Nations Conference on Trade and Development (UNCTAD), the services sector is responsible for the majority of

global employment. In 2016, it accounted for nearly half of all jobs worldwide, specifically 49%. The services sector is the primary source of employment in most countries. Notably, in developed countries, the services sector accounts for 75% of total employment, whereas in developing countries, it provides 44% of jobs[1].

Indeed, since the mid-2000s, services have emerged as the principal source of employment and appear to have been relatively resilient to various economic crises. Notably, the global financial and economic crisis of 2008-2009 did not lead to a decline in employment in this sector. Between 2001 and 2016, the share of the construction, tourism, and other business-related service sectors in the global employment market increased annually, including in developing nations.

Despite the health crisis caused by the COVID-19 pandemic, which severely impacted the global economy and weakened nearly all sectors and economic activities, certain service-related domains demonstrated resilience — even success, thereby preserving a significant number of jobs. This ongoing crisis has profoundly disrupted the services sector and employment in several of its branches, particularly air, maritime, and road transport; tourism; hospitality; and food service, due to travel bans, border closures, and quarantine measures.

However, the service sector played a crucial role in mitigating and managing the crisis, particularly in infrastructure-related services such as finance, telecommunications, distribution, logistics, transportation, and healthcare.

While the service sector plays a significant role in economic output, its impact on sustainable, inclusive employment growth varies across different countries. Consequently, employment outcomes are heavily influenced by sub-sector characteristics, government policies, and the broader economic structure.

[1] UNCTAD, Trade in Services and Employment, https://unctad.org/publication/trade-services-and-employment , accessed on 19/10/2024, 19:00.

### 1.3.3 Services and Quality of Life Enhancement

Contemporary international organizations seek not only to define quality of life (QOL) but also to operationalize its measurement across multiple dimensions. Core indicators of individual and social well-being include income, employment, cost of living, health, education, environment, and safety. The first United Nations Development Programme Human Development Report introduced the Human Development Index (HDI), which evaluates national performance in three domains—longevity and health, education, and standard of living—and classifies countries as having very high, high, medium, or low human development[1]

Assessing QOL at the individual or national level is complex because it is inherently multidimensional. Indices compiled by specialized international bodies therefore integrate education, health, environmental quality, infrastructure, and governance-related factors such as democracy, peace, freedom, safety, and leisure. Services are central to sustaining high QOL. In the European Union, services of general interest (SGI) are a core pillar of the European social model. The European Commission's 2004 White Paper underscored that well-functioning, accessible, affordable, and high-quality SGIs are essential to citizens' quality of life, environmental outcomes, and the competitiveness of European enterprises[2].

Expanding employment can raise QOL for vulnerable groups by improving access to stable income and social status. Anti-corruption measures in public institutions can rebuild institutional trust and improve collective morale, with positive economic and social spillovers. Correlational evidence shows that self-

[1] Gina Cristina Dimian and Andreea Barbu, Public Services – Key Factor to Quality of Life, Management & Marketing Challenges for the Knowledge Society, Volume 7, Issue 01, 2012, p. 153.
[2] Gina Cristina Dimian and Andreea Barbu, OP CIT, pp. 156–157.

reported happiness is closely linked to the quality of public services—especially health care, elder care, and state pensions—reflecting structural challenges in advanced societies: population ageing, a shrinking economically active cohort, and intensifying pressure on pension systems[1].

## 2. Introduction to Public Health Services

Public health services comprise organized, population-level functions that prevent disease, protect health, and promote well-being through surveillance, health promotion, environmental oversight, and emergency preparedness. They operate across governance levels to ensure equitable access, address social determinants, and coordinate with clinical services toward universal health coverage**.**

### 2.1 Core Concepts of Public Services

The concept of "public service" is interpreted in a similar manner across different countries, with variations often influenced by local legal frameworks and cultural contexts. In every nation, the definition of public service must be explicitly outlined in legal statutes. Numerous laws have been enacted globally to regulate the relationships and responsibilities within the civil service, ensuring clear guidelines for its operation and governance.

#### 2.1.1 General Definitions

Public service is a fundamental function of government, historically rooted in the government's responsibility to meet the needs and interests of the community or its members. Governments have long been entrusted with fulfilling this obligation, as reflected in the basic function of public bureaucracy. Public services are thus defined as a series of activities carried out by public bureaucratic institutions to meet the diverse needs and interests of the user community.

[1] Gina Cristina Dimian and Andreea Barbu, OP CIT, p. 163.

The government's primary duty is to serve its citizens, ensuring the fulfillment of essential human needs such as security, peace, and public welfare. This role aligns with the historical concept of the state as a “night watchman” responsible for protecting its people and maintaining order. While service products in the form of goods are typically easier to measure and value in terms of quality, public services, which are intangible, present a challenge in evaluating their quality. Nonetheless, goods and services often complement each other, making it difficult to separate the two[1].

The definition of any term depends on its practical application. Therefore, to understand what constitutes a "public service," one must examine its use in practice. Public service is often used synonymously with government service, encompassing all individuals working within the public sector. However, public service extends beyond one's employment location[2].

A critical question is: what distinguishes public services as “services”? Public services are designed to serve members of the public by providing goods or services to individuals, families, and communities. This distinction is not between "services" and "goods" in the manufacturing or industrial sense but is grounded in the idea that public services address the needs of the community. McKevitt (1998) links public services with professional and personal services, where the product and the act of production are identical, as in the fields of medical care, social work, or education. However, the concept of public services is broader and encompasses other areas such as communications, infrastructure,

[1] Jamil Bazarah, and Nanik Pujiastuti, Concept of Public Service in Indonesia, Budapest International Research and Critics Institute-Journal (BIRCI-Journal) Volume 5, Issue 1, 2022, p. 6256.
[2] James L. Perry and Lois Recascino Wise, The Motivational Bases of Public Service, Public Administration Review, 1990, p. 368.

and utilities. The core idea of service lies in the relationship between the activity and the public, rather than the form of production[1].

Public services, as defined by legal frameworks, encompass a range of activities designed to meet the needs of citizens and residents, including the provision of goods, services, and administrative services by public service providers[2]. The state, as the primary organ responsible for these services, uses public service as its front-line instrumentality. Consequently, when we speak of a humanitarian public service, we refer to one whose primary focus is on the well-being of the people[3].

### 2.1.2 Public Service as a System

Public service management seeks to improve service delivery, enhance efficiency, and increase knowledge in providing public services. Over the past decade, optimizing public services has become a key focus in public administration studies. Public services can be provided by either the government or the private sector, with funding often through collaborative mechanisms. Effective management is essential for ensuring service quality, which requires consistent government support for institutional reforms, shifting from merely organizing services to creating public value by applying management principles and utilizing technology[4].

Systems approach, although defined differently across sectors, shares a focus on the interconnections between actors, institutions, and processes. For example, the WHO (2007) defines a health system as all organizations and actions aimed at promoting health, while Moore (2015) describes education systems as those

[1] Paul Spicker, The Nature of a Public Service, International Journal of Public Administration Volume 32, Issue 11, 2009, p. 973.
[2] Jamil Bazarah, and Nanik Pujiastuti, OP CIT, p. 6257.
[3] Barry Gilder, Public Service by, Of and For the Public, Journal of Public Administration, Volume 50, Issue 3, 2015, p. 6.
[4] Lesmana Rian Andhika, Public Service Management: An Emerging Research Trend, Jurnal Borneo Administrator, Volume 21, Issue 1, 2025, p. 61.

affecting citizens' educational status. Despite differences, these definitions emphasize "holism"—the idea that policies do not operate in isolation. The success of policies often depends on interactions with other policies and the broader context. As De Savigny and Adam (2009) note, every intervention impacts the system, and the system influences each intervention. This interconnection has led to the study of complexity in development and public service delivery[1].

Despite the growing adoption of systems approaches, there is still significant ambiguity regarding their definition, with no universally accepted framework. While the emphasis on holism and complexity is clear, defining a systems approach to public service delivery remains a challenge[2].

### 2.1.3 Models of Public Service Provision

Public service provision can take various forms, each characterized by different methods of interaction between service providers and clients. These models reflect how services are delivered and accessed, ranging from traditional, face-to-face models to more advanced, technology-driven solutions. Below are the main models of public service provision[3]:

❖ Traditional Service Provision Models

In this model, clients must be physically present at the service provider's location. The interaction is direct and in-person, with the client meeting the service provider to complete the service transaction. This is the most conventional form of public service provision, commonly seen in government offices, public institutions, and healthcare services.

❖ Enhanced Service Provision Models

[1] Zahra Mansoor and Martin J. Williams, Systems approaches to public service delivery: methods and frameworks. Journal of Public Policy. Volume 44, Issue 2,2024, p. 262.
[2] Ibid., p 263.
[3] Rabah Al-Wafi, op. cit., p.127.

These models allow for some degree of interaction without the need for the client to be physically present. The service request can be submitted via phone, fax, or email, but the final transaction (e.g., receiving the output or result) still requires the client's presence. These models provide greater convenience and flexibility compared to traditional models while maintaining a degree of personal interaction.

❖ Digital Service Provision Models

Digital service provision models leverage technology to allow clients to access and interact with services online, through websites, mobile apps, or interactive kiosks in public spaces. These models eliminate the need for face-to-face contact, enabling clients to complete their transactions remotely. This model is increasingly becoming the preferred method for public service delivery, especially in the context of e-government and digital transformation.

❖ Electronic Service Provision Models

Electronic services represent an advanced form of service provision where the entire service process is automated and mediated by technology, such as the internet, extranets, and digital platforms. In this model, there is no direct human interaction, and clients can access and complete their service requests entirely online. This approach is particularly effective in minimizing physical presence requirements and streamlining the delivery of services in an efficient, timely, and accessible manner[1].

Each of these models reflects the ongoing evolution in public service provision, driven by advances in technology and changes in client expectations. The adoption of digital and electronic models is increasingly becoming the standard

[1] Ada Scupola, and others, E-Services Characteristics, Scope and Conceptual Strengths, International Journal of E-Services and Mobile Applications, Volume 1, Issue 3,2009, p. 6.

for public service delivery, offering greater convenience, accessibility, and efficiency for both clients and service providers[1].

## 2.2 Fundamentals of Public Services

Public services are institutional functions anchored in the state's responsibility to secure collective welfare. Their definition, scope, and variety are shaped by the administrative system and public policies in force, which determine providers, financing arrangements, and fields of intervention.

### 2.2.1 Principles Governing Public Services

Building on standard definitions, public services achieve the public interest only if their operation is governed by binding rules that align delivery with state objectives. Core principles include[2]:

❖ Principle of Continuity

Continuity secures the uninterrupted provision of essential services and sustained social welfare. The state must ensure stable financing and protect public institutions from insolvency, guaranteeing minimum service levels in critical sectors under all circumstances, subject to lawful and proportionate limitations.

❖ Principle of Equality

Equality requires non-discriminatory access to public services under comparable conditions. Tariffs for identical services in similar contexts should be equivalent, and all users must enjoy equal procedural guarantees, including access to complaint and judicial review. Equality does not imply universal free

[1] Bouras, Nadia, and Mubarak Bouacha, Improving Electronic Services Based on Quality Standards, Journal of Social and Human Sciences, Volume 10, Issue 02, 2017, p. 57

[2] Faa, Sharifa, and Aisha Gasmi: The Impact of Using Customer Relationship Management on the Quality of Public Service, Journal of Economic, Management, and Commercial Sciences, Volume 11, Issue 02, 2018, p. 327

provision; economic public services may charge fees, provided differences are grounded in objective and transparent criteria (e.g., cost, usage, or social tariffs).

❖ Principle of Adaptability (Mutability)

Public services must evolve with social needs and technological change. Administrations are therefore required to adjust standards, processes, and delivery modalities to maintain efficiency and relevance as user needs and operating environments shift.

Some scholars propose adding two complementary principles to the three fundamental ones: the principle of neutrality and the principle of gratuitousness (free access), as follows[1]:

❖ Principle of Neutrality.

Providers act solely to advance the public interest, free from political, religious, or personal bias. Neutrality is a corollary of equality and safeguards impartial treatment of users.

❖ Principle of Gratuitousness (Free Access).

Some services may be offered without direct charge, but gratuitousness is not a general rule. Many services require cost recovery—fully or partially—to ensure sustainability, including symbolic contributions consistent with equity and access objectives.

### 2.2.1 Distinctive Features of Public Services

Public services vary in nature, encompassing both administrative services and industrial or commercial services. Despite this diversity, they share

[1] Gasmi, Aisha: Factors Affecting Service Delivery in Public Institutions of an Administrative Nature, Journal of Commercial Research and Studies, Issue 03, 2018, pp. 30-31.

fundamental characteristics that define their public nature. The most significant common features can be summarized as follows[1]:

❖ The Public Interest

The notion of public interest is closely linked to the political and economic evolution of society. It interacts with social transformations and defines the framework through which the legitimacy of state action is established. Based on this, public interest can be classified into three main types:

- National Public Interest:

This type of public interest is realized through activities directly related to the state's core functions, such as diplomacy, internal and external security, and defense. Certain other activities may also serve the national interest, even if they do not constitute fundamental state functions, such as postal services and electricity distribution—services that satisfy essential public needs.

- Administrative Public Interest:

This form of public interest does not necessarily coincide with the national interest but is recognized as such by an explicit decision of the public authority. It reflects the state's deliberate commitment to achieving specific objectives, such as establishing specialized agencies to combat unemployment or promote vocational integration.

- Emergent (or New) Public Interest:

This category arises primarily within the economic and social spheres. Historically, activities in these fields were reserved for private entities; however, recurring economic and social crises have led to the emergence of new public interests, requiring state intervention. Such intervention, however, must remain

[1] Boughlachi Imad, E-Administration and Its Role in Improving the Performance of Public Administrations, PhD thesis, in Public Management, Department of Management Sciences, Faculty of Economic, Commercial and Management Sciences, University of Algiers 3, Algeria, 2010/2011, pp. 11-12.

proportionate to avoid excessive encroachment on economic freedom while ensuring that essential collective needs are met.

❖ Autonomy from Market Logic

Public services are characterized by a relative independence from market mechanisms. This autonomy can be explained through two related dimensions: the absence of market logic in certain public services and the presence of public oversight ensuring their regulation and alignment with collective welfare.

- Absence of Market Logic

A distinction must be made between administrative public services and industrial or commercial public services. Administrative services, by their nature, are not governed by market exchange—they do not sell goods or services in the conventional economic sense. Users do not "purchase" these services; rather, they receive them as part of their citizenship rights.

In contrast, industrial and commercial public services often maintain a quasi-market relationship with their users, who may be considered "clients." Nonetheless, even in these cases, the state frequently imposes conditions of delivery—such as pricing, access, or quality standards—that override market forces. This limitation of market authority reflects the primacy of public interest and the need to guarantee continuity, equality, and universality in service provision.

- Presence of Public Oversight:

The reduced influence of market mechanisms is balanced by strong public regulation and supervision. This is particularly relevant for industrial and commercial public services, which may otherwise follow market rules such as supply and demand pricing. Any malfunction or interruption in service provision can jeopardize the public interest, thereby justifying government intervention.

Through oversight and regulation, public authorities ensure the continuity of service, adapt provision to the evolving needs of citizens, and maintain equality in access and treatment[1].

In summary, while public services may differ in their operational nature—administrative, industrial, or commercial—they converge on two essential features: their orientation toward the public interest and their relative autonomy from pure market logic. These features justify ongoing state involvement to secure equity, efficiency, and social stability through regulated and sustainable service delivery.

### 2.2.3 Classification of Public Services

There are multiple classifications of public services, which vary according to the criteria and foundations on which they are based. The most common classifications can be summarized as follows:

❖ Classification Based on Cost-Bearing Method

In this framework, public services are divided into three categories[2]:

- Free Services:

These are services provided without charge, with their full cost covered by the state treasury. Examples include vaccination campaigns, public security, and street lighting.

- Paid Services:

These services are fully and directly financed by their beneficiaries. Examples include household electricity, public telephony, and drinking water supply.

[1] Othman, Said Abdel Aziz**,** Economics of Public Services and Projects: A Theoretical and Applied Study, 1st ed., Al-Dar Al-Jame'eya, Alexandria, Egypt, 2000, pp. 57-58.

[2] **Bdellaoui, Abdessalam:** The Importance of Administrative Digitalisation in Modernising and Activating the Public Service in Algeria, *Voice of Law Journal*, Issue 07, Part 01, Algeria, 2017, pp. 64-65.

- Subsidized Services:

In these cases, the cost is shared between the beneficiary and the state, with the government providing partial financial support. Examples include public transportation, housing programs, and basic consumer goods such as milk and bread.

Some scholars also classify public services according to the marketing criterion, resulting in two categories:

- Non-Marketed Services:

These are compulsory services provided to all citizens and residents by public authority. They are available free of charge and financed through public funds, mainly from general tax revenues. Examples include public security, national defense, municipal services, street lighting, public sanitation, and environmental protection.

- Marketed Services:

These are services provided voluntarily to individuals, usually in exchange for a payment covering the total or partial cost of provision. Examples include electricity, gas, and water supply. In certain cases, the state may subsidize part of the cost, such as for public transportation, cultural and recreational services, and entrance tickets to museums or sports facilities.

❖ Classification Based on the Characteristics of Public Services

This typology distinguishes between two main categories[1]:

- Social Public Services:

[1] **Othman, Said Abdel Aziz,** Economics of Public Services and Projects: A Theoretical and Applied Study, 1st ed., Al-Dar Al-Jame'eya, Alexandria, Egypt, 2000, pp. 62-66.

These services exhibit non-excludability and therefore cannot be priced or restricted to specific users. They are available to all members of society regardless of individual contribution, such as public security and national defense. Because of their non-market nature, state intervention is required to finance, produce, and provide them free of charge.

- Merit Public Services (Merit Goods):

Also referred to as desirable or merit needs, these are goods and services that markets can provide but at quantities below the socially optimal level. Due to high costs, low-income groups are often excluded despite the societal benefits associated with their consumption. Therefore, the state intervenes to ensure their adequate provision in line with collective welfare preferences. Examples include public education, housing, and health care facilities.

❖ Classification Based on the Level of User Interaction

According to the degree of interaction required between the user and the service provider, public services can be categorized as follows[1]:

- High-Contact Services:

These services require direct and active user participation at the service location. Beneficiaries must be physically present and engage with the service providers to obtain the service.

- Medium-Contact Services:

These involve limited user participation. The beneficiary may visit the service location, but does not need to remain until completion, nor engage extensively with the staff. Examples include paying utility bills or submitting administrative documents.

- Low-Contact Services:

[1] Kourtel, Farid, Services Marketing, Dar Knooz Al-Ma'refa Scientific for Publishing, Amman, Jordan, 2009, pp. 71-72.

These require minimal or no physical interaction between users and providers, as service delivery occurs remotely through digital or electronic channels. This category is expanding rapidly in technologically advanced societies that prioritize user convenience and administrative efficiency.

## 2.3 Understanding Health Services

Health services comprise organized actions to prevent disease, promote health, diagnose and treat illness, and provide rehabilitation across primary, secondary, and tertiary levels in community and facility settings. Performance is assessed using the AAAQ framework—availability, accessibility, acceptability, and quality. Provisions may be public, private, or mixed, but the state retains stewardship, regulation, and equity oversight. Current priorities include universal health coverage, person-centred care, emergency preparedness, and sustainable financing aligned with population needs.

### 2.3.1 Historical Evolution of Health Services

The term “health” stems from Latin “salus” and Greek “holos”, denoting integrity and wholeness. Health and illness exceed biology; they embed authority, control, and cure within social, political, and economic orders. Contemporary systems are cumulative products of these long trajectories[1].

Antiquity established civic health: Greek and Roman aqueducts, drainage, baths, and early public regulation, alongside Hippocratic observation and Galenic systematization. The Middle Ages shifted control toward clerical institutions, priced out the poor, and relied on humoralism and lay practice, while Islamic medicine—grounded in translations and scholars such as ʿAlī ibn

[1] CARLOS NETO, Daniel et al., THE HISTORICAL EVOLUTION OF PUBLIC HEALTH, Revista Científica Multidisciplinar Núcleo do Conhecimento. Volume 01, Issue 01, 2016, P.53.

al-ʿAbbās, Ibn Sīnā, al-Rāzī, al-Zahrāwī, and al-Bīrūnī—advanced hospital care, hygiene, and clinical method that later influenced European hospitals[1].

The Renaissance and Scientific Revolution normalized anatomy, quantification, and experiment. Early modern commerce expanded cities and mobility, but also propagated epidemics (plague, smallpox, measles, typhus, syphilis, malaria), revealing the health costs of market integration[2].

The nineteenth century consolidated modern public health: germ theory (Pasteur, Koch), urban sanitation, state regulation, occupational health, and epidemiologic method (e.g., Snow). The twentieth century added vaccines and antibiotics, the eradication of smallpox, environmental health, and structured health-system models: Bismarckian social insurance, Beveridge national health services, and mixed systems. Rights frameworks emerged in international law (UDHR, ICESCR art. 12) and informed the AAAQ standard—availability, accessibility, acceptability, quality.

Primary health care gained global articulation with Alma-Ata (1978). Subsequent decades saw selective PHC, vertical initiatives, the MDGs, the SDGs, and a turn to Universal Health Coverage. Demographic and epidemiologic transitions shifted burdens from infectious to chronic conditions, while inequities persisted across and within countries. Measurement advanced through life expectancy, mortality, and summary metrics such as DALYs to guide priority-setting and accountability[3].

Globalization reframed governance and access. GATS exposed service delivery to trade rules; TRIPS harmonized twenty-year patents in health

[1] Şafak Taner and Saliha Özpınar, The Evolution of the Concept of Health Services, Global Advanced Research Journal of Medicine and Medical Science, Volume 4, Issue 9, 2015, p. 397.
[2] Theodore H Tulchinsky, Elena A Varavikova, A History of Public Health, The New Public Health, 2014, pp. 1–42.
[3] Şafak Taner and Saliha Özpınar, op. cit., pp. 400-401.

technologies. The Doha Declaration affirmed TRIPS flexibilities, including compulsory licensing, to balance innovation with access to medicines, especially in low- and middle-income settings[1].

Across periods, women and community actors—midwives, lay healers, indigenous practitioners—remained central to service delivery and legitimacy, despite exclusion from formal training in many eras. The through-line is political economy: shifts in power, ideas, and resources repeatedly reconfigured institutions, exposed needs for reform, and drove efforts to secure health as a fundamental human right.

### 2.3.2 Definitions of Health Services

The definition of health is not just a theoretical issue, as it has numerous implications for practice, policy, health services, and health promotion. The definition of health significantly impacts health professionals, and in turn, they substantially influence how health is socially constructed in modern societies. The social representations of health influence the demands and expectations of health, healthcare systems, policymakers, and many other key aspects of health. In particular, views of health have a substantial impact on people's health behaviors and, consequently, on their ability to make informed health decisions. In short, the definition of health has a strategic importance in all health fields[2].

In 1964, following World War II, the World Health Organisation (WHO) formulated its definition of health [3]as "a state of complete physical, mental, and social well-being" [4]

[1] Şafak Taner and Saliha Özpınar, op. cit., pp. 400-401.
[2] Fabio Leonardi, The Definition of Health, International Journal of Health Services, Volume 48, Issue 4,2018, p.736, Published by: Sage Publications, Inc., pp. 735-748.
[3] James S. Larson, The World Health Organisation's Definition of Health: Social versus Spiritual Health, Social Indicators Research, Volume 38, Issue 2, 1996, pp. 181-192. Published by: Springer, p. 181.
[4] Bouawneh, Mahdi: Management of Hospitals and Health Services, Dar Al-Hamed for Publishing, Amman, Jordan, 2003, p.11.

The current definition of health, formulated by the WHO, "… Health is a state of being and, as a biological phenomenon, is in a continual condition of flux …Health and disease are not a simple pair of contrasting opposites like heat and cold. They are made up of an immense number of components involving the body, the mind, and the spirit …Health, then, is a state which can be measured."[1]

"Health is a balanced state of physical, mental, and social well-being, and not merely the absence of disease or infirmity".[2]

Public health is the science and art of preventing disease and disability, prolonging life and developing physical and mental health, through organized community efforts for environmental sanitation, control of infections in the community, the education of individuals nosprincípios personal hygiene and the organization of medical services and eparamédicos for the early diagnosis and early treatment dedoenças and the máquinasocial improvement that will ensure cadaindivíduo within the community, a standard of living adequate for health àmanutenção[3].

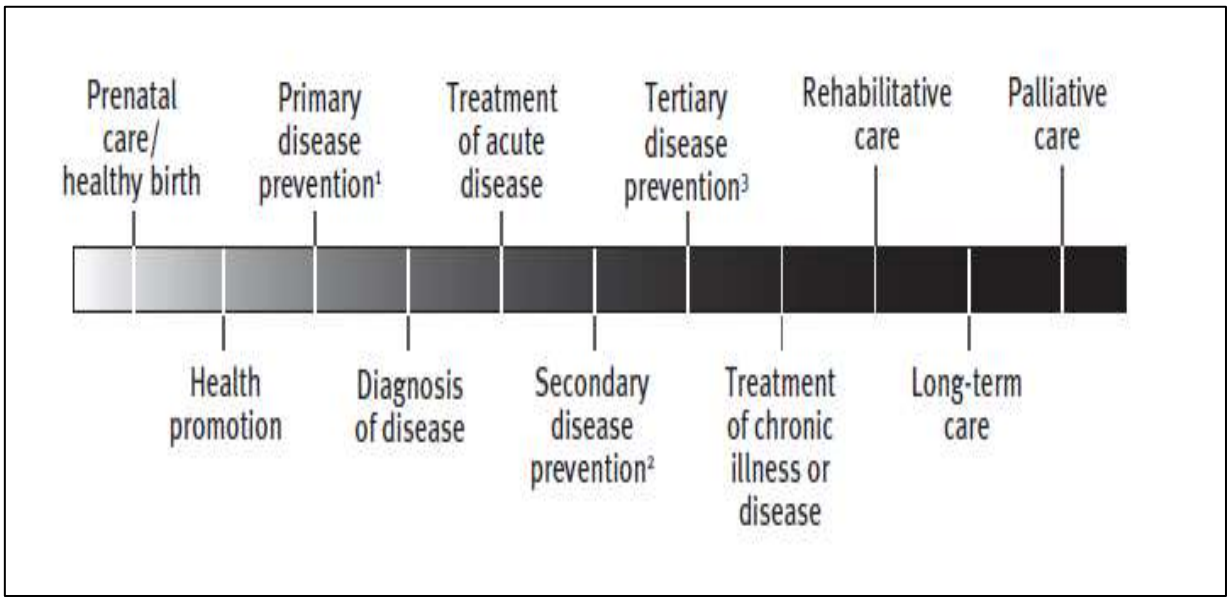
The term public health has come to include research, assessment, and control measures, since the government is usually involved in the financing and policy-making procedures. Public health services deal primarily with four aspects of care: identifying diseases that cause health or debility, assessing the causes and methods of transmission, finding ways to control or cure diseases and prevent their spread, and educating the public to apply the findings effectively[4].

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[1] W. F. Felton, Definition of Health**,** The British Medical Journal, Published by: BMJ, Volume 2, Issue 4476, 1946, p.591.
[2] W. F. Felton, op. cit., p.591.
[3] CARLOS NETO, Daniel et al., THE HISTORICAL EVOLUTION OF PUBLIC HEALTH, Revista Científica Multidisciplinar Núcleo do Conhecimento. Volume 01, Issue 01, 2016. P.57.
[4] Jones and Bartlett Publishers, Categories of Health Services, chapter 2, p. 16.

Health services encompass a wide range of functions, each designed to address different aspects of care. These services can be broadly classified into categories such as preventive, diagnostic, treatment, and palliative care, with each category serving distinct purposes. These services can then be organized into a continuum of care, offering comprehensive support from the prenatal stage to end-of-life care, as illustrated in Figure 2-2. Effective management and coordination of these diverse services are essential to ensure their seamless integration, ultimately promoting the optimal health and well-being of individuals[1].

**Figure 2-2:** The Healthcare Continuum




**Source**: Philip A. Newbold, OP CIT, p 7.

**NOTES:** 1. Primary disease prevention is preventing agents from causing disease or injury. 2. Secondary disease prevention is early detection and treatment to cure and/or control the cause of the disease. 3. Tertiary disease prevention is ameliorating the seriousness of disease by decreasing disability and the dependence resulting from it.

[1] Philip A. Newbold, HEALTH, HEALTHCARE, AND HEALTHCARE ORGANIZATIONS, chapter 1, Management of Healthcare Organizations, 2019, p. 7.

### 2.3.3 Main Features of Health Services

Health services play a crucial role in enhancing population health and promoting overall well-being. The key attributes of health services encompass accessibility, quality, efficiency, and equity. Accessibility pertains to the availability of healthcare services for individuals, ensuring that geographical, financial, and social barriers do not hinder people from obtaining care. The quality of care focuses on the effectiveness, safety, and patient-centeredness of health interventions, ensuring that services adhere to established standards. Efficiency in healthcare involves delivering services in a manner that optimizes resource utilization, minimizes waste, and guarantees timely care. Equity in health services aims to provide fair and just access to healthcare, addressing disparities linked to socio-economic factors, ethnicity, and other determinants. Together, these features contribute to a robust and responsive healthcare system that fosters overall health improvement[1].

## 3. Key Elements of Health Services

The delivery process of healthcare services is inherently complex, which makes designing healthcare services a challenging task. Healthcare services involve multiple actors, each with different priorities, specialized knowledge, and tasks that are interdependent with other organizations[2]. Health systems (HS) are complex by nature, consisting of non-integrated social structures that include various governments, payers, and providers responsible for delivering healthcare

[1] Mark L. Diana, Valerie A. Yeager, and David R. Hotchkiss, Health systems strengthening: A critical review of the evidence. Global Health Action, volume 12, issue 1,2017, p. 10.
[2] Eunji Lee, Identifying Key Components of Services in Healthcare in the Context of Outpatient in Norway, Conference Paper, In Proceedings of the 10th International Joint Conference on Biomedical Engineering Systems and Technologies (BIOSTEC 2017), 2017, p. 354.

to specific populations. These systems create extensive networks of feedback loops with time delays and nonlinear relationships within the system[1].

To achieve the goals of health systems, managers and decision-makers must plan with a comprehensive understanding of the system's dimensions and their interrelationships. This requires the application of systems thinking, which views the system as a whole rather than focusing on individual components and examines the behavior of the system over time. In addition to adopting a systemic perspective, a thorough and evidence-based analysis is necessary to consider all components of the system in relation to each other within a coherent framework[2].

Musgrove and colleagues, in the World Health Report 2000, defined health systems as encompassing all actors, institutions, and resources whose primary objective is to promote, maintain, or restore health. They identified three core goals of health systems—health status, financial risk protection, and responsiveness—and outlined four key functions of health systems that determine how inputs influence overall performance: resource generation, financing, service provision, and stewardship[3].

## 3.1 Types of Health Services

Healthcare services are classified into four main types. Preventive healthcare services come first, followed by therapeutic healthcare services. Supportive healthcare services align with and complement the first two types in delivering healthcare services. Additionally, telemedicine and e-health services are also included.

[1] Mozhgan Emami et al, Identification of Key Components in the Health System Using System Thinking Approach: A Scoping Review, Medical Journal of the Islamic Republic of Iran (MJIRI), volume 3, issue 37, 2023, p. 2.
[2] Mozhgan Emami et al, OP CIT, p. 2.
[3] Mark L. Diana, Valerie A. Yeager, and David R. Hotchkiss, OP CIT, p7.

### 3.1.1 Preventive Healthcare Services

Preventive healthcare services is a vital aspect of promoting overall health and wellness. Rather than simply treating diseases and conditions as they arise, preventive healthcare focuses on reducing the risk of illness through lifestyle changes, early detection, and other proactive measures[1].

Preventive healthcare services refer to any service that reduces the risks of negative health outcomes, such as disability or chronic diseases. These services often involve regular screenings for diseases before they become severe enough to manifest symptoms. Early identification of risk factors or disease markers significantly reduces the cost of treatment and the likelihood of these conditions progressing to life-threatening stages. Screening procedures themselves are considered medical interventions, but they also enable physicians to employ other preventive services, such as lifestyle modifications or medications, to reduce the risk of disease. Screenings are crucial for prevention because when diseases are detected early, physicians are generally more successful in treatment and reducing the need for emergency services or mortality related to the disease[2].

### 3.1.2 Therapeutic Healthcare Services

Therapeutic healthcare services are considered the core function of healthcare institutions and the foundation of their quality. These services encompass all diagnostic, therapeutic, interpretive, social, and psychological services provided across various hospital departments. This category includes all

[1] Nyantakyi Alison, The Importance of Preventive Healthcare: Strategies for Better Health and Wellness, American Journal of Preventive Medicine and Public Health, volume 9, issue 2, 2023, p. 01.
[2] Anjali Stenquist, Types of Preventive Care: 8 Proactive Ways to Ward off Health Problems, Health Sciences Review, Rasmussen University, 2020, p. 1.

forms of treatments, such as physical therapy, psychological therapy, physiotherapy, and other therapeutic interventions[1].

Therapeutic services refer to the healthcare services provided to patients in any country, and they are the responsibility of the government, specifically managed by the Ministry of Health. These services are organized in both private and public hospitals. The healthcare system is divided into two types: primary healthcare services, which are provided in rural and remote areas through small and mobile clinics, and specialized healthcare services, which are offered in large hospitals located in urban areas[2]. To achieve high-quality therapeutic services, several factors must be met, as outlined below[3]:

- Professional Competence of the Workforce: This refers to the qualifications and expertise of the individuals who provide healthcare, medical, and therapeutic services.
- Patient and Family Satisfaction: This pertains to the acceptance and satisfaction of the beneficiaries of healthcare services, including patients and their families, with the quality of services provided. It is important to ensure that they understand the concept of health education and accept and demand the level of service provided.
- Adequate Quality of Services: This refers to the appropriate and sustainable level of service quality, which is maintained, monitored, and protected by social organizations and public or popular organizations. These entities ensure the minimum standards, measures, and quality levels of healthcare services and encourage improvement in these standards.

[1] Maouedj, Essaid: The Impact of Information Systems on the Quality of Health Service in Algeria: A Case Study of Mohamed Lamine Debaghine University Hospital Centre - Bab El Oued, Algiers, p. 96

[2] Meznah Abdulaziz Saad and Ahlam Al-Atta Mohammed Omar, The Trend of Patients towards Treatment
Services in Public and Private Hospitals (A comparative study), International Journal on Humanities and Social Sciences, Volume 63, 2024, p. 103.

[3] مهدي بواعنة، مرجع سبق ذكره، ص 14.

These are fundamental requirements for providing quality healthcare services.

Although the objectives of therapeutic healthcare systems may vary from country to country due to differences in health, political, economic, social, and cultural conditions, there are general objectives that can be considered common across most systems. These objectives include[1]:

1- Improving the Health Status of the Population: This involves continuously evaluating and developing current programs to enhance public health. Henric Blum suggests specific objectives for this goal, including:
   - Continuous efforts to extend life expectancy and prevent premature death.
   - Reducing mortality rates caused by diseases.
   - Reducing anxiety caused by illness.Increasing acceptance of the healthcare system by beneficiaries.
   - Ensuring balanced therapeutic services for all members of society.
2- Ensuring Adequate Human Resources: This involves securing the appropriate numbers and types of healthcare professionals needed for therapeutic services on a permanent basis, making optimal use of these professionals, and supporting educational and training programs that develop their capabilities and skills.
3- Securing the Necessary Financial Resources: This includes providing the financial means required for the construction, equipment, and maintenance of new healthcare facilities, as well as resources for the proper functioning of the healthcare service network.
4- Developing the Health Information System: This system should provide timely information on the health status and efforts within the healthcare system.

[1] Meznah Abdulaziz Saad and Ahlam Al-Atta Mohammed Omar, OP CIT, pp. 103-104.

5- Encouraging Private Sector Participation: This involves encouraging the private sector to contribute to the operation of public healthcare facilities, as seen in countries like Saudi Arabia, and supporting health projects that contribute to national health development.
6- Achieving Coordination and Integration: This objective focuses on ensuring coordination and integration between the various stakeholders involved in healthcare programs at the national level.
7- Establishing Standards and Procedures: This involves setting regulations, preparing standards, and determining procedures that ensure the continuous improvement of healthcare services.
8- Promoting Relevant Research and Studies: Encouraging research and studies that address the key issues and challenges faced by the healthcare system at the national level.

### 3.1.3 Supportive Healthcare Services

Supportive healthcare services include all services that assist therapeutic processes within hospitals. The most important supportive services can be summarized as follows[1]:

- Laboratory Services: Laboratories play a crucial role in the treatment process by conducting various medical tests on patient samples, such as blood, saliva, sweat, skin, waste, and more. These tests help confirm the presence of diseases and their types, and they are essential for identifying effective treatments. Doctors rely on these results to assist in diagnosing diseases and prescribing appropriate medications.
- Radiology Services: Radiology services assist physicians in diagnosing diseases by detecting internal injuries or conditions that cannot be seen by the naked eye. Various imaging techniques are used, including X-ray imaging, Positron Emission Tomography (PET), Magnetic Resonance

[1] Maouedj, Essaid, op cit, pp.96-97.

Imaging (MRI), 3D Ultrasound imaging, Stereotactic Radiology, and other diagnostic imaging methods.

- Pharmacy Services: These services involve the preparation, distribution, and safe use of medications and therapeutic agents. Their primary responsibility within healthcare institutions is to ensure the availability of medications and guarantee their safe and effective use.
- Training and Education Services: Healthcare training and education services are fundamental components of healthcare institutions, especially university hospitals. These institutions serve as ideal environments for teaching and training students in medical and related fields due to their resources, staff, and the presence of patients who require treatment.
- Medical and Social Research Services: Advances in medical technology and healthcare sciences demonstrate the significance of research in health and related fields. Such research is conducted in hospitals, which are equipped with laboratories, facilities, and specialized staff.

### 3.1.4 Telemedicine and Digital Health

Telemedicine involves providing health services over distance, using information and communication technologies to exchange valid clinical and public-health information. This exchange supports diagnosis, treatment, disease prevention, research, evaluation, and the continuing education of health professionals, with the aim of improving individual and community health[1]. It is a modality of remote medical practice that applies digital communication tools to support consultation, clinical decision-making, and care coordination[2].

[1] WHO, Telemedicine: opportunities and developments in Member States: report on the second global survey on eHealth 2009, 2nd ed. Geneva, Switzerland: WHO press; 2010 (cited 2024 MAR 15). Available from: https://iris.who.int/bitstream/handle/10665/44497/9789241564144_eng.pdf, p. 9.

[2] Benski Anne Caroline, Reich Michael R, Telemedicine in maternal health in time of Covid-19: Five national and international projects, Revue médicale Suisse, Volume 17, No 755, October 2021, p 1785.

In practice, telemedicine employs advanced telecommunications to transmit health information and deliver services across geographic, temporal, social, and cultural boundaries. It expands access for distant and rural populations, can lower costs, and has contributed to health-care delivery for more than half a century. Rapid advances in telecommunications have further reshaped service delivery models. Telemedicine also supports knowledge sharing among clinicians, reduces travel burdens, and improves point-of-care data entry and retrieval. Related Web 2.0 platforms enable collaboration and relationship building, and large proportions of the public actively seek online health information—approximately four in five U.S. internet users and an estimated 117 million adults[1].

Core modalities include[2]:

- Teleconsultation: Real-time clinician–patient encounters by phone or video for assessment, diagnosis, counseling, and care planning.
- Telemonitoring: Remote capture and review of physiologic and clinical data to track status, detect problems, and adjust therapy.
- Tele-expertise: Remote peer consultation using images, reports, and clinical data to obtain specialist input for complex cases.
- Telesurgery: Performance of procedures at a distance via robotic systems and related technologies.
- Regulation/triage: Telephone-based medical regulation through emergency call centers, where physicians conduct initial assessment and trigger appropriate responses.

Together, these modalities leverage digital technologies to widen access and strengthen communication between patients and clinicians across distance.

[1] Haradhan Kumar Mohajan, An Analysis of Knowledge Management for the Development of Global Health, American Journal of Social Sciences, Volume 4, Issue 4, 2016, pp.40-41.
[2] Jean-Marie Manus, Télémédecine hier, et aujourd'hui avec la Covid, Revue Francophone des Laboratoires, Volume 2021, Issue 531, 2021, p 22.

On the other hand, eHealth services are defined as services involving interactions via electronic channels[1], with the key components identified in the table below.

**Table 2-3:** Differences Between Health and eHealth Services

| Service type Component | Health service | eHealth service |
|---|---|---|
| Service objective | Treatment Efficient | Treatment Efficient |
| Service customer | Patient | Healthcare Professional |
| Secondary service Customer | Family member of a patient | Patient |
| Service Worker | Healthcare professional | Health information System |
| Secondary service Worker | None | People producing or maintaining the health information system |
| Service setting | A medical facility or a location where a patient has a touchpoint | Health information system software |
| Service Process | Sequence of actions and touchpoints of a patient and health professionals | Sequence of touchpoints via health information systems |
| Service interaction type | Human to human or Human to physical evidence interaction | Human to computer interaction |
| Sub-service provision context | A service worker Provides a service to a service customer or A service worker provides a service to a service worker | A service worker provides an eservice to a service customer |

**Source :** Eunji Lee, OP CIT, p 358.

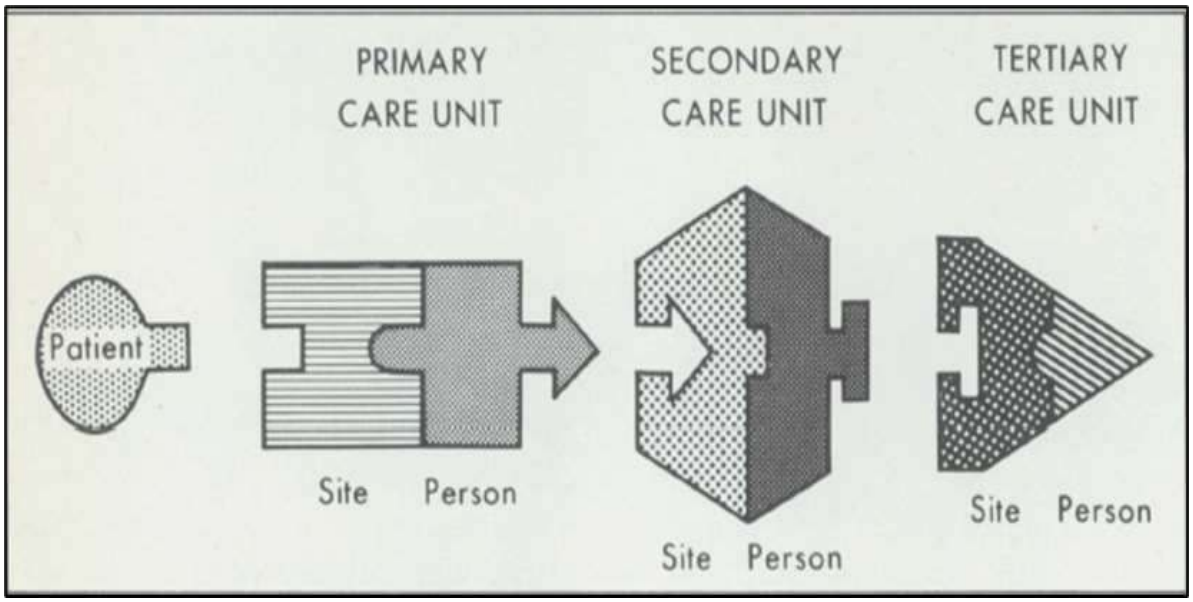
[1] Eunji Lee, OP CIT, p 357.

## 3.2 Levels of Health Care

Fry (1972) and White (1973) developed a framework that categorizes healthcare into levels based on the complexity of care delivery and the frequency of the condition in the population. Within this framework, common conditions requiring relatively simple interventions are managed at the primary level by a generalist provider.

Primary care functions as the first point of contact and the gateway to specialty services, such that less common or diagnostically and therapeutically complex conditions are escalated to secondary or tertiary settings, where specialized teams and highly differentiated facilities oversee management[1]. In what follows, the defining features, typical providers, and referral pathways were delineated, associated with primary, secondary, and tertiary levels of care.

**Figure 2-3**: Professional Practice Model by the level of Health Care




Source: Roger S. Tonkin, Primary Health Care, Canadian Journal of Public Health, Volume 67, Number 4,1976, p. 290.

[1] Roger S. Tonkin, Primary Health Care, Canadian Journal of Public Health, Volume 67, Number 4,1976, p. 290.

### 3.2.1 Primary Health Care Services

Primary health care is a complex and multifaceted process that can be analyzed and discussed from different patient and professional viewpoints. It is often called first-contact care. The word primary conveys the notion of first, as in a series or sequence, but it also conveys the notion of basic, as in the fundamental elements of a whole. The notion of primary as a basic level of services would also seem appropriate from the perspectives of patients and the government. Most professionals are trained to work with patients in one-to-one relationships.

Alma-Ata stated that a comprehensive primary health care system "addresses the main health problems in the community, providing promotive, preventive, curative, and rehabilitative services accordingly". The term primary care was used to describe first-line health services, while the term primary health care was used to describe a wider construct of social justice based on the Alma-Ata philosophy.18 This vision catalysed a swing from emphasis on large teaching hospitals being built in many newly independent countries towards more emphasis on preventive health, training of multipurpose paramedical workers, and training of community-based workers[1].

Primary health care (PHC) is a critical point of contact for addressing the health care needs of the population. It forms an essential part of a national health care system. Health systems with a stronger focus on PHC have improved health, financial, and equity outcomes.8 International trends suggest that PHC systems are incorporating concepts and services such as interdisciplinary coordination, integrated care, preventive services, self-care, and self-

[1] Joy E Lawn et al, Alma-Ata 30 years on: revolutionary, relevant, and time to revitalise, The Lancet, Volume 372, 2008, p. 921.

management, all of which may optimize health care and contribute to the sustainability of the health care system[1].

Primary health care is essential health care made universally accessible to individuals and families in the community by means acceptable to them, through their full participation and at a cost that the community and country can afford. It forms an integral part both of the country's health system, of which it is the nucleus, and of the overall social and economic development of the community.

Primary health care addresses the main health problems in the community, providing promotive, preventive, curative, and rehabilitative services accordingly. Since these services reflect and evolve from the economic conditions and social values of the country and its communities, they will vary by country and community, but will include at least the promotion of proper nutrition and an adequate supply of safe water; basic sanitation; maternal and child care, including family planning; immunization against the major infectious diseases; prevention and control of locally endemic diseases; education concerning prevailing health problems and methods of preventing and controlling them; and appropriate treatment for common diseases and injuries[2].

### 3.2.2 Secondary Health Care Services

Secondary care is delivered primarily through district or regional hospitals that provide both outpatient consultations and inpatient services, including emergency care. Typical staffing encompasses medical specialists (e.g., neurologists and internists), residents, nurses, and trained technicians, supported by diagnostic infrastructure such as laboratory services, electrophysiology, and

[1] Amaia Urionagüena et al., Community pharmacy and primary health care - Types of integration and their applicability: A narrative review, Research in Social and Administrative Pharmacy, Issue 19, 2023, p. 414.

[2] John H. Bryant, and Julius B. Richmond, Alma-Ata and Primary Health Care: An Evolving Story, International Encyclopedia of Public Health (Second Edition), 2017, Pages 83-102.

computed tomography (CT) scanning. These centers also furnish technical and administrative support to primary care clinics within their catchment areas. In several settings, outreach models extend this support beyond facility walls—for example, district hospital mobile teams in India address common neurologic conditions such as epilepsy, while Senegal's "neuro-caravans" enhance access in rural communities[1].

Within the broader health system, secondary care comprises specialized ambulatory and hospital services characterized by intermediate technological density between primary and tertiary levels and historically associated with medium-complexity procedures. This tier includes specialty medical care, diagnostic and therapeutic support, and emergency services. Access and quality are core system principles reflected in practice through the adoption of "best practices"—integrated sets of techniques, processes, and activities aligned with health-promotion values, contextual understanding, and evidence. Effective best practices combine appropriate knowledge translation with efficient resource use to achieve results, emphasizing technological efficacy and efficiency and facilitating adaptation of solutions across similar contexts. Embedding such benchmarks within secondary care strengthens the system's capacity to meet user demands and to structure service delivery within integrated networks such as Brazil's Unified Health System[2].

Contemporary policy trends encourage minimizing hospitalizations where clinically appropriate, not only to reduce length of stay but also to avoid

[1] .B.S. SINGHAL and SATISH V. KHADILKAR, Neurology in the developing world, Chapter 114, Handbook of Clinical Neurology, Volume 121 (3rd series), Neurologic Aspects of Systemic Disease Part III, Jose Biller and Jose M. Ferro, Editors, 2014, p. 1774.

[2] Alacoque Lorenzini Erdmann, et al, Secondary Health Care: best practices in the health services network, Rev. Latino-Am. Enfermagem, volume 21, special issue, 2013, p. 133.

unnecessary utilization of costly ancillary services[1]. Although the terms "hospital care" and "secondary care" are sometimes used interchangeably, many secondary care professionals—such as dental specialists, physiotherapists, occupational therapists, psychiatrists, and clinical psychologists—may practice outside hospital settings, and some primary care services are delivered within hospitals. Access pathways vary by health-system design: in many contexts, patients require referral from a primary care physician, while mixed-market systems may restrict or enable direct specialist access based on insurance arrangements and provider policies; in some cases, self-referral remains an option[2].

### 3.2.3 Tertiary (Specialized) Health Services

Tertiary neurologic care delivers advanced diagnosis, treatment, and rehabilitation for complex conditions through multidisciplinary teams and the introduction of emerging therapies. It is predominantly located in teaching hospitals and other highly resourced centers that also function as hubs for training and research. Delivering high-quality tertiary care depends on sufficient specialist staffing, sophisticated equipment, and stable financing; however, in many low- and middle-income settings only a limited number of centers receive adequate support. In several countries, the private corporate sector has expanded the availability of tertiary services to partially address these gaps[3].

More broadly, tertiary health care encompasses specialist services typically accessed via referral from primary or secondary care. While often concentrated in major hospitals, tertiary services may also be provided through visiting

[1] AH&MRC MONOGRAPH SERIES, PRIMARY, SECONDARY AND TERTIARY HEALTH CARE SERVICES TO ABORIGINAL COMMUNITIES, Volume 1, Number 1, 1999, p 5.
[2] Kevork Hopayian, Health Care Systems: Primary, Secondary, Tertiary, and Quaternary Care, Journal of Family Medicine & Medical Science Research, Volume 11, Issue 4, 2022, p2.
[3] B.S. SINGHAL and SATISH V. KHADILKAR, OP CIT, p 1774.

specialists and allied health professionals. For example, in Aboriginal Community Controlled health services and rural or remote areas, visiting clinics or hospital-based sessions supplement local capacity despite persistent shortages of specialists[1].

Representative examples of tertiary care include comprehensive cancer management, neurosurgery, cardiothoracic and plastic surgery, major burn therapy, advanced neonatology, palliative care, and other complex medical and surgical interventions—most commonly delivered to inpatients within tertiary referral centers[2].

## 3.2 Quality in Health Services

Service quality has become critically important due to the growing number of service organizations and the increasing intensity of competition among them. It is no longer sufficient to offer services of acceptable quality and reasonable price without ensuring good customer relations and understanding clients' needs. Therefore, organizations strive to maintain long-term relationships with their customers and expand their client base through continuous improvement in service quality and customer engagement.

### 3.3.1 Quality in Health Organizations

"A quality is the degree to which a set of inherent characteristics fulfils requirements". This definition is broad yet sufficiently accurate to be applied to various fields, including healthcare[3].

According to the WHO, the quality of care refers to the degree to which health services for individuals and populations enhance the likelihood of desired

[1] AH&MRC MONOGRAPH SERIES, OP CIT, p.5.
[2] Kevork Hopayian, OP CIT, pp 1- 2.
[3] Peter Madzik and Miroslav Hrnciar, Quality of Services with Respect to their Unique Characteristics – The Field of Education, Athens Journal of Education, Volume 2, Issue 1,2015, PP. 66.

health outcomes and are consistent with evidence-based professional knowledge. This definition of quality of care encompasses promotion, prevention, treatment, rehabilitation, and palliation. It implies that quality of care can be measured and continuously improved through the provision of evidence-based care that considers the needs and preferences of service users – patients, their families, and communities[1].

The American Medical Association defines the quality of health services as "the level of health services offered to persons and communities that increase the likelihood of achieving desired health outcomes and is consistent with current professional knowledge". Donabedian describes quality service as "the service expected to maximize a comprehensive measure of the well-being of the patient" after the anticipated gains and losses balance. These definitions emphasize the need for good documentation and knowledge management to achieve the expected outcomes of the healthcare system, but also indicate the importance of updating professionals' knowledge, which requires time-adapted intellectual and technological expertise[2].

A high-quality health service would provide care that is effective (the benefits outweigh any possible danger or harm), provided humanely (treats people with respect and is timely), and is equitable (available to everyone in need regardless of their sex, age, ethnicity, etc.). Note that this definition does not include any consideration of the other key attribute, cost or efficiency. The

[1] Akinyinka MR, Oluwole EO, and Odusanya OO, Community Perception of Quality of Health Care Received and Client Satisfaction in Lagos, Nigeria, Journal of Community Medicine and Primary Health Care, Volume 31, Issue 2, 2019, p. 47.
[2] ESLYNE JANE FLEURISSAINT, SELMA ALTINDIS, CİGDEM UGAN, The Role of Knowledge Management in the Healthcare Services Quality in Haiti, PAKISTAN JOURNAL OF MEDICAL & HEALTH SCIENCES, volume 14, issue 01, 2020, p 407.

challenge for health care policy makers and managers is to provide good quality care at a reasonable cost[1].

Palmar defines the quality of healthcare services from several perspectives as follows[2]:

- **Patient:** It is the treatment provided by the hospital with compassion and respect.
- **Doctor:** It is the application of advanced knowledge, science, and medical skills for the benefit of the patient.
- **Hospital Administration:** It is the provision of the best services based on the latest scientific and professional advancements, guided by ethical healthcare practices, effective patient and administrative interactions, and compliance with the standards and ethics that govern health-related professions.
- **Owners:** It is the acquisition of the best professionals and the finest facilities.

Multiple quality elements have been described over the past decades. There is now a clear consensus that quality health services should be[3]:

- **Effective** by providing evidence-based health care services to those who need them;
- **Safe** by avoiding harm to the people for whom the care is intended;
- **People-centered** by providing care that responds to individual preferences, needs, and values, within health services that are organized around the needs of people;

[1] Nick Black and Reinhold, Understanding Health Services, 1st Edition, Open University Press, 2005, p. 202.
[2] Mekid, Ali, and Farida Ben Ayyad, The Reality of Adopting the Quality System of Health Services in Public Hospitals, Algerian Journal of Economics and Finance, Volume 03, Issue 02, September 2016, pp. 13-14.
[3] Nick Black and Reinhold, OP CIT, p 202.

- **Timely** by reducing waiting times and sometimes harmful delays for both those who receive and those who give care;
- **Equitable** by providing the same quality of care regardless of age, sex, gender, race, ethnicity, geographic location, religion, socio-economic status, linguistic or political affiliation;
- **Integrated** by providing care that is coordinated across levels and providers and makes available the full range of health services throughout the life course;
- **Efficient** by maximizing the benefit of available resources and avoiding waste.

Many of the above domains of quality are intimately related to ethical principles**.**

### 3.3.2 Models of Quality Service Measurement in Organizations

Service quality is widely recognized as a strategic lever for differentiation, customer satisfaction, trust, and loyalty. Despite debate over its precise structure, scholars concur that quality perceptions are multidimensional and measurable, enabling service providers to position themselves more effectively[1]. Early work distinguished between technical quality (what is delivered) and functional quality (how it is delivered)[2]. Building on this foundation, Parasuraman et al. (1985) identified ten evaluative dimensions, later refined through empirical testing into the SERVQUAL framework's five core dimensions—tangibles, reliability, responsiveness, assurance, and empathy—which capture customers' global assessments across service contexts[3].

[1] Georgia Gkioka et al, Data analytics methods to measure service quality: A systematic review, Intelligent Decision Technologies, volume 17, 2023, p. 1007.
[2] Grönroos Ghristian, A Service Quality Model and its Marketing Implications, European Journal of Marketing, volume 18, Issue 04, 1984, p. 36.
[3] Parasuraman et al., SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality, Volume 64, Number 01, 1988, p. 17.

Within SERVQUAL, tangibles refer to the physical evidence of service operations, including facilities, equipment, and appearance of personnel; reliability denotes dependable and accurate performance as promised; responsiveness captures the willingness and timeliness with which staff address requests and problems; assurance reflects employees' competence, courtesy, and ability to inspire confidence through knowledge, integrity, and communication; empathy denotes individualized attention and care that recognize heterogeneous customer needs[1]. Subsequent models complement this perspective. SERVPERF conceptualizes quality as performance-only judgments. The three-component model emphasizes the service product, delivery process, and environment. The Retail Service Quality Scale specifies physical aspects, reliability, personal interaction, problem solving, and policy for retail settings. The PCP hierarchy differentiates pivotal attributes (outcomes) from core and peripheral attributes (inputs and processes). A further tripartite view distinguishes interaction quality, physical environment quality, and outcome quality. Collectively, these approaches provide convergent tools for diagnosing and managing service quality across industries, with SERVQUAL remaining the most frequently applied baseline for multidimensional assessment[2].

### 3.3.3 Models for Measuring the Quality of Healthcare Services

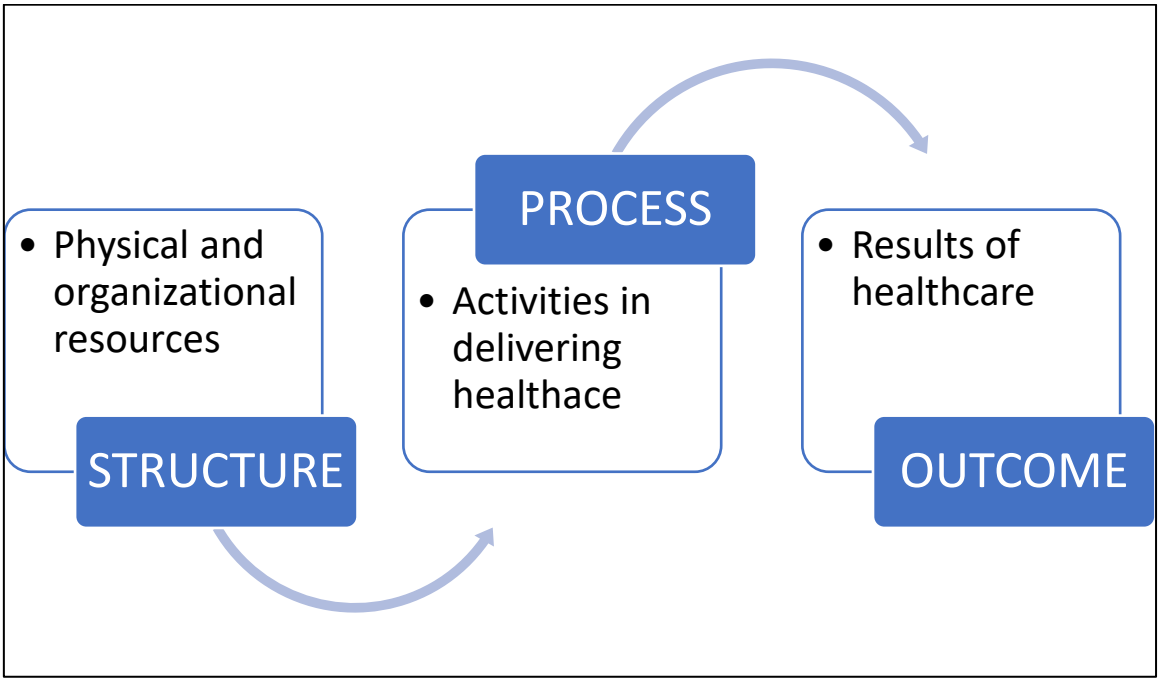
This sub-section examines various models used to measure the quality of healthcare services. Five key models identified for assessing healthcare service quality include Donabedian's Model, SERVQUAL, HEALTHQUAL, PubHosQual, and HospitalQual models.

[1] Shodiya Olayinka ABIDEEN et al, Secondary Health Care Service Quality and Patients' Satisfaction in Ogun State, Nigeria, Economics and Applied Informatics, Dunarea de Jos" University of Galati, Faculty of Economics and Business Administration, issue 1, 2023, pp. 90-91,

[2] Ighomereho Ogheneochuko Salome, et al, FROM SERVICE QUALITY TO E-SERVICE QUALITY: MEASUREMENT, DIMENSIONS AND MODEL, Journal of Management Information and Decision Sciences, Volume 25, Issue 1, 2022, p. 3.

❖ **Donabedian's Model:** Donabedian is widely acknowledged as a pioneer in the study of healthcare quality. His model suggests that the quality of healthcare services is dependent on both technical and interpersonal aspects. Technical care refers to the clinical procedures and treatments, while interpersonal care pertains to communication between the provider and the patient. Donabedian proposed a framework based on three interconnected elements: structure, process, and outcome. Structure refers to the resources, facilities, and qualifications of healthcare providers; process pertains to the delivery and methods of care; and outcome reflects the results of care, such as patient recovery or survival. To measure quality, Donabedian identified seven dimensions: efficacy, effectiveness, efficiency, optimality, acceptability, legitimacy, and equity[1].

**Figure 2-4**: Donabedian's Framework for Healthcare Quality Management




**Source:** prepared by researchers

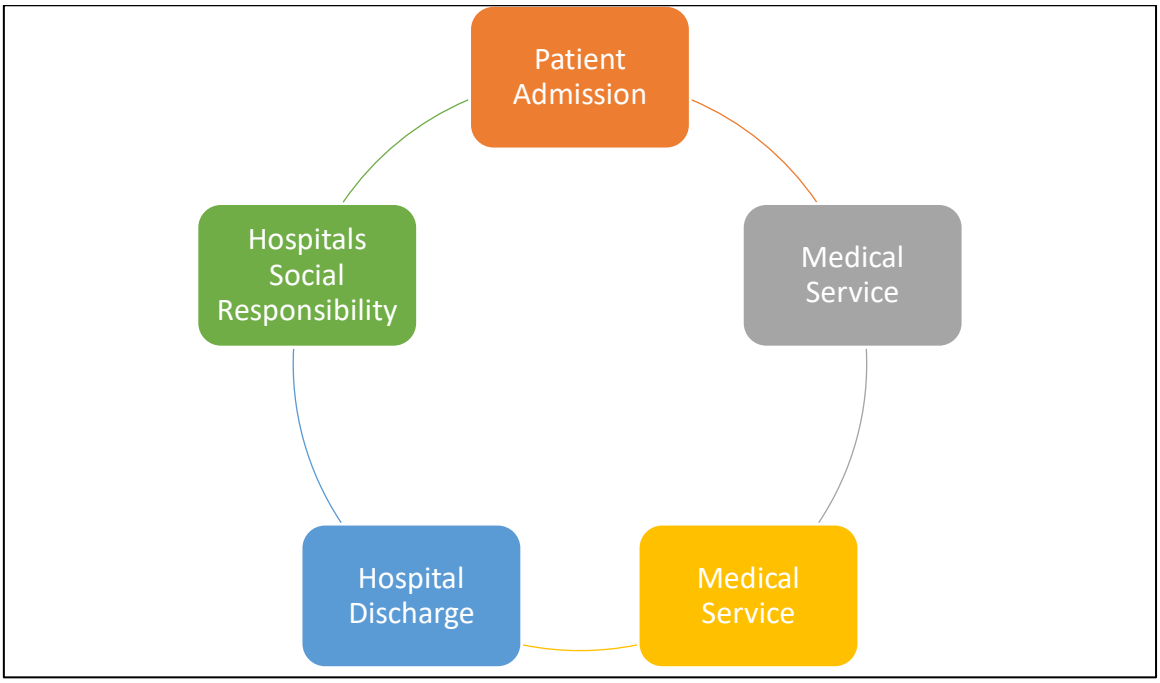
[1] John Voyce et al, A Donabedian Model of the Quality of Nursing Care from Nurses' Perspectives in a Portuguese Hospital: A Pilot Study, Journal of Nursing Measurement, Volume 23, Issue 3, p. 475.

- **SERVQUAL in Healthcare:** SERVQUAL is one of the most widely recognized models for service quality measurement. While some have questioned the model's validity and reliability in healthcare, it remains commonly used with adaptations. In a healthcare context, various studies have modified SERVQUAL to better reflect the nuances of healthcare delivery. For example, Carman identified nine dimensions, including admission services, nursing care, and discharge planning. Other studies, such as those by Brown and Swartz, emphasized physician interaction as a key driver of satisfaction, while Jabnoun and Chaker identified five dimensions—reliability, responsiveness, supporting skills, empathy, and tangibles—when comparing private and public hospitals in the UAE. Additionally, some scholars, like Boshoff and Gray, operationalized SERVQUAL with seven dimensions, including communication, tangibles, and empathy. Babakus and Mangold validated SERVQUAL in hospital settings, suggesting its reliability for assessing functional quality, though long-term success would require integrating technical aspects of healthcare services[1].
- **HEALTHQUAL Model:** In contrast to SERVQUAL, some researchers have developed models specifically tailored for the healthcare sector. One such model is HEALTHQUAL, which adapts the SERVQUAL framework and incorporates elements of Donabedian's structure, process, and outcome framework. HEALTHQUAL was developed by Camilleri and O'Callaghan, drawing on Donabedian's work to measure hospital service quality. The model includes six dimensions: admission processes, medical staff attitudes, nursing staff attitudes, hospital environment, patient amenities, and discharge planning[2].

[1] Shodiya Olayinka ABIDEEN et al, OP CIT, pp.91-92.
[2] Berhanu Endeshaw, Healthcare service quality measurement models: a review, Journal of Health Research, Volume 35, Issue 2, 2021, p. 109.

❖ **PubHosQual Model:** The PubHosQual model was developed to measure the quality of public hospitals in India. It focuses on patients' perspectives and categorizes service quality into five dimensions: admission, medical services, overall service, discharge, and social responsibility. Although this model offered valuable insights for identifying areas of improvement in Indian public hospitals, it did not fully address the technical aspects of healthcare service delivery, which are critical for a comprehensive quality assessment[1].

**Figure 2-5:** Dimensions of PubHosQual scale




**Source:** prepared by researchers

❖ **HospitalQual Model**: This model was developed by Itumalla et al. for monitoring and improving the quality of inpatient services in a public hospital in Hyderabad, India. HospitalQual uses the disconfirmation paradigm of SERVQUAL and is specifically designed for in-patient care. While it has proven useful for monitoring and improving inpatient service

[1] Reham Zuhier Qasim Almomania et al, Patients' satisfaction of health service quality in public hospitals: A PubHosQual analysis, Management Science Letters, Volume 10, 2020, p 1806.

quality, its limitations lie in its narrow focus on just one segment of the patient population[1].

While some studies rely on generic service quality models like SERVQUAL and SERVPERF, others have adapted these models to fit the specific context of healthcare. Researchers have developed or modified these models to capture the unique aspects of healthcare delivery, incorporating both functional and technical quality dimensions.

**Chapter Summary:**

In today's world, services have become one of the main pillars of the global economy, with significant progress seen in many countries. The focus on these services has increased notably in recent years. Among the most important types of services discussed in this chapter are public services, which countries aim to provide for the well-being of their populations, ensuring they can continue to perform their essential roles. We also highlighted healthcare services as a key part of public services, distinguished by their unique features. Furthermore, we examined various levels and types of healthcare services, as well as models for assessing their quality, due to their vital importance to what is arguably our most valuable asset—health. In this context, we will explore how knowledge management helps improve the quality of healthcare services from both theoretical and practical perspectives by analyzing international experiences that have successfully implemented it in the next chapter.

[1] Berhanu Endeshaw, OP CIT, p.109.

# Chapter Three:

## Health Knowledge Management as a Tool for Enhancing the Quality of Healthcare Services (Successful International Experiences)

# Chapter Introduction

In this modern era, enhancing the quality of healthcare services and achieving the highest standards of care are among the primary objectives of healthcare systems worldwide. Rapid advancements in medical sciences and technology have not only heightened public awareness but also elevated expectations for healthcare services. These services often remain suboptimal, highlighting the need for innovative approaches to bridge the gap between knowledge and practice.

Knowledge serves as a cornerstone for informal decision-making and practical actions within any organization, particularly in the healthcare sector. The absence of synergy between knowledge generation and the operational performance of health systems creates a critical gap that hinders the translation of evidence into practice. Addressing this gap requires the adoption of knowledge and evidence-based decision-making systems, fostering public health promotion, and facilitating human development through knowledge sharing and utilization.

Moreover, decision-making in healthcare is deeply intertwined with the research findings and knowledge available in the field. Without a shared understanding between knowledge creators and healthcare systems, research outcomes risk remaining underutilized, limiting their impact on patient care and health system improvement. This inefficiency results in wasted financial resources, increased costs for patients, and potential harm, while also hindering the implementation of preventive, curative, and management strategies. This chapter examines the role of health knowledge as a transformative tool for addressing these challenges, highlighting successful international experiences that have demonstrated its potential to enhance healthcare quality and efficiency.

## 1. Knowledge Management and Public Health

The potential application of knowledge management (KM) principles in public health is illustrated by parallels with lean manufacturing techniques used in other industries. In January 2006, Michael McCarthy's article in The Lancet posed the question, "Can car manufacturing techniques reform health care?"[1]. This drew attention to the efficiency gains achieved by US hospitals that adopted lean manufacturing practices, pioneered by companies such as Toyota and Boeing. This underscores the importance of exploring how such approaches could optimize healthcare delivery, especially in resource-constrained systems like the NHS[2]. Similarly, KM is essential for advancing public health practices, as noted by the Association of State and Territorial Health Officials (ASTHO). Given its multidisciplinary nature, public health requires effective knowledge management to tackle complex healthcare challenges[3]. By employing research methodologies and adopting systematic approaches, professionals can monitor, prevent, and mitigate health issues. Therefore, integrating KM principles with proven strategies, such as those used in lean manufacturing, may offer transformative potential for improving health outcomes and operational efficiencies within public health frameworks.

In the healthcare context, information is crucial for enabling healthcare professionals to perform their duties efficiently. KM transforms raw empirical data into experiential knowledge, facilitating the development of decision-support systems for experts. It plays a pivotal role in healthcare service delivery

[1] Michael McCarthy, Can car manufacturing techniques reform health care? The Lancet, Volume 367, Issue 9507, 2006, p. 290.

[2] Davide Nicolini, John Powell, Laura Martinez-Solano and Paul Conville, Managing knowledge in the UK health sector: state of the art and future perspectives, Draft final report of the Phase II scoping project: Knowledge management systems for lean healthcare, Coventry: University of Warwick,2006, p 4.

[3] Bowden E. Dawn et al, THE CHALLENGE OF KNOWLEDGE MANAGEMENT IN HEALTHCARE, Business Theory and Practice Across Industries and Markets, 2020, p.219.

by providing swift and convenient access to a vast knowledge repository. Beyond managing information overload, KM facilitates the implementation of best practices and the delivery of high-quality healthcare services, ultimately enhancing patient satisfaction. The KM model aims to improve efficiency, ensure harmonization, and reduce costs while increasing the effectiveness and productivity of healthcare professionals. Additionally, KM systems empower healthcare workers to learn from their peers' successful problem-solving strategies[1].

These perspectives are supported by the Institute of Medicine in Washington (2002), which emphasizes the necessity for up-to-date information in public health to conduct analyses, report findings, and disseminate relevant data effectively. Similarly, Abidi (2001) highlights that KM in healthcare integrates methodologies and techniques to facilitate the creation, identification, acquisition, development, protection, distribution, and utilization of a healthcare organization's diverse knowledge assets. This comprehensive approach underscores KM's potential to revolutionize public health and healthcare delivery[2].

## 1.1 Healthcare Knowledge Management

### 1.1.1 Knowledge Management in Health Services

Knowledge management involves the creation, use, reuse, and dissemination of information. In healthcare delivery, decisions are primarily based on knowledge and evidence-based medicine. Therefore, having a robust knowledge management infrastructure is critical for the healthcare sector. This

[1] Mohamed Abdalla Elamein Boshara, Peter Charles Woods and Nour Eldin Mohamed Elshaiekh, Knowledge Management Support to Public Health in Humanitarian Emergency, Research Square, 2020, p 4.
[2] Mohamed Abdalla Elamein Boshara, Peter Charles Woods and Nour Eldin Mohamed Elshaiekh, OP CIT, p. 4.

system enables the timely creation or access to the knowledge necessary for delivering services effectively. Knowledge management relies on information technologies for knowledge creation, storage, sharing, and use/reuse. Knowledge plays a vital role in the daily activities of healthcare providers, including both employees and managers. It encompasses various areas such as management practices, human resource management, organizational dynamics and governance, strategic planning, risk management, and quality management. For employees, knowledge is a vital resource that must be applied effectively. Healthcare services face numerous challenges, including rising costs and the pressure to deliver high-quality, effective, and efficient care. By establishing a knowledge management system and clearly defining knowledge assets, healthcare organizations can better address these challenges. Knowledge management is key to developing improved management techniques, and understanding data management and evidence-based practices is crucial in this context. The complexity of the service delivery process is informed by the various challenges faced by healthcare staff, necessitating collaboration across multiple disciplines to create and share information that contributes to providing high-quality care[1].

### 1.1.2 Importance of KM in Healthcare

KM is important in healthcare, as it is in any other business, if not more so. According to Kothari et al. (2011), some of the reasons for KM use in healthcare, like in the business sector, include prevention of possible knowledge loss due to retirement and staff turnover; gaining competitive advantage; continuous learning, which is not just important but crucial in a field that is

[1] ESLYNE JANE FLEURISSAINT, SELMA ALTINDIS, CİGDEM UGAN, The Role of Knowledge Management in the Healthcare Services Quality in Haiti, PAKISTAN JOURNAL OF MEDICAL & HEALTH SCIENCES, volume 14, issue 01, 2020, pp : 407-408.

constantly evolving; prevention of knowledge diffusion and/or isolation of organization or department or individuals and the need of fulfilling users needs[1].

As Mahmood, Burney, Abbas, and Rizwan (2012) indicated, the healthcare industry is inherently focused on knowledge, connecting various entities such as hospitals, physicians, patients, laboratories, pharmaceuticals, and clinics to facilitate knowledge sharing. According to Ali, Tretiakov, and Whiddett (2014), healthcare organizations operate differently from other industries due to the constant evolution of medical knowledge[2], which has doubled in over 20 years[3]. Liu, Cheng, Chao, and Tseng (2012), also cited by Simon (2016), identified the primary challenge in healthcare as implementing knowledge management into practical use. Consequently, an effective knowledge management strategy in healthcare should include incentives to encourage information-sharing behaviour[4].

Glaser and Overhage (2013) discussed that knowledge transfer and management have become strategic in healthcare. There are various knowledge transfer methods, including e-learning initiatives and communities of practice. Simon (2016) suggested that while there have been significant improvements in knowledge management in healthcare, much work still needs to be done. Supporting this, Gagnon et al. (2015) emphasized the importance of healthcare organizations seeking innovative solutions and developing strategies to design

[1] Pradyut Kumar Borah et al, Practical Application of Knowledge Management Models: Assessing Existing KM Models From The perspective of private Hospitals of North East India, Palarch's Journal of Archaeology of Egypt/Egyptology, volume 18, Issue 10, 2021, p 820.

[2] Frank Chikhata and Orpah Onwards Chivivi, The Significance of Knowledge Management in Improving the Quality of Health Care in the Public Sector in Zimbabwe, Information and Knowledge Management, volume 07, issue 5, 2017, p 18.

[3] Aamir Jalal Al Mosawi, Medical knowledge management and managing knowledge within the health setting, The New Iraqi Journal of Medicine, volume 7, issue 2, 2011, P .80

[4] Frank Chikhata and Orpah Onwards Chivivi, OP. CIT, p. 18

new work practices and manage knowledge[1]. This idea was also echoed by Lee and Hong (2014), who proposed that hospital organizations should encourage employees to share knowledge and continuously foster innovation.

### 1.1.3 Types of Healthcare Knowledge

Healthcare knowledge is complex both in form and function. That's why there are different types of healthcare knowledge. Knowledge type refers to the orientation and domain of knowledge. Healthcare knowledge is primarily employed to support clinical decision-making, which is a complex activity because it involves an active interplay between different types of healthcare knowledge. Syed Sibte Raza Abidi have identified an assortment of knowledge types that directly contribute to clinical decision-making and care planning[2]**:**

- **Patient knowledge** entails a clear description of the patient's health status. It encapsulates medical relationships between the various observations of the patient and the inferences drawn by physicians, both captured and recorded in the medical record, to provide a complete picture of the patient.
- **Practitioner knowledge** is practice-related tacit knowledge withheld by a practitioner and exercised whilst discharging patient care. Practitioner knowledge is acquired through active learning, internship, observations, and experiences.
- **Medical knowledge** is the core domain knowledge that describes the theories about health and healthcare, healthcare delivery models, and processes.

[1] Marie-Pierre Gagnon et al, A learning organization in the service of knowledge management among nurses: A case study, International Journal of Information Management. Volume 35, Issue 5, 2015, p.637.

[2] Syed Sibte Raza Abidi, Healthcare Knowledge Management: The Art of the Possible, In: Riaño, D. (eds) Knowledge Management for Health Care Procedures, K4CARE 2007, Lecture Notes in Computer Science, volume 4924, Springer, Berlin, Heidelberg, 2008, pp 5-6.

- **Resource knowledge** quantifies the care delivery resources and infrastructure available within a healthcare setting. Practitioners need up-to-date resource knowledge to know what resources—such as medical diagnostic devices and tools, drugs, support staff, nurses, hospital beds, surgical facilities, and so on—are available when making decisions about diagnostic and treatment interventions.
- **Process knowledge** concerns institution-specific care pathways (or workflows) that determine the stipulated discourse of care for specific medical conditions within a healthcare setting. Process knowledge stipulates the standardized way to treat a patient whilst addressing pragmatic considerations such as the resources needed to treat the patient as per the care pathway.
- **Organizational knowledge** represents the organizational structure and policies exercised by a healthcare institution. Organizational knowledge entails the information and knowledge flows within the organization—i.e., how does information flow from one source to another, who is required to report to whom, what is the decision-making hierarchy, what is the composition of care teams, what are the roles and responsibilities of different healthcare team members, and how to make and respond to information requests. Organizational knowledge is particularly important when deploying HKM solutions because their successful deployment needs to be congruent with organizational and process knowledge.
- **Relationship knowledge** reflects the social capital withheld within an organization, a community of healthcare providers, or even individuals. Relationship knowledge entails understanding how knowledge-seeking and sharing can be effectuated between healthcare professionals. In practice, such knowledge helps ask the right question to the right person—i.e., who is the domain expert, where to get the right knowledge, who can

be approached to seek a solution for a specific problem, and who can provide a critical opinion. Relationship knowledge also entails the communication mechanisms and contacts between multiple departments and institutions for the purposes of patient information sharing.

- **Measurement knowledge** encompasses the metrics, criteria, and standards used to evaluate the success of healthcare delivery processes and systems and related health outcomes. It is essential for establishing meaningful benchmarks for performance, efficiency, and safety. This knowledge lets us focus on important measurements instead of irrelevant parameters, formulate appropriate research questions, interpret results within various healthcare contexts, and analyze data effectively. Additionally, measurement knowledge helps determine whether a knowledge management solution achieves its intended outcomes. It assesses the level of knowledge uptake within a healthcare setting through the implemented Health Knowledge Management (HKM) solution.

### 1.1.4 KM Tools in Health Care

IT-based KM tools. A distinctive characteristic of the literature on KM in health care is its focus on electronic libraries and repositories of scientific information, such as articles, guidelines, and clinical protocols. Building on the continued growth of evidence-based medicine, electronic libraries are recognized as a crucial means of supporting the clinical decision-making process[1].

The table below provides a structured overview of the key knowledge management tools and initiatives in healthcare, categorized into three main types.

[1] Davide Nicolini, John Powell, Paul Conville and Laura Martinez-Solano, Managing knowledge in the healthcare sector: A review, International Journal of Management Reviews, Volume 10, Issue 3,2008, p 250.

Table 3-1: The Knowledge Management Tools and Initiatives in Healthcare

| Category | Tools and Initiatives | Description |
|---|---|---|
| **Information Technology (IT) Based** | Electronic Libraries | Support evidence-based decision-making by providing quick access to relevant medical Knowledge. |
| | Data Mining | Extracts meaningful information from large clinical datasets to improve decision-making and healthcare management |
| | Web-Based systems | Include intranets, virtual meeting platforms, telemedicine, and community-based health knowledge management systems. |
| **Socially Based** | Communities of Practice (CoPs) | Informal networks where clinicians share knowledge through discussion and collaboration |
| | Clinical Networks | Managed or organic networks that facilitate knowledge sharing, improve patient care, and standardize practices. |
| **Human Resources (HR) Driven** | Continuing Professional Development | Enhance Knowledge translation and lifelong learning through formal education. |
| | Educational and Training Programs | Includes online courses, case-based discussions, clinical apprenticeships, and reflection-based learning. |
| | HR Practices for Knowledge Retention | Initiatives such as wellness programs, referral incentives, and childcare support are used to retain knowledge workers. |

**Source**: prepared by the researcher based on Davide Nicolini, John Powell, Laura Martinez-Solano and Paul Conville, Managing knowledge in the UK health sector: state of the art and future perspectives, Draft final report of the Phase II scoping project: Knowledge management systems for lean healthcare, Coventry: University of Warwick,2006, pp 15-20.

## 1.2 KM Application in Health Services

Managing knowledge is crucial for the effectiveness of public health service systems, particularly in light of the growing demand for healthcare services and the numerous challenges the sector faces globally. Knowledge management is crucial for conducting health services needs assessments, service planning, integrated care planning, disease management, delivering care, and assessing outcomes. Although investing in information and communication technology (ICT) can be a barrier, the opportunity costs of having poor-quality information can lead to inefficiencies and adverse patient events. Poor data capture, data entry errors, outdated records, and ineffective data sharing also result in costly overheads. Addressing these challenges requires investments in information integration, data purification, and the matching of duplicate records. Without a knowledge-driven approach, care may not be targeted toward actual needs, interventions may not be based on research evidence of effectiveness, and outcomes may not be evaluated to guide future resource investments and intervention selections[1]. Implementing knowledge management in public health institutions has the potential to tackle issues related to effective planning, needs assessment, service provision, and healthcare service delivery.

### 1.2.1 Knowledge Management for Needs Analysis

The challenge for planners is to achieve the most significant improvement in population health, given the available resources. Populations are diverse, so it's essential to understand where the high-risk areas are, both geographically and in terms of social demographics. A knowledge base should provide insights into areas of need and suggest suitable locations for providing services. It should also highlight concentrations of the elderly or people with disabilities, assess

[1] Jeffrey Soar, Improving health and public safety through knowledge management, "Thailand International Conference on Knowledge Management (2004). Bangkok, Thailand 24 - 25 Nov 2004 Bangkok, p2.

people's ability to access care, and define what constitutes a reasonable travel distance. Additionally, it should help identify groups more likely to engage in unhealthy behaviour and determine the need for educational programs on nutrition. The population knowledge base would guide planners on where to target specific services. In an ideal scenario, planners and policymakers would use this knowledge base to identify at-risk groups and those with poor health status who require healthcare intervention. This knowledge base would also help inform the selection of interventions based on research evidence or international best practices. At the point of care, clinicians could optimize the effectiveness of interventions by having immediate access to all relevant information, including the patient's history, research evidence, and best practice guidelines. Evaluation would then determine the effectiveness of the intervention for both the condition and the overall health status of the target group, as well as whether alternative actions are necessary[1].

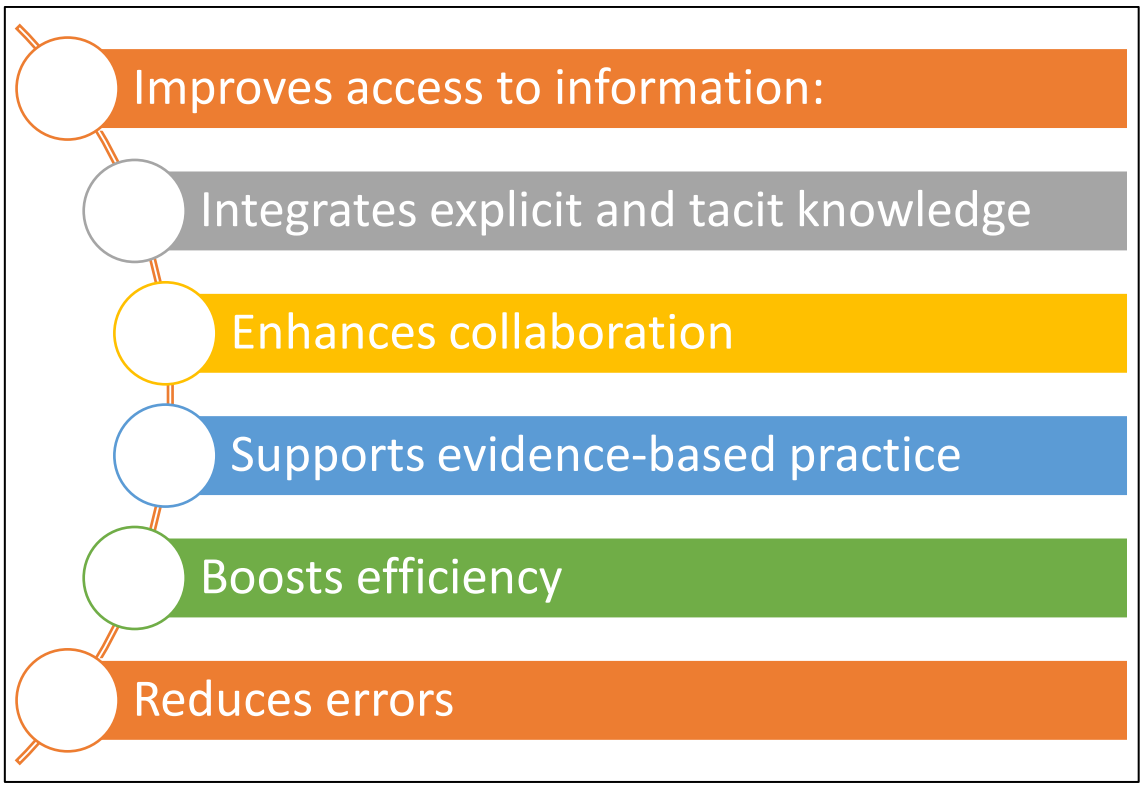
### 1.2.2 Knowledge Management for Care Planning

Support for patient care planning, driven by current and relevant knowledge, is highly desirable to healthcare professionals[2]. Knowledge management supports care planning by providing clinicians with immediate access to current evidence-based guidelines, standardized protocols, and relevant patient data, enabling the design of effective care plans. It enhances collaboration through shared information platforms that connect specialists and care teams, particularly for complex cases. By integrating explicit knowledge (e.g., research findings) with tacit expertise (e.g., practitioner judgment), it enables comprehensive and individualized plans. It operationalises evidence-

[1] Jeffrey Soar, op cit, p3.
[2]Syed Sibte Raza Abidi, Healthcare Knowledge Management: The Art of the Possible, In: Riaño, D. (eds) Knowledge Management for Health Care Procedures, K4CARE 2007, Lecture Notes in Computer Science, volume 4924, Springer, Berlin, Heidelberg, 2008, p. 10.

based practice by aligning research evidence, clinical expertise, and patient values in decision-making. Streamlined information flows and tools for systematic process management improve organizational efficiency, facilitating timely care and smoother patient pathways. Figure 3-1 summarizes the elements of the preceding paragraph in a single diagram.

**Figure 3-1**: Mechanisms through which KM supports care planning




**Source**: Prepared by the researcher

### 1.2.3 Knowledge Management for Evidence-Based Care

The medical field is transitioning to evidence-based medicine, a crucial step in improving population health, which requires effective knowledge management[1]. Evidence-based medicine combines clinical expertise with the best external evidence from systematic research to inform individual patient care. While clinical expertise comes from experience and personal patient

[1] Christo El Morr and Julien Subercaze, knowledge management in healthcare, chapter in Handbook of Research on Developments in E-Health and Telemedicine: Technological and Social Perspectives, IGI Global Scientific Publishing, 2010, p. 501.

insights, external evidence is derived from research on diagnostic tests and treatment efficacy. This evidence can challenge outdated practices and introduce better alternatives[1]. Clinicians often struggle to stay updated with the latest medical advancements, leading to variations in treatment decisions. Critics argue that an evidence-based approach may result in a rigid, "cookbook" style of care, prioritizing cost over individual patient needs. The concept is linked to health reforms in various countries and is met with skepticism by some clinicians, especially concerning Health Maintenance Organizations (HMOs) in the USA. Despite its longstanding roots, evidence-based medicine is still evolving, and the integration of knowledge management is key to its continued development and success[2].

### 1.2.4 Knowledge Management for Care Delivery

Improving patient safety and satisfaction is a core priority in hospitals. Knowledge-management-based training equips nurses with stronger self-management, more prudent clinical decision-making, better planning, and greater strategy execution. In inpatient units, knowledge-management interventions have improved the professionalism of nursing care for patients with decubitus ulcers (pressure injurie), and knowledge-management learning in nursing homes has been associated with significant gains in care quality. Documented mechanisms of knowledge transfer include team socialization and routine evaluation of nursing-care quality. Accordingly, knowledge management can be understood as a set of processes through which individuals seek, acquire, and share knowledge—skills, expertise, experience, and networks—within and across the organization.

[1] Leila Shahmoradi, Reza Safadari and Worku Jimma, Knowledge Management Implementation and the Tools Utilized in Healthcare for Evidence-Based Decision Making: A Systematic Review. Ethiop J Health Sci, volume 27, issue 5, 2017, p542.
[2] Jeffrey Soar, op cit, p4.

Hospitals should institutionalize knowledge management to generate service innovation and optimize care. Service quality is maximized when hospitals support knowledge management across their workforce and in coordination with external health institutions. The purpose of knowledge-management-driven innovation is to deliver comprehensive, high-quality services, which are a critical driver of care excellence expected to raise patient satisfaction[1].

### 1.3 KM and the Quality of Health Care

KM processes in a public healthcare system involve actions aimed at supporting the use of information through knowledge acquisition, sharing, and application for improvement in healthcare service delivery. From the definition given, it is suggested that the KM process should start by recognising and identifying the knowledge to be captured, shared and applied, to enable the organisation and its workforce to achieve a sustainable and competitive advantage, and recognising knowledge as an organisational asset and an intellectual capital to be managed through enabling tools aligned with organisational policies, to achieve high quality healthcare service delivery[2].

The quality of health care provision has been primarily achieved by adopting the right KM strategy for informed clinical decision-making. When both doctors and patients use both explicit and tacit knowledge, EBMP flourishes[3]. Therefore, effective knowledge management in public healthcare

[1] Daviq Ayatulloh et al, The Effect of Knowledge Management in Healthcare Services: A Systematic Review, Journal Pendidikan Keperawatan Indonesia, volume 07, issue 01, 2021, pp 92-93.

[2] Kgabo H. Badimo and Sheryl Buckley, Improving Knowledge Management Practices in the South African Healthcare System, International Journal of Industrial and Manufacturing Engineering, Volume 8, Issue 11, 2014, p 3465.

[3] Marija Lugonjic, Tatjana Jovanovic and Vera Krampot, KNOWLEDGE MANAGEMENT IN THE HEALTHCARE SYSTEM, conference paper, In 40th International Conference on Organisational Science Development Values, Competencies and Changes in Organisations, Faculty of Organisational Sciences, University of Maribo, 2021, p.560.

institutions, facilitated by tools that enable employees to access information easily and efficiently, can significantly enhance the quality of services. This improvement can be achieved through[1]:

Providing essential information and expertise: when employees have greater and more accurate access to information, skills, and expertise, they can perform their tasks more efficiently, ultimately leading to higher service quality.

Enhancing continuous learning: knowledge and experience sharing within the organization enables employees to learn from one another, refine their skills, and develop their expertise, which contributes to service improvement.

Fostering innovation and creativity: encouraging employees to exchange ideas and experiences creates a conducive environment for innovation, ultimately enhancing service quality.

### 1.3.1 The role of KM in Healthcare Institutions

According to the 2025 study by Alluqmani and AlDahawi, the primary roles of knowledge management in healthcare institutions are to[2]:

- Enhance the quality of healthcare by supplying the knowledge, tools, and resources required for appropriate action;
- Improve service delivery and clinical performance by strengthening organizational performance and efficiency and by coordinating resources, including the healthcare workforce;
- Increase efficiency and productivity, thereby fostering innovation in services;

[1] Said Hassan, and Khaleda Houam, The Impact of Knowledge Management Processes on Service Quality as an Indicator for Achieving Development, Journal of Errisala for Media Studies, Volume 07, Issue 02, 2023, p. 30

[2] Amnah Mubarak Alluqmani and Hana Ali AlDahawi, Knowledge Management Strategy in the Healthcare Sector: Challenges and Roles," Arab Journal for Scientific Publishing, volume 8, issue 82, 2025, pp 472-473.

- Support sound decision-making that reduces medical errors and enables effective responses to disasters and epidemics;
- Strengthen collaboration and knowledge sharing to build expertise and maximize organizational knowledge;
- Advance institutional improvement through competency development, process optimization, and greater capacity to address challenges;
- Facilitate access to services and thereby improve the effectiveness of care;
- Keep pace with scientific advances by improving information flow within the health system and expanding access to evidence and best practices, thereby closing knowledge gaps and increasing organizational value.

Collectively, these functions position knowledge management as a core mechanism for improving the quality and efficiency of healthcare and for sustaining continuous organizational improvement.

### 1.3.2 The Enablers of KM in the Healthcare Institutions

According to Chan and Chau (2008), knowledge enablers are characterized as influencing factors and can expedite knowledge management activities such as acquiring and disseminating knowledge capital among individuals[1]. Several authors, such as Booth (2001), Sensky (2002), and Sanders (2004), suggest that the enablers of KM in healthcare are not significantly different from those identified in various industries. Sensky (2002) argues that KM will not happen in healthcare organizations unless leadership, culture, HRM practices, and IT infrastructure and skills are in place. Similarly, Booth (2001) identifies ten building blocks for the success of KM. He argues that it is not sufficient to address merely content and technology – an empowering culture is also required. This includes executive-level support and the creation of an

[1] Abubakar Mohammed Abubakara and al, Knowledge management, decision-making style and organizational Performance, OP Cit, p 106.

environment where sharing of good practice is encouraged. Above all, KM should be integrated with the organization's business objectives and managed similarly to other commodities within the organization. Finally, Koumpouros et al. (2006) researched the critical success factors for establishing a multidisciplinary health community KM system using Internet-based ICTs. Some of the major success factors they found included: critical mass of knowledge, political commitment and endorsement, well-structured ontology, multilingual content and timeless processes, and a patient- and problem-oriented KM system[1]. Table 3-2, containing a summary of KM enablers, is given below:

[1] Davide Nicolini, John Powell, Paul Conville and Laura Martinez-Solano, OP CIT, p 255. https://doi.org/10.1111/j.1468-2370.2007.00219.x

**Table 3-2:** Summary of KM Enablers

| Author | KM Enablers |
|---|---|
| Anderson & APQC [1996] | Organizational culture, IT, Strategy, KM processes, Leadership, Evaluation |
| Arthur D. Little [1998] | Organizational culture, IT, Strategy, KM processes, Content |
| Delphi [1998] | Organizational culture, IT, Strategy, KM processes |
| Demarest [1997] | Culture, Operational, Technical |
| Ernst & Young [1998] | Organizational culture, IT, Strategy, KM processes, Knowledge content |
| KPMG [1998] | Organizational culture, IT, Strategy, KM processes |
| Lee & Kim [2001a] | Knowledge worker, Content, IT, KM processes |
| Leonard-Barton [1995] | Strategic intent, Core capability, Signature skill, Creative abrasion, Continuous, experimentation, information-porous boundaries, Cognitive variety |
| Nevis et al [1995] | Ten factors (ex. openness, operational, variety, leadership) |
| Nonaka & Takeuchi [1995] | Organizational intention, Autonomy, Fluctuation and creative chaos, Information redundancy, Requisite variety |
| Pan & Scarbrough [1998] | Culture and strategy, Technology, Organizational learning, Measurement |
| Pentland [1995] | Social interaction |
| Probst [1998] | Top management support, Organizational structure |
| Szulanski [1996] | Knowledge content, Source and recipient, Context |
| Spek and Spijervet [1997] | Organization and personnel, IT, Management, Culture and motivation |
| Walsh & Ungson [1991] | Individual, Culture, Transformation, Structure, Ecology, External archives |
| Wiig [1995] | Task/process, People, Structure, Power |
| Wijnhoven [1998] | Individual, Culture, Transformation, Structure, Ecology, External archives, System |

**Source:** Rizwan Saeed Mirza, Knowledge Management and Clinical Framework for Cross Country Healthcare Organizations, Thesis, Department of Interaction and System Design, School of Engineering, Blekinge Institute of Technology, Ronneby, Sweden, 2009, p 27.

### 1.3.3 Barriers to the Application of KM in Healthcare Institutions

Many studies reviewed noted most important challenges faced by KM implementation are infrastructural (technological) constraints, lack of motivation of employees to share knowledge, system unreliability, lack of senior management support, privacy issues patients in organizational policy, the reluctance of clinicians to use ICT tools daily - mainly due to lack of time, lack of attention to results and use of evidence, lack of incentives for documentation and dissemination, limited document and use of good practices, inadequate

awareness of KM systems[1]. The expensive initial investment, poor quality of patient data or information, inequality in status among physicians, organizational culture, lack of centralized system knowledge bases, and lack of trust. As for the EBMP, existing challenges include a lack of funds for the application of evidence-based medicine, limited access to modern technologies and modern medical research, the complexity of joint decision-making, perception of low expectations of change in the target audience, lack of communication between researchers and policymakers, lack of applied research, difficulties in finding certain information, poor usability of the interface, and problems with access to health IT applications[2].

According to a 2011 study by Anita Kothari et al., which reviewed 83 articles, the barriers discussed in these studies can be classified into individual or organizational barriers. These classifications are summarized in the table below.

**Table 3-3**: Barriers of KM in Healthcare Institutions

| Individual Barriers | Organizational Barriers |
|---|---|
| Change (management, ownership, turnover) **can cause distress and be a barrier to KM.** | **Organizational culture and structure**: a top-down approach, separate departments. |
| Information overload **can hinder effective KM.** | Lack of "ask why" thinking and lack of trust can impede KM efforts. |
| Unqualified individuals, **inappropriate authorities, or those resistant to change.** | Not being open to sharing Knowledge (e.g., lessons learned) hinders KM. |
| Insufficient technology skills **can** | **Time and financial resources** for |

[1] Marija Lugonjic, Tatjana Jovanovic and Vera Krampot, KNOWLEDGE MANAGEMENT IN THE HEALTHCARE SYSTEM, conference paper, In 40th International Conference on Organizational Science Development Values, Competencies and Changes in Organizations, Faculty of Organizational Sciences, University of Maribo, 2021, pp: 562-563.
[2] Leila Shahmoradi, Reza Safadari and Worku Jimma, OP CIT, p 550.

| | |
|---|---|
| **limit participation in KM** | implementing KM can discourage employees. |
| **Lack of motivation due to minimal incentives, time constraints, or lack of desire.** | Difficulty in presenting immediate benefits, leading to KM being undervalued. |
| **The loss of a** KM champion **can devastate the initiative.** | Barriers related to **technology:** software incompatibility, malfunctions, and balance. |
| Lack of support **from management or employees can hinder full participation.** | Intangible nature of knowledge and lack of a clear KM definition. |
| | Lack of clarity on how to measure KM processes or capture/ store Knowledge. |
| | **Conflict or disagreement** between employees' con lead to resentment and hinder KM. |
| | Concerns about the **timing of KM implementation** and searching for a successor. |
| | Monetary rewards can cause **resentment,** competition, and loss of focus. |
| | Over-management and **political interference** can force premature KM initiatives. |

**Source:** prepared by the researcher based on Anita Kothari et al, Lessons from the business sector for successful knowledge management in health care: A systematic review, BMC Health Services Research, volume 11, issue 173, 2011, pp 4-5.

The table above organizes barriers to clearly distinguish between individual and organizational factors affecting knowledge management.

To summarize, specific individual-level barriers can be mitigated through strategies such as training or allocating sufficient time for KM activities. Organizational environments that prioritize openness and foster a shared culture,

rather than emphasizing rigid reporting hierarchies, are more conducive to the successful implementation of KM strategies. While management support remains essential for the success of the KM initiative, the role of human resources departments in this context is less definitive. An equally important factor is the establishment of a clear KM framework or strategy that integrates human factors. Lastly, it is crucial to address the challenge associated with IT infrastructure to ensure the smooth functioning of KM systems[1].

# 2. The Algerian Health System and Knowledge Management

The healthcare sector in Algeria has undergone significant structural and organisational transformation, consistently prioritised by the Algerian state to address the evolving challenges of meeting population health needs. These efforts aim to ensure an adequate level of healthcare services, achieve public satisfaction with health policies, and establish healthcare as a vital instrument for both human and economic development.

## 2.1 Evolution of the Health System in Algeria

The Algerian national health system encompasses a range of activities and resources designed to protect and promote individual health. It has been developed comprehensively and cohesively within the framework of a national health strategy. The system is firmly rooted in strengthening the public sector to ensure the authentic advancement of free healthcare, with management conducted by the state at both national and local levels[2].

[1] Anita Kothari and al, OP CIT, p 5.

[2] Maten, Zineb, Upgrading Health Performance in Algerian Hospital Institutions : A Comparative Study Between the Public and Private Sectors, PhD thesis, Marketing

Since its independence, Algeria's health system has been marked by continuous change, necessitating periodic reforms in policies, organizational structures, and financing mechanisms. These reforms reflect the state's ongoing commitment to improving the health conditions of its citizens. Among the notable milestones was the adaptation of the principle of free medical care, which introduced a new structural organization through the creation of health sectors under the February 1973 decree. This reform eliminated centralized healthcare delivery and enhanced access to quality medical services[1].

The historical evolution of Algeria's healthcare system can thus be divided into several fundamental phases, as outlined below.

### 2.1.1 The Colonial Period

During the colonial period, Algeria experienced severe deterioration in its economic and social conditions due to the discriminatory colonial policies implemented by France, particularly in the provision of healthcare. These policies significantly contributed to the worsening health situation of the Algerian population, characterised by the spread of diseases, epidemics, poverty, and famine.

Following the Soummam Conference on 20 August 1956, the Algerian Revolution was reorganized, granting the healthcare sector an institutional character. The system was structured into five levels: *qisma* (sector), district, region, zone, and wilaya, with the industry serving as the foundational unit. The district ensured coordination between sectors. Health facilities were typically simple structures, such as huts, clay houses, or adapted shelters, which

Specialization, Department of Commercial Sciences, Faculty of Economic, Commercial, and Management Sciences, University of Algiers 3, Algeria, 2022/2023, p.127.

[1] Rahamnia, Saida, The Status of Health and Health Services in Algeria, *Social Researcher Journal*, Volume 11, Issue 01, 2015, p. 223.

functioned as hospitals. Equipment and medical supplies were fundamental, often obtained from colonial institutions through Algerians working in European hospitals who were affiliated with the National Liberation Front (FLN).

Most healthcare activities during this period focused on providing medical examinations for mujahideen (freedom fighters) and performing minor surgical operations. Additional efforts were made to prevent infectious diseases and train medical assistants. In some instances, these services were extended to the civilian population in remote villages and mountainous areas[1].

### 2.1.2 Post-Independence Reforms

**Phase one: 1963- 1973**

Following independence, Algeria had approximately 5,000 physicians, only 5% of whom were Algerian, to meet the healthcare needs of a population of 10.5 million. This period was characterized by poor health indicators and severely limited resources. The Ministry of Health focused on two primary objectives[2]: reducing inequalities in the distribution of medical personnel, both public and private, to facilitate access to treatment, and combating diseases to reduce mortality rates, particularly those caused by communicable illnesses.

During this stage, numerous health programs were introduced to protect disadvantaged populations and prevent the development of chronic conditions. Mandatory vaccination was also imposed for all children. At the same time,

[1]Maouedj, Essaid, The Impact of Information Systems on the Quality of Health Service in Algeria: A Case Study of Mohamed Lamine Debaghine University Hospital Center - Bab El Oued, Algiers, PhD diss., Health Economics and Management Specialization, Department of Management Sciences, Faculty of Economic, Commercial, and Management Sciences, University of Algiers 3, Algeria, 2022/2023, pp. 125-126.

[2] Ayyad, Leila, and Ahmed Helal, A Reading into the Reforms of the Healthcare System in Algeria, *Journal of Economic Alternative*, Volume 03, Issue 01, 2016, p. 154.

pharmaceutical production, importation, and wholesale distribution were primarily managed by the Algerian Central Pharmacy (PCA)[1].

**Phase Two: 1974- 1989**

Building upon the groundwork of the first decade, the second phase reforms were distinguished by three significant developments of Algeria's healthcare policy[2]:

- The introduction of free treatment in public healthcare facilities beginning in January 1974, embodying the principle of "health for all citizens", regardless of income or social status.
- Reform of the educational system, particularly in medical studies, aimed at improving the quality of the training and strengthening academic supervision. This led to a significant increase in the number of medical practitioners across all specialities.
- The establishment of the "health sector" as a pubic administrative institution with financial autonomy, comprising public healthcare structures dedicated to prevention, diagnosis, treatment, hospitalization, and medical rehabilitation. These institutions were designed to meet the healthcare needs of municipal populations under the supervision of the Ministry of Health.

Additionally, this stage was marked by[3]:

- The construction of a large number of healthcare facilities,

[1] Al-Abasi, Ramzi: Evaluating the Quality of Health Services in Private Hospital Institutions from the Customer's Perspective: A Case of a Sample of Institutions in the Wilaya of Annaba, PhD thesis, Business Administration Specialization, Department of Management Sciences, Faculty of Economic, Commercial, and Management Sciences, University of Echahid Hamma Lakhdar - El Oued, 2020/2021, p. 07.
[2] Ayyad, Leila, and Ahmed Helal, op cit., p.155.
[3] Al-Abasi, Ramzi, op. cit., p.8.

- The establishment of 13 university hospital centres tasked with three functions: treatment, education, and research,
- A substantial improvement in public health indicators.

**Phase Three: 1990-2011**

Despite the progress achieved in the preceding decades, Algeria's healthcare system faced numerous challenges during this period. Free healthcare, rising healthcare expenditures, and the deterioration of service quality created significant obstacles that necessitated reform policies and a strategic vision aimed at improving efficiency and effectiveness. This stage can be divided into two sub-periods[1]: 1990-2002 and 2002-2011.

**1990-2002:**

This was among the most challenging phases in Algeria's modern history, marked by political instability and security issues that disrupted nearly all sectors, including the healthcare sector. Many healthcare infrastructures were damaged or destroyed. Nevertheless, the system underwent gradual restructuring through several initiatives, including[2]:

- Implementation of the regional health project, initiated in the 1980s, as a framework for decentralization, inter-sectoral coordination, and balanced socio-health development.
- Reorganization of the National Institute of public Health under Decree No. 99/05 of 2 January 1993[3].

[1] Othman, M'barka: Analyzing Public Health Service Policy in Algeria (2011–2018): Public Health Service in the Wilaya of Djelfa as a Model, PhD thesis, Public Policy Specialization, Department of Political Science, Faculty of Political Science and International Relations, University of Algiers 3, 2020/2021, p. 76.
[2] Al-Abasi, Ramzi, op. cit., p.8.
[3] Jean-Paul Grangaud, Les systèmes de santé en Algérie, Maroc et Tunisie, Défis nationaux et enjeux partagés, Ipemed, 2012, p. 54.

- Establishment of the support institutions for the Ministry of Health, such as the National Laboratory for Pharmaceutical Products control (GNCPP), the Central Hospital Pharmacy (PCH), the National Blood Agency (ANS), and the National Centre for Pharmacovigilance and Equipment Vigilance (CNPM).
- Issuance of Executive Decree No. 97-465 of 2 December 1997, which defined the rules for creating and managing hospital institutions. This reform categorized public healthcare institutions into university hospitals, health sectors, and specialized hospitals[1].
- Issuance of Decree No. 98/227 of 13 July 1998, concerning state expenditures on medical equipment and central operations.

**2002-2011:**

This sub-period represented a phase of restored confidence and stability after years of crisis. The state devoted significant attention to rebuilding the healthcare sector, with key reforms including[2]:

- Renaming the Ministry responsible for healthcare in June 2002 to the "Ministry of Health, Population, and Hospital Reform".
- Conducting a comprehensive inventory of medical and non-medical equipment to modernize resources.
- Establishing an independent directorate within the Ministry to oversee equipment, maintenance, and the creation of a regional-national map of heavy and specialized medical technologies.
- Transforming hospital pharmacies into independent entities with clearly defined responsibilities and mandatory professional requirements.

[1] Ayyad, Leila, and Ahmed Helal, op cit, p. 157.
[2] Othman, M'barka, op. cit., pp. 81-82.

- Improving hospital communication and hygiene through better signage, information networks, and upgraded reception conditions.
- In 2007, the government separated hospitalization from treatment to reinforce decentralization and bring healthcare services closer to citizens.
- Issuing Executive Decree No. 07-140 of 19 May 2007, which restricted the healthcare sector into three categories: public hospital institutions, public community health institutions, and specialized health institutions. Former health centres were reclassified as multi-service clinics or treatment rooms, depending on their facilities. The new organizational framework was officially implemented on 1 January 2008.

In 2007, telemedicine was introduced in Algeria, initially connecting Bir Tarraria Hospital in Algiers with Ouargla Hospital, located more than 800 kilometres away. The initiative began with a lecture, followed by remote consultations, joint case presentation, and a surgery supported by the Centre for Advanced Technology Development. Subsequently, three additional healthcare centres were equipped with telemedicine services, representing a significant advancement in the modernization of Algeria's healthcare sector[1].

Additionally, the gradual introduction of the contractual system for hospital care began in this period. It was fully implemented in 2009, further reinforcing the shift toward efficiency, accountability, and modernisation in hospital management.

[1]MAGBI Mimouna and Si AHMED Nadir, The Impact of Telemedicine on Improving Public Health Services: A Study of International Experiences and the Algerian Case, REVIEW OF "ECO RESEARCH", Volume 19, Issue 2, 2024, pp: 97-98.

### 2.1.3 Contemporary Transformations

**Phase one: 2011-2018**

Public healthcare services remained one of Algeria's top national priorities during this period, with the government intensifying its efforts to improve and expand the system. The Ministry of Health aims to establish and develop 700 new healthcare institutions beginning in 2011. A key focus was addressing shortages in hospital beds, particularly in the southern provinces. From 2013 onward, new facilities were opened, including 90 public hospitals and 80 specialized institutions dedicated to ophthalmology, burn treatment, oncology, and nephrology.

The expansion of telemedicine continued under the leadership of the Centre for Advanced Technology Development (CDTA). In 2015, Tamanrasset Public Hospital was connected to Mustapha Pasha University Hospital in Algiers, enabling real-time consultations. The Following year, an experimental platform was established, linking the Regional Military Hospital of Ouargla with the Central Army Hospital in Algiers, and inaugurated by Lieutenant General Ahmed Gaïd Salah. In the same years, the first remote cardiac examination was conducted between Tamanrasset and Nadir Mohamed University Hospital in Tizi Ouzou. These initiatives highlighted Algeria's efforts to enhance healthcare access in remote regions[1].

In parallel, the Ministry of Health launched the "Sihatek" Project, originally agreed upon in 2008 through collaboration with the Ministry of Information and Communication Technologies, and formally implemented in late 2018. This

[1] Lahchem Kasmia and Kaci Yacine, Telemedicine and the introduction of ICT as a tool for developing the health system in Algeria, MAAHEF, volume 15, issue 02, 2020, p 198.

digital health transformation project was structured around three main objectives[1]:

- Enhancing patient care through the creation of electronic medical records to reduce paperwork and streamline healthcare delivery.
- Improving the efficiency of pubic healthcare services and reducing costs, while equipping practitioners with essential guidance and information.
- Minimizing the burden of patient travel, particularly from southern and high plateau regions, thereby saving time and expediting treatment.

Additionally, the adoption of Health Law No. 18-11 marked a turning point in the healthcare reform. This law reaffirmed the state's commitment to guaranteeing free medical care for all citizens across the national territory, while emphasizing the diversification of funding sources beyond the state budget. It mandated contractual arrangements between public healthcare institutions and financing bodies such as social security funds, insurance providers, local authorities, and mutual societies.

Key provisions of the law included[2]:

- Defining a comprehensive national health map to guide equitable coverage and resource allocation.
- Strengthening preventive medicine to control disease prevalence.
- Supporting domestic pharmaceutical production and encouraging medical research.
- Expanding paramedical training programs to address workforce shortages.

[1] Maten, Zineb, op. cit., p. 138.
[2] Law No. 18-11 of 18 Shawwal 1439 AH, Corresponding to July 2, 2018, Relating to Health: *Official Journal of the Algerian Republic*, Issue 46, pp. 5-6.

- Guaranteeing universal health protection, with the public sector as the backbone of the system and the private sector serving as a complementary, coordinated actor.

**Phase Two: 2018- present**

Algeria's healthcare system has undergone rapid modernization, primarily driven by the challenges of the COVID-19 pandemic in 2020. The crisis accelerated the adoption of digital health solutions and telemedicine, which improved access to remote areas with limited infrastructure and a high poverty rate. These technologies provided sustainable solutions for managing chronic diseases, reducing mortality, and enhancing access to healthcare services[1].

In addition, six major digital projects were launched to modernize healthcare structure and operations[2]:

- The Digital Hospital Project.
- The Digitisation of contractual relations with social security agencies.
- The Integration of biometric ID data into patients' electronic medical records.
- The Digitization of central administration and its connection to healthcare institutions.
- The Digitization of healthcare activity planning.
- The E-pharmacy Project.

Alongside these reforms, Algeria introduced several digital platforms and applications to improve healthcare delivery[1]:

[1] Jerboua, Mounira, Telemedicine: A Necessity Imposed by the COVID-19 Pandemic, *Algerian Journal of Legal and Political Sciences*, Volume 58, Issue 02, 2021, p. 145

[2] Zidane, Ammar, and Hassan Ben Kadi: The Algerian Experience in Digitalizing the Health Sector, International Journal of Legal and Political Sciences, Volume 07, Issue 01, 2023, pp. 163-164.

- The COVID-19 Digital Monitoring Platform, an official tool by the Ministry of Health to track the pandemic's evolution.
- Sihhatech, a digital appointment system linking patients, hospitals and pharmacies.
- Esiha, one of the most advanced national e-health platforms
- Besiha, a new digital health platform.

Mobile applications have also been deployed to strengthen citizen access to healthcare services, including Doctors of Algeria, Eyadati (My clinic), Tabib Dz, and Dzair Pharm[2].

## 2.2 Structure of the Algerian Health System

The Algerian health system is primarily governed by the Ministry of Health, Population, and Hospital Reform, with a hierarchical structure comprising several Key levels: national (central), regional, provincial, and local (grassroots).

### 2.2.1 Central Level

The Ministry of Health, Population, and Hospital Reform has the responsibility of leading the central-level system, which is comprised of the following components[3]:

[1] Rrouf, Radia, Digitalization of Health and Its Role in Modernizing and Upgrading the Health Sector in Algeria, Al-Aseel Journal for Economic and Administrative Research, Volume 09, Issue 01, 2025, pp. 292-294.

[2] Kada Amer, E-Health Services in Algeria: Healthcare Applications, Platforms, and Medical Services as a Model, Research Paper presented at the National Conference on Governance of the Healthcare System and Its Impact on Enhancing the Right to Health and Sustainable Development, Mustafa Stambouli University - Mascara, May 05, 2024, p. 05.

[3] Houmid, Ibrahim, Health Expenditure and Its Impact on Improving the Quality of Health Services in Public Health Institutions from the Patients' Perspective: A Case Study of the Public Hospital Institution of Ain Taya, PhD diss., Health Economics and Management Specialization, Department of Management Sciences, Faculty of Economic, Commercial, and Management Sciences, University of Algiers 3, Algeria, 2022/2023, pp. 133-134.

- The Minister: he is responsible for creating plans to promote the development of the sector in various areas.
- The Minister's Office: This office consists of the Director, supported by seven assistants, along with four other staff members who are primarily responsible for conducting studies and research in areas related to their expertise. They also actively participate in the minister's government operations.
- The General Secretariat: Led by a secretary-general, with the help of two study directors and a postal office, this office's responsibilities include coordinating between central structures and the centers under its authority, evaluating their performance, and guiding them.
- The General Inspectorate: it is supervised by six inspectors.
- The Central Directorates: Eight central directorates, each specializing in specific areas, play an essential role in the ministry. These include the Directorate of Population, the Directorate of Prevention, the Directorate of Health Services, the Directorate of Pharmacy and Medicine, the Directorate of Training, the Directorate of Planning, the Directorate of Regulation, and the Directorate of Disputes.

### 2.2.2 The Regional Level (Health Districts)

To promote equity and guarantee equal access to healthcare services, the Algerian health system introduced regionalization in 1995. This initiative aims to balance the provision of healthcare with the diverse needs of the population. The Regional Council, a multi-sectoral body, plays a central role in fostering collaboration among stakeholders and civil society. It is tasked with defining strategic goals, facilitating decision-making processes, and allocating resources effectively.

From both a legal and functional standpoint, regional health inspectors operate as affiliates of the National Institute of Public Health, focusing on specialized tasks related to health information. However, it is noteworthy that these regional institutions remain largely theoretical due to the lack of financial autonomy and the absence of a clear framework[1]. The table below outlines the provinces assigned to the five health regions in Algeria.

**Table 3-4:** Distribution of Provinces According to Health Regions

| Health Regions | Central Region (Algiers) | Western Region (Oran) | Eastern Region (Constantine) | Southwestern Region (Bechar) | Southeastern Region (Ouargla) |
|---|---|---|---|---|---|
| **The provinces under the region** | Algiers, Blida, Boumerdes, Tipaza, Tizi Ouzou, Bejaia, Bouira, Medea, Djelfa, Bordj Bou Arreridj, And Ain Defla. | Oran, Relizane, Chlef, Mascara, Ain Temouchent, Sidi Bel Abbes, Tlemcen, Saida, Mostaganem, Tissemsilt, and Tiaret. | Constantine, Annaba, Guelma, Skikda, El Tarf, Tebessa, Khenchela, Mila, Souk Ahras, Oum El Boughi, Jijel, Setif, Batna, and M'sila. | Bechar, Beni Abbes, Tindouf, Adrar, Bordj Baji Mokhtar, Timimoun, Naama, and El Bayagh. | Ouargla, Touggourt, Ghardaia, El Meniaa, Illizi, Djanet, Tamanrasset, Ain Salah, El Oued, Biskra, Ouled Djellal, Ain Guezzam, El M'ghair, and Laghouat. |

**Source:** Maten, Zineb, Upgrading Health Performance in Algerian Hospital Institutions: A Comparative Study Between the Public and Private Sectors, PhD thesis, Marketing Specialization, Department of Commercial Sciences, Faculty of Economic, Commercial, and Management Sciences, University of Algiers 3, Algeria, 2022/2023, p.130.

### 2.2.3 Provincial (The Wilaya) Level

At the provincial level, these structures are in place:

[1] عدمان مريزق، واقع جودة الخدمات في المؤسسات الصحية العمومية، أطروحة دكتوراه، قسم علوم التسيير، كلية العلوم الاقتصادية والعلوم التجارية وعلوم التسيير، جامعة الجزائر 3، الجزائر، 2008/2007، ص ص: 189-190.

- Provincial Directorate of Health and Population: Each province in Algeria has its own Provincial Directorate of Health and Population. The functions of these directorates are outlined in Executive Decree No. 97-267, dated 14 July 1997, which specifies the regulations governing their organization and operation[1].
- University Hospital Centres (UHC): These are public institutions with administrative status, legal personality, and financial independence. An executive decree establishes them following a joint proposal from the Minister of Health and the Minister of Higher Education and Scientific Research. The Minister of Health oversees the administrative management of the UHC. At the same time, the Minister of Higher Education and Scientific Research supervises the pedagogical aspects, given the dual role of these institutions in medical training and scientific research[2].
- University Hospital Institution (UHI): Created by Executive Decree 03-270 on 13 August 2003, these public institutions are specifically designed for diagnosis, treatment, prevention, and the implementation of national health programs. They also collaborate with higher education institutions to ensure medical training and conduct research in the health sciences. The responsibilities of these institutions mirror those of university

[1]Ayyad, Leila, and Ahmed Helal, A Reading into the Reforms of the Healthcare System in Algeria, Journal of Economic Alternative, Volume 03, Issue 01, 2016, p.158.

[2] Souar, Youcef, and Abdelkrim Mansouri**,** Evaluating the Efficiency of Algerian University Hospital Centers Using Data Envelopment Analysis, *Journal of Economic Notebooks*, Volume 04, Issue 02, 2013, p. 109.

hospitals. In Algeria, there is only one such institution, which is the 1 November University Hospital in Oran[1].

### 2.2.4 The Local level

At the Local level, the health system is organized as follows[2]:

- Hospital Institutions: These are public, administrative institutions with legal personality and financial autonomy, placed under the authority of the provincial governor (wali). They include diagnostic, treatment, rehabilitation, and medical care services, covering the population of a single municipality or a group of municipalities.
- Specialized Hospital Institutions (SHI): These Hospitals, regulated by Executive Decree No. 465-97 dated 2 December 1997, are designed to provide specialized care in specific medical fields, such as ophthalmology, cardiology, pediatrics, obstetrics, or gynecology. What distinguishes these hospitals is their focused approach to providing specialized services, enabling in-depth care in a particular area of medical practice. Examples include cardiac hospitals, internal medicine hospitals, neurological hospitals, nephrology and urology hospitals, obstetrics and gynecology hospitals, and orthopedic hospitals.
- Public Hospital Institutions (PHI): These institutions were established under Executive Decree No. 07-140, dated 19 May 2007, which governs the creation, organization, and operation of public hospital institutions and public community health institutions. These public entities, under the authority of the provincial governor, have legal personality and financial independence. They provide diagnostic, treatment, rehabilitation, and

[1] Mennad, Naima, and Mohamed Ziad, The Contribution of Digital Transformation Applications in the Health Sector in Algeria: Reality and Challenges, Algerian Journal of Public Finance, Volume 15, Issue 01, 2025, p. 23.
[2] Houmid, Ibrahim, op cit, pp.137-138.

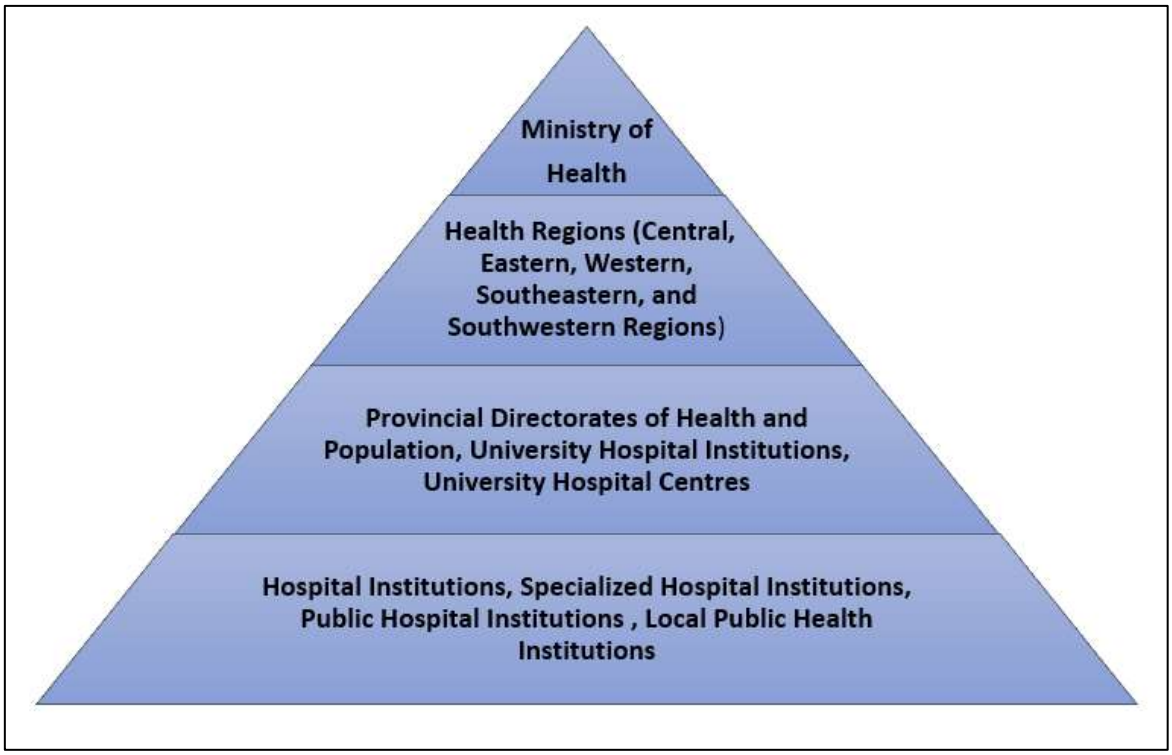
medical care services to the population of a municipality or a group of municipalities.

- Local Public Health Institutions (LPHI): Following the issuance of Executive Decree No. 07-140 on 19 May 2007, the health sectors were restructured into public hospital institutions and public health institutions. A Public Health Institution includes a multi-service clinic and treatment rooms. These facilities have undergone several changes to adapt to the new health map requirements[1]:
    - Multi-Service Clinics: Representing the basic unit for public healthcare, these clinics are administratively linked to the Local Public Health Institutions. In urban areas, a multi-service clinic covers approximately 25,000 citizens, while in rural areas, it serves between 3,000 and 4,000 citizens. The variance in coverage is due to various factors, such as population needs, social, economic, and geographical constraints, as well as the isolation of some regions.
    - Treatment Rooms: These rooms serve as the closest medical units to the population, where primary or basic treatments are provided. At least one treatment room is equipped in each neighbourhood, both in urban and rural areas.

The following diagram summarizes the organizational Hierarchy of the Health System in Algeria:

**Figure 3-2:** The Organizational Hierarchy of the Health System in Algeria

[1] Mennad, Naima, and Mohamed Ziad, The Contribution of Digital Transformation Applications in the Health Sector in Algeria: Reality and Challenges, Algerian Journal of Public Finance, Volume 15, Issue 01, 2025, p. 235.




**Source:** Prepared by the researcher

## 2.3 Knowledge Management in the Algerian Health Sector

Algeria, with a population of approximately 44 million and a land area of 2.4 million square Kilometers, 80 % of which is desert, faces significant challenges in ensuring equitable and adequate health coverage. Meeting the needs and expectations of its citizens requires the establishment of an appropriate resilient health infrastructure, the availability of qualified and competent human resources, and the implementation of effective mechanisms to sustain and further develop these resources while guaranteeing the provision of high-quality services. Knowledge management represents one such mechanism. The subsequent section provides a more detailed elaboration on the requirements.

### 2.3.1 Physical Infrastructure of the Public Health Sector

The Algerian public health sector can be outlined in terms of its existing infrastructure as follows:

**Table 3-5:** Census of Public Health Institutions in Algeria (2024)

| The province of Algeria | | Number of | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | U.H.I | U.H.C | H. I | S.H. I | P.H. I | L.P.H. I | |
| • | Oran | 1 | 1 | 1 | 9 | 2 | 9 | 23 |
| • | SETIF | | 1 | 1 | 4 | 5 | 9 | 20 |
| • | CONSTANTINE | | 1 | 1 | 4 | 4 | 6 | 16 |
| • | ALGER | | 5 | | 12 | 8 | 10 | 35 |
| • | BATNA | | 1 | | 3 | 12 | 11 | 27 |
| • | TIZI OUZOU | | 1 | | 4 | 7 | 8 | 20 |
| • | BEJAIA | | 1 | | 2 | 6 | 8 | 17 |
| • | SIDI BEL ABBES | | 1 | | 3 | 6 | 7 | 17 |
| • | TELEMCEN | | 1 | | 1 | 5 | 7 | 14 |
| • | MOSTAGANEM | | 1 | | 2 | 5 | 6 | 14 |
| • | BLIDA | | 1 | | 3 | 4 | 4 | 12 |
| • | ANNABA | | 1 | | 3 | 3 | 3 | 10 |
| • | DJELFA | | | 1 | 1 | 8 | 5 | 15 |
| • | BORDJ BOU ARRERIDJ | | | 2 | 2 | 3 | 6 | 13 |
| • | BECHAR | | | 1 | 2 | 5 | 4 | 12 |
| • | BOUIRA | | | 1 | 1 | 5 | 5 | 12 |
| • | SKIKDA | | | 1 | 1 | 4 | 5 | 11 |
| • | AIN TEMOUCHENT | | | 1 | 1 | 4 | 4 | 10 |
| • | OUARGLA | | | 1 | 2 | 2 | 3 | 8 |
| • | EL OUED | | | 1 | 2 | 1 | 4 | 8 |
| • | TAIRAT | | | | 3 | 5 | 7 | 15 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| • | MESCARA | | | | 2 | 7 | 5 | 14 |
| • | TEBESSA | | | | 1 | 7 | 6 | 14 |
| • | M'SILA | | | | 2 | 6 | 6 | 14 |
| • | CHLEF | | | | 1 | 7 | 6 | 14 |
| • | KHENCHELA | | | | 1 | 7 | 6 | 14 |
| • | LAGHOUAT | | | | 2 | 4 | 7 | 13 |
| • | BISKRA | | | | 3 | 4 | 6 | 13 |
| • | TIPAZA | | | | 3 | 5 | 4 | 12 |
| • | GUELMA | | | | 1 | 5 | 5 | 11 |
| • | MILA | | | | 1 | 5 | 5 | 11 |
| • | RELIZANE | | | | 1 | 4 | 5 | 10 |
| • | JIJEL | | | | 1 | 3 | 6 | 10 |
| • | OUM BOUAGHI | | | | 1 | 5 | 3 | 9 |
| • | ADRAR | | | | 2 | 4 | 3 | 9 |
| • | SAIDA | | | | 1 | 4 | 4 | 9 |
| • | SOUK AHRAS | | | | 1 | 4 | 4 | 9 |
| • | NAAMA | | | | 1 | 4 | 4 | 9 |
| • | GHARDAIA | | | | 1 | 3 | 4 | 8 |
| • | TISSEMSILT | | | | 1 | 3 | 3 | 7 |
| • | TOUGGOURT | | | | 1 | 3 | 2 | 6 |
| • | TAMANRASSET | | | | 1 | 1 | 4 | 6 |
| • | MEDEA | | | | | 5 | 8 | 13 |
| • | AIN DEFLA | | | | | 5 | 4 | 9 |
| • | EL TARF | | | | | 4 | 4 | 8 |
| • | EL BAYADH | | | | | 3 | 4 | 7 |
| • | BOUMERDES | | | | | 3 | 4 | 7 |
| • | ILLIZI | | | | | 1 | 4 | 5 |
| • | BENI ABBES | | | | | 2 | 3 | 5 |
| • | OULED DJELLAL | | | | | 1 | 3 | 4 |
| • | DJANET | | | | | 1 | 3 | 4 |
| • | EL M'GHAIR | | | | | 2 | 2 | 4 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| • | TINDOUF | | | | | 1 | 2 | 3 |
| • | TIMIMOUN | | | | | 1 | 2 | 3 |
| • | IN SALAH | | | | | 1 | 1 | 2 |
| • | BORDJ BADJI MOKHTAR | | | | | 1 | 1 | 2 |
| • | EL MENIAA | | | | | 1 | 1 | 2 |
| • | IN GUEZZAM | | | | | | 2 | 2 |
| | **Total** | **1** | **16** | **12** | **94** | **231** | **277** | **631** |

**Source**: Prepared by the researcher based on the ALGERIAN MINISTRY OF HEALTH, Health Institutions, https://sante.gov.dz/etablissements-de-sante/,accessed 15/04/2024, 20:00.

**Notes**: **U.H.I**: University Hospital Institution**, U.H.C**: University Hospital Center, **H.I**: Hospital Institution, **S.H.I**: Specialized Hospital Institutions, **P.H.I**: Public Hospital Institution, **L.P.H.I:** Local Public Health Institution.

An analysis of **Table** 19 reveals that public health institutions in Algeria are distributed across the entire national territory. These institutions are classified into six main types, which differ in terms of size, levels of professionalization, specialization, and the resources allocated to them. They provide a comprehensive and integrated range of health services in accordance with the principle of treatment hierarchy. In total, there are 631 Public institutions, including one University Hospital Institution, 16 University Hospital Centres, 12 hospital institutions, 94 specialized hospital Institutions, 231 Public Hospital Institutions, and 277 Local Public Hospital Institutions. However, their number decreases progressively toward the southern provinces, reflecting an imbalance in their geographical distribution. This disparity is primarily attributed to population density, as the northern provinces have significantly higher population concentrations.

### 2.3.2 Human Resources in the Public Health Sector

Human resources constitute the core enabling capacity of the public health system, shaping service availability, quality, and equity. The following outlines the composition and deployment of key professional categories.

**Table 3-6**: Health Sector Employees

| Occupation | Number of Employees | Percentage (%) |
|---|---|---|
| Medical Practitioner | 54338 | 19.87 |
| Paramedical | 146293 | 53.51 |
| Administrative Staff | 28092 | 10.27 |
| Technician | 8011 | 2.93 |
| Service Assistant | 34944 | 12.78 |
| Other Positions | 1726 | 0.63 |
| Total | 273404 | 100 |

**Source:** préparée par les chercheurs sur la base du Ministère de la Santé, de la Population et de la Réforme hospitalière, Santé en chiffres : année 2019, Direction des études et de la planification, édition de février 2021, p. 146.

The health sector employed a total of 273,404 staff members, distributed across several professional categories. The paramedical staff constituted the largest group, with 146,293 employees (53.51%), reflecting the sector's reliance on nursing and allied health professions. Medical practitioners accounted for 57,338 employees (19.87%), which is less than one-quarter of the workforce, highlighting a structural imbalance where physicians are significantly outnumbered by paramedical staff. Administrative personnel comprised 10.27 % (28,092 employees). The health sector employed a total of 273,404 staff members, spread across various professional categories. The paramedical staff made up the largest group, with 146,293 employees (53.51%), highlighting the sector's dependence on nursing and allied health professions. Medical practitioners numbered 57,338 (19.87%), representing less than one-quarter of the workforce, which indicates a structural imbalance, as physicians are significantly outnumbered by paramedical staff. Administrative personnel accounted for 10.27% (28,092 employees), indicating the bureaucratic and organizational needs of the health system. Service assistants accounted for 12.78% (34,944 employees), providing vital non-medical support, while

technicians comprised just 2.93% (8,011 employees), reflecting a limited capacity in technical and laboratory services. Other roles represented a small 0.63% (1,726 employees). Overall, the data suggest a health system heavily dependent on paramedical staff, with comparatively fewer physicians and technicians, and a large portion of administrative and support staff roles, highlighting the bureaucratic and organizational needs of the health system. Service assistants represented 12.78% (34,944 employees), providing essential non-medical support, while technicians comprised only 2.93% (8,011 employees), indicating a limited capacity in technical and laboratory services. Other positions accounted for a small 0.63% (1,726 employees). Overall, the data suggest a health system heavily reliant on paramedical staff, with relatively fewer physicians and technicians, and a substantial proportion of administrative and support roles.

### 2.3.3 KM Practices in Algerian Public Health Institutions

Knowledge Management (KM) Practices in Algerian Public Health Institutions are still in an early stage compared to specific sectors, such as universities. Although most health facilities lack formal KM units or offices, recent digitalization efforts have begun to establish the foundation for a national, institutional knowledge system.

- **Current State and Ongoing Initiatives**

Building on sector-wide modernization objectives, the current state reveals an absence of dedicated organizational structures for knowledge management across most health administrations, in contrast to an expanding portfolio of digital transformation projects that constitute an initiative, including the “Digital Hospital” project, the digitalization of contractual relations with social security bodies, and the integration of biometric data into the electronic medical records, the digital interconnection of the central administration with health institutions,

the digitalization of health facility activity plans, and the "e-pharmacy"[1]. Collectively, these initiatives aim to enhance sectoral visibility and management of human and pharmaceutical inventories, thereby enabling the subsequent deployment of more mature knowledge-management tools at the national level. According to, success in these initiatives logically paves the way for a unifying cornerstone: the Electronic Medical Record.

- **The Electronic Medical Record as a Strategic Pivot**

There is an impact of knowledge management on health records to improve the quality of health care services, through the theories and practices of knowledge management and the possibility of facilitating narrowing the gap of patient medical records, which will eventually move to improve the quality of health care, which can be assessed through the quality management model. We also explore the relationship between knowledge management and health records to enhance the quality of healthcare by examining theoretical ideas about knowledge management, health records, decision support systems, clinical practice guidelines, and ontology, with the aim of narrowing the decision-making gap[2].

The historical trajectory of the Electronic Medical Record in Algeria originates from the 2002 agreement between the Ministry of Health and the European Union, which aimed to support sectoral modernization. Further consolidating this trajectory, in 2012, the University Hospital Institution of Oran (UHI Oran) was selected as a pilot site, alongside the Directorate of Health and Population and the medical clinic, to develop the Health Information and

[1] Ben Jomaa, Mohamed, and Zoulikha Sanoussi, Digitalization for Reform of Algerian Public Hospitals: Opportunities and Challenges, Journal of New Economy, Volume 14, Issue 01, 2023, pp. 612-613.

[2]ADHIL ALSUBAIE, OTHMAN AQILI, The Role of Medical Records Management in Activating Knowledge Management Applications in Saudi Arabia Hospitals, International Journal of Advances in Computer Science and Technology, volume 12, No 1, 2023, p 18.

Decision System (SIS/SID) comprising: (a) a centralized data warehouse, (b) a Human Resources Information System (HRIS), and (c) the Electronic Medical Record (DEM) accessible via the SIS.DZ portal[1].

In terms of financing and implementation, 3 million was allocated by UHI Oran, and the European Union provided an additional €1 million. The initial deployment covered four departments and expanded to 98% of UHI Oran's departments by 2014[2]. Functionally, the DEM encompasses patient registration and hospitalization, appointment management, medical database administration, nursing care plans and medical records, clinical decision support and clinical data dictionaries, laboratory results, documentation of surgical interventions, radiology services, medication /therapeutic file management, billing, and querying/ reporting, with confidentiality, security, and traceability ensured via a secure network[3].

Although implementation remains partial across several public and private facilities, the stated policy direction is toward a nationwide rollout of a unified EMR linking all health institutions. Thus, the EMR becomes the connecting hinge between the digital initiatives outlined above and the national health information system described below.

- **National Health Information System**

Consistent with the EMR's pivotal role, Algeria's national health information system comprises six subsystems: (1) the Human Resources Information

[1] Taheri, Taiba, and Fatima Zohra Taheri, The Reality of Implementing the Electronic Medical Record in Algeria, *Journal of Human Sciences*, Issue 47, 2017, p. 287

[2] Cherif, Nedjma, Rachida Adad, and Essaid Maouedj, Towards Implementing the Electronic Medical File in the Algerian Health Institution, *Algerian Journal of Social and Human Sciences*, Volume 11, Issue 01, 2023, p. 23

[3] Michennef, Ahmed, and Maghnia Lakrenche**,** The Reality of Implementing Electronic Management in the Health Sector: The Electronic Medical Record as a Model, *Journal of Comparative Legal Studies*, Volume 10, Issue 01, 2024, pp. 20-37.

System, (2) the Mandatory Disease Notification System, (3) Maintenance Information Systems, (4) the Electronic Immunization Record system, (5) the Health Activities Application, and (6) the Scorpion Envenomation Information Systems. This architecture represents a significant step toward modernizing the sector and reducing the digital divide through the SIS.DZ platform, leveraging information and communication technologies to improve accessibility and efficiency regardless of location or time[1]. From this vantage point, integration between these subsystems and the EMR is a necessary precondition for generating reliable, comparable, and reusable data for national knowledge management tools.

- **Comparative Learning and International Cooperation**

Given Algeria's recent experiences and ongoing evaluation of their impact on quality and costs, comparative learning becomes particularly important. Evidence from countries like Saudi Arabia, Jordan, and the United Arab Emirates highlights several key success factors in implementing EMR and KM, which are detailed in the following subsection. Therefore, a structured comparative analysis should be carried out to identify the most relevant lessons for adapting to the Algerian context before expanding to a nationwide EMR. This approach creates a clear path, from individual digital initiatives to an integrated system (the EMR), and ultimately to a connected national infrastructure that supports a mature knowledge management system.

To sum up, the ongoing digitalization efforts are supporting a gradual shift from scattered initiatives to a comprehensive national institutional KM framework. The next stage involves:

- Establishing Formal KM units/ offices within health institutions;

[1] Zidane, Ammar, and Hassan Ben Kadi, Op. cit., pp. 165-166.

- Enacting data-governance policies with standards for quality, updating, and routine maintenance;
- Capacity building for technical and human resources;
- Developing a national unified platform for knowledge exchange that interconnects with existing information systems;
- Scaling a unified EMR with robust privacy, security, and interoperability safeguards; and
- Adopting performance indicators to measure impact on quality, cost, and effectiveness.

Collectively, these measures would move Algerian public health institutions from the foundational stage toward institutional consolidation of KM, thereby strengthening decision-making, enhancing service quality, and promoting sustainability and equity within the health system.

# 3. International Experience in Implementing KM in the Public Health Sector

## 3.1 The Saudi Arabia Experience

### 3.1.1 Overview of the Saudi Health Sector

**-** The health sector in the Kingdom of Saudi Arabia

Health services in the Kingdom of Saudi Arabia have expanded and developed substantially over the past few decades. The first public department was established in Mecca in 1925 by the royal decree of King Abdulaziz. This department was responsible for providing high-quality healthcare to residents and pilgrims by establishing several hospitals and clinics. Twenty years later, in 1950, the Ministry of Health was founded by another royal decree. Among the public service sector, the health services sector in Saudi Arabia occupies a

distinctive position, owing to the critical nature of the services it provides and their direct connection to the health and lives of community members. Over the past four decades, health services have undergone significant development in terms of their actual spread across all regions of the Kingdom, reaching population centers in these areas. Statistics indicate that the number of health facilities and the workforce have risen markedly, reflecting continued growth aimed at improving health services. Healthcare providers in the kingdom are divided into segments: public and private. The focus of this subsection is on the public health sector, overseen by the Ministry of Health[1].

- The Public Health Sector

The Saudi health sector is centrally regulated by the Ministry of Health (MoH), which oversees the majority of public healthcare services, while also coordinating with private providers. The Ministry of Health is responsible for safeguarding pubic health and for managing, planning, and financing primary and specialized care delivered through its primary care centers and affiliated hospitals, as well as laboratory services and blood banks. The Ministry of Health provides the largest share of health services nationwide, approximately 60%, while other government health agencies account for 20%, and the private sector supplies the remaining 20%[2].

Within this governance landscape, government health providers comprise the following[3]:

- Medical Services of the Armed Forces
- Medical Services of the Ministry of Interior
- Health Affairs of the National Guard

[1] Basharahil, Heba Omar: Applying Knowledge Management in Health Institutions, Journal of Information Studies, Issue 19, 2017, p. 136.
[2]Ibid.
[3] Ibid, p.136-137.

- University Hospitals
- King Faisal Specialist Hospital in Riyadh and Jeddah
- Hospitals affiliated with the Royal Commission for Jubail and Yanbu
- Hospitals affiliated with Saudi Aramco
- Health facilities affiliated with the Ministry of Education and the Ministry of Social Affairs.

With respect to public human and material resources under the Ministry of Health, 60% of all operating hospitals in the Kingdom are affiliated with the Ministry (244 out of 408). Ministry hospitals reportedly account for 60% of the total bed capacity in Saudi hospitals (11,277 out of 56,002). Approximately 42% of all physicians in the Kingdom work for the Ministry, as do 57% of nursing personnel and 54.3% of allied health professionals.

Despite the sector's central role in achieving national health objectives and the sustained efforts to develop it, most evidence and studies suggest that performance remains below the expectations of both policymakers and society at large, indicating persistently low performance levels. Accordingly, implementing information management and knowledge management within the public health sector may help raise the quality of service delivery[1].

Against this backdrop, the past decade has witnessed substantial reform under the umbrella of Saudi Vision 2030, which emphasizes digital transformation, efficiency, and patient-centered care. Healthcare spending accounts for approximately 6% of the Kingdom's GDP, with investments focused on modernizing infrastructure, expanding primary care, and integrating digital health systems. The Kingdom of Saudi Arabia has made significant investments in its healthcare system in line with its Vision 2030. With 2.2

[1] Basharahil, Heba Omar: Applying Knowledge Management in Health Institutions, Journal of Information Studies, Issue 19, 2017, p. 136.

hospital beds per 1,000 individuals and world-class medical specialists, the country has made notable advancements. Over the past three decades, the average life expectancy has increased from 66 to 74 years. The Saudi Arabian government is committed to improving the quality of preventive and therapeutic services in hospitals and healthcare centers. The public sector plays a crucial role in these efforts by promoting preventive care and reducing the spread of infectious diseases. As a result, citizens are encouraged to seek primary care as their first point of contact[1].

### 3.1.2 KM in the Saudi Health Sector

The healthcare landscape in Saudi Arabia has witnessed a significant transformation in recent years, with a growing emphasis on leveraging technology and knowledge sharing to enhance patient care and outcomes. By implementing knowledge management practices, healthcare institutions in the kingdom have been able to streamline operations, improve decision-making processes, and ultimately deliver better services to the population. Several new initiatives have emerged, focusing on various aspects of healthcare, including creating electronic patient files, monitoring the statistical spread of infectious diseases, integrating all hospital systems using cloud computing technologies, and tracking the arrival of pilgrims and the vaccines administered to each pilgrim in their home country[2].

[1]Vision2030,Retrieved from https://www.vision2030.gov.sa/media/rc0b5oy1/saudi_vision203.pdf 14/03/2024 at 13:50, p29.

[2] Saleh Almuayqil et al, Knowledge Management Framework for E-Healthcare in Saudi Arabia, conference paper, In: eTELEMED 2015, The Seventh International Conference on eHealth, Telemedicine, and Social Medicine, 22-27 February 2015, Lisbon, Portugal, p 112.

- The purpose of applying knowledge management in the healthcare sector in Saudi Arabia is [1]:

To achieve the maximum benefit from data and information owned by the Ministry, as well as the personal expertise inherent in the minds of MOH's staff, in an endeavor to optimize the human capital investment to turn it into a productive force that contributes to the development of individual performance, and create a stimulating environment for making it happen.

To improve the institution's efficiency in developing services, upgrade the Ministry's competitive advantage, achieve beneficiary satisfaction, enhance the organizational knowledge base, and support decision-makers in establishing and developing knowledge-based health systems. While it aimed to achieve several objectives, including[2] :

- Support and enhance the KM concept throughout all MOH sectors.
- Provide comprehensive and accurate information as needed.
- Facilitate decision-making.
- Improve the work performance of MOH staff.
- Achieve beneficiary satisfaction and reduce costs.
- Medical records management in activating KM applications:

The Saudi Ministry of Health has leveraged health records in knowledge management to enhance the quality of healthcare services by applying knowledge management theories and practices. This approach aims to bridge the gap in patient medical records, ultimately improving the quality of care[3].

[1] The Saudi Ministry of Health, Overview of Knowledge Management, Accessed 3 September 2024, available https://www.moh.gov.sa/en/Ministry/Projects/Knowledge-Management/Pages/default.aspx.
[2] Saleh Almuayqil et al, OP CIT, p. 112.
[3] ADHIL ALSUBAIE, OTHMAN AQILI, OP CIT, p 18.

Many benefits are achieved by utilizing knowledge management applications for managing medical records in public health institutions. Some of these benefits include[1]:

- Strengthened care coordination: With up-to-date patient data at their fingertips, providers, patients, and caregivers can work together to make fully informed care decisions.
- Improved safety and quality: Interoperable patient data helps ensure patients receive appropriate tests and medications while avoiding duplicative or conflicting ones. This translates to a better, safer, and more efficient experience, a key marker of the current shift toward value-based care.
- Empowered patients and families: People with access to their medical records and options can make better-informed clinical decisions and become fuller partners in their care.
- Increased efficiency and reduced costs: The enhanced ability to share relevant information, including patient matching, reduces time and resource costs for patients and insurers by avoiding duplicative services and for clinical and administrative staff by devoting fewer hours to these tasks.
- Robust public health registries: Creating and sharing aggregated patient health information will support more accurate tracking and prevention efforts for disease and other public health threats.

In their study, Alsubaie and Aqili (2023) also outlined numerous benefits of implementing medical records in knowledge management[2] :

- Maintaining continuity of information and data flow.

[1] Report01_18_19-Sharing-Data-Saving-Lives_FINAL, American Hospital Association, 2019, p 4. PDF (www.aha.org).
[2] ADHIL ALSUBAIE, OTHMAN AQILI, Op.cit, p17.

- Providing mechanisms for verifying information sources.
- Organizing and analyzing information.
- Utilizing information across various fields within the health sector
- Storing and retrieving information as needed
- Enhancing and streamlining decision-making processes, particularly concerning health services
- Elevating health services to peak levels of efficiency and effectiveness
- Improving internal processes within health institutions to manage costs.

The experience of Saudi Arabia with knowledge management in healthcare demonstrates the significant impact of using knowledge and information to bring about positive change. Through investments in knowledge management initiatives, Saudi Arabia has successfully improved the quality of healthcare services, maximized resource utilization, and ultimately enhanced the health outcomes for its population. Applying knowledge management principles in the Saudi Arabian healthcare sector has proven to be an effective strategy for promoting efficiency, fostering innovation, and driving quality improvement. As the kingdom continues to prioritize knowledge management within its healthcare system, it is well-positioned to elevate the standards of care further and establish itself as a leader in healthcare innovation on the global stage.

### 3.1.3 Lessons for Algeria from the Saudi Experience

The Saudi experience offers several pertinent lessons for Algeria. Firstly, Algeria could benefit from adopting a centralized governance model for knowledge management by establishing a national agency or directorate within the Ministry of Health to set standards and oversee knowledge management policy. Secondly, implementing open-data platforms would enhance transparency, foster research collaboration, and facilitate evidence-informed policymaking**.**

Thirdly, the Saudi model highlights the importance of aligning knowledge management with digital health strategies; Algeria could pursue this alignment through phased digitalization and the implementation of electronic medical records. Fourthly, the focus on training and cultural transformation within Saudi hospitals underscores the need for sustained capacity-building programs that foster knowledge sharing among healthcare professionals.

Lastly, integrating knowledge management with sustainability objectives would ensure that knowledge processes not only enhance the quality of care but also encourage efficient resource utilization and long-term system resilience. Additionally, applying knowledge management in the Algerian context can directly strengthen care coordination by improving information flows across providers and levels of care. It can also enhance patient safety and service quality through standardized clinical guidelines, incident learning systems, and continuous quality improvement measures. Additionally, it increases operational efficiency and reduces costs by minimizing redundant tests and procedures, optimizing resource allocation, and enabling data-driven procurement.

## 3.2 Jordan's Experience

### 3.2.1 Overview of the Jordanian Health Sector

Jordan has a hybrid healthcare system, comprising a public sector, a private sector, and an international/charitable sector. The healthcare system is esteemed for providing high-quality care, thereby establishing itself as a prominent destination for health tourism in the Middle East[1].

Care in the public sector is offered by the Ministry of Health and the Royal Medical Services. Groups eligible for free insurance in the public sector

[1]Jordan Health Systems, accessed 2 September 2025, https://data.worldobesity.org/country/jordan-109/health-systems.pdf.

include those aged 60 and over, those aged six and under, and those considered impoverished by the Ministry of Social Development. The private sector comprises hospitals and various clinics, but it is often fragmented. A recent census estimated that 70% of Jordanians and 55% of the overall population had health insurance, with 80% of Jordanians having public insurance compared to private. There are calls for health insurance to be made mandatory to improve coverage. Out-of-pocket expenditure was estimated to be 28.8% of total health expenditure in 2013. Jordan's health system has been challenged by the geopolitical crises in neighbouring Syria and Palestine. Large numbers of refugees have stretched services and exacerbated the impact of an ageing population and the rise in non-communicable diseases. Several humanitarian agencies support healthcare delivery to many of the displaced people[1].

Jordan's health system comprises 121 hospitals—71 private, 33 public, 15 military, and two university facilities—spanning major specialties, including cardiology, neurology, oncology, orthopedics, pediatrics, reproductive medicine/IVF, ophthalmology, plastic and reconstructive surgery, and psychiatry and addiction services. The sector's technological capacity encompasses MRI, CT, nuclear medicine, advanced cardiac catheterization (as a surgical alternative in selected indications), laser ophthalmology, lithotripsy, and comprehensive infertility services. These resources, coupled with skilled multidisciplinary teams, support management of complex cases and sustain Jordan's regional standing in high-acuity care[2].

Human resources are a central performance driver. Jordan has more than 35,000 physicians, many of whom hold certifications from the United States, the United Kingdom, Germany, and other jurisdictions, alongside a sizable nursing

[1] Jordan Health Systems, https://data.worldobesity.org/country/jordan-109/health-systems.pdf, PDF created on July 23, 2023, accessed 2/09/2025, 20:48.
[2] International Trade Administration, Jordan – Healthcare, Last published date: 2022-12-14, https://www.trade.gov/country-commercial-guides/jordan-healthcare, accessed 2/09/2025, 20:10.

workforce that supports acute and specialized services. High adult literacy (~95%) and continued investment in education and workforce development reinforce the pipeline of qualified health professionals[1].

### 3.2.2 KM in the Jordanian Health Sector

Jordan, through the Ministry of Health, developed a Knowledge Management Strategy for 2018–2022. This strategy was developed using a methodology that began with an analysis of the ministry's knowledge environment, gathering information and data to formulate the strategy on a sound scientific basis.

The knowledge environment analysis produced recommendations on the ministry's current state and the actions required to establish a knowledge management strategy. This strategy aims to bridge the knowledge gap identified by the analytical work and the overarching knowledge map.

The results of the knowledge environment analysis and the gaps in the knowledge map were also benchmarked against the American Productivity and Quality Centre (APQC) Knowledge Management Maturity Model, which has five levels for organisations. The Ministry of Health was placed at Level 1, indicating that it recognizes the need to implement knowledge management and must develop policies and institutional frameworks to support activities in identifying its knowledge needs and how to meet them.

A SWOT analysis—strengths, areas for improvement, available opportunities, and threats—was conducted based on the knowledge environment analysis to anchor the efforts to be pursued through this strategy. Enablers that would contribute to successful implementation were identified, while

[1] Private Hospitals Association Jordan, https://phajordan.org/View_Article.aspx?type=2&ID=3809, accessed 29/09/2025, 20 :00.

considering risks that could hinder the knowledge management strategy's success in the Ministry of Health.

The strategy's vision, mission, and values were formulated in collaboration with the Knowledge Management Strategy Development Committee, formed by His Excellency the Minister of Health, Professor Mahmoud Sheyyab, on 8 November 2017. This was a first step in the right direction, in partnership with the USAID-funded Health Finance and Governance project.

The objectives in the Knowledge Management Strategy were divided into four levels to align with government directions, the Ministry of Health's strategy, the requirements of the King Abdullah II Award for Excellence standards, the findings of the knowledge environment analysis, and international standards for implementing knowledge management.

Within the strategy's overall and logical framework, the first level is the national vision for providing services to citizens, including health sector services. Under this national vision lies the institutional knowledge objective in the Ministry of Health's strategy. This initiative is part of its system for improving services through knowledge management, supported by digital transformation and technology in the Kingdom to enhance service delivery and equity, as outlined in the national goal. Next come the two knowledge pillars in the Ministry of Health's strategic plan, which have integrated operational knowledge objectives and established an organizational unit for knowledge management.

A matrix of key performance indicators was developed in line with the strategy's logical framework and the four levels of objectives. It includes their logical sequencing, horizontal and vertical linkages, specified targets, activities,

interventions, responsibilities, and assumptions, along with detailed reference sheets for the key performance indicators.

This strategy will be followed by an operational plan covering 2018, after which full institutional implementation is to begin in 2019[1].

### 3.2.3 Lessons for Algeria from Jordan's Experience

- Prioritize strengthening the Health Information System (HIS): Algeria could emulate Jordan in auditing existing data collection, defining core indicators relevant to its context, and standardizing them nationally.

- Focus on human resource practices: Training, rewards, and appraisal systems in hospitals help embed KM; Algeria should invest in HRM reforms aligned with KM goals.

- Address knowledge sharing culture: Overcome technical, organizational, and cultural barriers. Use models like TPB/TAM to understand what discourages or encourages sharing in Algerian institutions.

- Increase awareness of data rights and data sharing: Ensure patients and health workers understand privacy, the use of data, and their rights, and build trust.

- Governance & policy framework: Jordan's experience shows the need for policy support, institutional capacity, and oversight in KM; Algeria should build or strengthen KM governance bodies.

[1] Ministry of Health Knowledge Management Strategy (2018–2022), https://moh.gov.jo/ebv4.0/root_storage/ar/eb_list_page/%D8%A7%D8%B3%D8%AA%D8%B1%D8%A7%D8%AA%D9%8A%D8%AC%D9%8A%D8%A9_%D8%A7%D8%AF%D8%A7%D8%B1%D8%A9_%D8%A7%D9%84%D9%85%D8%B9%D8%B1%D9%81%D8%A9_%D9%88%D8%B2%D8%A7%D8%B1%D8%A9_%D8%A7%D9%84%D8%B5%D8%AD%D8%A9_%D%84%D9%84%D8%A7%D8%B9%D9%88%D8%A7%D9%85_2018-2022.pdf, p.6,accessed 29/09/2024, 20 :00.

**Chapter summary:**

This chapter examines the relationship between knowledge management and the quality of healthcare services in the literature. It traces the emergence of the term "health knowledge management" and outlines its tools, enabling factors, and the barriers that limit its effectiveness in realizing the expected benefits within healthcare institutions. It then situates these concepts in diverse health contexts, starting with Algeria and extending to other Arab countries as proximate and comparable settings. Lessons can be drawn from these to inform the Algerian effort to develop an integrated knowledge management system that enhances service quality and beneficiary satisfaction. The analysis focuses on the public health sector, which faces multiple challenges in meeting rising demand amid the high prevalence of various diseases and epidemics. These elements are presented to lay the conceptual groundwork and connect the discussion to existing realities in Algeria, particularly in university hospital centres. These centres are multidisciplinary, receive large inflows of patients, and perform multiple functions established by Algerian law, as detailed in the following.

# Chapter Four:

## Field study of some Algerian University Hospital Centers

## Chapter Introduction

The primary objective of scientific research is to generate results that explain the studied phenomenon by identifying its underlying causes and clarifying the nature of relationships among variables. Such understanding enables the prediction of future occurrences, as the recurrence of the same causes generally produces similar outcomes.

In this context, the present study examines the role of knowledge management on the quality of public health services within Algerian University Hospital Centers, which constitute a vital segment of public institutions. The research seeks to empirically test its hypotheses by applying them to a selected sample and analyzing quantitative data collected from the field.

It is important to note that research on knowledge management in healthcare remains limited, particularly in Algeria, where the field is still in its early stages. Although some studies exist, they have yet to fully explore its various dimensions.

To address the research problem and achieve the main objectives, this study employed a methodological approach grounded in statistical analysis. Data were gathered through questionnaires distributed to health workers in University Hospital Centres, as they are the most appropriate respondents for assessing the variables central to this research.

# 1. An overview of the Algerian University Hospital Centers

University Hospital Centers represent a key component of Algeria's healthcare and academic infrastructure. They combine medical care, teaching, and research under a unified institutional framework. The following section provides an overview of the main university hospital centers established across the country.

## 1.1 Concept of University Hospital Centers

The concept of a university hospital centers around institutions that combine healthcare delivery with education and research. They function simultaneously as advanced medical facilities and as academic environments where future healthcare professionals are trained and where scientific inquiry is pursued. This dual nature distinguishes them from ordinary hospitals, as they not only provide specialized patient care but also contribute to the development of medical knowledge, innovation, and continuous improvement of healthcare systems. Understanding this concept is essential to appreciating their pivotal role in bridging medical practice with academic advancement.

### 1.1.1 Definition of University Hospital Centers

University Hospital Centers are considered one of the pillars of healthcare institutions within the Algerian health service systems. These centers are defined as "public institutions of an administrative nature endowed with legal personality and financial autonomy. Administratively, they operate under the supervision of the Ministry of Health, while pedagogically, they fall under the authority of the Ministry of Higher Education, with a mandate to provide training and support scientific research"[1].

[1] Executive Decree No. 97-467 of 2 Chaabane 1418 corresponding to December 2, 1997, establishing the rules for the creation, organization, and functioning of university hospital centers, Official Journal of the Algerian Republic, No. 81, 1997, p. 27

By regulation, such institutions must encompass at least nine specialties, namely: internal medicine, general surgery, pediatrics, obstetrics and gynecology, otorhinolaryngology, ophthalmology, radiology, biology, and anesthesiology and resuscitation. In addition to their medical role, these centers also organize pedagogical and scientific activities and establish admission requirements for students[1].

### 1.1.2 Missions and Value of University Hospital Centers

University Hospital Centers serve as a fundamental pillar of both the healthcare and educational systems, seamlessly integrating a therapeutic mission focused on delivering advanced medical services with an academic and research commitment aimed at expanding knowledge and training future medical professionals. These institutions extend their impact beyond direct patient care; they also contribute significantly by supporting scientific research, disseminating medical knowledge, and upholding the ethical values inherent in medical practice. Through this dual mission, the significance of University Hospital Centers is evident not only in their service to individuals and society but also in their role in advancing medical progress.

The University Hospital Center fulfills the following missions[2]:

- In the field of health:
  - To provide diagnostic, therapeutic, hospitalization, and medico-surgical emergency services, as well as preventive care and all activities contributing to the protection and promotion of public health.
  - To implement national, regional, and local health programs.
  - To participate in the development of scientific, medical, and pedagogical standards for healthcare facilities.

[1] Souar, Youcef, and Abdelkrim Mansouri, Evaluating the Efficiency of Algerian University Hospital Centers Using Data Envelopment Analysis, Journal of Economic Notebooks, Volume 04, Issue 02, 2013, p. 109.
[2] Houmid, Ibrahim, op cit., p. 135.

- To contribute to environmental protection and promotion in area related to prevention, hygiene, sanitation, and the fight against nuisances and social scourges.

❖ In the field of training:

- To provide, in collaboration with higher education institutions in medical and sciences, undergraduate and postgraduate training in medical sciences, and to participate in the design and implementation of related curricula.
- To contribute to the training, retraining, and professional development of healthcare personnel.

❖ In the field of research:

- To conduct, within the framework of current regulations, research and studies in the field of health sciences.
- To organize seminars, colloquia, study days, and other technical and scientific events to promote healthcare, training, and research in healthcare sciences.

### 1.1.3. Objectives of University Hospital Centers

University Hospital Centers are comprehensive healthcare and academic institutions that combine the provision of specialized medical services with the advancement of scientific research and academic training. Their role extends beyond patient care and the delivery of high-quality health services, as they also function as academic institutions that contribute to the education of medical and research professionals while fostering innovation in medicine and health sciences. Hence, defining the objectives of these centers is essential to understanding their dual role in serving society and advancing medical knowledge.

The main objectives of the University Hospital Centers are as follows[1]:

[1]CHU Bejaia, https://www.chubejaia.dz/NosServices, accessed on 30/07/2025 at 14:37.

- Provision of high-level healthcare, including advanced diagnostic and therapeutic services.
- Medical and nursing education through specialized academic and clinical training programs.
- Research in health sciences to foster innovation and improve medical practices.
- Support for the implementation of regional organizational and monitoring frameworks, including internal restructuring, technical platform pooling, and the promotion of partnerships between public and private institutions.
- Development of information, communication, and audiovisual systems to enhance coordination and knowledge dissemination.
- Support for operations that meet efficiency criteria, ensuring the optimal use of resources.
- Ensuring compliance with safety standards to protect both patients and healthcare personnel.

### 1.1.4 The Current University Hospital Centers in Algeria

The Algerian health system, as outlined in the previous chapter, consists of a diverse and complex structure of public healthcare institutions, differentiated by their form, type, organization, and specialization. Among these, university hospital centers represent one of the most important public institutions, given their distinctive significance and unique characteristics. Their number, however, remains relatively limited compared to other categories of public health institutions. Some of these centers have existed since the post-colonial period, while others were established through executive decrees in response to population growth and changes in administrative divisions. The following table presents the university hospital centers currently in existence and effectively operating.

**Table 4-1:** List of University Hospital Centers in Algeria

| No | Name | Headquarters | Physical Facilities |
|---|---|---|---|
| **01** | Mustapha University Hospital Center in Algiers | Mustapha Hospital | - Mustapha Hospital<br>- " Léon Bernard" Health Center<br>- Pediatric Surgery Unit |
| **02** | Beni Messous University Hospital Center in Algiers | Beni Messous Hospital | - Beni Messous Hospital |
| **03** | Hussein Dey University Hospital Center in Algiers | Parnet Hospital | - Parnet Hospital<br>- Central Emergency Unit of Tripoli<br>- Cytology Laboratory Boujema Moghani Unit |
| **04** | Bab El Oued University Hospital Center in Algiers | Bab El Oued Hospital | - Bab El Oued Hospital<br>- "Gharafa" Clinic |
| **05** | Douera University Hospital Center in Algiers | Djilali Bounaama Hospital | - Djilali Bounaama Hospital |
| **06** | Constantine University Hospital Center | Ben Badis Hospital | - Ben Badis Hospital<br>- El Khroub Hospital<br>- Dental Surgery Unit on Si Abdallah street (Casbah) |
| **07** | Oran University Hospital Center | Oran Hospital | - Oran Hospital<br>- Emergency Surgical Medical Unit<br>- Filaoucène Clinic<br>- Hamou Boutlilis Clinic<br>- Nouar Fadela Clinic<br>- Amílcar Cabral Clinic<br>- Endocrinology and Diabetology Clinic<br>- Dental Clinic |
| **08** | Annaba University Hospital Center | Ibn Rochd Hospital | - Ibn Rochd Hospital<br>- Ibn Sina Hospital<br>- Derban Hospital, |

| | | | |
|---|---|---|---|
| | | | - Ophthalmology clinic<br>- Pediatric Clinic<br>- "ELIYSA" Dental Clinic<br>- "Saoula Abdelkader" Clinic |
| **09** | BLIDA University Hospital Center | Franz Fanon Hospital | - Franz Fanon Hospital<br>- Mitidja Clinic<br>- Ben-Boulaid Clinic<br>- Zabana Clinic<br>- Medical and surgical emergency |
| **10** | Tizi Ouzou University Hospital Center | Nedir Mohamed Hospital | - Nedir Mohamed Hospital<br>- Sidi-Belloua Hospital |
| **11** | Batna University Hospital Center | Benflis Tehami Hospital | - Batna Hospital "Benflis Tehami" Hospital<br>- Cancer Treatment Center |
| **12** | Sétif University Hospital Center | Sétif Hospital | - Sétif Hospital-<br>- ENT and Ophthalmology Clinic<br>- Mother and child Complex |
| **13** | Sidi Bel Abbés University Hospital Center | Sidi Bel Abbés Hospital | - Sidi Bel Abbés Hospital<br>- Urban Maternity Hospital |
| **14** | Tlemcen university Hospital center | Tlemcen Hospital | - Tlemcen Hospital |
| **15** | Bejaia University Hospital Center | Khelil Amrane Hospital | - Khelil Amrane Hospital<br>- Frantz Fanon Hospital<br>- Targua Ouzemmour Hospital (Mother and Child Clinic) |
| **16** | Mostaganem University Hospital Center | Mostaganem Hospital | - Mostaganem Hospital<br>- Kharouba Hospital |

Source: Prepared by the researcher based on Executive Decree No. 97-467 of 2 Chaabane 1418 corresponding to December 2, 1997, establishing the rules for the creation, organization, and functioning of university hospital centers, Official Journal of the Algerian Republic, No. 81, 1997, p. 27. And Executive Decree No. 21-397 of 11 Rabi' al-Awwal 1443 corresponding to October 18, 2021, supplementing the list of university hospital centers annexed to Executive Decree No. 97-467 of 2 Chaabane 1418 corresponding to December 2, 1997, establishing the rules for the creation, organization, and functioning of university hospital centers, Official Journal of the Algerian Republic, No. 80, 2021, p. 14**.**

## 1.2 Administrative Structure of Algerian UHCs

The administrative framework of Algerian university hospitals is established by law and structured to balance governance, academic functions, and healthcare delivery. It rests on four key entities: the Board of Directors, the General Director, the Scientific Council, and the Advisory Committee.

### 1.2.1 The Board of Directors

The Board of Directors is the supreme governing authority of the UHC. It consists of representatives from the Ministries of Health, Higher Education, Finance, Economic Insurance, and Social Security, along with representatives of local assemblies (municipal and provincial). Elected members include academic hospital physicians, medical specialists, paramedical staff, workers, and associations, in addition to a representative of the Scientific Council. The General Director participates with consultative power and serves as secretary[1].

Board members are appointed by the Minister of Health for a renewable term of three years. Their mandates and when their institutional functions end.

The board deliberates on development plans, budgets, accounts, investment projects, organizational charts, maintenance programs, contracts with social security and insurance institutions, cooperation agreements, staffing tables, internal regulations, acquisition and alienations of assets, as well as donations and bequests.

Meetings are held twice a year at a minimum, with extraordinary sessions convened when necessary. Decisions require a majority of members, and in the case of a tie, the president's vote prevails. Deliberations are subject to

[1] Berhou, Fafa Souhila, "Healthcare System Reform and Its Role in Algerian Economic Recovery 2002–2020." PhD thesis, Planning Specialization, Department of Economic Sciences, Faculty of Economic, Commercial, and Management Sciences, University of Algiers 3, Algeria, 2022/2023, p. 80.

supervisory approval within eight days and become enforceable within thirty days unless explicitly opposed[1].

### 1.2.2 The General Director

The General Director is appointed by executive decree upon the proposal of the Minister of Health and may be dismissed in the same manner. He is the primary authority responsible for administrative, financial, and personnel management.

His prerogatives include[2]:

- Representing the UHC in court and civil matters;
- Appointing staff, except where other procedures apply;
- Acting as authorizing officer for expenditures and preparing budgets;
- Drafting internal regulations and organizational structures;
- Implementing board decisions;
- Submitting annual activity reports to the Ministry of Health;
- Signing contracts, agreements, and partnerships;
- Exercising hierarchical authority over all staff;
- Delegating his signature to collaborators when necessary

He is assisted by a Secretary-General, directors, and unit heads appointed by ministerial decision. The organizational structure of the UHC is determined by a joint ministerial decree of the Health, Finance, and Civil Service authorities[3].

### 1.2.3 The Scientific Council

The Scientific Council provides advisory opinions on[4]:

- Functional links between medical services;

[1] Articles 17, 18, 19, Executive Decree No. 97-467, OP CIT, p. 24.
[2] Article 22, Decree No. 97-467, OP CIT, pp. 24-25.
[3] Berhou, Fafa Souhila, OP CIT, p. 81.
[4] Article 23, Decree No. 97-467, OP CIT, p. 25.

- Equipment, construction, and restructuring projects;
- Public health and population programs;
- Scientific and technical activities;
- The creation or abolition of medical structures;
- Training and research agreements in medical sciences.

It also proposes measures to enhance service organization, resource allocation, training, and research.

The council consists of department heads, the director of the affiliated higher education institution or his representative, heads of research units, appointed scientific community members, an elected associate professor and assistant professor, and a senior paramedical representative. A president is elected for a renewable three-year term.

It convenes once every two months in ordinary session, and in extraordinary session when required. Valid deliberation requires a majority, but if the quorum is not met, a reconvened meeting can proceed regardless of attendance.

### 1.2.4 The Advisory Committee

The Advisory Committee supports the General Director in carrying out his duties, particularly in implementing recommendations from the Scientific Council.

It is composed of the General Director as chair, the president of the Scientific Council, and three to seven department heads appointed by the Scientific Council. Sessions may be extended to include the Secretary-General and directors of structures when deemed necessary.

The committee meets once a month to ensure follow-up on operational and scientific decisions[1].

[1] Articles 27, 28, 29, 30, Executive Decree No. 97-467, OP CIT, p. 25.

## 1.3 Brief Overview of University Hospital Centers under study

### 1.3.1 The University Hospital Center of Blida

The University Hospital Center of Blida is a major healthcare and scientific institution, with origins dating back to 1912 when the French colonial administration planned a large medical shelter. Although delayed by World War I, the project materialized in 1933 with the official establishment of the Blida Psychiatric Hospital, which admitted its first patients that same year. Over 2.000 beds by 1958. In 1984, it was restructured into a multidisciplinary institution in response to the province's growing needs for specialized healthcare services.

A further stage of reform came with Decree No. 86-301 of 16 December 1986, which created the University Hospital Center of Blida. This center brought together the Mitidja Clinic, Ben Boulaid Clinic, Douera Hospital, and Kolea Hospital as units managed under the General Directorate, headquartered in the Blida Civil Hospital. Each was overseen by a director without expenditure authority and had its own trade union. At the central level, a coordinating union represented the units collectively, but diverging interests often led to persistent conflicts, labor disputes, and disruptions in service delivery. This structure created organizational inefficiencies and instability across the institution.

To resolve these difficulties, Executive Decree No. 97-467 of 1997 introduced a major restructuring. The reform designated Frantz Fanon Hospital as the new headquarters, separating Douera and Kolea hospitals into independent entities- a specialized hospital institution and health sector- and restructured the Blida Civil Hospital into a health sector. These measures aimed to eliminate the shortcomings of the earlier system and establish more effective governance and institutional performance[1].

[1] Documents provided by the University Hospital Center.

### 1.3.2 The University Hospital Center of Bab El Oued

The University Hospital Center of Bab El Oued, officially established on 2 February 1988, by Decree No. 88.20, is a public administrative institution with legal personality and financial autonomy. It operates under the administrative supervision of the Ministry of Health and the pedagogical supervision of the Ministry of Higher Education and Scientific Research. Historically, it is one of Algeria's oldest hospitals, founded in 1932 during the colonial period. The era was under the name Hôpital du Dey, later renamed Mayou. It was converted into a military hospital after independence and ultimately reclassified as a university hospital Center in 1988. This center was divided into Bab El Oued Hospital, which is the headquarters, and "Gharafa" Clinic.

Today, the center covers an area of 18960 $m^2$, with a bed capacity of 745 and more than 650 resident physicians in training, distributed across 33 departments, many of which serve as a national reference for specialties. These include surgical departments (general surgery, orthopedics and traumatology, neurosurgery, thoracic and cardiovascular surgery, otorhinolaryngology, ophthalmology, and urology), medical specialties (internal medicine, pediatrics, psychiatry, neurology, dermatology, endocrinology, pulmonology, gastroenterology, rheumatology, nephrology and dialysis, diabetology, and infectious diseases), and women's health (obstetrics and gynecology). Complementary services include emergency and intensive care, anesthesiology and resuscitation, forensic medicine, occupational medicine, epidemiology and preventive medicine, central laboratories for biology and pathology, toxicology, hematology and blood banking, dentistry, and a central pharmacy. This diversified structure, combining care, teaching, and research, positions the Mohamed Lamine Debaghine University Hospital Center of Bab El Oued as a pivotal institution in Algeria's national healthcare and academic network[1].

[1] Documents provided by the University Hospital Center.

### 1.3.3 The University Hospital Center of Tizi Ouzou

The Nedir Mohamed Hospital was inaugurated on 28 July 1955, with a limited number of medical specialties. In 1974, the Regional Hospital of Tizi Ouzou was reorganized into a health sector through the integration of several affiliated healthcare units. Subsequently, in 1982, this sector was transformed into a university Health sector (SSU) following the establishment of multidisciplinary biomedical training programs.

The University Hospital Center (CHU) of Tizi Ouzou was formally established by Decree No.86/25 of 11 February 1986, later supplemented and amended by Decree No. 86/302 of 16 December 1986. As a public institution with an administrative mandate under the Ministry of Health, the UHC was designated to have its headquarters at the Nadir Mohamed Hospital.

On 16 December 1986, the municipality of Tizi Ouzou was officially endowed with a University Hospital Center composed of two principal hospitals with a combined capacity of 1080 beds. The UHC employed a total of 3487 staff members who were distributed across 42 departments operating within the Nedir Mohamed Hospital and the Sidi Belloua Hospital[1].

### 1.3.4 The University Hospital Center of Bejaia

The University Hospital Center of Bejaia was established by Executive Decree No. 09-319 of 17 Shawwal 1430, corresponding 6, 2009, which supplemented the list of university hospital centers annexed to Executive Decree No. 97-467 of 2 Sha‘ban 1418, Corresponding to December 23, 1997, setting forth the rules governing the establishment, organization, and operation of university hospital centers[2].

[1] Documents provided by the University Hospital Center.
[2] CHU Bejaia, https://www.chubejaia.dz/NosServices , accessed on 30/07/2025 at 14 :37.

The list of university hospital centers annexed to Executive Decree No 97-467 of 2 Sha‘ban 1418 (December 2, 1997) was completed as follows:

- **Name:** UHC Bejaia
- **Headquarters:** Khelil Amrane Hospital
- **Physical Components:**

- Khelil Amrane Hospital
- Frantz Fanon Hospital
- Targua Ouzemmour Hospital (Mother and Child Clinic).

## 2. Methodological Procedures of the Field Study

This section presents the methodological procedures adopted in conducting the field study. It clarifies the research design, instruments, and techniques applied to guarantee scientific accuracy and objectivity. The outlined approach establishes transparency and ensures the replicability of the study.

### 2.1 Study Domains

Study domains define the scope and boundaries of the study, providing a structured framework for data collection and analysis. They typically encompass three key dimensions:

- **Spatial domain**: specifies the geographical area where the study is conducted.
- **Temporal domain**: defines the time frame within which the research takes place
- **Human domain**: identifies the target population or subjects involved in the study

### 2.1.1 Spatial Domain

The study was conducted at the University Hospital Center in the central health region of Algeria, which has the highest number of university hospital centers. Below is a list of these centers.

**Table 4-2:** List of University Hospital Centers in the central health regions

| No | University Hospital Centers Names (U.H.C) | Province |
|---|---|---|
| **01** | Bab El Oued University Hospital Center | Algiers |
| **02** | Franz Fanon University Hospital Center | Blida |
| **03** | Nedir Mohamed University Hospital Center | Tizi Ouzou |
| **04** | Khelil Amrane University Hospital Center | Bejaia |

**Source:** Prepared by the researcher

## 2.1.2 Temporal domain

The research was conducted in two successive phases. The first phase encompassed the development of the theoretical framework, undertaken from June 2023 to June 2024. During this period, data were systematically collected, organized, filtered, and critically reviewed, alongside an extensive examination of prior studies to ensure a comprehensive understanding of the study variable. This stage was subsequently followed by the drafting and refinement of the theoretical component, which extended from June to October 2024.

The second phase addressed the empirical procedures of the study and was carried out between October 2024 and September 2025. This phase was implemented through a sequence of methodical steps. Initially, the research instrument was designed on the basis of the theoretical framework and previous scholarly contributions related to the study variables. Thereafter, the questionnaire was submitted to expert reviewers for validation and enrichment between mid-December 2024 and mid-February 2025. The subsequent step consisted of conducting a pilot study in March 2025, intended as a preliminary test of the questionnaire to evaluate the responsiveness of the study sample and to verify the validity and reliability of the research tool.

Following this, the final version of the questionnaire was administered to the sample, with the process of distribution and collection extending over a six-month period. Upon completion of data collection, statistical analyses were undertaken from early August to mid-September 2025. The concluding stage focused on formal revisions and linguistic proofreading, which were completed between mid-September and mid-October 2025.

### 2.1.3 Human Domain

The sampling frame refers to a comprehensive list of all the cases in the population from which the sample of the study is drawn[1]. The sampling frame was derived from the population comprising healthcare workers of University Hospitals Centers in the central health region of Algeria. Table 23 provides a detailed breakdown of the population from each University Hospital Center of the population.

**Table 4-3:** Sample Summary

| No | List of UHC | Total Population Healthcare workers |
|---|---|---|
| **01** | Bab El Oued University Hospital Center | 4323 |
| **02** | Franz Fanon University Hospital Center | 2365 |
| **03** | Nedir Mohamed University Hospital Center | 3487 |
| **04** | Khelil Amrane University Hospital Center | 3103 |
| **Total** | | 13278 |

**Source:** Prepared by the researcher

In order to determine the availability of the study variables within UHCs in Algeria, a simple random sampling technique was employed. The sample size

[1] Mark Saunders, Philip Lewis and Adrian Thornhill, Research Methods for Business Students, 4th edition, Pearson Education, United Kingdom, 2007, p 206.

was calculated using Steven Thompson's formula, and the obtained results were as follows:

Steven Thompson's formula is expressed as:

$$n = \frac{N \times p(1-p)}{\left[\left[N-1 \times \left(d^2 \div z^2\right)\right] + p(1-p)\right]}$$

Where:

n= required sample size

N= population size

Z= standard score corresponding to the desired confidence level

P= estimated proportion of the population possessing the characteristic of interst,

d= margin of error

In this study, the initially targeted sample size was 373. Following the processes of distribution and data collection, the final sample size amounted to 385. Surpassing the minimum sample size estimated by Steven Thompson's formula does not undermine the validity of the results; rather, it typically enhances statistical precision and strengthens the reliability of the findings, albeit with potential increases in the time and resource requirements.

## 2.2 Research Methodology

The purpose of this section is to set out the methodology employed in the current study. This includes specifying the approach to data collection as well as the data analysis techniques that will be adopted**.**

### 2.2.1 Research design and approach

Sekaran and Bougie (2013) defined research design as a blueprint for the collection, measurement, and analysis of data, focusing on the study's research

questions. Similarly, Vogt (2007) described research design as plan for collecting evidence to answer a research question effectively.

This study adopted a quantitative approach, which prioritizes numerical data and statistical analysis to generate objective and generalizable findings. The quantitative cross-sectional survey was employed, allowing for a numerical representation of enhanced generalizability by employing random sampling techniques. A self-administered, standardized questionnaire was used to evaluate the theoretical relationship between research variables.

To achieve the study objectives, a descriptive analytical method was employed. This approach involves the scientific analysis and interpretation of data in order to quantitatively describe a phenomenon. It includes the collection, classification, and analysis of relevant data. Statistical analysis was performed to evaluate the research hypotheses and to extract meaningful insights.

### 2.2.2 Data Collection Tools

The selected data collection method must be capable of yielding suitable data in sufficient quantity within the time available.

#### ❖ Primary Data source

Primary data were collected through a structured questionnaire. A questionnaire is considered a key tool for collecting data, and it is the most widely used tool in social research, which is distributed to employees at the Algerian University Hospital Center. The objective was to examine the relationship and the impact of knowledge management on the quality of healthcare services. A five-point Likert scale was employed as it is one of the most effective instruments for measuring knowledge management processes and healthcare service quality dimensions.

### ❖ Questionnaire Development

A questionnaire is defined as a formal framework consisting of a set of questions and scales designed to generate primary raw data[1]. To adequately build the constructs and test the hypotheses, the researcher conducted a comprehensive review of the literature. The format and content of the questionnaire were initially developed based on insights from previous studies, ensuring validity and alignment with existing research. The following table presents the variable and their corresponding sources, providing a structured foundation for data collection and analysis.

**Table 4-4:** Summary of previous studies used in developing the Research instrument

| S.No | Variable | Previous studies |
|---|---|---|
| **1** | Knowledge management (KM) processes | - Cheng Sheng Lee Kuan Yew Wong, (2015)<br>- Samina Nawab, Tahira Nazir, Muhammad Mohsin Zahid, and Syed Muhammad Fawad (2015)<br>- Sanjib Raj and Pradyut Kumar Borah (2020)<br>- Siddique Rashid, Shahzad Khurra, Hashmi, Muhammad Aami, and Siddique, Imran (2021)<br>- Ghadah Lafi Alharbi and Monira Essa Aloud (2024)<br>- AYALEW GIRMA (2024) |
| **2** | The quality of health services | - Parsu A Parasuraman, Valarie A. Zeithaml and Leonard L Berry (1988)<br>- Hayder Khathyer Jawan (2012)<br>- Abas Mazal AL-Mochrif (2015)<br>- Mohanad Talab Sowadi and Abbas Muzel AL-Mochrif (2021) |

**Source:** Prepared by the researcher

The questionnaire was composed of 63 statements, organized into three main axes and structured as follows:

[1] Joseph F. Hair, Mary Celsi, Robert P. Bush, and David J. Ortinau, Essentials of Marketing Research, McGraw-Hill Education, Penn Plaza, New York, 2017, p 192.

- Demographic and professional data
- Knowledge management processes
- The quality of health services

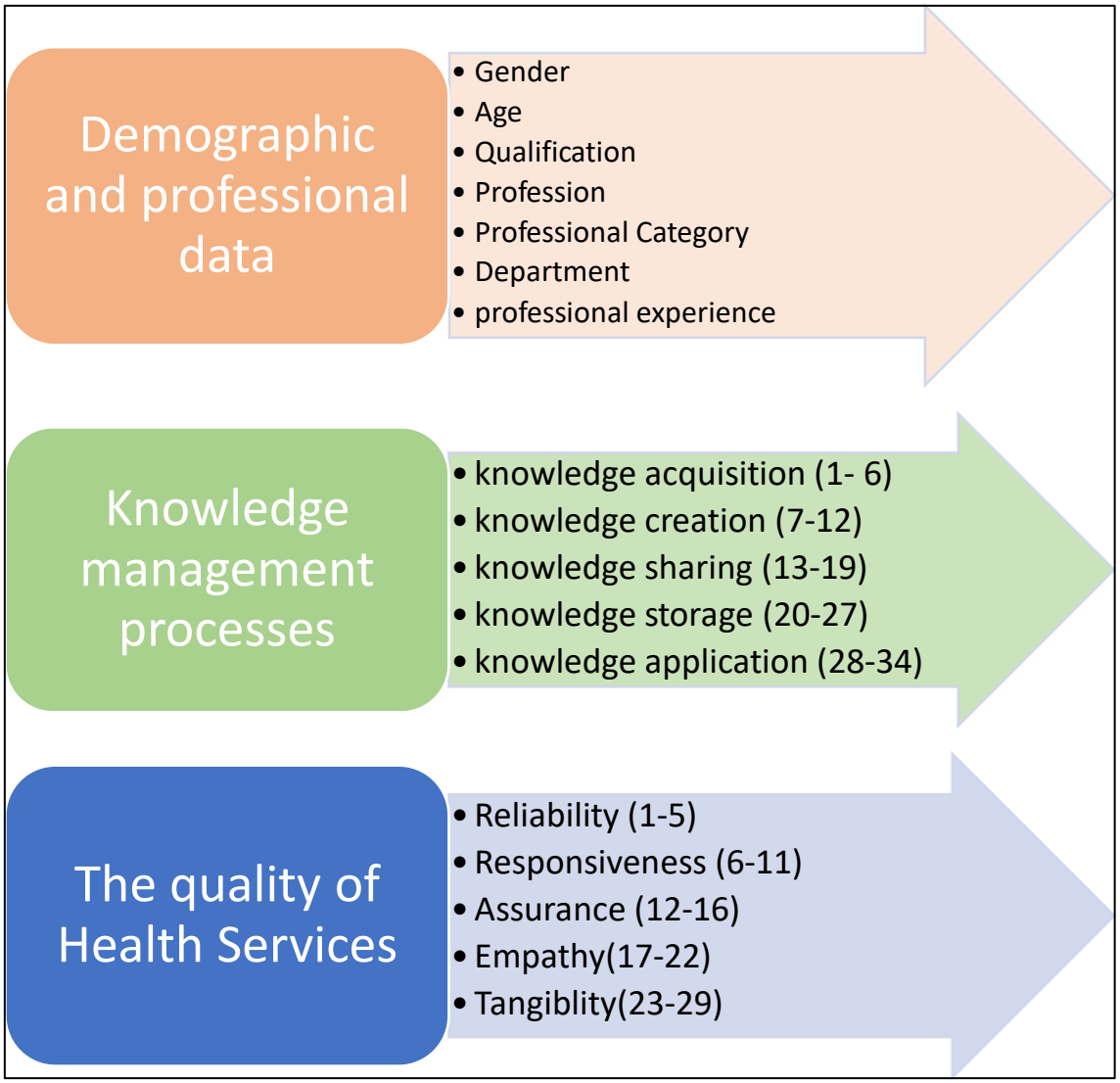
In terms of the KM processes section, there are 34 items distributed based on knowledge processes,6 items for Knowledge acquisition, 6 items for knowledge creation, 7 items for knowledge sharing,8 items for knowledge storage, and 7 items for knowledge application.

The quality of Health Services is measured using five dimensions, which are content 29 items as follows: 7 items for tangibility, 5 items for reliability, 6 items for responsiveness, 5 items for assurance, and 6 items for empathy.

At the end of each dimension of KM processes and at the conclusion of the questionnaire, an open-ended question with space for responses was included to enable participants to provide additional comments relevant to the study or the questionnaire in general.

The following figure accurately summarizes the contents of the questionnaire:

**Figure 4-1:** The General Form of the Study Questionnaire




**Source:** Prepared by the researcher

## ❖ Selecting Scale

The questionnaire items were measured using a five- point Likert scale, an ordinal scale format that asks respondents to indicate how much they agree or disagree with a series of mental belief or behavioral belief statements about a given object[1]. A Likert scale asks respondents to indicate the extent to which they either agree or disagree with a series of statements about a subject. Usually, the scale format is balanced between agreement and disagreement scale

[1] Joseph F. Hair, Robert P. Bush and David J. Ortinau, Marketing research -within a changing information environment-,2nd edition, McGraw-Hill/Irwin, New York,2003, p. 422.

descriptors. Named after its original developer, Rensis Likert, this scale initially had five descriptors: "Never," "Rarely," "Sometimes," "Often," and "Always"[1].

The five response categories are as follows:

**Table 4-5:** Likert scale scores (five-point scale)

| **Pointes** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| **Answer** | Never | Rarely | Sometimes | Often | Always |

Source: Prepared by the researcher

❖ **Measurement and Categorization of the scale**

In the second section, the study variables were measured using a five-point Likert scale to assess the significance of each statement. To determine respondents' directional tendencies toward each item, the following range formula was applied:

$$\text{Range} = \frac{(\text{Highest Score} - \text{Lowest Score})}{\text{Number of Levels}} = \frac{(5-1)}{5} = 0.8$$

This classification allows for a structured interpretation of agreement levels, categorized as low, moderate, and high degrees

**Table 4-6:** Explanation of the five-point Likert Scale (Relative Importance of the Mean)

| Mean Range | Scale Items (Likert scale) | Level |
|---|---|---|
| **1-1.80** From 01 to 1.80 Degrees | Never | Low Level |
| **1.81- 2.60** From 1.81to 2.60 Degrees | Rarely | |
| **2.61- 3.40** From 2.61to 3.40 Degrees | Sometimes | Moderate Level |

[1]Joseph F. Hair, Mary Celsi, Robert P. Bush, and David J. Ortinau, Essentials of Marketing Research, McGraw-Hill Education, Penn Plaza, New York, 2017, p 173.

| | | |
|---|---|---|
| **3.41-4,20**<br>From 3.41to 4.20 Degrees | Often | High Level |
| **4.21- 5**<br>From 4.21to 5 Degrees | Always | |

Source: Prepared by the researcher based on Likert scale scores

This classification system helps interpret the data effectively, ensuring that responses are systematically categorized based on their significance levels.

❖ **Administration of the Questionnaire**

The questionnaire was distributed in both paper-based and electronic formats to ensure broader coverage of the study population. This method was necessitated by the difficulty of accessing participants in the public health sector, which is characterized by heavy patient loads, the sensitivity of the field, and the respondents' engagement in delivering timely healthcare services without interruption.

❖ **Secondary Data Source**

Secondary data was utilized to obtain Comprehensive insights into the practical application of knowledge management processes and healthcare services quality. These secondary sources included:

- Reports and publications from healthcare institutions.
- Academic journals and scientific articles.
- Manuals, brochures, and books related to the study's field.

## 2.2.3 Statistical Techniques and Data Analysis

The collected quantitative data were initially processed and cleaned, followed by statistical analysis using **JASP (Jeffreys's Amazing Statistics Program)**. JASP is a free, open-source software for statistical analysis, supported by the University of Amsterdam, and it is accredited by the Ministry of Higher Education and Scientific Research. It has been recently integrated into

the training offers and taught modules for the academic year 2025/2026 (see Appendix 9). It is available for download on multiple operating systems, including Windows, macOS, and Linux. Designed for ease of use, JASP is particularly familiar to users of SPSS. The program supports both classical and Bayesian statistical methods, providing users with a range of standard analytical procedures. Additionally, JASP generates results tables and plots in APA, facilitating publication. The software promotes open science through integration with the Open Science Framework and enhances reproducibility by embedding analysis settings with the results**.** The choice of the statistical techniques was determined by the nature of the data, the research questions, and the hypotheses under investigation. Various statistical methods were employed to extract meaningful interpretations and validate the findings, as outlined below:

**Table 4-7**: Statistical Tools Used in Data Analysis and Hypothesis Testing

| Statistical Tool | Description |
|---|---|
| **Frequency, percentage, and Graphs** | Used to describe the study sample and analyze their responses to questionnaire items. |
| **Cronbach's Alpha Coefficient** | Measures the reliability of the questionnaire using data from the pilot sample. |
| **Mean** | Represents the average of a set of values, calculated by dividing the sum of the values by their count. It helps interpret respondents' mean answers and compare them with the hypothetical mean (3), considering the rating scale ranges from 1 to 5. Additionally, it is useful for ranking items based on their highest mean value. |
| **Standard** | Measures the degree of response variation for each item |

| | |
|---|---|
| **Deviation** | or dimension, ensuring model validity for hypothesis testing. It also helps rank items by favoring those with the least dispersion when the weighted a arithmetic means are equal. |
| **The Shapiro-Wilk test and The Kolmogorov test** | Are commonly applied to assess the normality of data distribution. Conducting these test allows researchers to determine whether parametric or non parametric tests should be used in the statistical analysis. |
| **Pearson Correlation Coefficient** | Assesses the direction and strength of the relationship between two variables. It determines whether a statistically significant linear relationship exists and is also used to evaluate the validity of the questionnaire. |
| **Coefficient of Determination (R2)** | Measures the extent to which the independent variable explains variations in the dependent variable. A higher R2 value indicates a greater contribution of the independent variable, with the remaining variation attributed to other factors. |
| **Multiple Regression** | Determine how independent variables influence the dependent variable while accounting for the margin of error, which approaches zero when estimating model parameters. Hypothesis acceptance or rejection is evaluated using ANOVA and the F-statistic |
| **One-Way ANOVA** | It is a statistical test used to compare the means of more than two independent groups to determine whether there is a statistically significant difference between them. |

**Source:** Prepared by the researcher based on Kouache Sara, The role of e-government in administrative development, the case study of a public institution, PhD thesis, Management, Khemis Miliana University-Djilali Bounaama-, 2021/2022, p 106.

## 2.3 The psychometric properties of the study tool

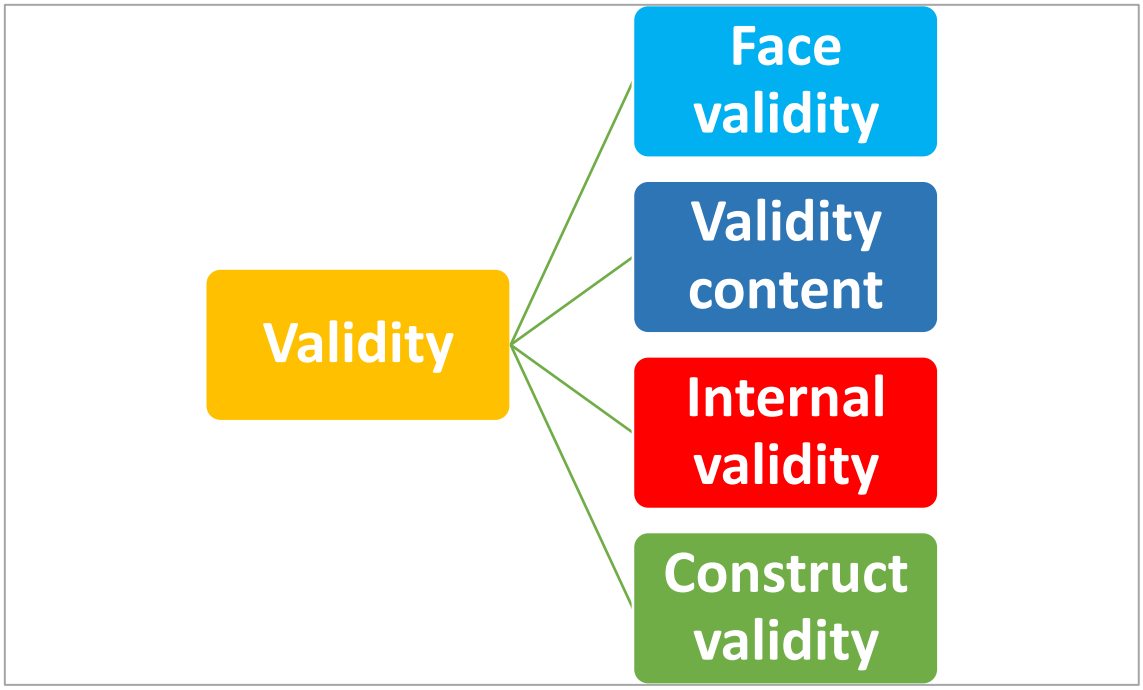
Psychometric properties can be defined as evidence or statistical indicators of the quality of a questionnaire and its items. These properties include the distinction of the items and their internal consistency, or validity. The psychometric properties of the scale are its validity, reliability, and sensitivity.

## 2.3.1 Validity of the Study Tool

Validity refers to how effectively the collected data reflects the actual area of investigation. Essentially, validity means "whether an instrument measures what it set out to measure"[1]. In the following section, the main types of validity- namely, face validity, translation process, internal validity, and construct validity- are discussed. Figure 23 illustrates the subtypes of various forms of validity tests explored and described in this section.

[1] Andy Field, Discovering Statistics Using IBM SPSS Statistics, 5th Edition, Sage Publications Inc,2005, p. 57.

**Figure 4-2:** Subtypes of validity




**Source:** Prepared by the researcher

❖ **Face validity and Validity content**

Face validity refers to researchers' subjective evaluations of how well the measuring instrument is presented and its relevance. It assesses whether the items in the instrument seem relevant, reasonable, unambiguous, and clear[1].

To verify the face validity and content validity of the study instrument (Appendix 01: initial form of questionnaire for arbitration), it was subjected to expert evaluation by a panel of faculty reviewers (Appendix 02. provides the list of the expert reviewers for the questionnaire). They were requested to assess the questionnaire and provide their opinions, including any relevant observations regarding the appropriateness of statements to the main variable, their comprehensiveness, content diversity, linguistic and scientific accuracy, clarity of the questionnaire items, and the extent to which the questionnaire adequately addresses the research problem and fulfills its objectives. The reviewers'

[1] Hamed Taherdoost, Validity and Reliability of the Research Instrument; How to Test the Validation of a Questionnaire/Survey in a Research, International Journal of Academic Research in Management, volume 05, issue 03, 2016, pp.28-36.

remarks primarily focused on summarizing, merging, repositioning, adding, modifying, and omitting certain statements. Most of their recommendation were incorporated into the final design of the study instrument (Appendix 03, example of a review). As a result, the questionnaire was finalized with 63 statements, ensuring that they remain concise, comprehensible, and relevant to the study topic. (Copies of the final version of the questionnaire in English, French, and Arabic are provided in Appendices 05, 06, 07, while the electronic version is presented in Appendix 08)

### ❖ Translation process

Translation of the original questionnaire is an important step for establishing the validity of a questionnaire. This process involves initially translating the questionnaire from a foreign language into a local language, and at the same time matching the semantic features of each item or question as closely as possible with those of the original questionnaire. Past research work in this area revealed that there were many different approaches to undertake the translation of study instruments, such as a questionnaire. One of the best approaches is to have two arms working independently for performing an initial forward translation, and then a backward translation[1].

- The first arm consists of the subject matter experts (SME) from a particular field.
- The second arm will usually be represented by several language experts, particularly those who understand at least both the foreign language of the original questionnaire and the local language of the translated version of the original questionnaire[2].

[1] Mohamad Adam Bujang, Hon Yoon Khee, and Lee Keng Yee, A Step-by-Step Guide to Questionnaire Validation Research, Institute for Clinical Research, NIH MY, Kuala Lumpur, Malaysia,2022, p. 63.
[2] Mohamad Adam Bujang, Hon Yoon Khee, and Lee Keng Yee, OP CIT, P64.

This two-armed approach facilitates a more accurate and reliable translation process.

To ensure the accuracy of the questionnaire, the correctness of its translation, and a clear understanding by the respondents, several expert professors of English translation were consulted. Additionally, professors with prior experience and research related to the study variables, who also teach in English, were involved in the process. (Appendix 04: List of professors involved in the translation and validation of the study instrument in English, Arabic, and French).

### ❖ Internal Validity

Internal validity refers to the extent to which the research design accurately identifies causal relationships. In other words, internal validity exists when the researcher can rule out rival explanations for the observed results and conclusions about the functional relationship[1].

The internal consistency validity of the questionnaire was assessed by calculating the Pearson correlation coefficient between each item's score on the two axes and the total score of the axis to which it belongs[2]. This analysis was conducted using JASP. The following table displays the correlation coefficient between each item and the total score of the corresponding axis. The following table illustrates this.

[1] Mira Andersson, Kofi Boateng, and Pro Abos, Validity and Reliability: The extent to which your research findings are accurate and consistent, 2024, p. 2.
[2] Sara Kaouache, OP CIT, p 101.

**Table 4-8:** Correlation Coefficients between the Items of Knowledge Management Processes Dimensions and their Corresponding Total Scores

| Knowledge management processes | Items | Pearson Correlation | Sig |
|---|---|---|---|
| **Knowledge acquisition** | KA1 | 0.625 | < 0.001 |
| | KA2 | 0.570 | < 0.001 |
| | KA3 | 0.631 | < 0.001 |
| | KA4 | 0.727 | < 0.001 |
| | KA5 | 0.645 | < 0.001 |
| | KA6 | 0.670 | < 0.001 |
| **Knowledge creation** | KC7 | 0.773 | < 0.001 |
| | KC8 | 0.728 | < 0.001 |
| | KC9 | 0.692 | < 0.001 |
| | KC10 | 0.731 | < 0.001 |
| | KC11 | 0.780 | < 0.001 |
| | KC12 | 0.733 | < 0.001 |
| **Knowledge sharing** | KS13 | 0.729 | < 0.001 |
| | KS14 | 0.654 | < 0.001 |
| | KS15 | 0.738 | < 0.001 |
| | KS16 | 0.640 | < 0.001 |
| | KS17 | 0.751 | < 0.001 |
| | KS18 | 0.743 | < 0.001 |
| | KS19 | 0.614 | < 0.001 |
| **Knowledge Storage** | KST20 | 0.736 | < 0.001 |
| | KST21 | 0.667 | < 0.001 |
| | KST22 | 0.731 | < 0.001 |
| | KST23 | 0.766 | < 0.001 |
| | KST24 | 0.734 | < 0.001 |
| | KST25 | 0.479 | < 0.001 |
| | KST26 | 0.712 | < 0.001 |
| | KST27 | 0.691 | < 0.001 |
| **Knowledge application** | KAP28 | 0.622 | < 0.001 |
| | KAP29 | 0.767 | < 0.001 |
| | KAP30 | 0.739 | < 0.001 |

| | | | |
|---|---|---|---|
| | KAP31 | 0.775 | < 0.001 |
| | KAP32 | 0.772 | < 0.001 |
| | KAP33 | 0.780 | < 0.001 |
| | KAP34 | 0.729 | < 0.001 |
| **Rule: An item is considered consistent with its dimension if its correlation with the total score of the dimension is positive, statistically significant (Sig. ≤ 0.05), and greater than 0.30.** | | | |

**Source:** Outputs of JASP 0.95.0.0

The table above indicates that the correlation values between each item and the average of the dimension are relatively high, ranging from 0.570 to 0.780. All of these correlations are statistically significant at the 0.05 level, which indicates a strong degree of consistency between the items and the overall construct. This finding confirms that all items within the first axis demonstrate internal consistency with their respective constructs, thereby supporting their validity and suitability for measuring the intended concept.

**Table 4-9:** Correlation Coefficients between the Items of the Quality of Health Services Dimensions and Their Corresponding Total Scores

| The quality of health services | Items | Pearson Correlation | Sig |
|---|---|---|---|
| **Reliability** | REL1 | 0.742 | < 0.001 |
| | REL2 | 0.765 | < 0.001 |
| | REL3 | 0.660 | < 0.001 |
| | REL4 | 0.779 | < 0.001 |
| | REL5 | 0.738 | < 0.001 |
| **Responsiveness** | RES6 | 0.710 | < 0.001 |
| | RES7 | 0.658 | < 0.001 |
| | RES8 | 0.749 | < 0.001 |
| | RES9 | 0.785 | < 0.001 |
| | RES10 | 0.805 | < 0.001 |
| | RES11 | 0.641 | < 0.001 |
| **Assurance** | ASS12 | 0.635 | < 0.001 |
| | ASS13 | 0.717 | < 0.001 |
| | ASS14 | 0.824 | < 0.001 |

| | | | |
|---|---|---|---|
| | ASS15 | 0.838 | < 0.001 |
| | ASS16 | 0.799 | < 0.001 |
| **Empathy** | EMP17 | 0.797 | < 0.001 |
| | EMP18 | 0.826 | < 0.001 |
| | EMP19 | 0.774 | < 0.001 |
| | EMP20 | 0.790 | < 0.001 |
| | EMP21 | 0.800 | < 0.001 |
| | EMP22 | 0.747 | < 0.001 |
| **Tangibles** | TAN23 | 0.782 | < 0.001 |
| | TAN24 | 0.669 | < 0.001 |
| | TAN25 | 0.737 | < 0.001 |
| | TAN26 | 0.703 | < 0.001 |
| | TAN27 | 0.659 | < 0.001 |
| | TAN28 | 0.774 | < 0.001 |
| | TAN29 | 0.642 | < 0.001 |
| **Rule: An item is considered consistent with its dimension if its correlation with the total score of the dimension is positive, statistically significant (Sig. ≤ 0.05), and greater than 0.30.** | | | |

**Source:** Outputs of JASP 0.95.0.0

The table above shows that the correlation values between each item and the average of the dimension are high, ranging from 0.642 to 0.838. All of these correlations are statistically significant at the 0.05 level, which indicates a strong degree of consistency between the items and the overall construct. This finding confirms that all items within the second axis demonstrate internal consistency with their corresponding constructs, thereby supporting their validity and appropriateness for measuring the intended concept.

❖ **Construct validity**

Construct validity consistency is considered one of the fundamental measures of an instrument's validity, as it assesses the extent to which the tool accurately measures the objectives it was designed to achieve. This type of

validity reflects the strength of the relationship between each axis of the instrument and the overall score of the questionnaire items combined.

In this study, construct validity was tested by calculating the correlation coefficients between each dimension of the variable and the total score of the variable itself. When these correlations are strong and statistically significant, this indicates that the questionnaire possesses a high level of construct validity. The following table presents the results of this analysis.

**Table 4-10:** Correlation between dimensions and the overall score of the first axis

| **Knowledge management processes** | **Correlation with the total degree for axis equals =** | |
|---|---|---|
| | Pearson Correlation | Sig |
| **Knowledge acquisition** | 0.752 | < 0.001 |
| **Knowledge creation** | 0.809 | < 0.001 |
| **Knowledge sharing** | 0.795 | < 0.001 |
| **Knowledge storage** | 0.844 | < 0.001 |
| **Knowledge application** | 0.767 | < 0.001 |
| **Rule: If the probability value (Sig. or P-value) is less than or equal to the significance level of 0.05, this indicates that the correlation between each dimension of the axis and the overall score of the Knowledge Management Processes items is statistically significant.** | | |

**Source:** Outputs of JASP 0.95.0.0

The results in the table show that the Pearson correlation coefficients between each questionnaire axis and the overall score of all items are statistically significant, with a significance level (Sig) of less than 0.05. Accordingly, it can be concluded that the dimensions of knowledge management processes demonstrate validity in measuring the intended constructs.

**Table 4-11:** Correlations between dimensions and overall score of the second axis

| The quality of health services | Correlation with the total degree for the axis equals | |
|---|---|---|
| | Pearson Correlation | Sig<br>N |
| **Reliability** | 0.772 | < 0.001 |
| **Responsiveness** | 0.827 | < 0.001 |
| **Assurance** | 0.851 | < 0.001 |
| **Empathy** | 0.838 | < 0.001 |
| **Tangibles** | 0.805 | < 0.001 |
| **Rule: If the probability value (Sig. or P-value) is less than or equal to the significance level of 0.05, this indicates that the quality of health services correlation between each dimension of the axis and the overall score of the items is statistically significant.** | | |

**Source:** Outputs of JASP 0.95.0.0

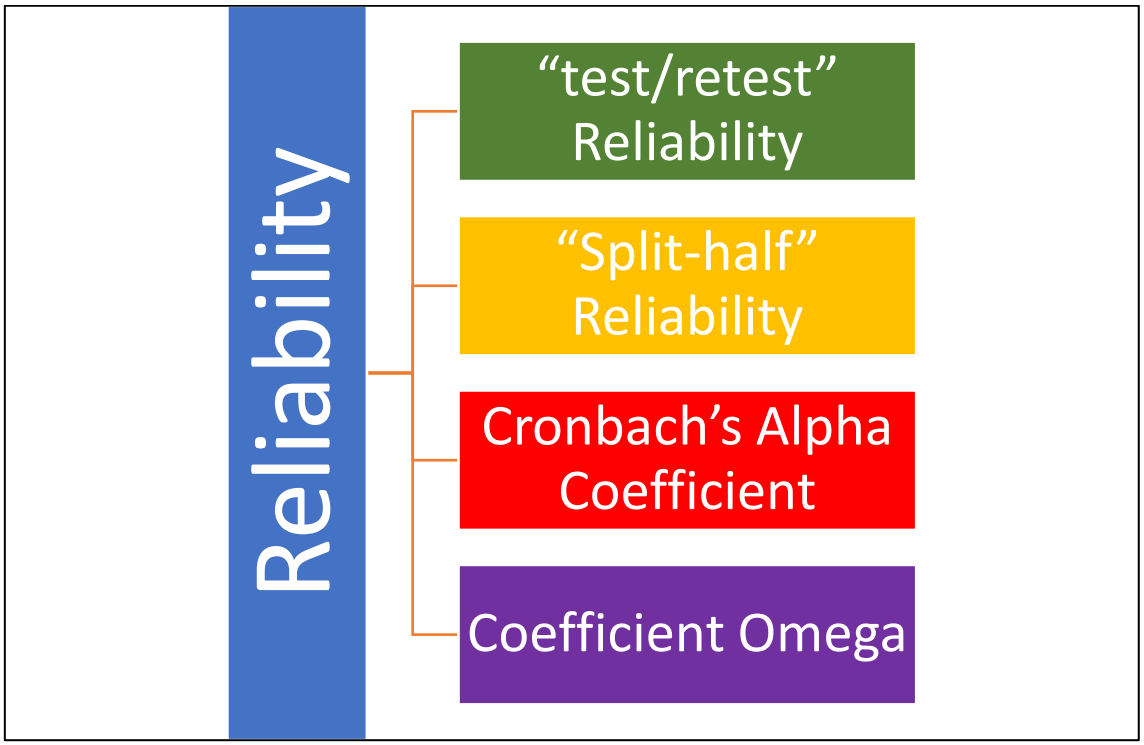
The results presented in the table indicate that the Pearson correlation coefficients between each axis of the questionnaire and the overall score of all its items are statistically significant, as the significance level (Sig) was found to be less than 0.05. Accordingly, it can be concluded that the dimensions of the quality of health services demonstrate validity in measuring the intended constructs.

## 2.3.2 Reliability of the Study Tool

Validity is a necessary but not sufficient condition of a measure. A second consideration is reliability, which refers to the degree to which an instrument consistently measures the construct being studied. Consequently, a scale is reliable if it produces the same results in repeated trials[1]. Several methods can be used to test the reliability of a measurement, as summarized in the following figure.

[1] Andy Field, Discovering Statistics Using IBM SPSS Statistics, 5th Edition, Sage Publications Inc,2005, p. 58.

**Figure 4-3:** Statistical Methods to Determine Reliability




**Source:** Prepared by the researcher

❖ **The "test/retest" Reliability**

The technique involves repeating the administration of the scale measurement twice –either to the same sample of respondents at two different times or two different samples of respondents from the same defined target population under as nearly the same conditions as possible. The underlying principle of this approach is that any random variations present will be reflected in differences between the two measurements. If there are minimal differences between the first and the second administrations, the measuring scale is considered stable and, therefore, reliable[1]. This is determined by calculating Pearson's correlation coefficient between individuals' scores in the first and the second administrations. If the correlation coefficient is greater than or equal to 0.70, the questionnaire is reliable and can be used in the final form. However, if the correlation coefficient is less than 0.70, it indicates weak reliability. In such

[1] Joseph F. Hair, Robert P. Bush and David J. Ortinau, Marketing research -within a changing information environment, OP CIT, p 398.

cases, the researcher must revise, modify, or eliminate certain statements (items) to enhance the overall reliability of the questionnaire.

We calculated reliability using the test/retest method by administering the study questionnaire to a pilot sample, a small-scale version of the intended main research study[1], which included data collection and analysis and typically involved 20 to 30 respondents similar to the study's defined target population[2]. After two weeks, the same questionnaire was given to the same individuals under identical conditions. A Pearson's correlation coefficient was then calculated between the two sets of responses.

**Table 4-12:** Questionnaire reliability using the Test/Retest Method

| | **Pearson Correlation Coefficient between Tests** |
|---|---|
| **knowledge management processes** | 0.776 |
| **the quality of health services** | 0.962 |
| **Overall Test** | 0.881 |

**Source:** Outputs of JASP 0.95.0.0

As presented in the preceding table, the Pearson correlation coefficient for the overall test reaches a remarkably high value of **0.881**. This exceeds the widely recognized threshold of 0.70, which is commonly adopted in research as the minimum level required to indicate acceptable reliability. Furthermore, when focusing on the individual axes of the questionnaire, the correlation coefficients range between **0.776 and 0.962**. These values provide clear evidence of strong internal consistency across the different dimensions of the instrument. In particular, the results highlight a substantial degree of stability and internal consistency between the first and second distributions of the test. This strong

[1] Joseph F. Hair, Mary Celsi, Robert P. Bush, and David J. Ortinau, Essentials of Marketing Research, OP CIT, p 208.
[2] Kouache Sara, OP CIT, p 100.

alignment indicates that the instrument yields stable and reproducible outcomes over time, confirming that the responses are not random but reflect a coherent measurement framework. Overall, these findings demonstrates that the questionnaire possesses a high degree of reliability and can therefore be confidently employed in the field study to generate valid and dependable data.

❖ **The "Split-half" method**

A technique for assessing the internal consistency of scale measurements with multiple dimensions. In a split-half test, the items in the scale are divided into two halves (either odd versus even attributes or randomly), and the summed scores of the resulting halves are correlated with each other. High correlations between the halves indicate good (or acceptable) internal consistency[1].

The split-half was employed to assess the reliability of the study instrument (the questionnaire). The results are presented in the following table.

Table 4-13: Questionnaire reliability using the Split-Half Method

| Reliability Coefficient | Estimate | Standard Error | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|
| **Split-Half Coefficient** | 0.974 | 0.003 | 0.969 | 0.979 |

**Source:** Outputs of JASP 0.95.0.0

The split-half reliability coefficient for the study instrument was 0.974, with a standard error of 0.003. The 95% confidence interval ranges from 0.969 to 0.979, suggesting that the instrument demonstrates very good internal consistency. Since values above 0.70 are generally considered acceptable in social sciences, this result provides strong evidence that the questionnaire items are homogeneous and reliably measure the intended construct.

[1] Robert F. De Vellis, Scale Development – Theory and Applications, 4th edition, SAGE Publications, Thousand Oaks, California, 2017, p. 69.

### ❖ Cronbach's Alpha Coefficient

Cronbach's alpha is a reliability coefficient that assesses the internal consistency of a scale constructed from a set of items. This process involves iteratively retaining or eliminating items based on their impact on the alpha coefficient, which ranges from 0 to 1. A value closer to 1 indicates stronger internal consistency (reliability) of the scale. Items that decrease the alpha score are removed, while those that enhance it are kept[1].

The acceptability threshold for alpha varies depending on the research objective. In an exploratory study, a lower coefficient (0.7) is acceptable, whereas in fundamental research, a higher coefficient (>0.8) is required[2]. De Vellis (2003) proposes the following classification:

Table 4-14: Cronbach's Alpha Values

| Alpha values | Interpretation |
|---|---|
| **Alpha< 0.6** | Not enough |
| **0.6 <Alpha< 0.65** | Weak |
| **0.65 <Alpha< 0.70** | Minimum acceptable |
| **0.70 <Alpha< 0.85** | Good deed |
| **0.85 <Alpha< 0.90** | Good |
| **Alpha> 0.9** | Excellent |

**Source :** Manu Carricano et Fanny Poujol, Analyse de données avec spss, Pearson Education, France,2009, p. 53.

To ensure the reliability of the study instrument, Cronbach's alpha coefficient was employed, yielding the following results.

[1] Manu Carricano et Fanny Poujol, op. cit., p. 53.
[2] Ellamrani Ben Hanana et Souad Houfaidi, Proposition D'un Instrument De Mesure De La Qualité De Service Perçue Par Les Usagers Des Administrations Publiques Marocaines, European Scientific Journal, volume 12, issue 29, 2016, p 298.

**Table 4-15:** Questionnaire reliability using the Cronbach's Alpha Coefficient

| | Number of items | Cronbach's Alpha Coefficient |
|---|---|---|
| Knowledge acquisition | 06 | 0.718 |
| Knowledge creation | 06 | 0.834 |
| Knowledge sharing | 07 | 0.820 |
| Knowledge Storage | 08 | 0.842 |
| Knowledge application | 07 | 0.862 |
| All items related to the 1st axis | 34 | 0.933 |
| Tangibles | 05 | 0.835 |
| Reliability | 06 | 0.788 |
| Responsiveness | 05 | 0.815 |
| Assurance | 06 | 0.817 |
| Empathy | 07 | 0.878 |
| All items related to the 2nd axis | 29 | 0.938 |
| **All items of the questionnaire** | 63 | 0.953 |

**Source:** Outputs of JASP 0.95.0.0

It is evident from the table above that the overall reliability coefficient of the questionnaire is very high, reaching 0.953 for the total sixty-three questionnaire items, which exceeds the acceptable threshold of 0.70. The reliability of the axis ranged between 0.933 (minimum) and 0.938 (maximum). This indicates that the questionnaire exhibits a very high level of reliability and can be confidently relied upon for the field application of the study.

❖ **Coefficient Omega (ω)**

Coefficient Omega (ω) is an alternative to Cronbach's alpha for estimating reliability, relying on factor analysis rather than the covariance matrix. It is calculated using item loadings on a common factor representing the shared underlying variable. Unlike alpha, omega is based on the congeneric model, which does not require equal item covariance with a good score. Instead, it assumes that all items reflect a single latent variable. Reliability is estimated as the proportion of actual score variance relative to total variance, making omega

a more accurate measure without tau-equivalence constraints[1]. Like Cronbach's alpha, Omega (ω) is interpreted using a value to assess the adequacy of internal reliability. There are no strict thresholds, but the values are generally interpreted as follows:

**Table 4-16:** Omega (ω) Values

| Omega (ω) value | Interpretation |
|---|---|
| **ω < 0.60** | Unacceptable reliability |
| **0.60 ≤ ω < 0.70** | Weak reliability |
| **0.70 ≤ ω < 0.80** | Acceptable reliability |
| **0.80 ≤ ω < 0.90** | Good reliability |
| **ω ≥ 0.90** | Excellent reliability |

**Source:** Robert F. DeVellis, OP CIT, p. 67.

To ensure the reliability of the study instrument, the Coefficient Omega (ω) was employed, and the following results were obtained.

**Table 4-17:** Questionnaire reliability using the Coefficient Omega (ω) Coefficient

| Dimensions | Number of items | Coefficient Omega (ω) Coefficient |
|---|---|---|
| Knowledge acquisition | 06 | 0.723 |
| Knowledge creation | 06 | 0.836 |
| Knowledge sharing | 07 | 0.823 |
| Knowledge storage | 08 | 0.848 |
| Knowledge application | 07 | 0.863 |
| All items related to the 1st axis | 34 | 0.934 |
| Reliability | 05 | 0.785 |
| Responsiveness | 05 | 0.819 |
| Assurance | 06 | 0.824 |
| Empathy | 06 | 0.878 |
| Tangibles | 07 | 0.839 |
| All items related to the 2nd axis | 29 | 0.938 |
| All items of the | 63 | 0.953 |

[1] Robert F. DeVellis, op cit., pp. 66-67.

| | | |
|---|---|---|
| questionnaire | | |

**Source:** Outputs of JASP 0.95.0.0

The reliability of the questionnaire is exceptionally high, as indicated by the Coefficient Omega (ω), which reached 0.953 across all sixty-three items. This value surpasses the generally accepted threshold of 0.70. The reliability scores for the individual axes range from a minimum of 0.934 to a maximum of 0.938. These results suggest that the questionnaire demonstrates a very high degree of reliability, making it a dependable tool for the field application of the study.

All of these previous results demonstrate that the questionnaire possesses satisfactory internal consistency, with all coefficients exceeding the conventional threshold of 0.70 recommended in social science research. Moreover, based on the previously obtained value of McDonald's omega (0.953), Cronbach's alpha (0.953), and the split-half coefficient (0.974), it can be concluded that the instrument provides a reliable and stable measure of the intended construct.

### 2.3.3 Normal Distribution

The normal distribution (the normality test) for the study variable is one of the fundamental prerequisites that must be met to conduct statistical analysis and hypothesis testing. This is because many parametric tests are based on the assumption of normality, which assumes the sampling distribution of the population parameter is normally distributed. This assumption does not mean that the sample data being analyzed should be normally distributed. Two tests of normality exist to compare scores in a sample to a normally distributed set of scores with identical mean and standard deviation. A significant p-value ($p < 0.05$) from these tests indicates that the distribution is significantly different from a normal distribution. The Kolmogorov–Smirnov test and the Shapiro–Wilk test both test for this significance. However, the Shapiro–Wilk test has more power to detect differences from normality. Therefore, the Shapiro–Wilk

test may have significant values when the Kolmogorov–Smirnov test does not. These tests should be used carefully, as false significance may occur when testing larger samples. Both tests should be used simultaneously with histograms or plots and the aforementioned values of skew and kurtosis[1].

Therefore, we subjected the study variable to the Shapiro–Wilk test to determine whether the data follow a normal distribution.

Data are considered to follow a normal distribution if the significance level for all study variables is greater than 0.05 (Sig > 0.05), based on the following null and alternative hypotheses:

- **Null hypothesis** ($H_0$): The data follow a normal distribution (p-value>0.05)
- **alternative hypothesis** ($H_1$): The data do not follow a normal distribution (p-value < 0.05)

Using the JASP software, the following results were obtained from the normality test of the study variable, based on the Shapiro-Wilk tests, as presented in the table below:

**Table 4-18:** Normality Test for the Independent and Dependent Variables of the study

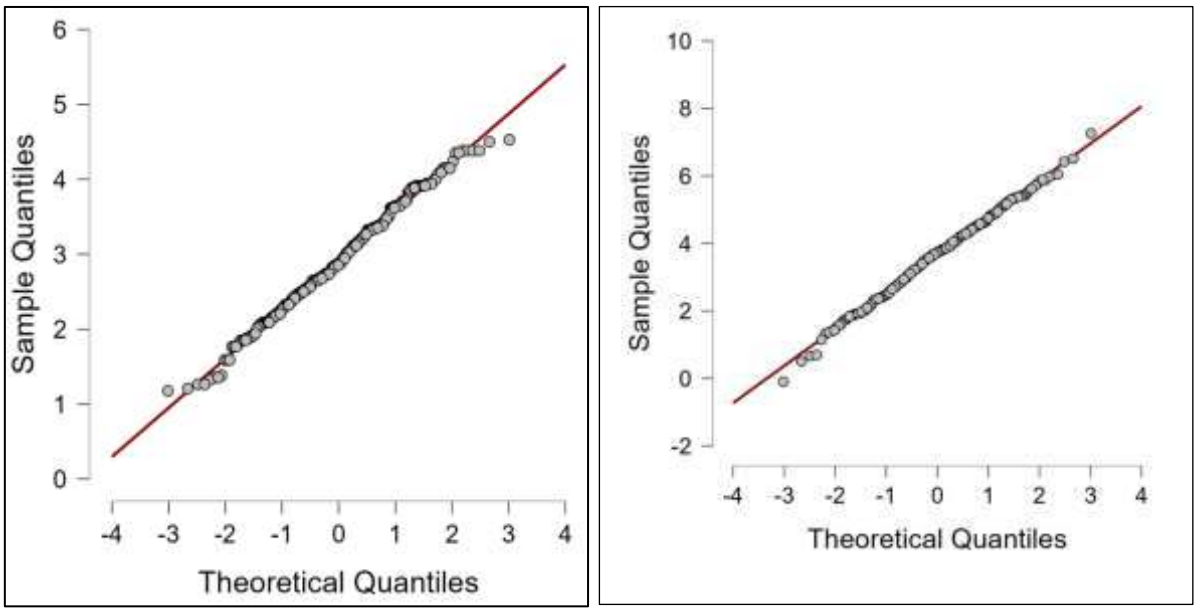
| Variables | Shapiro-Wilk | p-value of Shapiro-Wilk |
|---|---|---|
| Independent Variable **(Knowledge management processes)** | 0.994 | 0.997 |
| dependent Variable **(The quality of health services)** | 0.143 | 0.777 |

**Source:** Outputs of JASP 0.95.0.0

[1] Dorothy J. Musselwhite Thompson and Brian C. Wesolowski, Normal Distribution, Chapter book in: The SAGE Encyclopedia of Educational Research, Measurement, and Evaluation, SAGE Publications, Thousand Oaks,2018, p 5.

As shown in the Table above, the normality test was carried out using the Shapiro-Wilk test for both study variables. The results indicate that the independent variable (Knowledge Management Processes) has p-value of 0.997, which is greater than 0.5. The dependent variable (Quality of Health Services) also shows a p-value of 0.777, which is above the 0.05 level. This means that both variables of the study are normally distributed.

**Figure 4-4:** Q-Q Plots of Knowledge_Management_Processes and Q-Q Plots of The_Quality_of_Health_Services




**Source:** Outputs of JASP 0.95.0.0

The Q-Q plots provide further confirmation of these results. In both cases, most of the data points are close to the diagonal line, with only small deviations at the ends. This suggests that the distributions of two variables are approximately normal.

In general, these results indicate that the data meet the assumption of normality, which allows **the use of parametric tests** such as correlation and regression in the next steps.

## 3. Data analysis and results

This section outlines the analysis of the collected data and presents the key results in relation to the study objectives.

## 3.1 Sample Characteristics Analysis

An analysis of the sample characteristics is presented in the following sub-section, highlighting the demographic and contextual features of the respondents to ensure a comprehensive understanding of the study population.

### 3.1.1 Analysis of Sample Characteristics by Gender

The statistical distribution of the sample according to the gender variable can be presented as follows:

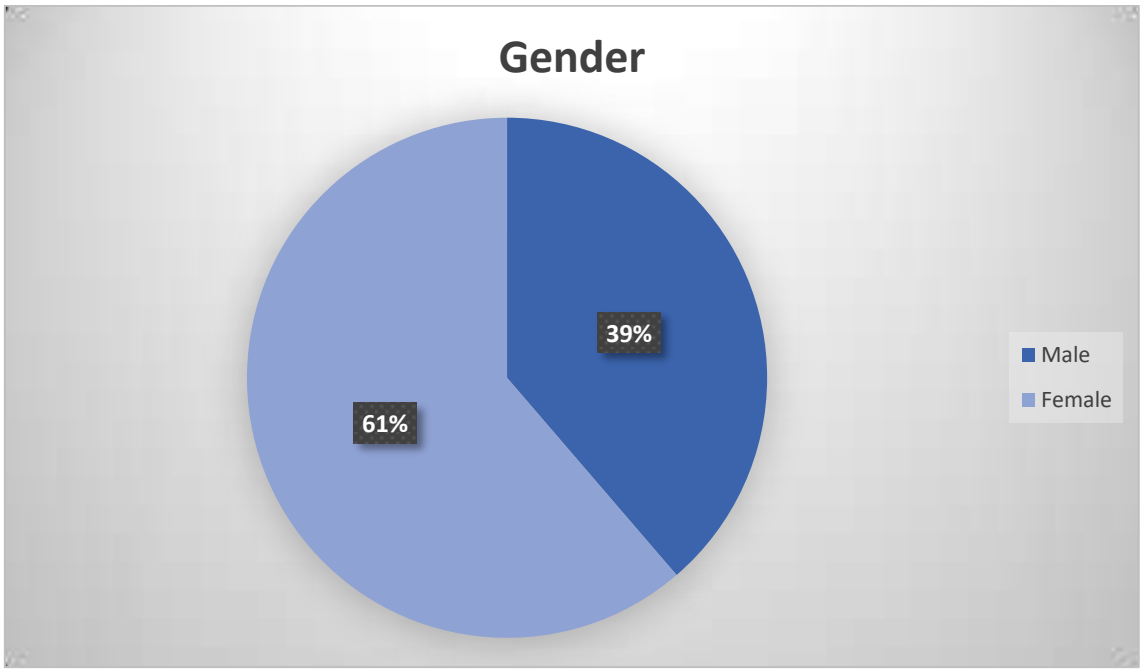
**Table 4-19**: Distribution of Study Sample by Gender

| No. | Variable | Category | Frequency | Percentage % |
|---|---|---|---|---|
| 01 | Gender | Male | 149 | 38.7 |
| 02 | | Female | 236 | 61.3 |
| **Total** | | | 385 | 100 |

**Source:** Outputs of JASP 0.95.0.0

The results presented in the table above can be illustrated graphically, as shown in the following figure:

**Figure 4-5:** Distribution of Study Sample by Gender




**Source:** EXCEL Software

The table and figure above present the distribution of participants by gender in a sample of 385 individuals. The percentage breakdown is as follows:

Male: 149 participants, accounting for 38.7 % of the total sample.

Female: 236 participants, accounting for 61.3 % of the total sample.

From the analysis, it is evident that females represent the majority of the sample, comprising over 60% of the respondents, while males account for less than 40%. This gender imbalance in the study conducted in the university hospital centers can be attributed to several interconnected factors. First, social and professional roles often lead to females being more prevalent in healthcare-related fields, particularly in nursing and general healthcare roles. These professions are often seen as more aligned with the traditional female role. Second, educational trends in Algeria show that females are increasingly graduating in medical and healthcare disciplines. Additionally, specialization within public healthcare institutions may attract more females to certain fields, such as internal medicine or nursing, while fields like surgery may see more male representation. Furthermore, females might be more actively engaged in university activities, research programmes, and hospital-based academic opportunities, leading to

higher representation in the sample. Lastly, there may be unintentional biases in sample selection or a greater willingness among females to participate in the study.

In conclusion, these various factors- ranging from professional trends and educational shifts to institutional specialization and social dynamics- combine to explain the higher representation of females in the sample compared to males

### 3.1.2 Analysis of Sample Characteristics by Age

The statistical distribution of the sample according to the age variable can be presented as follows:

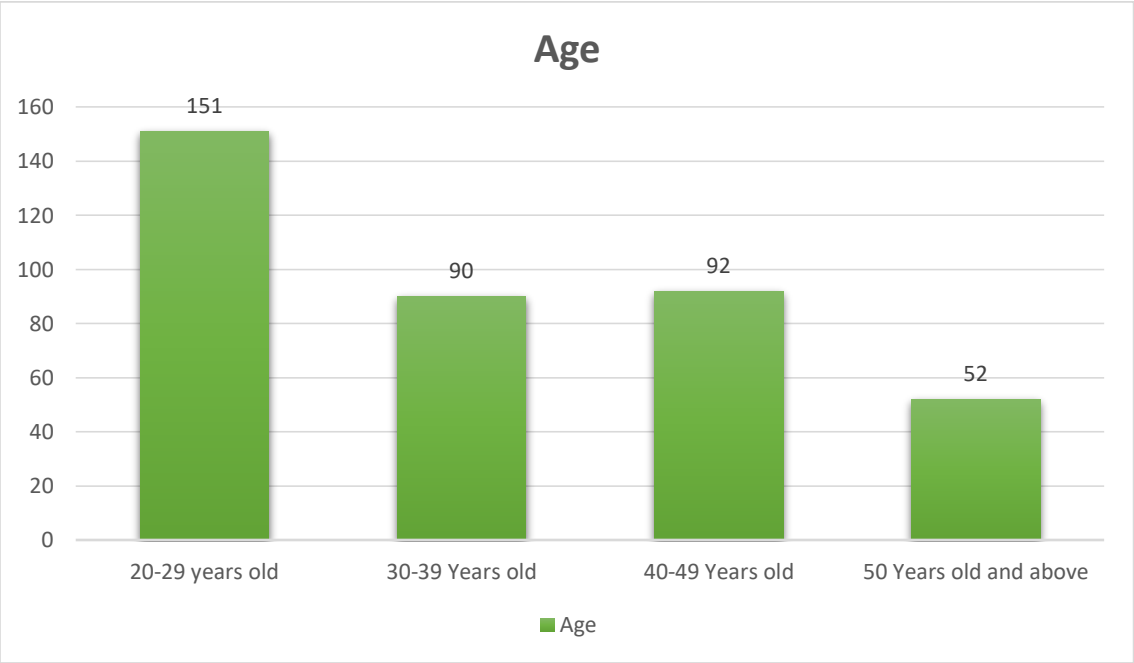
**Table 4-20:** Distribution of Study Sample by Age

| No. | Variable | Category | Frequency | Percentage % |
|---|---|---|---|---|
| 01 | Age | 20-29 Years old | 151 | 39.2 |
| 02 | | 30-39 Years old | 90 | 23.4 |
| 03 | | 40-49 Years old | 92 | 23.9 |
| 04 | | 50 Years old and above | 52 | 13.5 |
| **Total** | | | 385 | 100% |

**Source**: Outputs of JASP 0.95.0.0

The results presented in the table above can be illustrated graphically, as shown in the following figure:

**Figure 4-6:** Distribution of Study Sample by Age




**Source:** EXCEL Software

The age distribution of the sample reveals that the largest group is individuals aged 20-29 years, accounting for 39.2% of the respondents. This likely reflects the significant presence of younger individuals in the early stages of their academic or professional careers within university hospital centers. The 30-39 years and 40-49 years age groups combined represent 47.3 %, indicating a substantial proportion of mid-career professionals. In contrast, the 50 years and above group comprises only 13.5% of the sample, which may be attributed to factors such as retirement or transitions into senior administrative roles. Overall, the age distribution demonstrates a predominance of younger and middle-aged individuals, which is characteristic of healthcare institutions with a focus on training and early-career professionals, while highlighting a potential underrepresentation of older professionals whose experience could offer valuable insights.

### 3.1.3 Analysis of Sample Characteristics by Qualification

The statistical distribution of the sample according to the Qualification variable can be presented as follows:

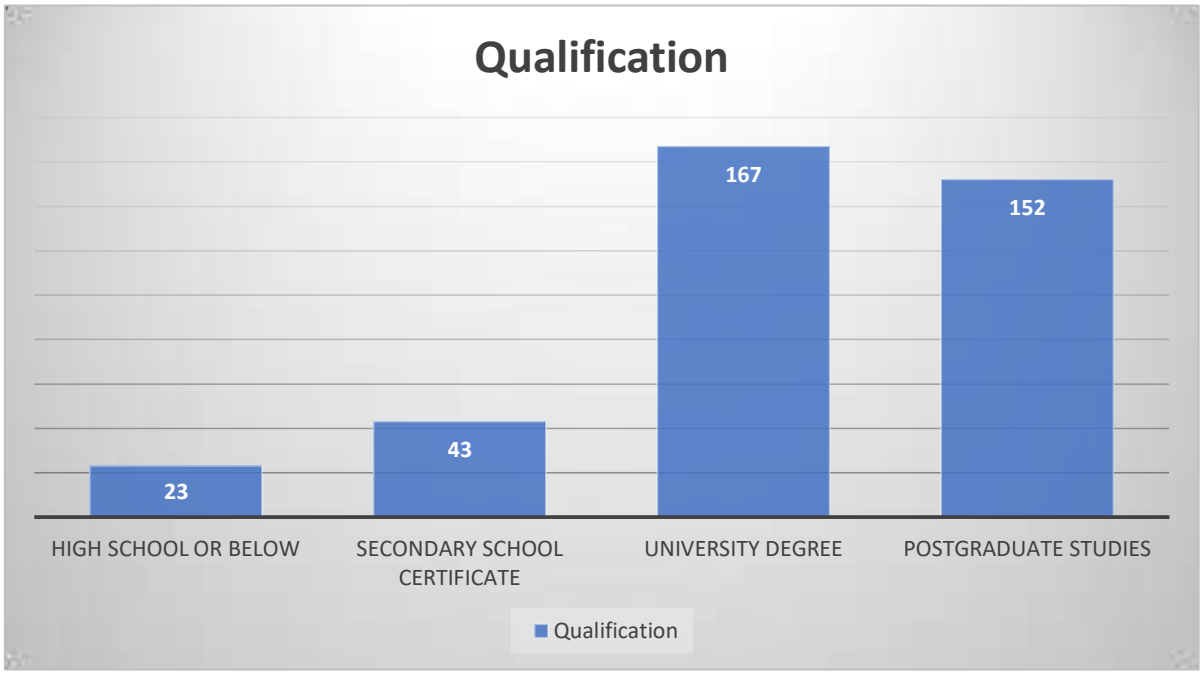
**Table 4-21:** Distribution of Study Sample by Qualification

| No. | Variable | Category | Frequency | Percentage % |
|---|---|---|---|---|
| 01 | Qualification | High school or below | 23 | 6.0 |
| 02 | | Secondary School Certificate (Baccalaureate) | 43 | 11.2 |
| 03 | | University degree | 167 | 43.4 |
| 04 | | Postgraduate Studies | 152 | 39.5 |
| **Total** | | | 385 | 100% |

**Source:** Outputs of JASP 0.95.0.0

The results presented in the table above can be illustrated graphically, as shown in the following figure:

**Figure 4-7:** Distribution of Study Sample by Qualification




**Source:** EXCEL Software

The results of the qualification distribution show that 43.4% of the participants hold a university degree, while 39.5% have completed postgraduate studies. This reflects a high level of education within the sample, which is consistent with the nature of university hospitals that typically attract individuals with higher educational backgrounds. Additionally, 11.2 % of the participants have completed the Secondary School Certificate (Baccalaureate), indicating that this group is likely in the early stages of their academic or professional careers. Conversely, only 6.0% of the participants have completed high school or below, suggesting that the sample is predominantly composed of individuals with advanced qualifications.

### 3.1.4 Analysis of Sample Characteristics by Profession

The statistical distribution of the sample according to the Profession variable can be presented as follows:

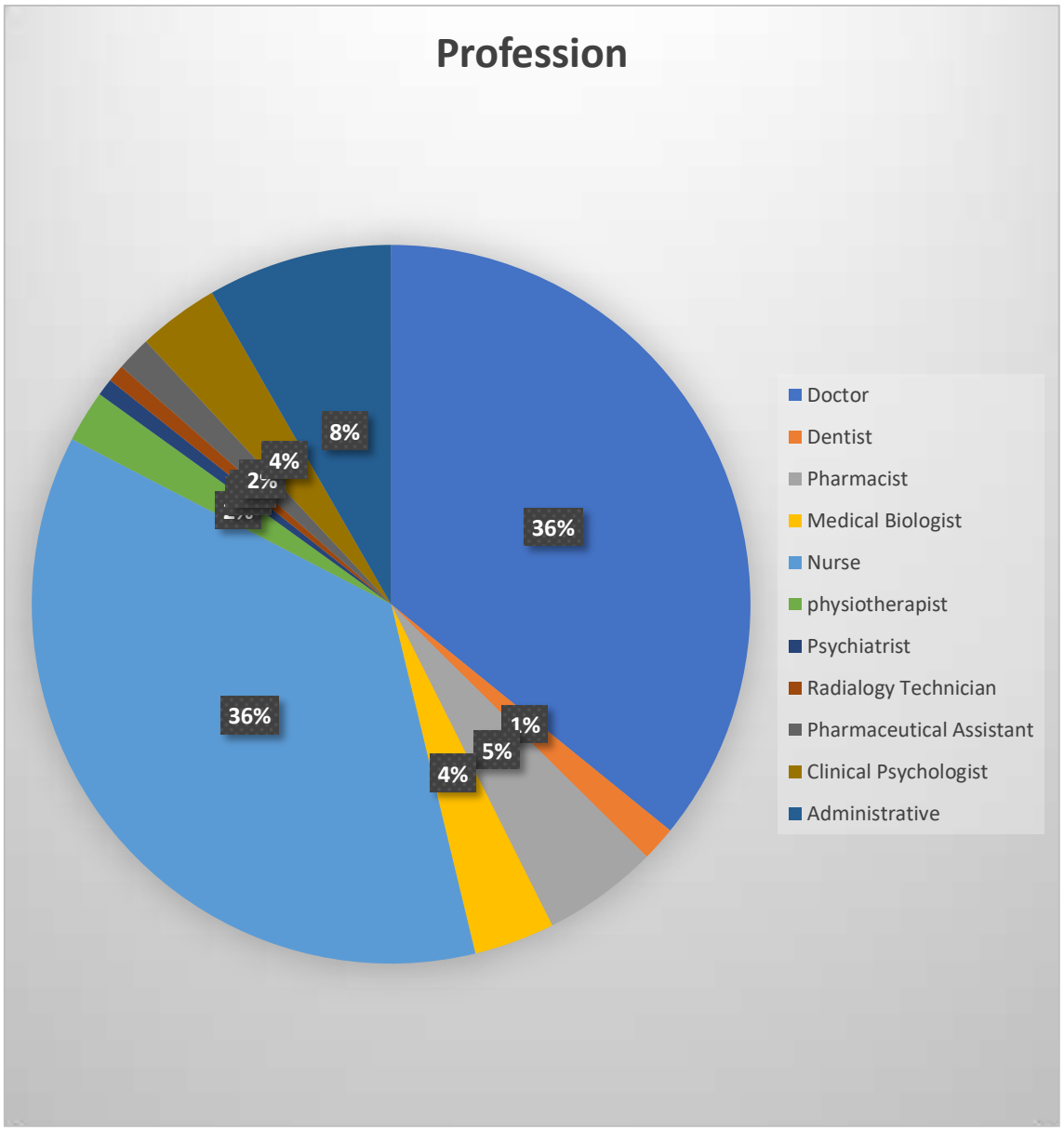
**Table 4-22:** Distribution of Study Sample by Profession

| No. | Variable | Category | Frequency | Percentage % |
|---|---|---|---|---|
| 01 | Profession | Doctor | 138 | 35.8 |
| 02 | | Dentist | 6 | 1.6 |
| 03 | | Pharmacist | 20 | 5.2 |
| 04 | | Medical Biologist | 14 | 3.6 |
| 05 | | Nurse | 140 | 36.4 |
| 06 | | Physiotherapist | 9 | 2.3 |
| 07 | | Psychiatrist | 3 | 0.8 |
| 08 | | Radiology Technician | 3 | 0.8 |
| 09 | | Pharmaceutical Assistant | 6 | 1.6 |
| 10 | | Clinical Psychologist | 14 | 3.6 |
| 11 | | Administrative | 32 | 8.3 |
| **Total** | | | 385 | 100 % |

**Source:** Outputs of JASP 0.95.0.0

The results presented in the table above can be illustrated graphically, as shown in the following figure:

**Figure 4-8:** Distribution of Study Sample by Profession




**Source:** EXCEL Software

The distribution of the study sample by profession shows that the largest groups are nurses and doctors, who represent the main workforce in hospitals, with nurses making up 36.4% and doctors 35.8%. Other professions, such as pharmacists (5.2%), medical biologists (3.6%), and psychiatrists (0.8 %), are represented in smaller proportions, indicating that these are more specialized roles with a smaller workforce in the hospital. Administrative individuals

account for 8.3 % of the sample. This distribution aligns with the typical professional structure in university hospitals, where clinical roles dominate, while specialized and administrative roles represent a smaller proportion of the workforce.

### 3.1.5 Analysis of Sample Characteristics by Professional Category

The statistical distribution of the sample according to the Professional Category variable can be presented as follows:

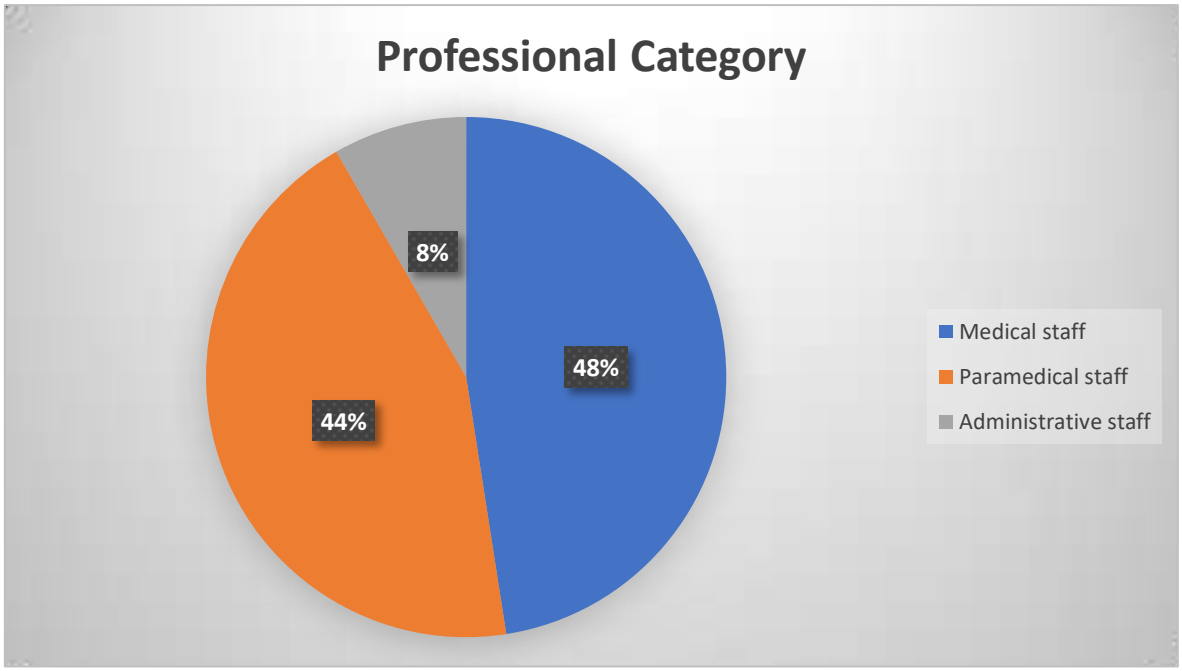
**Table 4-23:** Distribution of Study Sample by Professional Category

| No. | Variable | Category | Frequency | Percentage % |
|---|---|---|---|---|
| 01 | Professional Category | Medical staff | 183 | 47.5 |
| 02 | | Paramedical staff | 170 | 44.2 |
| 03 | | Administrative staff | 32 | 8.3 |
| **Total** | | | 385 | 100% |

**Source:** Outputs of JASP 0.95.0.0

The results presented in the table above can be illustrated graphically, as shown in the following figure:

**Figure 4-9:** Distribution of Study Sample by Professional Category




**Source:** EXCEL Software

The distribution of the sample by professional category shows that medical staff represent the majority group, comprising 47.5 % of the sample, followed by paramedical staff at 44.2 %. Together, these two categories account for 91.7% of the sample, highlighting the study's primary focus on professionals directly involved in patient care. Administrative staff make up only 8.3 %, reflecting their supportive role within the university hospital setting. This distribution emphasizes that the study is mainly centered on the clinical roles, with administrative staff representing a smaller proportion of the sample.

### 3.1.6 Analysis of Sample Characteristics by Department

The statistical distribution of the sample according to the Department variable can be presented as follows:

**Table 4-24:** Distribution of Study Sample by Department

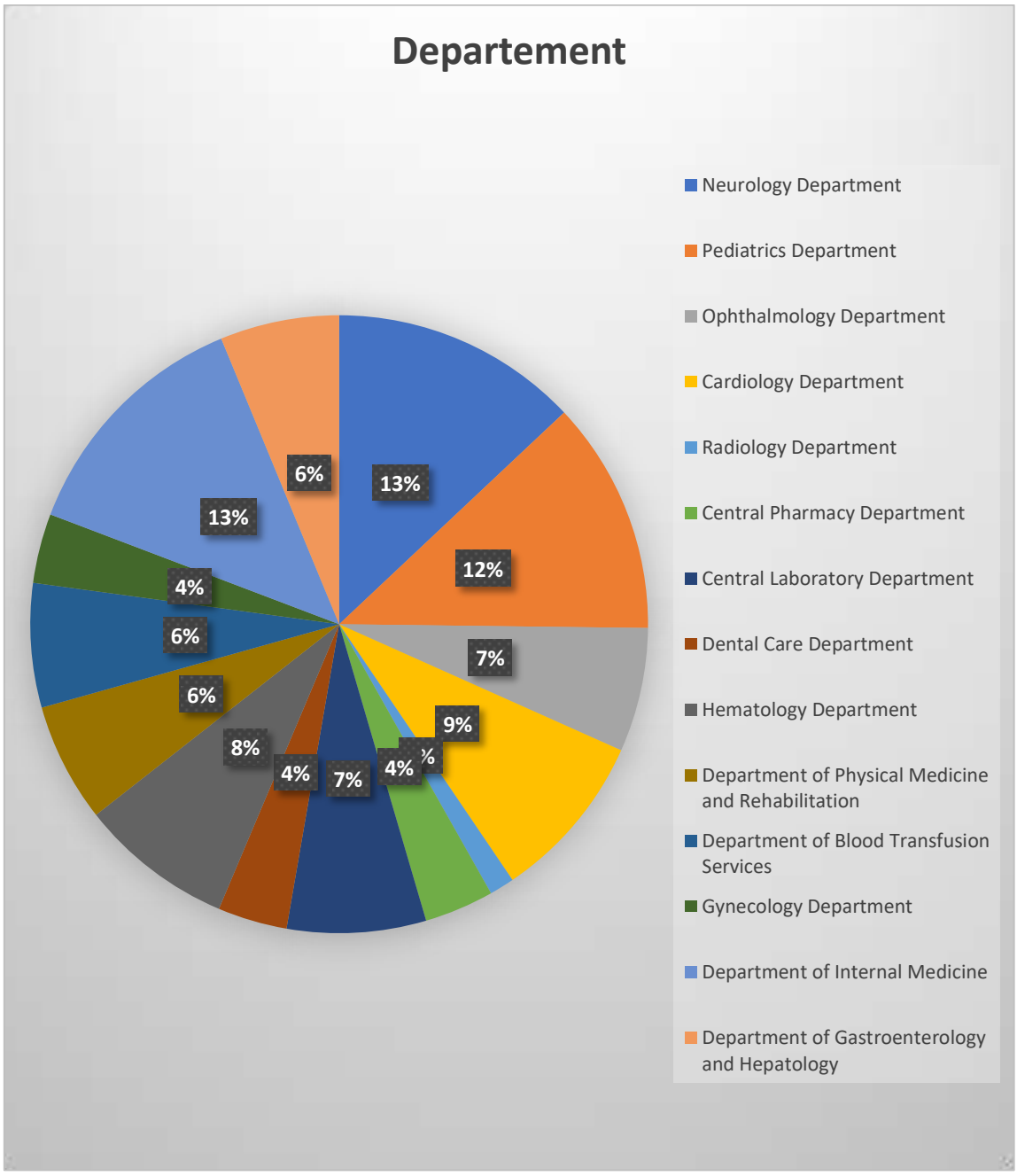
| No. | Variable | Category | Frequency | Percentage % |
|---|---|---|---|---|
| 01 | | Neurology Department | 50 | 13.0 |
| 02 | | Pediatrics Department | 47 | 12.2 |
| 03 | | Ophthalmology Department | 25 | 6.5 |
| 04 | | Cardiology | 34 | 8.8 |

| | | | | |
|---|---|---|---|---|
| | Department | Department | | |
| 05 | | Radiology Department | 5 | 1.3 |
| 06 | | Central Pharmacy Department | 14 | 3.6 |
| 07 | | Central Laboratory Department | 28 | 7.3 |
| 08 | | Dental Care Department | 14 | 3.6 |
| 09 | | Hematology Department | 31 | 8.1 |
| 10 | | Department of Physical Medicine and Rehabilitation | 24 | 6.2 |
| 11 | | Department of Blood Transfusion Services | 25 | 6.5 |
| 12 | | Gynecology Department | 14 | 3.6 |
| 13 | | Department of Internal Medicine | 50 | 13.0 |
| 14 | | Department of Gastroenterology and Hepatology | 24 | 6.2 |
| **Total** | | | 385 | 100% |

**Source:** Outputs of JASP 0.95.0.0

The results presented in the table above can be illustrated graphically, as shown in the following figure:

**Figure 4-10:** Distribution of Study Sample by Department




**Source**: EXCEL Software

The distribution of the study sample by department exhibits that the Neurology Department and the Department of Internal Medicine are the most represented, each comprising 13.0 % of the sample, reflecting the central role of these departments in the university hospitals under study. The Pediatrics Department follows closely with 12.2 %, and other departments such as Cardiology (8.8%), Hematology (8.1%), and the Central laboratory (7.3%) also

have significant representation. In contrast, departments like Gynecology (3.6%), central pharmacy (3.6%), and Radiology (1.3%) have lower representation, which may reflect the specialized nature of these fields or their smaller workforce in the hospital. This distribution highlights a diverse range of medical specialties in the study, with a stronger focus on departments like neurology and internal medicine.

### 3.1.7 Analysis of Sample Characteristics by Years of Experience in the Public Health Sector

The statistical distribution of the sample according to the Years of Experience in the Public Health Sector variable can be presented as follows:

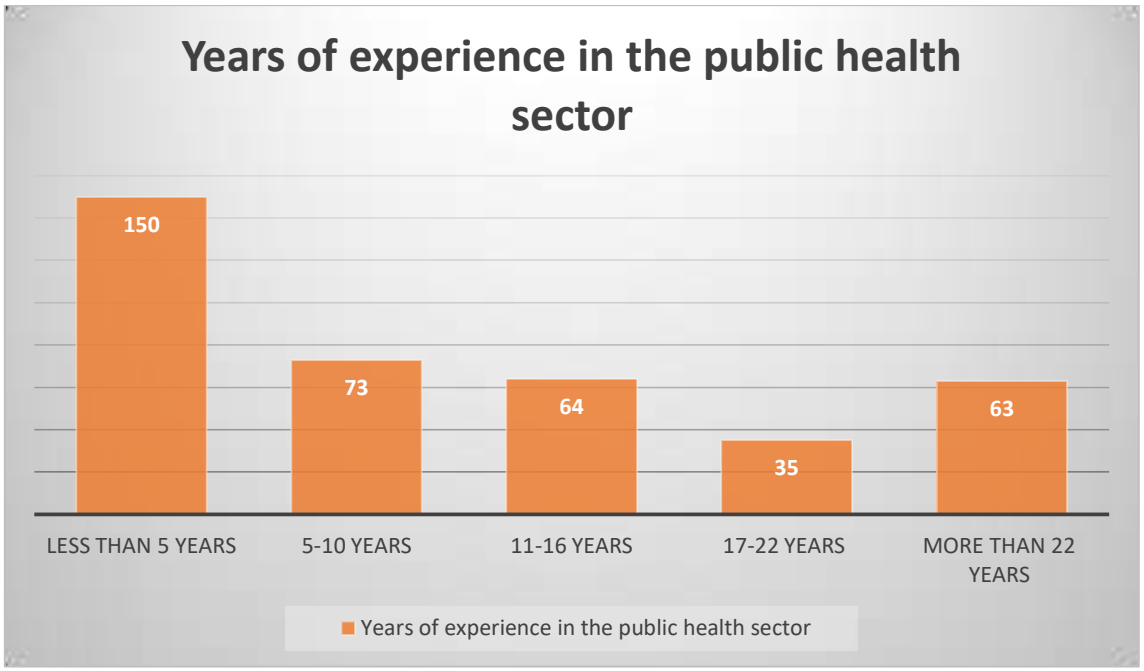
**Table 4-25:** Distribution of Study Sample by Years of Experience in the Public Health Sector

| No. | Variable | Category | Frequency | Percentage % |
|---|---|---|---|---|
| 01 | Years of Experience in the Public Health Sector | Less than 5 Years | 150 | 39.0 |
| 02 | | 5–10 Years | 73 | 19.0 |
| 03 | | 11–16 Years | 64 | 16.6 |
| 04 | | 17-22 Years | 35 | 9.1 |
| 05 | | More than 22 years | 63 | 16.4 |
| **Total** | | | 385 | 100% |

**Source:** Outputs of JASP 0.95.0.0

The results presented in the table above can be illustrated graphically, as shown in the following figure:

**Figure 4-11:** Distribution of Study Sample by Years of Experience in the Public Health Sector




**Source:** EXCEL Software

The distribution of the study sample by years of experience in the public health sector shows that the largest group has less than 5 years of experience, comprising 39.0 % of the sample, indicating that many participants are in the early stages of their careers. 19.0 % of the participants have 5-10 years of experience, and 16.6 % have 11-16 years of experience, reflecting a significant portion of mid-career professionals. Additionally, 16.4 % of participants have more than 22 years of experience, while 9.1 % have 17-22 years of experience. This distribution highlights the diversity of experience levels among the participants, offering insights from both early-career and highly experienced professionals in the public health sector.

### 3.1.8 Analysis of Sample Characteristics by Wilaya of UHC Location

The statistical distribution of the sample according to the Wilaya of UHC Location variable can be presented as follows:

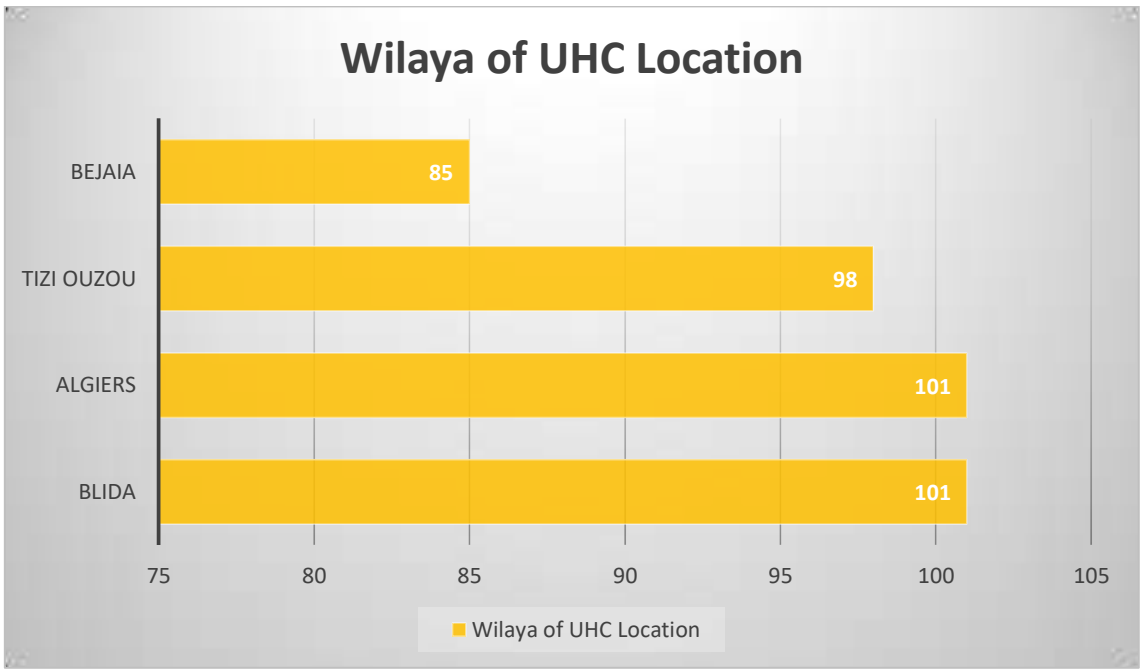
**Table 4-26**: Distribution of Study Sample by Wilaya of UHC Location

| No. | Variable | Category | Frequency | Percentage % |
|---|---|---|---|---|
| 01 | Wilaya of UHC Location | Blida | 101 | 26.2 |
| 02 | | Algiers | 101 | 26.2 |
| 03 | | Tizi Ouzou | 98 | 25.5 |
| 04 | | Bejaia | 85 | 22.1 |
| **Total** | | | 385 | 100% |

**Source:** Outputs of JASP 0.95.0.0

The results presented in the table above can be illustrated graphically, as shown in the following figure:

**Figure 4-12:** Distribution of Study Sample by Wilaya of UHC Location




**Source**: EXCEL Software

The distribution of the study sample by Wilaya of UHC location shows that both Blida and Algiers each account for 26.2 % of the sample, indicating equal representation from these two regions. Tizi Ouzou follows with 25.5%, reflecting strong participation from this area. Bejaia represents 22.1% of the sample, showing a slightly smaller but still significant contribution. This

distribution ensures a geographically diverse representation, capturing perspectives from various regions of the country.

### 3.2 Analysis of Study Axes Results

The preliminary analysis aims to identify respondents' opinions and attitudes by examining each questionnaire item across the study axes. This stage is intended to provide a comprehensive descriptive account of the data, offering insights into patterns of agreement or divergence within the sample. Establishing such a foundation is crucial before moving forward to the testing of the research hypotheses, as it ensures a clearer understanding of the contextual significance of the findings.

#### 3.2.1 Analysis of the First Axis Results: Knowledge Management Processes

This axis examines participants' views on Knowledge Management Processes, including acquisition, creation, sharing, storage, and application. The analysis highlights the extent to which these practices are applied in the University Hospital Centers.

❖ **Analyze the responses of the participants regarding items in the knowledge acquisition dimension**

**Table 4-27:** Results of analyzing the answers of the respondents to items of 1st dimension of knowledge acquisition

| N | Items | Mean | Standard deviation | Ranking | Rating degree |
|---|---|---|---|---|---|
| **KA1** | Healthcare workers are able to participate in training sessions and workshops to acquire new knowledge | 2.997 | 1.074 | 3 | Moderate Level |
| **KA2** | The UHC regularly relies on external sources, such as conferences and medical publications, to gain health-related knowledge | 3.039 | 0.977 | 2 | Moderate Level |
| **KA3** | Electronic Medical Records | 2.348 | 1.249 | 6 | Low |

| | | | | | |
|---|---|---|---|---|---|
| | (EMRs) are consistently used as a primary source for acquiring knowledge about patient cases | | | | Level |
| **KA4** | The UHC actively gathers feedback from patients and staff to improve knowledge acquisition in health services | 2.470 | 1.146 | 5 | Low Level |
| **KA5** | The UHC allows healthcare workers to access and benefit from information available in internal sources to acquire new knowledge | 2.813 | 1.123 | 4 | Moderate Level |
| **KA6** | Modern medical devices at the UHC enhance clinical knowledge by improving diagnostic accuracy | 3.166 | 1.276 | 1 | Moderate Level |
| Knowledge Acquisition | | **2.806** | **0.738** | **Moderate Level** | |

**Source:** Outputs of JASP 0.95.0.0

The analysis of knowledge acquisition within Algerian University Hospital Centers indicates an overall moderate level with a mean score of 2.806 and a standard deviation of 0.738. This demonstrates that while some mechanisms for acquiring knowledge are in place, there remain notable gaps that hinder optimal knowledge management in the healthcare setting. The highest contribution emerged from the use of modern medical devices, which moderately enhance clinical knowledge by improving diagnostic accuracy. Reliance on external sources such as conferences and medical publications, as well as participation in training workshops, also demonstrated moderate effectiveness. However, significant weaknesses were observed in the consistent use of electronic medical records and the integration of patient and staff feedback, both of which scored at a low level. These findings suggest that while some mechanisms for professional learning and knowledge development are in place, there remains a pressing need to strengthen digital health systems and institutionalize feedback processes.

❖ **Analyze the responses of the participants regarding items in the knowledge creation dimension**

**Table 4-28:** Results of analyzing the answers of the respondents to items of the 2nd dimension, Knowledge Creation

| N | Items | Mean | Standard deviation | Ranking | Rating degree |
|---|---|---|---|---|---|
| **KC7** | In the UHC, healthcare workers are given opportunities to suggest new ideas for improving health services | 2.660 | 1.162 | 5 | Low Level |
| **KC8** | Teamwork sessions are regularly held to promote innovative solutions in healthcare delivery | 2.704 | 1.104 | 3 | Moderate Level |
| **KC9** | Medical data is analyzed to identify health challenges and propose new treatment strategies | 2.966 | 1.139 | 2 | Moderate Level |
| **KC10** | Multidisciplinary teams collaborate to enhance therapeutic procedures based on the latest medical research | 3.210 | 1.109 | 1 | Moderate Level |
| **KC11** | The UHC fosters a supportive environment for research and development in healthcare services | 2.636 | 1.239 | 4 | Moderate Level |
| **KC12** | Pilot projects are supported to evaluate new treatment models | 2.434 | 1.178 | 6 | Low Level |
| Knowledge Creation | | **2.768** | **0.855** | **Moderate Level** | |

**Source:** Outputs of JASP 0.95.0.0

The analysis of Knowledge Creation within Algerian University Hospital Centers indicates an overall moderate level with a mean score of 2.768 and a standard deviation of 0.855. The highest-rated item concerned multidisciplinary

collaboration (M= 3.210), highlighting the value of joint efforts in enhancing therapeutic procedures informed by medical research. Similarly, the analysis of medical data and teamwork sessions scored at a moderate level, indicating some institutional support for innovative practices. However, lower scores were noticed in opportunities for health workers to propose new ideas (M= 2.660), and in fostering a supportive research environment (M= 2.636), suggesting limited encouragement for bottom-up innovation. The lowest score was assigned to pilot project support (M= 2.434), reflecting weak engagement in testing and implementing new treatment models. These findings emphasize that while collaborative and data-driven initiatives contribute to knowledge creation, structural and cultural barriers continue to restrict the full institutionalization of innovation in healthcare services.

❖ **Analyze the responses of the participants regarding items in the knowledge sharing dimension**

**Table 4-29:** Results of analyzing the answers of the respondents to items of the 3rd dimension, knowledge Sharing

| N | Items | Mean | Standard deviation | Ranking | Rating degree |
|---|---|---|---|---|---|
| **KS13** | The UHC facilitates regular meetings and workshops for knowledge exchange among staff | 2.735 | 1.131 | 6 | Moderate Level |
| **KS14** | The UHC facilitates regular meetings and workshops for knowledge exchange among staff | 2.434 | 1.304 | 7 | Low Level |
| **KS15** | Case review sessions are conducted to disseminate best practices in medical treatment | 2.922 | 1.108 | 4 | Moderate Level |
| **KS16** | Healthcare workers voluntarily document their experiences and share them with colleagues to support knowledge exchange | 3.213 | 1.116 | 2 | Moderate Level |

| | | | | | |
|---|---|---|---|---|---|
| **KS17** | Cross-functional meetings are held to enhance interdepartmental knowledge sharing | 2.839 | 1.106 | 5 | Moderate Level |
| **KS18** | The UHC encourages participation in professional medical forums to share and gather knowledge | 3.117 | 1.218 | 3 | Moderate Level |
| **KS19** | UHC staff regularly exchange perspectives to address workplace challenges | 3.249 | 1.134 | 1 | Moderate Level |
| Knowledge Sharing | | **2.930** | **0.806** | **Moderate Level** | |

**Source:** Outputs of JASP 0.95.0.0

The analysis of Knowledge Sharing within Algerian University Hospital Centers indicates an overall moderate level with a mean score of 2.930 and a standard deviation of 0.806. The highest score was observed for regular staff exchanges to address workplace challenges (M = 3.249), followed by voluntary documentation and sharing of experiences (M =3.213), reflecting a positive tendency toward informal peer-to-peer knowledge exchange. Similarly, participation in professional forums (M = 3.117) and case review sessions (M = 2.922) scored at a moderate level, suggesting that structured platforms contribute to knowledge dissemination, though not consistently institutionalized. Cross-functional meetings (M = 2.839) and regular workshops (M = 2.735) also indicated moderate effectiveness, but one item related to knowledge exchange activities scored at a low level (M = 2.434), highlighting weaknesses in sustaining systematic Knowledge-sharing mechanisms. Overall, while interpersonal and professional interactions play a significant role in facilitating knowledge sharing, the lack of formalized and consistent structures limits the potential impact of knowledge-sharing practices in university hospital centers.

- **Analyze the responses of the participants regarding items in the knowledge storage dimension**

**Table 4-30:** Results of analyzing the answers of the respondents to items of the 4th dimension, knowledge Storage

| N | Items | Mean | Standard deviation | Ranking | Rating degree |
|---|---|---|---|---|---|
| **KST 20** | Integrated digital systems are in place for storing and retrieving medical knowledge | 2.444 | 1.280 | 7 | Moderate Level |
| **KST 21** | Lessons learned from past medical cases are systematically documented and stored for future reference | 3.140 | 1.234 | 2 | Moderate Level |
| **KST 22** | Medical guidelines and procedures are regularly updated and stored to reflect best practices | 2.997 | 1.207 | 3 | Moderate Level |
| **KST 23** | The UHC uses electronic archiving systems to preserve patient health information | 2.610 | 1.419 | 6 | Moderate Level |
| **KST 24** | Healthcare workers have seamless access to stored knowledge resources as per their needs | 2.862 | 1.199 | 5 | Moderate Level |
| **KST 25** | A structured paper-based system is used to archive knowledge within the UHC | 3.829 | 1.215 | 1 | Moderate Level |
| **KST 26** | Stored knowledge is reviewed and updated regularly to ensure it remains current and useful | 2.888 | 1.166 | 4 | Moderate Level |
| **KST 27** | The UHC uses cloud-based systems to ensure secure and accessible knowledge storage | 2.442 | 1.316 | 8 | Low Level |
| Knowledge Storage | | **2.902** | **0.867** | **Moderate Level** | |

**Source:** Outputs of JASP 0.95.0.0

The analysis of Knowledge Storage within Algerian University Hospital Centers indicates an overall moderate level with a mean score of 2.902 and a standard deviation of 0.867. The highest-rated practice was the reliance on a

structured paper-based archiving system (M= 3.829), suggesting that traditional methods remain dominant in preserving institutional knowledge. Moderate scores were obtained for documenting lessons learned from medical cases (M= 3.140) and updating and storing medical guidelines (M= 2.997), which reflect partial adherence to knowledge management standards. Similarly, the regular review of archived knowledge (M = 2.888) and access to stored resources (M = 2.862) were evaluated at moderate levels, indicating areas with potential for improvement. By contrast, weaknesses were evident in the use of electronic archiving (M= 2.610), integrated digital systems (M= 2.444), and particularly cloud-based storage solutions (M= 2.442), which scored at a low level. Overall, the results highlight a continued reliance on traditional paper-based systems, with limited adoption of modern digital and cloud technologies, thereby restricting efficiency, accessibility, and long-term sustainability in knowledge storage practices.

❖ **Analyze the responses of the participants regarding items in the knowledge application dimension**

**Table 4-31:** Results of analyzing the answers of the respondents to the items of the 5th dimension of knowledge application

| N | Items | Mean | Standard deviation | Ranking | Rating degree |
|---|---|---|---|---|---|
| **KAP 28** | Acquired knowledge is used to improve patient intake, diagnosis, and treatment procedures | 3.452 | 1.170 | 2 | Moderate Level |
| **KAP 29** | The UHC integrates applied medical research findings to improve service | 3.075 | 1.206 | 4 | Moderate Level |
| **KAP 30** | Healthcare workers receive training on implementing modern knowledge into medical and administrative practices | 2.753 | 1.183 | 7 | Moderate Level |
| **KAP** | Lessons learned from past | 3.026 | 1.136 | 5 | Moderate |

| | | | | | |
|---|---|---|---|---|---|
| **31** | cases are used in the development of new administrative procedures and clinical protocols | | | | Level |
| **KAP 32** | The UHC effectively utilizes organizational knowledge to address new challenges and avoid duplication of work | 2.886 | 1.202 | 6 | Moderate Level |
| **KAP 33** | Applying knowledge in the UHC has led to noticeable improvements in patient outcomes | 3.278 | 1.120 | 3 | Moderate Level |
| **KAP 34** | Past case knowledge informs decision-making and helps prevent medical errors | 3.603 | 1.193 | 1 | Moderate Level |
| Knowledge Application | | **3.153** | **0.868** | **Moderate Level** | |

**Source:** Outputs of JASP 0.95.0.0

The analysis of Knowledge Application within Algerian University Hospital Centers indicates an overall moderate level with a mean score of 3.153 and a standard deviation of 0.868. The most praised aspect was the use of past case knowledge to help make decisions and prevent medical errors (M=3.603), demonstrating the crucial role of experiential learning in improving clinical safety. Similarly, knowledge utilization to enhance patient intake, diagnosis, and treatment (M= 3.452) and the perception that knowledge application contributes to improved patient outcomes (M= 3.278) also scored at a moderate level, highlighting tangible benefits of applied knowledge in practice. The integration of medical research findings (M= 3.075) and the use of lessons from past cases in administrative and clinical protocols (M= 3.026) further reflect moderate but uneven adoption. However, weaknesses emerged in the areas of organizational knowledge used to address new challenges (M= 2.886) and training for applying modern knowledge (M= 2.753), both of which recorded the lowest scores. According to these findings, while knowledge application contributes positively

to healthcare performance, systemic barriers, specifically insufficient training and limited institutional mechanisms for knowledge integration, limit its full potential.

❖ **Analyze the responses of the participants regarding items in the Knowledge Management Processes axis**

**Table 4-32**: Analyzing the answers of the respondents of the 1st Knowledge Management Processes axis and its dimensions

| Axis | Dimensions | Mean | Standard deviation | Ranking | Rating degree |
|---|---|---|---|---|---|
| **Knowledge Management Processes** | Knowledge Acquisition | 2.806 | 0.738 | 4 | Moderate Level |
| | Knowledge Creation | 2.768 | 0.855 | 5 | Moderate Level |
| | Knowledge Sharing | 2.930 | 0.806 | 2 | Moderate Level |
| | Knowledge Storage | 2.902 | 0.867 | 3 | Moderate Level |
| | Knowledge Application | 3.153 | 0.868 | 1 | Moderate Level |
| | **Total of axis 1** | 2.919 | 0.661 | Moderate Level | |

**Source**: Outputs of JASP 0.95.0.0

According to the first axis analysis, knowledge management processes are generally **moderate** in Algerian university hospital centers, with a mean score of 3.153 and a standard deviation of 0.868. The highest ranking among the five dimensions was for knowledge application (M= 3.153, SD=0.868), which indicates that healthcare workers are reasonably successful in utilizing acquired and stored knowledge to improve patient care and decrease medical errors. This was followed by knowledge sharing (M= 2.930, SD= 0.806) and knowledge storage (M= 2.902, SD= 0.867), reflecting a moderate culture of information exchange and reliance on both traditional and partially digital archiving systems. In contrast, knowledge acquisition (M= 2.806, SD= 0.738) and knowledge creation (M= 2.768, SD= 0.855) scored the lowest, suggesting persistent challenges in systematically acquiring new knowledge and fostering innovation

through research and collaborative practices. Overall, the findings demonstrate that while the foundations of knowledge management exist within these institutions, greater emphasis is required on strengthening acquisition and creation mechanisms to complement the relatively stronger application and sharing practices.

### 3.2.2 Analysis of the Second Axis Results: The Quality of Health Services

This axis examines participants' views on the quality of public health services dimensions, including reliability, responsiveness, assurance, empathy, and tangibles. The analysis highlights the extent to which these dimensions are applied in the University Hospital Centers.

❖ **Analyze the responses of the participants regarding items in the Reliability dimension**

**Table 4-33:** Results of analyzing the answers of the respondents to items of 1ST dimension, Reliability

| N | Items | Mean | Standard deviation | Ranking | Rating degree |
|---|---|---|---|---|---|
| **REL 1** | Healthcare workers consistently strive to minimize errors in service delivery | 4.068 | 1.059 | 1 | High Level |
| **REL 2** | Healthcare workers keep the promises they make to patients | 4.018 | 0.967 | 2 | High Level |
| **REL 3** | The UHC provides consistent and continuous services with reliability and efficiency | 3.582 | 1.058 | 5 | High Level |
| **REL 4** | Services at the UHC are provided at the scheduled times that have been announced to patients | 3.678 | 1.102 | 4 | High Level |
| **REL 5** | Medical examinations are performed in a setting that ensures patients' privacy and confidentiality | 4.008 | 1.012 | 3 | High Level |
| Reliability | | **3.871** | **0.769** | **High Level** | |

**Source:** Outputs of JASP 0.95.0.0

The analysis of the reliability dimension within Algerian University Hospital Centers indicates an overall high level with a mean score of 3.871 and a standard deviation of 0.769. The highest rankings were given to healthcare workers' efforts to minimize errors (M= 4.068) and their commitment to keeping promises to patients (M= 4.018), reflecting strong professionalism and accountability. Likewise, privacy and confidentiality during medical examination (M= 4.008) were positively perceived, indicating adherence to ethical standards. However, relatively lower scores were recorded for adherence to scheduled service times (M= 3.678) and consistency in service continuity (M= 3.582), suggesting that delays and variability remain areas for improvement. Overall, the findings highlight that while reliability in Algerian UHCs is generally strong, enhancing timeliness and service efficiency would further consolidate patient trust.

❖ **Analyze the responses of the participants regarding items in the Responsiveness dimension.**

**Table 4-34:** Results of analyzing the answers of the respondents to items of the 2nd dimension, Responsiveness

| N | Items | Mean | Standard deviation | Ranking | Rating degree |
|---|---|---|---|---|---|
| **RES 6** | The UHC provides easy access to emergency services and medical consultations | 3.670 | 1.124 | 2 | High Level |
| **RES 7** | Healthcare workers respond quickly to patient needs | 3.883 | 1.010 | 1 | High Level |
| **RES 8** | Efforts are made to improve working conditions to ensure efficient service delivery | 3.514 | 1.083 | 5 | High Level |
| **RES 9** | The UHC streamlines procedures to improve patient care. | 3.660 | 1.024 | 3 | High Level |
| **RES 10** | The UHC guarantees prompt coordination among departments to address patient | 3.514 | 1.066 | 4 | High Level |

| | | | | | |
|---|---|---|---|---|---|
| | needs without delay | | | | |
| **RES 11** | Healthcare workers actively seek out and value patient feedback upon their departure from the UHC. | 2.855 | 1.239 | 6 | Moderate Level |
| Responsiveness | | **3.516** | **0.788** | **High Level** | |

**Source:** Outputs of JASP 0.95.0.0

The analysis of the responsiveness dimension within the Algerian University Hospital Centers indicates an overall high level with a mean score of 3.516 and a standard deviation of 0.788. The highest-rated item was the quick response of healthcare workers to patient needs (M= 3.883), highlighting efficiency and attentiveness in service delivery. Easy access to emergency services and consultation (M=3.670) and streamlined procedures to improve patient care (M=3.660) were also positively evaluated, reflecting institutional efforts to facilitate patient services. However, lower scores were observed in interdepartmental coordination (M=3.514) and improving working conditions (M=3.514), suggesting structural challenges that may limit overall responsiveness. Notably, the lowest rating was given to the practice of seeking and valuing patient feedback (M=2.855), which was only at a moderate level, pointing to a gap in patient-centered communication and quality improvement mechanisms. Overall, the findings emphasize that while responsiveness is generally strong, greater attention to patient feedback and internal coordination could significantly enhance service quality.

❖ **Analyze the responses of the participants regarding items in the assurance dimension**

**Table 4-35:** Results of analyzing the answers of the respondents to items of 3$^{RD}$ dimension Assurance

| N | Items | Mean | Standard deviation | Ranking | Rating degree |
|---|---|---|---|---|---|
| **ASS** | The healthcare workers at the | 3.909 | 0.921 | 1 | High |

| | | | | | |
|---|---|---|---|---|---|
| **12** | UHC possess the appropriate medical knowledge, skills, and experience | | | | Level |
| **ASS 13** | The UHC ensures continuous training for medical, nursing, and administrative staff to keep up with the latest medical protocols | 3.099 | 1.171 | 5 | Moderate Level |
| **ASS 14** | The healthcare workers demonstrate professionalism and competence in their work | 3.730 | 0.971 | 4 | High Level |
| **ASS 15** | Healthcare workers uphold high ethical standards and instill patient confidence by clearly explaining medical procedures | 3.842 | 0.986 | 2 | High Level |
| **ASS 16** | Health services are provided equitably, ensuring that all patients receive care without discrimination or bias | 3.839 | 1.148 | 3 | High Level |
| Assurance | | **3.684** | **0.794** | **High Level** | |

**Source:** Outputs of JASP 0.95.0.0

The analysis of the assurance dimension within the Algerian University Hospital Centers reflects an overall high level with a mean score of 3.684 and a standard deviation of 0.794. The strongest aspect identified was the possession of appropriate medical knowledge, skills, and experience by healthcare workers (M=3.909), which underscores patient confidence in staff competence. Ethical standards and the ability of healthcare workers to explain procedures clearly (M=3.842) as well as equitable service delivery without discrimination (M=3.839) were also highly rated, reinforcing trust and fairness in care provision. Professionalism and competence in daily practice (M=3.730) further strengthen this positive perception. However, the lowest score was given to the provision of continuous training for staff (M=3.099), which was rated at a moderate level, indicating a potential gap in keeping medical, nursing, and

administrative staff updated with modern protocols. Overall, while assurance is generally strong, enhancing continuous professional development would further consolidate patient trust and service quality.

❖ **Analyze the responses of the participants regarding items in the empathy dimension**

**Table 4-36:** Results of analyzing the answers of the respondents to items of 4TH dimension, Empathy

| N | Items | Mean | Standard deviation | Ranking | Rating degree |
|---|---|---|---|---|---|
| **EMP 17** | Healthcare workers offer psychological and social support for patients and their families | 3.590 | 1.115 | 6 | High Level |
| **EMP 18** | The healthcare workers at UHC are compassionate, friendly, and cheerful when interacting with patients. | 3.784 | 0.996 | 2 | High Level |
| **EMP 19** | The healthcare workers are considerate of patients' special circumstances | 3.818 | 1.057 | 1 | High Level |
| **EMP 20** | Patients feel their individual needs and concerns are heard and addressed during consultations | 3.592 | 1.032 | 5 | High Level |
| **EMP 21** | The UHC provides services at times convenient for its patients. | 3.748 | 1.039 | 3 | High Level |
| **EMP 22** | The UHC prioritizes patient needs during administrative and medical team meetings. | 3.717 | 1.088 | 4 | High Level |
| Empathy | | **3.708** | **0.832** | **High Level** | |

**Source:** Outputs of JASP 0.95.0.0

The analysis of the empathy dimension within the Algerian University Hospital Centers reveals an overall high level with a mean score of 3.708 and a standard deviation of 0.832. The highest-rated item was the consideration of patients' special circumstances (M= 3.818), highlighting the sensitivity of healthcare workers toward individual patient conditions. Compassion,

friendliness, and positive interaction with patient (M= 3.784) as well as the provision of services at convenient times (M= 3.748) were also strongly valued, indicating efforts to make care more patient-centred. Prioritizing patient needs in medical and administrative meeting (M= 3.717) and addressing patients' concerns during consultations (M= 3.592) reinforced this positive perception. The lowest score, though still at a high level, was offering psychological and social support to patients and families (M= 3.590), suggesting room for improvement in holistic care beyond medical treatment. Overall, the results emphasize that empathy is a notable strength in Algerian UHCs, though further attention to psychological and social support could enhance patient satisfaction and well-being.

- **Analyze the responses of the participants regarding items in the tangibles dimension**

**Table 4-37**: Results of analyzing the answers of the respondents to items of 5$^{TH}$ dimension Tangibles

| N | Items | Mean | Standard deviation | Ranking | Rating degree |
|---|---|---|---|---|---|
| **TAN 23** | The UHC ensures proper hygiene and disinfection of its facilities to maintain patient safety. | 3.574 | 1.293 | 4 | High Level |
| **TAN 24** | The appearance of the healthcare workers is neat and appropriate. | 4.023 | 1.049 | 1 | High Level |
| **TAN 25** | UHC facilities are sufficient to support effective healthcare delivery | 3.132 | 1.188 | 7 | Moderate Level |
| **TAN 26** | The UHC uses clear signage and directional markers to guide patients to different departments and facilities. | 3.779 | 1.071 | 2 | High Level |
| **TAN 27** | The UHC guarantees that medications and medical tests are available and accessible | 3.605 | 0.976 | 3 | High Level |

| | | | | | |
|---|---|---|---|---|---|
| | to patients. | | | | |
| **TAN 28** | The medical equipment utilized in service delivery is both modern and advanced. | 3.200 | 1.125 | 6 | Moderate Level |
| **TAN 29** | Facilities at the UHC are accessible for individuals with disabilities | 3.332 | 1.239 | 5 | Moderate Level |
| Tangibles | | **3.522** | **0.807** | **High Level** | |

**Source:** Outputs of JASP 0.95.0.0

The analysis of the tangibles dimension within the Algerian University Hospital Centers reveals an overall high level with a mean score of 3.522 and a standard deviation of 0.807. The highest-rate factor was the neat and appropriate appearance of healthcare workers (M= 4.023), reflecting professionalism and positive first impressions. Clear signage and guidance within facilities (M= 3.779) and availability of medications and medical tests (M= 3.605) were also positively assessed, indicating organizational efforts to facilitate patient guidance and ensure treatment access. Hygiene and disinfection practices (M= 3.574) were rated highly as well, reflecting compliance with safety standards. However, several items received only moderate ratings, including the sufficiency of healthcare facilities (M= 3.132), the modernity of medical equipment (M= 3.200), and accessibility for individuals with disabilities (M= 3.332). These results suggest that while tangible aspects of service quality are generally satisfactory, there remain critical areas for improvement, particularly infrastructure adequacy, technological modernization, and inclusivity for patients with special needs. Overall, the findings highlight that tangibles contribute positively to service quality, but targeted investments in facilities and equipment are necessary to strengthen patient care in Algerian UHCs.

❖ **Analyze the responses of the participants regarding items in the quality of health services axis**

**Table 4-38:** Analyzing the answers of the respondents of the 2nd axis, The Quality of Health Services and their dimensions

| Axis | Dimensions | Mean | Standard deviation | Ranking | Rating degree |
|---|---|---|---|---|---|
| **The Quality of Health Services** | Reliability | 3.871 | 0.769 | 1 | High Level |
| | Responsiveness | 3.516 | 0.788 | 5 | High Level |
| | Assurance | 3.684 | 0.794 | 3 | High Level |
| | Empathy | 3.708 | 0.832 | 2 | High Level |
| | Tangibles | 3.522 | 0.807 | 4 | High Level |
| | **Total of axis 2** | **3.647** | **0.655** | **High Level** | |

**Source:** Outputs of JASP 0.95.0.0

According to the second axis analysis, the quality of health Services is generally at a high level in Algerian university hospital centers, with a mean score of 3.647 and a standard deviation of 0.655. Among the five dimensions ranked first (M=3.871), highlighting patients' strong confidence in the accuracy, consistency, and dependability of healthcare services. Empathy followed with a (M=3.708), reflecting the importance of compassionate care and intention to patients' individual circumstances. Assurance with a (M=3.684) ranked third, emphasizing trust in staff competence, professionalism, and ethical standards. In contrast, tangibles with a (M=3.552) and responsiveness with a (M=3.516) were rated relatively lower, though still at a high level, suggesting challenges in infrastructure, modern equipment, and timely service delivery. Overall, these findings indicate that while patients are generally satisfied with healthcare quality, improvement in responsiveness and tangibles is necessary to reinforce the comprehensive performance of Algerian university hospital centers.

### 3.2.3 Analysis of Open-Ended Questionnaire Responses

Following collection of the questionnaires and a comprehensive review of all responses, the following results emerged:

- Q1. Effect of Knowledge Acquisition on Health-Service Quality

Most respondents confirmed a positive relationship between knowledge acquisition and service quality. They highlighted better diagnosis, faster patient management, and improved confidence in care when staff receive continuous training or learn through experience. Barriers included lack of modern equipment, limited training opportunities, and dependence on paper records. Some noted that quality varies according to available resources rather than staff competence.

- Q2. Effect of Knowledge Creation on Health-Service Quality

Responses indicated that knowledge creation enhances innovation and accuracy, particularly in chronic-disease management, laboratory work, and research activities. Examples included the introduction of new treatment techniques, twin-hospital collaborations, and student research projects. Constraints were the absence of research culture, limited time, and weak coordination among departments.

- Q3. Effect of Knowledge Sharing on Health-Service Quality

Most participants viewed knowledge sharing as essential for coordination, reduced errors, and improved teamwork. Where exchange occurs (seminars, device training, case discussions), respondents observed faster service delivery and consistency in practice. However, poor digital connectivity, siloed departments, and rare professional meetings restrict effective sharing.

- Q4. Effect of Knowledge Storage on Health-Service Quality

The analysis revealed mixed results. Staff recognized that organized archiving—especially digital—facilitates information retrieval and training. Nonetheless, many centers rely solely on paper archives, with no unified digital system, causing delays and loss of continuity in patient care. Respondents emphasized the need for an electronic health record (EHR) system.

- Q5. Effect of Knowledge Application on Health-Service Quality

Application of knowledge was seen as having the strongest direct impact on quality. It improves diagnostic accuracy, decision-making, and safety. Yet, respondents cautioned that without structured training or accessible data, application remains inconsistent and dependent on individual effort.

- Q6. Overall Impact of Knowledge-Management Processes on Health-Service Quality

Across questions, respondents agreed that knowledge management substantially improves healthcare quality—enhancing coordination, reducing medical errors, and increasing patient satisfaction—when supported by training, digital tools, and managerial commitment. Persistent gaps include limited continuous education, insufficient equipment, and weak digital infrastructure. Some respondents noted only partial or indirect effects where these enablers are absent.

❖ **Summary of Thematic Insights**

- Training and digitalization are key enablers of knowledge acquisition and application.
- Sharing culture and collaboration improve efficiency and reduce duplication.
- Systemic barriers—outdated equipment, paper files, weak leadership—limit KM potential.

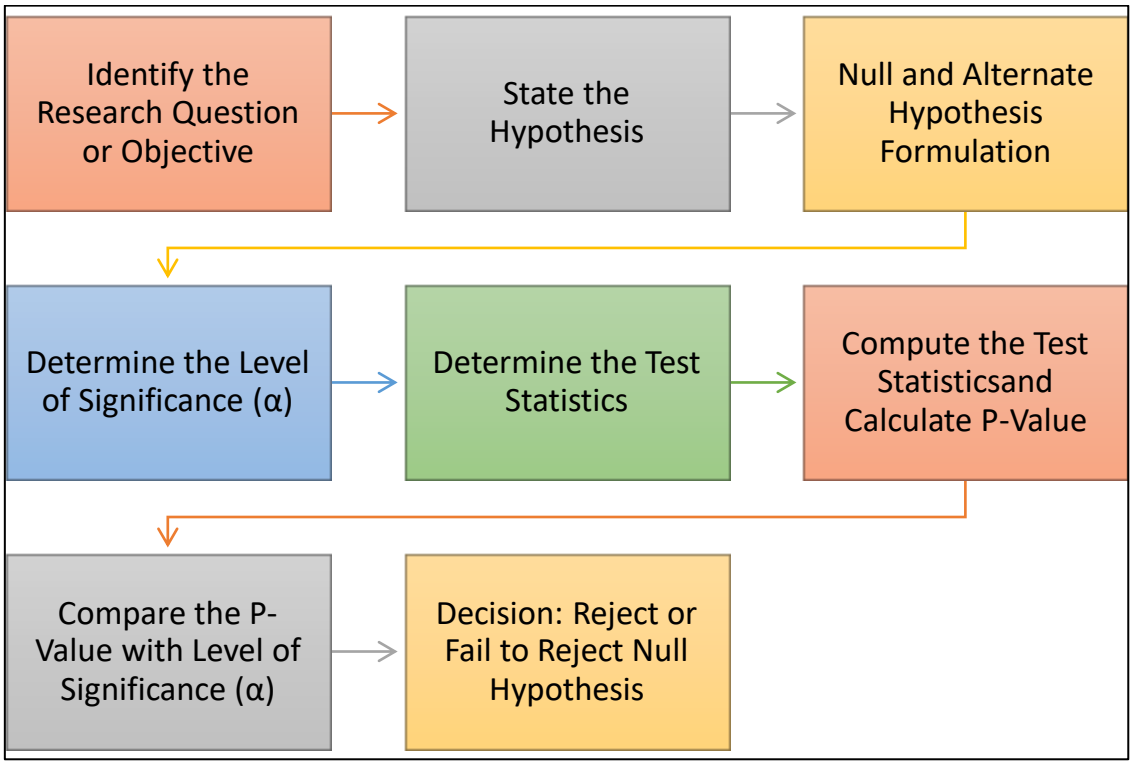
- Policy implication: institutionalize continuous professional development, implement electronic information systems, and foster interdepartmental knowledge exchange.

### 3.3 Testing Hypotheses of the Study

The hypothesis test statistic has become one of the most crucial characteristics distinguishing field research from experimental research. The primary objective of hypothesis testing is to draw inferences about the characteristics of a population based on a sample taken from it.

To test the study hypotheses, we follow the following steps:

**Figure 4-13**: Hypothesis Testing Procedure




**Source:** Prepared by the researcher

#### 3.3.1 Testing the First Sub-Hypothesis

The primary hypothesis posits that there is no statistically significant effect of knowledge management processes on the quality of public health services in Algerian University Hospital Centers at the ($\alpha \leq 0.05$) level. Prior to testing this main hypothesis, it is essential to verify the existence of a correlation

between the independent variable (knowledge management processes) and the dependent variable (the quality of public health services), as the absence of such a correlation implies the lack of an effect.

Therefore, the first sub-hypothesis and its null hypothesis were formulated as follows:

- $H_0$: There is no statistically significant relationship between knowledge management processes and the quality of public health services in Algerian University Hospital Centers at the significance level ($\alpha \leq 0.05$).
- $H_1$: There is a statistically significant relationship between knowledge management processes and the quality of public health services in Algerian University Hospital Centers at the significance level ($\alpha \leq 0.05$).

To test this hypothesis, the Pearson correlation coefficient was used. The null hypothesis is rejected if the p-value is less than or equal to 0.05, and the results are shown in the table below.

**Table 4-40:** Results of the Pearson's correlation analysis between knowledge management processes and the quality of public health services

| **knowledge management processes** | | |
|---|---|---|
| **0.530** | **Pearson's r** | The quality of public health services |
| **0.001** | **P-value** | |

**Source:** Outputs of JASP 0.95.0.0

As shown in the table above, the significance level is 0.001, which is smaller than the threshold of 0.05, confirming the existence of a statistically significant and meaningful relationship between knowledge management processes and the quality of public health services. The Pearson correlation coefficient of 0.530 indicates a moderate positive correlation between the two variables.

Based on these results, the null hypothesis is rejected, and the alternative hypothesis is accepted, confirming a statistically significant relationship between knowledge management processes and the quality of public health services at the significance level ($\alpha \leq 0.05$).

### 3.3.2 Testing the Main Hypothesis

The central hypothesis of this study is the causal hypothesis, which investigates the degree to which knowledge management processes influence the improvement of public health services quality. This hypothesis and its null hypothesis were formulated as follows:

$H_0$: There is no statistically significant effect of knowledge management processes on the quality of public health services in Algerian University Hospital Centers at the significance level ($\alpha \leq 0.05$).

$H_1$: There is no statistically significant effect of knowledge management processes on the quality of public health services in Algerian University Hospital Centers at the significance level ($\alpha \leq 0.05$).

To test this hypothesis, a simple linear regression was conducted. The null hypothesis is rejected if the p-value is less than or equal to 0.05, and the results are presented in the table below:

**Table 4-41:** The Simple linear regression of the effect of knowledge management processes on the quality of public health services

| Model | R | R-deux | R-deux Ajusté | F | P-value |
|---|---|---|---|---|---|
| **$M_1$** | 0.530 | 0.281 | 0.279 | 149.9 | 0.001 |

**Source:** Outputs of JASP 0.95.0.0

According to the table above, a moderate positive correlation (0.530) exists between the independent variable, knowledge management processes, and the dependent variable, the quality of public health services. The squared correlation coefficient of 0.281 indicates that knowledge management processes explain 28.1% of the variation in the quality of public health services, with the remaining 71.9% attributed to other factors not accounted for in the study. In terms of assessing the overall significance of the model, the analysis of variance revealed an F value of

149.9, which is statistically significant, given that the p-value of 0.001 is less than the 0.05 threshold. This indicates that the regression model is valid, with at least one of the regression coefficients significantly different from zero.

Consequently, the null hypothesis is rejected, and the alternative hypothesis is accepted, affirming the statistically significant effect of knowledge management processes on the quality of public health services in Algerian University Hospital Centers at the significance level ($\alpha \leq 0.05$).

### 3.3.3 The Sub-Hypotheses Testing

Prior to testing the sub-hypotheses, the sub-hypotheses and their corresponding null hypotheses were formulated as follows:

❖ **Sub-Hypothesis 2:**

- $H_0$: Knowledge acquisition has no statistically significant effect on the quality of public health services in Algerian University Hospital Centers at the ($\alpha \leq 0.05$) level.
- $H_1$: Knowledge acquisition has a statistically significant effect on the quality of public health services in Algerian University Hospital Centers at the ($\alpha \leq 0.05$) level.

❖ **Sub-Hypothesis 3:**

- $H_0$: Knowledge creation has no statistically significant effect on the quality of public health services in Algerian University Hospital Centers at the ($\alpha \leq 0.05$) level.
- $H_1$: Knowledge creation has a statistically significant effect on the quality of public health services in Algerian University Hospital Centers at the ($\alpha \leq 0.05$) level.

❖ **Sub-Hypothesis 4:**

- $H_0$: Knowledge sharing has no statistically significant effect on the quality of public health services in Algerian University Hospital Centers at the ($\alpha \leq 0.05$) level.

- $H_1$: Knowledge sharing has a statistically significant effect on the quality of public health services in Algerian University Hospital Centers at the ($\alpha \leq 0.05$) level.

❖ **Sub-Hypothesis 5:**

- $H_0$: Knowledge storage has no statistically significant effect on the quality of public health services in Algerian University Hospital Centers at the ($\alpha \leq 0.05$) level
- $H_1$: Knowledge storage has a statistically significant effect on the quality of public health services in Algerian University Hospital Centers at the ($\alpha \leq 0.05$) level

❖ **Sub-Hypothesis 5:**

- $H_0$: Knowledge application has no statistically significant effect on the quality of public health services in Algerian University Hospital Centers at the ($\alpha \leq 0.05$) level.
- $H_1$: Knowledge application has a statistically significant effect on the quality of public health services in Algerian University Hospital Centers at the ($\alpha \leq 0.05$) level.

After validating the main hypothesis and confirming the existence of an effect between the independent variable, knowledge management processes, and the dependent variable, the quality of public health services, the sub-hypotheses will be tested using stepwise multiple linear regression analysis. In this process, all dimensions of the independent variables will be tested together. The primary objective of stepwise regression is to identify the most strongly correlated with it. This method is performed incrementally, allowing for the exclusion of variables that were initially selected in earlier stages. The results are presented as follows:

**Table 4-42**: shows the Partial significance of regression coefficients of the Stepwise multiple linear regression

| Coefficients | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | p | Collinearity Statistics | |
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| $M_0$ | (Intercept) | 3.647 | 0.033 | | 109.309 | 0.001 | | |
| $M_1$ | (Intercept) | 2.035 | 0.126 | | 16.215 | 0.001 | | |
| | Knowledge Acquisition | 0.056 | 0.049 | 0.063 | 1.127 | 0.260 | 0.543 | 1.840 |
| | Knowledge Creation | 0.100 | 0.046 | 0.130 | 2.153 | 0.032 | 0.458 | 2.183 |
| | Knowledge Sharing | 0.004 | 0.046 | 0.005 | 0.095 | 0.925 | 0.530 | 1.888 |
| | Knowledge Storage | -0.016 | 0.045 | -0.021 | -0.362 | 0.717 | 0.482 | 2.075 |
| | Knowledge Application | 0.385 | 0.040 | 0.511 | 9.523 | <0.001 | 0.583 | 1.715 |

**Source:** Outputs of JASP 0.95.0.0

The Table above presents the results of a regression model, including Unstandardized Coefficients, Standard Error, Standardized Coefficients, t-value, p-value, and Collinearity Statistics (Tolerance and VIF). The analysis of these values will help understand the relationships between the independent variables (such as knowledge Acquisition, knowledge Creation, etc) and the dependent variable in the model.

- **Unstandardized Coefficients**
  - **(Intercept):** the intercept for model $M_0$ is 3.647. This indicates that when all independent variables are equal to zero, the expected value of the dependent variable is 3.647.

- **(Intercept):** the intercept for model $M_1$ is 2.035, representing the intercept when the independent variables are included in the model.

➢ **Independent Variables and Their Analysis**

- **Knowledge Acquisition:**

- The coefficient of regression ($B_1$ is 0.056), meaning that a one-unit increase in knowledge Acquisition results in an increase of 0.056 in the quality of public health services.
- P-Value = 0.260, which suggests that knowledge Acquisition does not have a statistically significant effect on the quality of public health services (since the p-value is greater than 0.05).

- **Knowledge Creation:**

- The coefficient of regression ($B_2$ is 0.100), indicating that a one-unit increase in knowledge Creation results in an increase of 0.056 in the quality of public health services.

- P-Value = 0.032, which shows that knowledge Creation has a statistically significant effect on the quality of public health services (since the p-value is less than 0.05).

- **Knowledge Sharing:**

- The coefficient of regression ($B_3$ is 0.004), indicating that a one-unit increase in knowledge sharing results in an increase of 0.004 in the quality of public health services.

- P-Value = 0.925, which suggests that knowledge Sharing does not have a statistically significant effect on the quality of public health services (since the p-value is greater than 0.05).

- **Knowledge Storage:**

- The coefficient of regression ($B_4$ is -0.016), meaning that a one-unit increase in knowledge Storage results in a decrease of 0.016 in the quality of public health services.

- P-Value = 0.717, meaning that knowledge Storage does not have a statistically significant effect on the quality of public health services (since the p-value is greater than 0.05).

- **Knowledge Application:**

- The coefficient of regression ($B_5$ is 0.385), meaning that a one-unit increase in knowledge Application results in an increase of 0.056 in the quality of public health services.

- P-Value = < 0.001, indicating that knowledge Application has a statistically significant effect on the quality of public health services (since the p-value is less than 0.05).

So, the multiple linear regression model that represents the relationship between knowledge management processes, its dimensions, and the quality of public health services in Algerian University Hospital Centers is:

$$\boldsymbol{y = 2.035 + 0.100(x_2) + 0.385(x_5) + \varepsilon i}$$

$y$ : The quality of public health services

$x_2$: Knowledge Creation

$x_5$: Knowledge Application

$\varepsilon i$ : Error term

- **Collinearity Statistics**

- **Tolerance:** This measure is used to detect multicollinearity between independent variables. Tolerance values closer to 0 indicate high

collinearity. The tolerance values in this model range from 0.458 to 0.583, indicating that there is no significant collinearity among the independent variables.

- **VIF (Variance Inflation Factor):** This statistic is another indicator of multicollinearity. Values greater than 10 indicate potential multicollinearity problems. In this model, all VIF values are below 3 (ranging from 1.715 to 2.183). So, there is no collinearity between the independent variables, and the interpretation of the regression coefficients is established**.**

From the acceptable Tolerance and VIF values, there is no multicollinearity issue**.**

From above, the results indicate that knowledge Creation and knowledge Application exert statistically significant effects on the quality of public health services. Accordingly, the null hypothesis is rejected, and the alternative hypothesis is accepted, confirming the statistically significant impact of these dimensions at the 0.05 significance level ($\alpha \leq 0.05$).

Conversely, Knowledge Sharing, knowledge Storage, and Knowledge Acquisition do not exhibit statistically significant effects on the dependent variable in this model. Therefore, the null hypothesis is accepted, and the alternative hypothesis is rejected, indicating the absence of a significant relationships between these dimensions and the quality of public health services in Algerian University Hospital Centers at the significance level ($\alpha \leq 0.05$).

## Chapter summary

This chapter addressed the field study examining the relationship between knowledge management and the quality of public health services in Algerian University Hospital Centers. It began with a comprehensive overview of the institutions under study, clarifying their definition, mission, objectives, and administrative structure, in order to situate the research within its organizational and institutional context.

The chapter then presented the methodological framework adopted for the study. This included the process of selecting the study population and the representative sample, the justification for choosing a research model suited to the objectives of the investigation, and the development of the primary research instrument in the form of a structured questionnaire. Attention was also given to the use of statical tools and programs, most notably JASP, alongside the analytical methods applied to ensure the reliability and validity of the results. The methodological discussion emphasized the importance of tailoring these approaches to address the multidimensional and behavioral nature of the variables under examination, which often pose challenges in terms of measurement and interpretation.

The empirical analysis provided robust evidence in support of the research hypotheses. The results confirmed that knowledge management has a statistically significant effect on the quality of public health services in University Hospital Centers. More specifically, the study highlighted that the dimensions of knowledge creation and knowledge application are particularly influential in enhancing service quality. These findings underscore the critical role of effective knowledge management practices in strengthening healthcare performance, while also pointing to the need for continued investment in knowledge-based.

# GENERAL CONCLUSION

# General Conclusion

In conclusion, the role of knowledge management (KM) is crucial in enhancing the quality of public health services, particularly within the Algerian context. Health services have a direct impact on individuals' lives, and ensuring their high quality is of utmost importance. Improving healthcare quality hinges on the effective use of knowledge, which in turn relies on the proper management of knowledge. KM is a critical pillar for the public healthcare sector, which is continually in need of development and improvement.

In this regard, Algerian University Hospital Centers (UHCs) should adopt the concept of "learning Organization" in a real and meaningful way by implementing a robust KM system. While skill enhancement and capacity building are already being pursued through various means, what is required is a systematic approach to KM that integrates knowledge acquisition, storage, codification, feedback, and dissemination. Such an integrated approach can significantly contribute to improving the services offered and optimizing the overall performance of healthcare institutions.

The effective utilization of resources and the enhancement of patient care within these centers can be further achieved through a structured KM process. A comprehensive approach to KM, rooted in scientific practices, can contribute to achieving optimal outcomes in the healthcare sector. For this to be successful, both top management and employees must collaborate closely, fostering a deep understanding of the importance of KM and its role in meeting the needs of the system. Therefore, the development and implementation of a well-organized KM strategy is a key enabler for improving the Algerian healthcare system, ensuring better performance and more efficient service delivery.

## ❖ Study Results (Summary)

The study reveals the following findings:

- The study surveyed 385 participants, of whom 67.3% were female.
- The largest age group was 20-29 years, while only 13.5% were aged 50 years or above.
- In terms of education, university graduates 43.4% were the most frequent, followed by those with postgraduate degrees, 39.5%.
- Professionally, nurses, 36.4%, and doctors, 35.8%, represented the majority, together forming 47.5% of the sample.
- The Neurology and Internal Medicine departments were most represented (13.0% each).
- Regarding professional experience, 39.0% had fewer than 5 years in public health, while 16.4% had over 22 years. Intermediate categories were less represented.
- In the domain of knowledge management processes (KM), knowledge application scores highest (3.15/5), while knowledge creation scored lowest (2.7/5). For health service quality, the reliability dimension was rated most favorably (3.8/5).
- A moderate positive correlation was observed between KM processes and service quality ($r=0.530$, $p \leq 0.05$). KM processes explained 28.1% of the variance in quality ($R^2 = 0.281$), with the remainder attributed to other factors.
- Analysis of KM dimensions showed that:
  - Knowledge application and knowledge creation had a statistically significant positive effect on service quality ($p \leq 0.05$).
  - Knowledge acquisition, sharing, and storage showed no significant effect on service quality ($p \geq 0.05$).

❖ **Discussion of Results and Comparison of the Previous Studies**

The analysis of knowledge Management (KM) processes in Algerian University Hospital Centers revealed a moderate level (M = 2.919, SD = 0.661). This result suggests that although the foundations of KM are present within these institutions, they remain insufficiently developed to achieve a high level of performance. Similar findings were reported by Reza et al (2020) in their study conducted in non-governmental public hospitals. However, this result partially contrasts with those of Al-Bqour (2014), who identified KM processes at a high level (M = 4.23) in his study of Jordanian private hospitals. Such divergence may reflect differences in institutional context, ownership type, and resource availability between public and private healthcare organizations.

Among the five dimensions, knowledge application achieved the highest mean score (M = 3.153), indicating that healthcare workers are moderately effective in utilizing acquired and stored knowledge to enhance patient intake, diagnosis, and treatment. The use of lessons learned from past cases to inform decisions and prevent medical errors also underscores the importance of experiential learning in enhancing clinical safety. However, the moderate level indicates that such practices are not fully institutionalized, and their effectiveness remains constrained by the limited provision of systematic training and the partial integration of modern medical knowledge into practice.

Knowledge sharing (M = 2.930) and knowledge storage (M = 2.902) also scored at moderate levels. These findings suggest that staff are willing to exchange experiences and perspectives, and that hospitals have some mechanisms in place for archiving institutional knowledge. Nevertheless, reliance on traditional paper-based systems and limited adaptation of digital or cloud-based solutions restricts the efficiency, accessibility, and sustainability of storage practices. Similarly, while interpersonal exchanges and professional forums contribute positively to knowledge sharing, the absence of formalized

interdepartmental communication structures weakens the systematic dissemination of knowledge.

The lowest-performing dimensions were knowledge acquisition (M = 2.806) and knowledge creation (M = 2.768). The limited use of electronic medical records, restricted access to external training opportunities, and insufficient integration of patient and staff feedback illustrate systemic barriers to effective knowledge acquisition. Moreover, the weak support for pilot projects, innovative ideas, and research activities suggests that a culture of innovation is not yet firmly embedded within university hospital centers. This represents a critical limitation, given that these institutions are expected to play a dual role in both clinical practice and medical research.

Taken together, these findings highlight that KM processes in Algerian university hospital centers are present but remain fragmented and institutionally weak. The moderate performance across all dimensions suggests the existence of three interrelated challenges:

- structural limitation, including the lack of powerful organizational mechanisms to support continuous learning and innovation;
- technological gaps, reflected in the dominance of paper-based systems and limited investment in advanced digital platforms;
- cultural barriers, such as low incentives for knowledge sharing, weak integration of feedback, and limited support for creativity.

The finding related to the second axis, quality of health services in Algerian University Hospital Centers (UHCs), revealed an overall high assessment (M = 3.647, SD = 0.655). When examining the five dimensions within this axis, notable variations in the perceptions of healthcare workers emerged. The dimension of reliability achieved the highest mean score (M= 3.871), which underscores healthcare workers' confidence in the consistency, accuracy, and dependability of the services provided. This reflects their belief in

the hospital's capacity to minimize errors, fulfill commitments, and maintain patient confidentiality.

Empathy ranked second with a (M= 3.708), indicating that healthcare workers place significant value on compassionate interactions with patients and the ability to recognize and address the unique circumstances and needs of individuals. The dimension of assurance followed closely in third place with a (M=3.684), highlighting the competence, professional skills, knowledge, and ethical standards that healthcare workers believe are critical for fostering trust in the healthcare service provided.

On the other hand, the dimensions of tangibles (M = 3.522) and responsiveness (M = 3.516) recorded comparatively lower scores. However, they remained within an acceptable range. These findings suggest that healthcare workers perceive ongoing challenges related to the adequacy and maintenance of physical facilities, the modernization of medical equipment, accessibility for patients with disabilities, and the efficiency in addressing patient needs promptly.

Despite these challenges, the overall high rating across all dimensions suggests that Algerian UHCs are largely successful in providing reliable and trustworthy healthcare services. Nevertheless, there remains a need for greater investment in infrastructure, the acquisition of advanced medical technologies, and the development of patient-centered care procedures. These improvements would further enhance service quality and contribute to higher levels of satisfaction both among patients and healthcare workers.

Other results of the present study indicate a statistically significant relationship between knowledge management (KM) processes and the quality of public health services in the Algerian University Hospital Centers at the significance level ($\alpha \leq 0.05$). These findings are consistent with several previous studies. For example, Jawan (2012) reported a significant positive relationship

between KM and the quality of healthcare services at Al-Hussein Hospital in Karbala. Similarly, Al-Bqour (2014) found that KM processes had a statistically significant effect on healthcare quality in Jordanian hospitals. Sowadi and Al-Mochrif (2021) also confirmed a substantial relationship between KM and healthcare quality, showing that better KM practices enhanced service quality at Al-Sadr Medical Hospital in Najaf Al-Ashraf. In the same vein, Halali (2022) demonstrated that KM contributed to 61% of improvements in service quality in Family Health Centers in Alexandria. Al-Dabbagh et al. (2022) further supported these findings by establishing a positive correlation between KM processes and healthcare service quality in Ibn Al-Atheer Teaching Hospital for children in Mosul. Additionally, Kejžar et al. (2023) reported significant positive relationships between KM practices, such as creation, storage, transfer, and implementation, and service quality, with knowledge storage showing a positive impact only in nursing homes without the E-Qalin certificate.

Conversely, the findings of this study diverge from those of others. Chikhata and Chivivi (2017) reported that there was no significant impact of KM on reducing newborn mortality in public health facilities in Zimbabwe. Likewise, Raj and Borah (2020) found that KM practices in Guwahati Hospitals remained rudimentary, limited primarily to record-keeping and training activities, and not fully integrated into hospital operations. Furthermore, the results contrast with those of Alluqamani and AI-Dahawi (2025), who observed that KM processes had statistically significant effects across all dimensions of healthcare service quality.

Overall, the current study confirms that KM has a statistically significant effect on the quality of public health services in University Hospital Centers. In particular, the dimensions of knowledge creation and knowledge application emerged as especially influential in enhancing service quality.

❖ **Recommendations**

The study recommends that, since knowledge management processes have a positive impact on improving public health services, the Algerian Ministry of Health should adopt knowledge management in conjunction with other interventions. Knowledge management is a way of embracing knowledge and achieving organizational objectives (Cho et al, 2009). As such, if the Algerian Ministry of Health sets realistic and achievable goals and targets, and ensures full implementation of knowledge management, the quality of health services could be effectively improved.

- The implementation of knowledge management should be prioritized in the public health sector, as it plays a pivotal role in strengthening health planning, which in turn constitutes a cornerstone for the systematic design of healthcare programs, both therapeutic and preventive, at all administrative levels. Furthermore, knowledge management provides an integrated framework for coordinating and harmonizing health services, thereby enhancing the University Hospital Centers' capacity to achieve strategic objectives with optimal efficiency and effectiveness.
- For the successful implementation of KM in the Algerian University Hospital Centers, it's suggested to involve all UHC staff in the KM program.
- The Algerian University Hospital Centers should also introduce patient medical records to strengthen recording and real-time monitoring of patients. This recommendation can be drawn from the assertion by Demirkan (2013), which stated that sustainable healthcare services can be enhanced through the use of electronic medical records.
- It is imperative to establish institution-specific knowledge repositories and portals interconnected at a centralized level, as this significantly enhances the capacity of health workers to access and utilize information and knowledge resources not only within their own organisations but also across other healthcare institutions. Such an integrated system fosters more effective

knowledge sharing and utilization, thereby overcoming the cultural and organizational barriers that often impede knowledge management in the healthcare sector.

- Organize regular workshops, seminars, and training sessions to enhance the acquisition of new knowledge.
- Establish a dedicated library within the University Hospital Centers to document major advancements in treatment, innovative healthcare approaches, technology, and patient care.
- Ensure the continuous maintenance and accessibility of library facilities for health workers to get what they need.
- Implement systematic categorization of knowledge to facilitate efficient utilization and timely access to information by the right personnel.
- It is essential to provide stronger IT infrastructure facilities, ensure more reliable communication networks, develop robust information systems, and increase internet bandwidth within the University Hospital Centers in order to foster an environment where knowledge storage and sharing can flourish. Such technological support is not only expected to improve internal efficiency but also to enable the healthcare sector to capitalize on lessons learned from previous experiences. This, in turn, will allow professionals to apply accumulated knowledge in refining practices and enhancing the quality of public health services, thereby strengthening the overall effectiveness of the health system.
- The University Hospital Centers should prioritize the systematic identification, documentation, and dissemination of best practices to various stakeholders. Since the ultimate objective of knowledge management is to convert tacit knowledge to explicit forms, a structured clinical KM framework offers the most effective means for ensuring that valuable practices are preserved and widely shared.

- Conduct regular interdepartmental meetings to enhance coordination and knowledge exchange.
- Establish collaborations with national and international institutions to promote the free exchange of ideas and knowledge.
- Strengthen strategic partnerships with external stakeholders to advance performance and innovation.
- The human resource management policies that motivate, encourage, and facilitate the sharing of knowledge among individual health workers should be highly promoted by the Algerian Ministry of Health. In addition, the Algerian Ministry of Health should strive to improve the rewards for good work so that health workers are fully motivated and encouraged to share and utilize knowledge within the health facilities. This could be supported by DeLong (2004), who noted that knowledge sharing can be enhanced by incorporating it into formal rewards and recognition systems, such as performance appraisals. This can also be supported by Lee and Hong (2014), who postulated that hospital organisations should create and develop knowledge by motivating employees to share knowledge and continually foster innovation. As such, rewarding innovation could be exceptionally effective.
- The University Hospital Centers must provide continuous KM training and education for health workers as an essential element for bridging existing knowledge gaps. Such initiatives not only enhance individual competencies but also contribute to transforming healthcare organizations into true learning organizations, thereby strengthening their adaptive capacity and overall performance.

❖ **Suggestions for Future Research**

The findings of this study open several promising avenues for future research. A key direction concerns the evaluation of the quality of health services during emergencies. Future studies could focus on defining the

minimum essential services that should be delivered with acceptable quality, recognizing that the quality standards are likely to shift under emergency conditions.

Another important line of inquiry concerns the codification of explicit knowledge and the design of an information technology environment that can effectively store, organize, and disseminate such knowledge. Advancing this area would strengthen the foundations of knowledge management within healthcare institutions.

In addition, further research could investigate the following themes:

- The role of knowledge management practices in enhancing public health services, with continuous learning and innovation as mediating factors.
- The integration of knowledge management and digital transformation in healthcare as drivers of service quality through continuous learning.
- The impact of knowledge sharing on innovation in public health institutions, with organizational culture as a moderating variable.
- The development of integrated frameworks linking continuous learning, knowledge management, and patient-centered care for public health improvement.
- The influence of leadership support and knowledge management on innovation and their combined effect on public health services delivery.
- The requirements of knowledge management in advancing public health services, with innovation and organizational culture serving as mediating or moderating mechanisms.

The translation of knowledge management requirements into service excellence, highlighting pathways from knowledge to care

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# APPENDIX

## APPENDIX 01:

**Questionnaire Form Directed for Arbitration**

The University of Blida 2-Ali Lounici

Faculty Of Economics, Commercial Science, And Management

Department of Management Sciences

Public Management Specialization"

To the esteemed professor: ……..

As part of our preparation for a PhD dissertation in Public Management Specialization titled **"The Role of Knowledge Management in Improving Public Health Services: Case of Algeria,"** we kindly request that you review this questionnaire and provide comments, critiques, suggestions, and any modifications you deem appropriate. Your insights represent a crucial step in enriching the topic. We greatly appreciate your cooperation.

**The problem of the study:**

How do knowledge management processes contribute to improving public health services in Algeria?

❖ **Hypotheses of the Study**

- H1: The implementation level of knowledge management processes in Algerian public health institutions is low.
- H2: The overall quality of health services in Algerian public institutions is perceived as moderate.
- H3: There is a statistically significant correlation between knowledge management processes and the improvement of health services quality in public institutions at the $\alpha \leq 0.05$ level.
- H4: There is no statistically significant effect of knowledge management processes on improving the quality of health services in public institutions at the ($\alpha \leq 0.05$) level.
- H5: There are no statistically significant differences in the study sample responses regarding knowledge management processes and health services quality due to demographic and professional characteristics at the ($\alpha \leq 0.05$) level.

Prepared by the student

MAGBI Mimouna

Under the supervision of the professor

SI AHMED Nadir

FERRAT Isma

Academic year: 2024/2025

## ❖ Demographic and professional data:

1) **Gender**: Male ( ) Female ( )

2) **Age:** less than 30 years ( ) 31-40 years old ( )
40-50 years old ( ) more than 51 years old ( )

3) **Qualification:** High school or below ( ) License Degree ( ) Advanced Health Technician Diploma ( ) Master's Degree ( ) Magister ( ) PhD ( )

Other ……

4) **Profession**:…….

5) **What is your level of professional experience in the health sector?**

less than 5 years ( ) from 5 to 10 years( ) from 11 to 15 years ( )

from 16 to 20 ( ) 21 years and above ( )

6) **What is your role within the institution?**

Medical staff ( ) administrative staff ( )

❖ **Procedural terminology**

| Terms | Definitions |
|---|---|
| ❖ **Knowledge Management Processes** | A structured set of organizational practices designed to systematically acquire, generate, store, share, and apply knowledge to enhance decision-making and performance. |
| - **Knowledge Acquisition** | The process through which an organization converts inputs from internal and external sources into valuable knowledge. |
| - **Knowledge Creation** | The systematic process of generating new insights and innovations that contribute to organizational growth and value creation. |
| - **Knowledge Storage** | The organizational practices that ensure the systematic preservation and retrieval of valuable knowledge for future use. |
| - **Knowledge Sharing** | The process of disseminating acquired knowledge and technologies, empowering employees through skill and competency exchange. |
| - **Knowledge Application** | The final phase of knowledge management is where acquired knowledge is effectively utilized to enhance operations, develop products, and improve overall organizational efficiency. |
| ❖ **Quality of Health Services** | The degree to which healthcare delivery meets established professional standards and effectively improves patient outcomes. It encompasses accessibility, safety, efficiency, patient-centered care, and the use of evidence-based practices to ensure optimal health outcomes and satisfaction. |

*Responses were measured using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

**Table 1**. Five-point Likert

| Strongly disagree | Not Agree | Neutral | Agree | Strongly agree |
|---|---|---|---|---|

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

The first Variable**: knowledge management processes**

| **Item No.** | **Statements to measure knowledge management processes** | The statement is clear | | The statement is appropriate. | | Suggestions And modifications |
|---|---|---|---|---|---|---|
| I. | **Knowledge acquisition (KA)** | Yes | No | Yes | No | |
| 1 | Employees have opportunities to attend training sessions and workshops to gain new knowledge. | | | | | |
| 2 | Your institution relies on external sources such as conferences and medical publications to acquire health knowledge. | | | | | |
| 3 | Electronic Medical Records (EMR) are a primary source for acquiring knowledge about patient cases. | | | | | |
| 4 | The institution updates its medical library with the latest resources to enable employees to gain new knowledge. | | | | | |
| 5 | Your institution gathers feedback from patients and staff to enhance knowledge acquisition in health services. | | | | | |
| 6 | Your institution permits employees to access information from any source, whether internal or external, and benefit from it. | | | | | |

In your opinion, has knowledge acquisition in your institution influenced the quality of health services? Please explain

……
……
…

| II. | **Knowledge creation (KC)** | The statement is clear | | The statement is appropriate | | Suggestions And modifications |
|---|---|---|---|---|---|---|
| | | Yes | No | Yes | No | |
| 7 | Your institution encourages employees to suggest new ideas for improving health services | | | | | |
| 8 | Regular brainstorming sessions are conducted to develop innovative solutions for healthcare delivery | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 9 | Medical data is analyzed to identify health challenges and propose new treatment strategies | | | | | |
| 10 | Multidisciplinary teams collaborate to enhance procedures based on the latest medical research | | | | | |
| 11 | The institution fosters a supportive environment for research and development in healthcare services | | | | | |
| 12 | In your institution, monetary incentives are awarded to employees who develop knowledge and innovative solutions that enhance healthcare performance | | | | | |

In your opinion, has knowledge creation in your institution influenced the quality of health services? Please explain

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| III. | **Knowledge sharing (KS)** | The statement is clear | | The statement is appropriate | | Suggestions And modifications |
|---|---|---|---|---|---|---|
| | | Yes | No | Yes | No | |
| 13 | The institution facilitates regular meetings and workshops for knowledge exchange among staff | | | | | |
| 14 | An internal digital platform is available for healthcare professionals to share knowledge. | | | | | |
| 15 | Case review sessions are conducted to disseminate best practices in medical treatment. | | | | | |
| 16 | Employees are encouraged to document their experiences and share them with colleagues. | | | | | |
| 17 | Cross-functional meetings are held to enhance interdepartmental knowledge sharing. | | | | | |
| 18 | The institution utilizes professional networks and online forums to facilitate knowledge exchange. | | | | | |

In your opinion, has knowledge acquisition in your institution influenced the quality of health services? Please explain

……

……..

| IV. | **Knowledge Storage (KS)** | The statement is clear | | The statement is appropriate. | | Suggestions And modifications |
|---|---|---|---|---|---|---|
| | | Yes | No | Yes | No | |
| 19 | The institution has an integrated digital system for storing and retrieving medical knowledge | | | | | |
| 20 | Lessons learned from past medical cases are systematically documented and stored for future reference. | | | | | |
| 21 | Medical guidelines and procedures are regularly updated and stored to reflect best practices. | | | | | |
| 22 | The institution uses electronic archiving systems to preserve patient health information. | | | | | |
| 23 | Healthcare service improvement knowledge is stored in dedicated databases for easy access. | | | | | |
| 24 | Employees have seamless access to stored knowledge resources as per their needs | | | | | |

In your opinion, has knowledge storage in your institution influenced the quality of health services? Please explain

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……..

| V. | **Knowledge application (KA)** | The statement is clear | | The statement is appropriate. | | Suggestions And modifications |
|---|---|---|---|---|---|---|
| | | Yes | No | Yes | No | |
| 25 | Acquired knowledge is effectively applied to enhance diagnosis and treatment procedures | | | | | |
| 26 | The institution integrates applied medical research findings to improve service quality | | | | | |
| 27 | Employees receive training on implementing modern knowledge into clinical and administrative practices | | | | | |
| 28 | Knowledge gained from past cases is utilized to develop new | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | policies and procedures | | | | | |
| 29 | The institution provides a conducive environment for applying innovative solutions | | | | | |
| 30 | The institution integrates advanced digital technologies to optimize clinical workflows and decision-making | | | | | |
| In your opinion, has knowledge application in your institution influenced the quality of health services? Please explain<br>……<br>……<br>…….. | | | | | | |

The second Variable**: The quality of health services**

| **Item** No | **Statements to measure the quality of Health Services** | The statement is clear | | The statement is appropriate. | | Suggestions And modifications |
|---|---|---|---|---|---|---|
| I. | **Tangibles** | Yes | No | Yes | No | |
| 1 | The institution ensures proper hygiene and disinfection of its facilities to maintain patient safety | | | | | |
| 2 | The physical facilities of the institution are attractive and well-organized | | | | | |
| 3 | Awareness and sensitization advertisements are accurate and attractive. | | | | | |
| 4 | The appearance of employees is neat and appropriate | | | | | |
| | The institution guarantees that medications and medical tests are both available and accessible to patients. | | | | | |
| | The medical equipment utilized in service delivery is both modern and advanced. | | | | | |
| II. | **Reliability** | | | | | |
| 5 | The institution has a rapid response system to identify and correct medical errors promptly | | | | | |
| 6 | The institution keeps the promises it makes to patients | | | | | |
| 7 | The institution provides the service correctly the first time | | | | | |
| 8 | The institution provides the requested service reliably | | | | | |
| 9 | The institution provides consistent and continuous services | | | | | |
| 10 | The institution delivers the service | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | on time and accurately | | | | | |
| | Medical examinations are performed in a setting that ensures patients' privacy and confidentiality. | | | | | |
| III. | **Responsiveness** | | | | | |
| 11 | The institution provides easy access to emergency services and medical consultations | | | | | |
| 12 | Employees respond quickly to patient requests | | | | | |
| 13 | Employees are willing to answer patient questions | | | | | |
| 14 | Employees react immediately to patient problems | | | | | |
| | Services are provided at the scheduled and announced times for patients. | | | | | |
| | The healthcare center is focused on enhancing working conditions for efficient service delivery. | | | | | |
| | The healthcare center streamlines procedures to improve patient care | | | | | |
| IV. | **Assurance** | | | | | |
| 15 | The institution ensures continuous training for medical and nursing staff to keep up with the latest medical protocols | | | | | |
| 16 | Employees demonstrate professionalism and competence in their work | | | | | |
| 17 | Employees act with honesty and high ethical standards | | | | | |
| 18 | Employees provide patients with a sense of confidence | | | | | |
| | Service providers at the healthcare center possess the appropriate medical knowledge, skills, and experience. | | | | | |
| | Health services are provided equitably, ensuring that all patients receive care without discrimination or bias. | | | | | |
| V. | **Empathy** | | | | | |
| 19 | The institution provides psychological and social support for patients and their families | | | | | |
| 20 | Employees understand the specific needs of patients | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 21 | The institution cares about its patients. | | | | | |
| 22 | Employees are considerate of patients' special circumstances | | | | | |
| 23 | The institution provides services at times convenient to its patients | | | | | |
| | The University Hospital Center prioritizes patient needs during administrative and medical team meetings. | | | | | |

In your opinion, has knowledge management in your institution influenced the quality of health services? Please explain

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## APPENDIX 02:

**List of Arbitrators for the study questionnaire**

| No | Professor Full Name | University | Email Address |
|---|---|---|---|
| 1. | Supervisor Pr. SI AHMED Nadir | Faculty of Economics, Commercial Sciences, and Administration Sciences at the University of Blida 2 | siahmed_nadir@yahoo.fr |
| 2. | Dr. SARAA Tawfiqh | Faculty of Economics, Commercial Sciences, and Administration Sciences at the University of Blida 2 | tawfiqhrm@gmail.com |
| 3. | Pr. BENNADIR Nacereddine | Faculty of Economics, Commercial Sciences, and Administration Sciences at the University of Blida 2 | bennadir.nacer@yahoo.fr |
| 4. | Pr. TAHANOUT Kheira | Faculty of Economics, Commercial Sciences, and Administration Sciences at the | tahanout33@gmail.com |

| | | | |
|---|---|---|---|
| | | University of Blida 2 | |
| 5. | Pr. SEDKAOUI Souraya | Faculty of Economics, Commercial Sciences, and Administration Sciences at The University of Khemis Meliana | s.sedkaoui@univ-dbkm.dz |
| 6. | Pr. BOUKHATEM Ayoub | at University Yahia Fares- Medea | ayoubktm@gmail.com |
| 7. | Dr. Riad BAHA | Laboratoire Lirsa-CNAM France | riadbaha@gmail.com |
| 8. | Dr. Hayet Hirtsi | Faculty of Economics, Commercial Sciences, and Administration Sciences at the University of Blida 2 | hirtsihayet@gmail.com |
| 9. | Dr. MOKEDDEM Allal | Faculty of Economics, Commercial Sciences, and Administration Sciences at the University of Algiers 3 | formateuranalyse@gmail.com |
| 10. | Dr. TAHRAOUI Hayet | Faculty of Economics, Commercial Sciences, and Administration Sciences at the University of Medea | hayet.ikram05@gmail.com |
| 11. | Dr. FARRAT Isma | Faculty of Economics, Commercial Sciences, and Administration Sciences at the University of Blida 2 | ismaferrat@gmail.com |

## APPENDIX 03:

### Review of the Arbitration Questionnaire Form

Dear Mimouna,

Thank you for reaching out and for considering my input on your questionnaire. I am pleased to assist in the review process for your PhD dissertation titled "The Role of Knowledge Management in Improving Public Health Services: Case of Algeria."

I will carefully examine the questionnaire and provide detailed comments, critiques, suggestions, and any modifications that I believe will enhance its effectiveness and clarity. Your dedication to enriching this topic is commendable, and I am happy to contribute to your academic endeavor.

I appreciate the opportunity to collaborate and look forward to providing constructive feedback.

Sincerely,

Dr. Riad BAHA
Laboratoire Lirsa-CNAM

#### 1 Detailed Critique of the Questionnaire

##### 1.1 Introduction and Context

- **Clarity**: The introduction is clear, providing the context of the study and the objective of the questionnaire.
- **Suggestions**: The introduction could be more engaging by emphasizing the importance of the respondents' participation and how their input will directly impact the study's outcomes.

##### 1.2 Study Problem and Hypotheses

- **Clarity**: The hypotheses are well-formulated but presented in a negative form (null hypotheses).
- **Suggestions**: Rephrase the hypotheses positively to make them more engaging and easier to understand. For example:

- H1: There is a statistically significant correlation between knowledge management processes and the improvement of health services in public institutions.
- H2: Knowledge management processes have a statistically significant effect on the improvement of health services in public institutions.

- H3: There are statistically significant differences in the responses of the study sample regarding knowledge management processes and the quality of health services attributable to demographic and professional characteristics.

### 1.3 Demographic and Professional Data

- **Clarity**: The questions are clear and cover essential demographic and professional aspects.
- **Suggestions** :

- Add more options for qualifications and professional roles to ensure inclusivity.
- Consider including a question about the type of institution (e.g., public, private, non-profit) to provide more context.

### 1.4 Terminology and Definitions

- **Clarity**: The definitions are precise but may be too technical for some respondents.
- **Suggestions**: Simplify the language to ensure all respondents, regardless of their background, can understand the terms. For example:

- Knowledge Management Processes: Practices designed to acquire, generate, store, share, and apply knowledge to improve decision-making and performance.
- Knowledge Acquisition: The process of converting inputs from various sources into valuable knowledge.
- Knowledge Creation: Generating new insights and innovations that contribute to organizational growth.

### 1.5 Likert Scale

- **Clarity**: The Likert scale is well explained.
- **Suggestions**: Ensure respondents understand each point on the scale by providing examples or scenarios.

## 2 Revision of Questionnaire Sections

### 2.1 Knowledge Acquisition

- **Clarity of Statements**: The statements are clear and relevant.
- **Suggestions** :

- Add concrete examples to illustrate the types of knowledge acquired.
- Include questions about the frequency and effectiveness of training sessions.

### 2.2 Knowledge Creation

- **Clarity of Statements**: The statements are clear and relevant.
- **Suggestions** :

- Include questions about obstacles to knowledge creation.
- Add questions about the impact of knowledge creation on specific health outcomes.

2.3 Knowledge Sharing

- **Clarity of Statements**: The statements are clear and relevant.
- **Suggestions** :

- Add questions about informal knowledge-sharing methods.
- Include questions about the effectiveness of digital platforms for knowledge sharing.

2.4 Knowledge Storage

- **Clarity of Statements**: The statements are clear and relevant.
- **Suggestions** :

- Include questions about the security and accessibility of storage systems.
- Add questions about the frequency of updates to stored knowledge.

2.5 Knowledge Application

- **Clarity of Statements**: The statements are clear and relevant.
- **Suggestions** :

- Add questions about the effectiveness of knowledge applications in different contexts.
- Include questions about the impact of applied knowledge on patient outcomes.

2.6 Quality of Health Services

- **Clarity of Statements**: The statements are clear and relevant.
- **Suggestions** :

- Add questions about patient satisfaction and health outcomes.
- Include questions about the impact of knowledge management on specific aspects of health service quality, such as accessibility and efficiency.

**Conclusion**

The questionnaire is well-structured and covers essential aspects of the study. However, several adjustments can improve the questions' clarity, relevance, and

engagement. Feel free to ask for further details or assistance with specific modifications.

**APPENDIX 04:**

**List of professors involved in the translation and validation of the study instrument in English, Arabic, and French**

| No | Professor Full Name | Contact Information |
|---|---|---|
| 1. | BOUKHATEM Ayoub | CEO Almaahed International<br>Founder of Knowlab Coworking Space \|<br>Lecturer at the University Yahia Fares- Medea<br>00213 661 696 559<br>00213 770 756 235<br>www.almaahed.com |
| 2. | MASKRI Anfal | Professor in Intensive Language Teaching Centre CEIL<br>Blida 2 University |
| 3. | SAFA CHAOUCHE Imene | Professor at Almaahed International<br>Imenesafachaouche@gmail.com |

**APPENDIX 05:**

**Study Questionnaire in English**

## Study Questionnaire

Faculty of Economics, Commercial Science, and Management

Department of Management Sciences

Public Management Specialization

PhD Research Questionnaire

Thesis Title: **The Role of Knowledge Management in Improving Public Health Services: The Case of Algeria**

Dear Participant,
As part of the empirical component of a PhD Thesis entitled:
**"The Role of Knowledge Management in Improving Public Health Services: The Case of Algeria,"**
You are kindly invited to carefully review the statements included in the attached questionnaire and respond as objectively as possible. Your input is vital to ensuring the accuracy and reliability of the study's findings.
Please indicate your response by marking an (X) next to the option that best reflects your opinion.
We assure you that all information provided will be treated with the utmost confidentiality and used strictly for academic and research purposes.
We greatly appreciate your time, collaboration, and valuable contribution to the success of this research.

**Researchers: Pr. SI AHMED. N and Magbi. M**

**Section 1**

❖ **Demographic and professional data**

You are kindly requested to place an (X) in the box that best represents your answer, and to respond to all questions without omission

**1- Gender :**

Male ☐ Female ☐

**2- Age :**

20-29 Years old ☐ 30-39 Years old ☐ 40-49 Years old ☐ 50 Years old and above ☐

**3- Qualification :**

High school or below ☐ Secondary school Certificate (Baccalaureate) ☐ University degree ☐

Postgraduate Studies ☐

Other: .....

**4- Profession :**

Doctor ☐ Nurse ☐ Administrator ☐

Other: .....

**5- Professional Category :**

Medical staff ☐ Paramedical staff ☐ Administrative staff ☐

Other.....

**6- Department**:.....

**7- Years of Experience in the Public Health Sector**

Less than 5 Years ☐ 5–10 Years ☐ 11–16 Years ☐ 17-22 Years ☐

More than 22 years ☐

**8- The wilaya in which the University Hospital Center (UHC) where you work is located:**

- Blida ☐
- Algiers ☐
- Tizi Ouzou ☐
- Béjaia ☐
- Other: ……..

**Section 2**

By selecting the appropriate option, please indicate how frequently each of the following statements applies to your University Hospital Center (UHC). Kindly place an (X) in the box that best reflects the actual conditions within the UHC. You are requested to answer all questions completely and honestly.

I. **Knowledge Management Processes:** Practices designed to acquire, generate, store, share, and apply knowledge to improve decision-making and performance within the university hospital center (UHC).

| I. | **Knowledge Acquisition: The process of obtaining valuable knowledge from various sources and transforming it into something practical.** | **Never** | **Rarely** | **Sometimes** | **Often** | **Always** |
|---|---|---|---|---|---|---|
| 1. | Healthcare workers are able to participate in training sessions and workshops to acquire new knowledge | | | | | |
| 2. | The UHC regularly relies on external sources, such as conferences and medical publications, to gain health-related knowledge | | | | | |
| 3. | Electronic Medical Records (EMRs) are consistently used as a primary source for acquiring knowledge about patient cases | | | | | |
| 4. | The UHC actively gathers feedback from patients and staff to improve knowledge acquisition in health services | | | | | |
| 5. | The UHC allows healthcare workers to access and benefit from information available in internal sources to acquire new knowledge | | | | | |
| 6. | Modern medical devices at the UHC enhance clinical knowledge by improving diagnostic accuracy | | | | | |

In your opinion, has knowledge acquisition in your UHC influenced the quality of health services? Please explain and provide examples if applicable……
……

| II. | **Knowledge Creation: the process that involves developing new ideas and solutions that contribute to organizational growth.** | **Never** | **Rarely** | **Sometimes** | **Often** | **Always** |
|---|---|---|---|---|---|---|
| 7. | In the UHC, healthcare workers are given opportunities to suggest new ideas for improving health services | | | | | |
| 8. | Teamwork sessions are regularly held to promote innovative solutions in healthcare delivery | | | | | |
| 9. | Medical data is analyzed to identify health challenges and propose new treatment strategies | | | | | |
| 10. | Multidisciplinary teams collaborate to enhance therapeutic procedures based on the latest medical research | | | | | |
| 11. | The UHC fosters a supportive environment for research and development in healthcare services | | | | | |
| 12. | Pilot projects are supported to evaluate new treatment models | | | | | |

In your opinion, has knowledge creation in your UHC influenced the quality of health services? Please explain and provide examples where possible……
……
……

| III. | **Knowledge Sharing: The process involves passing on knowledge and skills to others, enabling everyone to learn and perform their jobs more effectively.** | **Never** | **Rarely** | **Sometimes** | **Often** | **Always** |
|---|---|---|---|---|---|---|
| 13. | The UHC facilitates regular meetings and workshops for knowledge exchange among staff | | | | | |
| 14. | Digital platforms are used to facilitate internal knowledge sharing among healthcare professionals | | | | | |
| 15. | Case review sessions are conducted to disseminate best practices in medical treatment | | | | | |
| 16. | Healthcare workers voluntarily document their experiences and share them with colleagues to support knowledge exchange | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 17. | Cross-functional meetings are held to enhance interdepartmental knowledge sharing | | | | | |
| 18. | The UHC encourages participation in professional medical forums to share and gather knowledge | | | | | |
| 19. | UHC staff regularly exchange perspectives to address workplace challenges | | | | | |
| In your opinion, has knowledge sharing in your UHC influenced the quality of health services? Please explain and provide examples if applicable…… ……. ……. ……. | | | | | | |
| **IV.** | **Knowledge Storage:** **The process involves saving important knowledge in an organized way so it can be easily found and used later.** | **Never** | **Rarely** | **Sometimes** | **Often** | **Always** |
| 20. | Integrated digital systems are in place for storing and retrieving medical knowledge | | | | | |
| 21. | Lessons learned from past medical cases are systematically documented and stored for future reference | | | | | |
| 22. | Medical guidelines and procedures are regularly updated and stored to reflect best practices | | | | | |
| 23. | The UHC uses electronic archiving systems to preserve patient health information | | | | | |
| 24. | Health workers have seamless access to stored knowledge resources as per their needs | | | | | |
| 25. | A structured paper-based system is used to archive knowledge within the UHC | | | | | |
| 26. | Stored knowledge is reviewed and updated regularly to ensure it remains current and useful | | | | | |
| 27. | The UHC uses cloud-based systems to ensure secure and accessible knowledge storage | | | | | |
| In your opinion, has knowledge storage in your UHC influenced the quality of health services? Please explain and provide examples if applicable…… ……. ……. ……. ……. | | | | | | |

| V. | **Knowledge Application: the process that involves using organizational knowledge to enhance work processes, develop new products, improve services, and increase efficiency.** | **Never** | **Rarely** | **Sometimes** | **Often** | **Always** |
|---|---|---|---|---|---|---|
| 28. | Acquired knowledge is used to improve patient intake, diagnosis, and treatment procedures | | | | | |
| 29. | The UHC integrates applied medical research findings to improve service | | | | | |
| 30. | Healthcare workers receive training on implementing modern knowledge into medical and administrative practices | | | | | |
| 31. | Lessons learned from past cases are used in the development of new administrative procedures and clinical protocols | | | | | |
| 32. | The UHC effectively utilizes organizational knowledge to address new challenges and avoid duplication of work | | | | | |
| 33. | Applying knowledge in the UHC has led to noticeable improvements in patient outcomes | | | | | |
| 34. | Past case knowledge informs decision-making and helps prevent medical errors | | | | | |

In your opinion, has knowledge application in your UHC influenced the quality of health services? Please explain……
……
……

**II. The Quality of Health Services:** The degree to which healthcare delivery meets established professional standards and effectively improves patient outcomes.

| **I.** | **Reliability: The ability to provide consistent and dependable healthcare services** | **Never** | **Rarely** | **Sometimes** | **Often** | **Always** |
|---|---|---|---|---|---|---|
| 1. | Healthcare workers consistently strive to minimize errors in service delivery | | | | | |
| 2. | Healthcare workers keep the promises they make to patients | | | | | |
| 3. | The UHC provides consistent and continuous services with reliability and efficiency | | | | | |
| 4. | Services at the UHC are provided at the scheduled times that have been announced to patients | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 5. | Medical examinations are performed in a setting that ensures patients' privacy and confidentiality | | | | | |
| **II.** | **Responsiveness: The willingness and ability to help patients and provide prompt service.** | **Never** | **Rarely** | **Sometimes** | **Often** | **Always** |
| 6. | The UHC provides easy access to emergency services and medical consultations | | | | | |
| 7. | Healthcare workers respond quickly to patient needs | | | | | |
| 8. | Efforts are made to improve working conditions to ensure efficient service delivery | | | | | |
| 9. | The UHC streamlines procedures to improve patient care. | | | | | |
| 10. | The UHC guarantees prompt coordination among departments to address patient needs without delay | | | | | |
| 11. | Healthcare workers actively seek out and value patient feedback upon their departure from the UHC. | | | | | |
| **III.** | **Assurance: The ability of healthcare providers to inspire trust and confidence.** | **Never** | **Rarely** | **Sometimes** | **Often** | **Always** |
| 12. | The healthcare workers at the UHC possess the appropriate medical knowledge, skills, and experience | | | | | |
| 13. | The UHC ensures continuous training for medical, nursing, and administrative staff to keep up with the latest medical protocols | | | | | |
| 14. | The healthcare workers demonstrate professionalism and competence in their work | | | | | |
| 15. | Healthcare workers uphold high ethical standards and instill patient confidence by clearly explaining medical procedures | | | | | |
| 16. | Health services are provided equitably, ensuring that all patients receive care without discrimination or bias | | | | | |
| **IV.** | **Empathy: The provision of caring and individualized attention to patients.** | **Never** | **Rarely** | **Sometimes** | **Often** | **Always** |
| 17. | Healthcare workers offer psychological and social support for patients and their families | | | | | |
| 18. | The healthcare workers at UHC are compassionate, friendly, and cheerful when interacting with patients. | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 19. | The healthcare workers are considerate of patients' special circumstances | | | | | |
| 20. | Patients feel their individual needs and concerns are heard and addressed during consultations | | | | | |
| 21. | The UHC provides services at times convenient for its patients. | | | | | |
| 22. | The UHC prioritizes patient needs during administrative and medical team meetings. | | | | | |
| **V.** | **Tangibles: The physical facilities, equipment, and appearance of healthcare personnel** | **Never** | **Rarely** | **Sometimes** | **Often** | **Always** |
| 23. | The UHC ensures proper hygiene and disinfection of its facilities to maintain patient safety. | | | | | |
| 24. | The appearance of the healthcare workers is neat and appropriate. | | | | | |
| 25. | UHC facilities are sufficient to support effective healthcare delivery | | | | | |
| 26. | The UHC uses clear signage and directional markers to guide patients to different departments and facilities. | | | | | |
| 27. | The UHC guarantees that medications and medical tests are available and accessible to patients. | | | | | |
| 28. | The medical equipment utilized in service delivery is both modern and advanced. | | | | | |
| 29. | Facilities at the UHC are accessible for individuals with disabilities | | | | | |

**Please describe how knowledge management processes have influenced the quality of healthcare services at your UHC. Provide examples if possible**.....

.....

.....

.....

.....

| استبيان إلكتروني باللغة العربية | استبيان إلكتروني باللغة الفرنسية | استبيان إلكتروني باللغة الإنجليزية |
|---|---|---|

# APPENDIX 06 :

## Study Questionnaire in French

**Questionnaire d'étude**

Faculté des Sciences Economiques, Commerciales et des Sciences De Gestion

Département des Sciences de Gestion

Spécialité Gestion Publique

Questionnaire de Recherche Doctorale

Titre de la thèse : **Le rôle de la gestion des connaissances dans l'amélioration des services de santé publique : Le cas de l'Algérie**

Cher participant,

Dans le cadre du volet empirique d'une thèse de doctorat intitulée :
**" Le rôle de la gestion des connaissances dans l'amélioration des services de santé publique : Le cas de l'Algérie».** Nous vous invitons à examiner attentivement les affirmations contenues dans le questionnaire ci-joint et à y répondre de la manière la plus objective possible. Votre contribution est essentielle pour garantir l'exactitude et la fiabilité des résultats de l'étude.
Veuillez indiquer votre réponse en cochant un (X) à côté de l'option qui reflète le mieux votre opinion.
Nous vous assurons que toutes les informations fournies seront traitées avec la plus grande confidentialité et utilisées strictement à des fins académiques et de recherche.
Nous apprécions grandement votre temps, votre collaboration et votre précieuse contribution à la réussite de cette recherche.

**Chercheurs: Pr. SI AHMED. N et Magbi. M**

**Section 1**

❖ **Données démographiques et professionnelles**

Nous vous prions de bien vouloir cocher la case qui correspond le mieux votre réponse et de répondre à toutes les questions sans omission.

**1- Genre :**

Masculin ☐ Féminin ☐

**2- Age :**

20-29 ans ☐ 30-39 ans ☐ 40-49 ans ☐ 50 ans et plus ☐

**3- Qualification :**

Études secondaires ou inférieures ☐ Certificat d'études secondaires (Baccalauréat) ☐

Diplôme universitaire ☐ Études post-universitaires ☐

Autres: .....

**4- Profession :**

Médecin ☐ Infirmier ☐ Administrateur ☐

Autres : .....

1

**5- Catégorie professionnelle :**

Personnel médical ☐ Personnel paramédical ☐ Personnel administratif ☐

Autres : .....

**6- Le service ou le département dans lequel vous travaillez**

.....

**7- Années d'expérience dans le secteur de la santé publique**

Moins de 5 ans ☐ 5–10 ans ☐ 11–16 ans ☐ 17-22 ans ☐

Plus de 22 ans ☐

**8- La wilaya dans laquelle se situe le Centre Hospitalier Universitaire (CHU) où vous travaillez :**

- Blida ☐
- Alger ☐
- Tizi Ouzou ☐
- Béjaia ☐
- Autres: .....

**Section 2**

En sélectionnant l'option appropriée, veuillez indiquer à quelle fréquence chacune des affirmations suivantes s'applique à votre centre hospitalier universitaire (CHU). Veuillez mettre un (X) dans la case qui reflète le mieux les conditions réelles au sein du CHU. Vous êtes priés de répondre à toutes les questions de manière complète et honnête.

I. **Processus de Gestion des Connaissances:** Pratiques visant à acquérir, générer, stocker, partager et appliquer les connaissances afin d'améliorer la prise de décision et les performances au sein du centre hospitalier universitaire (CHU).

| **I.** | **Acquisition de connaissances :** **Le processus qui consiste à obtenir des connaissances précieuses à partir de diverses sources et à les transformer en quelque chose de pratique.** | **Jamais** | **Rarement** | **Parfois** | **Souvent** | **Toujours** |
|---|---|---|---|---|---|---|
| 1. | Les travailleurs de la santé peuvent participer à des sessions de formation et à des ateliers afin d'acquérir de nouvelles connaissances. | | | | | |
| 2. | Le CHU s'appuie régulièrement sur des sources externes, telles que des conférences et des publications médicales, pour acquérir des connaissances liées à la santé. | | | | | |
| 3. | Les dossiers médicaux électroniques (DME) sont systématiquement utilisés comme source principale d'acquisition de connaissances sur les cas des patients. | | | | | |
| 4. | Le CHU recueille activement les réactions des patients et du personnel afin d'améliorer l'acquisition des connaissances | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | dans les services de santé. | | | | | |
| 5. | Le CHU permet aux travailleurs de la santé d'accéder et de bénéficier des informations disponibles dans les sources internes afin d'acquérir de nouvelles connaissances. | | | | | |
| 6. | Les dispositifs médicaux modernes du CHU améliorent les connaissances cliniques et la précision des diagnostics. | | | | | |
| Selon vous, l'acquisition de connaissances dans votre CHU a-t-elle influencé la qualité des services de santé ? Veuillez expliquer et donner des exemples si possible. ……<br>…… | | | | | | |

| **II.** | **<u>Création de connaissances :</u> Le processus qui consiste à développer de nouvelles idées et solutions qui contribuent à la croissance organisationnelle.** | **Jamais** | **Rarement** | **Parfois** | **Souvent** | **Toujours** |
|---|---|---|---|---|---|---|
| 7. | Dans les CHU, les travailleurs de la santé ont la possibilité de proposer de nouvelles idées pour améliorer les services de santé. | | | | | |
| 8. | Des séances de travail en équipe sont régulièrement organisées pour promouvoir des solutions innovantes en matière de prestation de soins de santé. | | | | | |
| 9. | Les données médicales sont analysées pour identifier les problèmes de santé et proposer de nouvelles stratégies de traitement. | | | | | |
| 10. | Des équipes multidisciplinaires collaborent pour améliorer les procédures thérapeutiques sur la base des dernières recherches médicales. | | | | | |
| 11. | Le CHU favorise un environnement propice à la recherche et au développement dans le domaine des services de santé | | | | | |
| 12. | Des projets pilotes sont soutenus pour évaluer de nouveaux modèles de traitement. | | | | | |
| Selon vous, la création de connaissances au sein de votre CHU a-t-elle influencé la qualité des services de santé ?<br>Veuillez expliquer et donner des exemples si possible.<br>……<br>……<br>…… | | | | | | |

| III. | **Partage des connaissances : Le processus consiste à transmettre des connaissances et des compétences à d'autres personnes, ce qui permet à chacun d'apprendre et d'effectuer son travail de manière plus efficace.** | **Jamais** | **Rarement** | **Parfois** | **Souvent** | **Toujours** |
|---|---|---|---|---|---|---|
| 13. | Le CHU organise régulièrement des réunions et des ateliers pour favoriser l'échange de connaissances entre les membres du personnel. | | | | | |
| 14. | Les plateformes numériques sont utilisées pour faciliter le partage interne des connaissances entre les professionnels de la santé. | | | | | |
| 15. | Des sessions d'examen de cas sont organisées pour diffuser les meilleures pratiques en matière de traitement médical. | | | | | |
| 16. | Les travailleurs de la santé documentent volontairement leurs expériences et les partagent avec leurs collègues pour favoriser l'échange de connaissances. | | | | | |
| 17. | Des réunions interfonctionnelles sont organisées pour améliorer le partage des connaissances entre les services. | | | | | |
| 18. | Le CHU encourage la participation à des forums médicaux professionnels afin de partager et d'acquérir des connaissances | | | | | |
| 19. | Le personnel du CHU échange régulièrement ses points de vue pour relever les défis liés au travail. | | | | | |
| Selon vous, le partage des connaissances dans votre CHU a-t-il influencé la qualité des services de santé ? Veuillez expliquer et donner des exemples si possible. ……<br>…… | | | | | | |

| IV. | **Stockage des connaissances :**<br>**Le processus consiste à sauvegarder les connaissances importantes de manière organisée afin qu'elles puissent être facilement retrouvées et utilisées ultérieurement.** | Jamais | Rarement | Parfois | Souvent | Toujours |
|---|---|---|---|---|---|---|
| 20. | Des systèmes numériques intégrés sont en place pour stocker et récupérer les connaissances médicales. | | | | | |
| 21. | Les leçons tirées des cas médicaux précédents sont systématiquement documentées et conservées pour référence future. | | | | | |
| 22. | Les directives et procédures médicales sont régulièrement mises à jour et conservées afin de refléter les meilleures pratiques. | | | | | |
| 23. | Le CHU utilise des systèmes d'archivage électronique pour préserver les informations sur la santé des patients. | | | | | |
| 24. | Les travailleurs de la santé ont un accès transparent aux ressources de connaissances stockées en fonction de leurs besoins. | | | | | |
| 25. | Un système structuré basé sur le papier est utilisé pour archiver les connaissances au sein du CHU. | | | | | |
| 26. | Les connaissances stockées sont revues et mises à jour régulièrement pour s'assurer qu'elles restent actuelles et utiles. | | | | | |
| 27. | Le CHU utilise des systèmes basés sur le cloud pour garantir un stockage sécurisé et accessible des connaissances. | | | | | |
| Selon vous, le stockage des connaissances dans votre CHU a-t-il influencé la qualité des services de santé ? Veuillez expliquer et donner des exemples si possible……<br>…… | | | | | | |

| V. | **Application des connaissances :**<br>**Le processus consiste à utiliser les connaissances organisationnelles pour améliorer les processus de travail, développer de nouveaux produits, améliorer les services et accroître l'efficacité.** | Jamais | Rarement | Parfois | Souvent | Toujours |
|---|---|---|---|---|---|---|
| 28. | Les connaissances acquises sont utilisées pour améliorer l'accueil des patients, le diagnostic et les procédures de traitement. | | | | | |
| 29. | Le CHU intègre les résultats de la recherche médicale appliquée pour améliorer les services. | | | | | |
| 30. | Les travailleurs de la santé | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | reçoivent une formation sur la mise en œuvre des connaissances modernes dans les pratiques médicales et administratives. | | | | | |
| 31. | Les leçons tirées des cas précédents sont utilisées dans l'élaboration de nouvelles procédures administratives et de nouveaux protocoles cliniques. | | | | | |
| 32. | Le CHU utilise efficacement les connaissances organisationnelles pour relever les nouveaux défis et éviter le double emploi. | | | | | |
| 33. | L'application des connaissances au sein du CHU a conduit à des améliorations notables des résultats pour les patients. | | | | | |
| 34. | La connaissance des cas précédents éclaire la prise de décision et aide à prévenir les erreurs médicales. | | | | | |
| Selon vous, l'application des connaissances dans votre CHU a-t-elle influencé la qualité des services de santé ? Veuillez expliquer et donner des exemples si possible<br><br>.....<br>..... | | | | | | |

**II. La qualité des services de santé:** La mesure dans laquelle la prestation des soins de santé répond aux normes professionnelles établies et améliore efficacement les résultats pour les patients.

| **I.** | **Fiabilité : la capacité à fournir des services de santé cohérents et fiables.** | **Jamais** | **Rarement** | **Parfois** | **Souvent** | **Toujours** |
|---|---|---|---|---|---|---|
| 1. | Les travailleurs de la santé s'efforcent constamment de minimiser les erreurs dans la prestation des services. | | | | | |
| 2. | Les travailleurs de la santé tiennent les promesses qu'il font aux patients. | | | | | |
| 3. | Le CHU fournit des services cohérents et continus avec fiabilité et efficacité. | | | | | |
| 4. | Les services du CHU sont fournis aux heures prévues qui ont été annoncées aux patients. | | | | | |
| 5. | Les examens médicaux sont effectués dans un cadre garantissant l'intimité et la confidentialité des patients. | | | | | |

| II. | **Réactivité : La volonté et la capacité d'aider les patients et de leur fournir un service rapide.** | **Jamais** | **Rarement** | **Parfois** | **Souvent** | **Toujours** |
|---|---|---|---|---|---|---|
| 6. | Le CHU offre un accès facile aux services d'urgence et aux consultations médicales. | | | | | |
| 7. | Les travailleurs de la santé répondent rapidement aux besoins des patients. | | | | | |
| 8. | Des efforts sont faits pour améliorer les conditions de travail afin d'assurer une prestation de services efficace. | | | | | |
| 9. | Le CHU rationalise les procédures pour améliorer les soins aux patients. | | | | | |
| 10. | Le CHU garantit une coordination rapide entre les services afin de répondre sans délai aux besoins des patients. | | | | | |
| 11. | Les travailleurs de la santé recherchent activement les réactions des patients à leur départ du CHU et y accordent de l'importance. | | | | | |

| III. | **Assurance : La capacité des prestataires de soins de santé à inspirer confiance.** | **Jamais** | **Rarement** | **Parfois** | **Souvent** | **Toujours** |
|---|---|---|---|---|---|---|
| 12. | Les travailleurs de la santé du CHU possèdent les connaissances, les compétences et l'expérience médicales appropriées. | | | | | |
| 13. | Le CHU assure la formation continue du personnel médical, infirmier et administratif pour se tenir au courant des derniers protocoles médicaux. | | | | | |
| 14. | Les travailleurs de la santé font preuve de professionnalisme et de compétence dans leur travail. | | | | | |
| 15. | Les travailleurs de la santé respectent des normes éthiques élevées et inspirent confiance aux patients en expliquant clairement les procédures médicales. | | | | | |
| 16. | Les services de santé sont fournis de manière équitable, en veillant à ce que tous les patients reçoivent des soins sans discrimination ni parti pris. | | | | | |

| IV. | **Empathie : Fournir une attention bienveillante et individualisée aux patients.** | **Jamais** | **Rarement** | **Parfois** | **Souvent** | **Toujours** |
|---|---|---|---|---|---|---|
| 17. | Les travailleurs de la santé offrent un soutien psychologique et social aux patients et à leurs familles. | | | | | |
| 18. | Les travailleurs de la santé du CHU font preuve de compassion, d'amabilité et de bonne humeur lorsqu'ils interagissent avec | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | les patients. | | | | | |
| 19. | Les travailleurs de la santé sont attentifs aux circonstances particulières des patients. | | | | | |
| 20. | Les patients ont le sentiment que leurs besoins et préoccupations individuels sont entendus et pris en compte lors des consultations. | | | | | |
| 21. | Le CHU fournit des services à des heures qui conviennent à ses patients. | | | | | |
| 22. | Le CHU priorise les besoins des patients lors des réunions de l'équipe administrative et médicale | | | | | |

| V. | **Éléments tangibles : Les installations physiques, l'équipement et l'apparence du personnel de santé** | **Jamais** | **Rarement** | **Parfois** | **Souvent** | **Toujours** |
|---|---|---|---|---|---|---|
| 23. | Le CHU veille à l'hygiène et à la désinfection de ses installations afin de préserver la sécurité des patients. | | | | | |
| 24. | L'apparence des travailleurs de la santé est soignée et appropriée. | | | | | |
| 25. | Les installations du CHU sont suffisantes pour permettre une prestation efficace des soins de santé | | | | | |
| 26. | Le CHU utilise une signalétique claire et des repères directionnels pour guider les patients vers les différents services et installations. | | | | | |
| 27. | Le CHU garantit que les médicaments et les tests médicaux sont disponibles et accessibles aux patients. | | | | | |
| 28. | L'équipement médical utilisé pour la prestation des services est à la fois moderne et avancé. | | | | | |
| 29. | Les installations du CHU sont accessibles aux personnes handicapées. | | | | | |

**Veuillez décrire comment les processus de gestion des connaissances ont influencé la qualité des services de santé dans votre CHU. Donnez des exemples si possible** .....

.....

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| استبيان إلكتروني باللغة العربية | استبيان إلكتروني باللغة الفرنسية | استبيان إلكتروني باللغة الإنجليزية |
|---|---|---|

## APPENDIX 07 :

## Study Questionnaire in Arabic

استبيان الدراسة

جامعة البليدة 2

كلية العلوم الاقتصادية والتجارية وعلوم التسيير

استبانة بحثية لإعداد أطروحة الدكتوراه في علوم التسيير - تخصص تسيير عمومي- الموسومة بـ:

The Role of Knowledge Management in Improving Public Health Services: The Case of Algeria

تحية طيبة وبعد:

في إطار التحضير لإعداد الدراسة التطبيقية الخاصة بأطروحة الدكتوراه الموسومة بـ: دور إدارة المعرفة في تحسين الخدمات الصحية العمومية: حالة الجزائر، يُرجى منكم التكرم بقراءة عبارات الاستبانة المرفقة بدقة، والإجابة عنها بموضوعية، لما لذلك من انعكاس على صحة النتائج، وذلك بوضع إشارة (X) أمام الإجابة الأنسب. كما نؤكد لكم أنّ البيانات المقدمة من طرفكم سيتم التعامل معها بسرية ولأغراض البحث العلمي فقط.

ولكم الشكر الجزيل مسبقًا على تعاونكم معنا ومساهمتكم في إثراء هذا العمل البحثي.

الباحثان: أ/د سي أحمد نذير و ط/د م. مقي

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القسم الأول: البيانات الشخصية والوظيفية

يُرجى وضع إشارة (X) في الخانة التي تراها مناسبة، مع الإجابة على جميع الأسئلة المطروحة.

1- الجنس:

ذكر ☐ أنثى ☐

2- العمر:

من 20-30 سنة ☐ من30-39 سنة ☐ من40-49 سنة ☐ من 50 سنة فأكثر ☐

3- المستوى التعليمي:

ثانوي أو أقل ☐ بكالوريا ☐ مؤهل جامعي ☐ دراسات عليا ☐

أخر: .....

4- الوظيفة:

طبيب/ة ☐ ممرض/ة ☐ إداري ☐

أخر: .....

5- الطاقم الذي تنتمي إليه:

الطاقم الطبي ☐ الطاقم شبه الطبي ☐ الطاقم الإداري ☐

أخر: .....

6- المصلحة أو القسم الذي تعمل فيه .....

1

7- مدة الخبرة الوظيفية في قطاع الصحة العمومي

أقل من 5 سنوات ☐ من 5 إلى 10 سنوات ☐ من 11-16 سنة ☐ من 17- 22 سنة ☐ من 22 سنة فأكثر ☐

8- الولاية التي يتواجد بها المركز الاستشفائي الجامعي (CHU) الذي تعمل به

- البليدة ☐
- الجزائر ☐
- تيزي وزو ☐
- بجاية ☐
- أخرى: .....

القسم الثاني: عبارات الاستبيان

يُرجى وضع إشارة (X) في الخانة التي تراها مناسبة وحسب الواقع الفعلي الموجود في المركز الاستشفائي الجامعي، مع الإجابة على جميع الأسئلة.

المحور الأول: عمليات إدارة المعرفة: ممارسات تهدف إلى اكتساب المعرفة وتوليدها وتخزينها ومشاركتها وتطبيقها من أجل تحسين اتخاذ القرار والأداء في المركز الاستشفائي الجامعي

| | | أبدا | نادرا | أحيانا | غالبا | دائما |
|---|---|---|---|---|---|---|
| I. | اكتساب المعرفة: عملية الحصول على معرفة قيمة من مصادر مختلفة وتحويلها إلى شيء عملي | | | | | |
| .1 | يمكن لمقدمي الرعاية الصحية المشاركة في الدورات التدريبية وورش العمل لاكتساب معارف جديدة | | | | | |
| .2 | يعتمد المركز بانتظام على مصادر خارجية، مثل المؤتمرات والمنشورات الطبية، لاكتساب المعرفة المتعلقة بالصحة | | | | | |
| .3 | تُستخدم السجلات الطبية الإلكترونية (EMRs) باستمرار كمصدر أساسي لاكتساب المعرفة حول حالات المرضى | | | | | |
| .4 | يجمع المركز بشكل فعّال آراء المرضى والعاملين لتحسين اكتساب المعرفة في الخدمات الصحية | | | | | |
| .5 | يتيح المركز لمقدمي الرعاية الصحية الوصول إلى المعلومات المتوفرة في مصادر داخلية بغية استفادة منها في اكتساب المعرفة | | | | | |
| .6 | تعزز الأجهزة الطبية الحديثة المتوفرة في مركزكم المعرفة السريرية من خلال تحسين دقة التشخيص | | | | | |

في رأيك، هل أثر اكتساب المعرفة في مركزكم الاستشفائي الجامعي على جودة خدمات الصحية؟ يرجى توضيح مع تقديم امثلة إذا أمكن ذلك.....

.....

.....

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| II. | خلق معرفة جديدة: العملية التي تشمل تطوير أفكار وحلول جديدة تساهم في تطور المركز الاستشفائي الجامعي وخدماته الصحية | أبدا | نادرا | أحيانا | غالبا | دائما |
|---|---|---|---|---|---|---|
| 7. | يُتاح لمقدمي الرعاية الصحية في المركز الفرص لاقتراح أفكار جديدة لتحسين خدمات الرعاية الصحية. | | | | | |
| 8. | تُعقد جلسات عمل جماعي منتظمة لتطوير حلول مبتكرة لتقديم الرعاية الصحية | | | | | |
| 9. | يتم تحليل البيانات الطبية لتحديد التحديات الصحية واقتراح استراتيجيات علاجية جديدة | | | | | |
| 10. | تتعاون الفرق متعددة التخصصات لتحسين الإجراءات العلاجية بناءً على أحدث الأبحاث الطبية | | | | | |
| 11. | يهيئ المركز بيئة داعمة للبحث والتطوير في خدمات الرعاية الصحية | | | | | |
| 12. | يتم دعم المشاريع التجريبية لتقييم نماذج العلاج الجديدة | | | | | |
| في رأيك، هل أثر خلق المعرفة في مركزكم الاستشفائي الجامعي على جودة خدمات الصحية؟ يرجى توضيح مع تقديم امثلة إذا أمكن ذلك..... | | | | | | |

| III. | مشاركة المعرفة: العملية التي تشمل نقل المعرفة والمهارات للآخرين، مما يمكّن الجميع من التعلم وأداء مهامهم بشكل أكثر فعالية | أبدا | نادرا | أحيانا | غالبا | دائما |
|---|---|---|---|---|---|---|
| 13. | يُيسر المركز عقد اجتماعات وورش عمل منتظمة لتبادل المعرفة بين مقدمي الرعاية الصحية | | | | | |
| 14. | تُستخدم المنصات الرقمية لتسهيل تبادل المعرفة الداخلية بين المهنيين الصحيين | | | | | |
| 15. | تُعقد جلسات مراجعة الحالات لنشر أفضل الممارسات في العلاج الطبي | | | | | |
| 16. | يوثق مقدمو الرعاية الصحية تجاربهم بشكل طوعي ويشاركونها مع زملائهم لدعم تبادل المعرفة | | | | | |
| 17. | تُعقد اجتماعات تضم مختلف مصالح لتعزيز مشاركة المعرفة فيما بينها | | | | | |
| 18. | يشجع المركز على المشاركة في المنتديات الطبية المهنية لتبادل المعرفة وجمعها | | | | | |
| 19. | يتبادل مقدمو الرعاية الصحية في المركز وجهات النظر بانتظام لمعالجة تحديات التي تواجههم في مكان العمل | | | | | |
| في رأيك، هل أثرت مشاركة المعرفة في مركزكم الاستشفائي الجامعي على جودة خدمات الصحية؟ يرجى توضيح مع تقديم امثلة إذا أمكن ذلك..... | | | | | | |

| IV. | تخزين المعرفة: تعني حفظ المعرفة الهامة بطريقة منظمة تتيح سهولة العثور عليها واستخدامها لاحقًا | أبدا | نادرا | أحيانا | غالبا | دائما |
|---|---|---|---|---|---|---|
| 20. | يتم تطبيق أنظمة رقمية متكاملة لتخزين واسترجاع المعرفة الطبية | | | | | |
| 21. | يتم توثيق الدروس المستفادة من الحالات الطبية السابقة بصورة منهجية وحفظها للاستفادة منها مستقبلاً | | | | | |
| 22. | تُحدّث الأدلة والإجراءات الطبية بانتظام وتُخزن لتعكس أفضل الممارسات المعتمدة | | | | | |
| 23. | يعتمد المركز على أنظمة أرشفة إلكترونية لحفظ المعلومات الصحية الخاصة بالمرضى | | | | | |
| 24. | يتمتع مقدمو الرعاية الصحية بإمكانية وصول إلى مصادر المعرفة المخزنة بحسب احتياجاتهم بطريقة سهلة وسلسة | | | | | |
| 25. | يتم استخدام نظام ورقي منظم لأرشفة المعرفة داخل المركز | | | | | |
| 26. | تُراجع المعرفة المخزنة وتُحدّث بشكل دوري لضمان مواكبتها للتطورات واستمرار فائدتها | | | | | |
| 27. | يستخدم المركز أنظمة قائمة على الحوسبة السحابية لضمان تخزين المعرفة بشكل آمن وسهل الوصول إليه | | | | | |
| في رأيك، هل أثر تخزين المعرفة في مركزكم الاستشفائي الجامعي على جودة خدمات الصحية؟ يرجى توضيح مع تقديم امثلة إذا أمكن ذلك..... | | | | | | |

| V. | تطبيق المعرفة: تعني استخدام المعرفة التنظيمية بهدف تحسين سير العمل، وتحسين الخدمات، وزيادة الكفاءة. | أبدا | نادرا | أحيانا | غالبا | دائما |
|---|---|---|---|---|---|---|
| 28. | يتم استخدام المعرفة المكتسبة لتحسين إجراءات استقبال المرضى والتشخيص والعلاج | | | | | |
| 29. | يدمج المركز نتائج البحوث الطبية التطبيقية من أجل تحسين الخدمات الصحية المقدّمة | | | | | |
| 30. | يتلقى مقدمو الرعاية الصحية التكوين اللازم حول كيفية إدماج المعرفة الحديثة في الممارسات الطبية والإدارية | | | | | |
| 31. | تُستخدم الدروس المستخلصة من الحالات السابقة في تطوير إجراءات إدارية وبروتوكولات سريرية جديدة | | | | | |
| 32. | يوظّف المركز المعرفة التنظيمية بشكل فعّال لمواجهة التحديات الجديدة، وتفادي تكرار العمل | | | | | |
| 33. | يسهم تطبيق المعرفة داخل المركز في تحقيق تحسينات ملموسة في نتائج المرضى | | | | | |
| 34. | تُسهم معرفة الحالات السابقة في اتخاذ القرارات وتساعد في منع الأخطاء الطبية | | | | | |
| في رأيك، هل أثر تطبيق المعرفة في مركزكم الاستشفائي الجامعي على جودة خدمات الصحية؟ يرجى توضيح مع تقديم امثلة إذا أمكن ذلك..... | | | | | | |

المحور الثاني: **جودة الخدمات الصحية**: تشير إلى مدى التزام الرعاية الصحية المقدمة بالمعايير المهنية المعتمدة، وفعاليتها في تحسين نتائج المرضى

| I. | **الاعتمادية**: قدرة على تقديم الخدمات صحية الموعود بها للمريض بدقة، بثقة وبالشكل الصحيح | أبدا | نادرا | أحيانا | غالبا | دائما |
|---|---|---|---|---|---|---|
| 1. | يسعى مقدمو الرعاية الصحية باستمرار إلى تقليل الأخطاء في تقديم الخدمات الصحية | | | | | |
| 2. | يحرص مقدمو الرعاية الصحية على الوفاء بالوعود التي يقدّمونها للمرضى | | | | | |
| 3. | يوفّر المركز خدمات صحية منتظمة ومتواصلة، وبدرجة عالية من الموثوقية والكفاءة | | | | | |
| 4. | تُقدَّم الخدمات الصحية في المركز في الأوقات المحددة والمعلن عنها مسبقًا للمرضى | | | | | |
| 5. | تُجرى الفحوصات الطبية في بيئة تضمن خصوصية المرضى وسرية معلوماتهم | | | | | |

| I. | **الاستجابة**: تعني الاستعداد والقدرة مقدمي الرعاية الصحية على مساعدة المرضى وتقديم الخدمة بسرعة وفعالية | أبدا | نادرا | أحيانا | غالبا | دائما |
|---|---|---|---|---|---|---|
| 6. | يتيح المركز وصولًا سهلاً إلى خدمات الطوارئ والاستشارات الطبية | | | | | |
| 7. | يستجيب مقدمو الرعاية الصحية بسرعة لاحتياجات المرضى | | | | | |
| 8. | تُبذل جهود في المركز لتحسين ظروف العمل لضمان تقديم خدمة صحية فعّالة | | | | | |
| 9. | يعمل المركز على تبسيط الإجراءات بهدف تحسين رعاية المرضى | | | | | |
| 10. | يضمن المركز تنسيقًا سريعًا بين الأقسام المختلفة للاستجابة لاحتياجات المرضى دون تأخير | | | | | |
| 11. | يحرص مقدمو الرعاية الصحية على جمع آراء المرضى بعد مغادرتهم المؤسسة، ويُولون تلك الملاحظات اهتمامًا بالغًا | | | | | |

| II. | **الأمان**: يعني تقديم خدمات تكون خالية من المخاطرة والمغامرة والشك، بحيث يشعر المريض بالراحة والاطمئنان عند التعامل مع المركز الاستشفائي وموظفيه | أبدا | نادرا | أحيانا | غالبا | دائما |
|---|---|---|---|---|---|---|
| 12. | يمتلك مقدمو الرعاية الصحية في المركز المعرفة الطبية والمهارات والخبرة اللازمة | | | | | |
| 13. | يضمن المركز تدريبًا مستمرًا للكادر الطبي والتمريضي والإداري لمواكبة أحدث البروتوكولات الطبية | | | | | |
| 14. | يُظهر مقدمو الرعاية الصحية مستوى عاليًا من المهنية والكفاءة في أداء مهامهم | | | | | |
| 15. | يتمسك مقدمو الرعاية الصحية بمعايير أخلاقية عالية ويزرعون الثقة في نفوس المرضى من خلال شرح الإجراءات الطبية بوضوح | | | | | |
| 16. | تُقدَّم الخدمات الصحية بعدالة، مع ضمان حصول جميع المرضى على الرعاية دون أي تمييز أو تحيّز | | | | | |

| III. | التعاطف: تقديم رعاية واهتمام فردي للمرضى تراعى فيه احتياجاتهم الخاصة ومشاعرهم | أبدا | نادرا | أحيانا | غالبا | دائما |
|---|---|---|---|---|---|---|
| 17. | يوفر مقدمو الرعاية الصحية في المركز الدعم النفسي والاجتماعي للمرضى وعائلاتهم | | | | | |
| 18. | يتحلّى مقدمو الرعاية الصحية في المركز بالرحمة والودّ والبشاشة في تعاملهم مع المرضى | | | | | |
| 19. | يُراعي مقدمو الرعاية الصحية الظروف الخاصة للمرضى | | | | | |
| 20. | يشعر المرضى بأن احتياجاتهم الفردية ومخاوفهم يتم الاستماع إليها ومعالجتها خلال الاستشارات الطبية | | | | | |
| 21. | يوفّر المركز خدماته في أوقات مناسبة لمرضى | | | | | |
| 22. | يعطي المركز الأولوية لاحتياجات المرضى خلال الاجتماعات الإدارية والطبية | | | | | |

| IV. | الملموسية: تشمل المرافق المادية، والمعدات، والمظهر العام لمقدمي الرعاية الصحية | أبدا | نادرا | أحيانا | غالبا | دائما |
|---|---|---|---|---|---|---|
| 23. | يضمن المركز النظافة والتعقيم المناسبين لمرافقه بهدف الحفاظ على سلامة المرضى | | | | | |
| 24. | يتميّز مظهر مقدمي الرعاية الصحية بالنظافة والاحترافية | | | | | |
| 25. | المرافق الحالية داخل المركز كافية لدعم تقديم الخدمات الصحية للمرضى | | | | | |
| 26. | يستخدم المركز لافتات واضحة وإشارات توجيهية لإرشاد المرضى إلى الأقسام والمرافق المختلفة | | | | | |
| 27. | يضمن المركز توفّر الأدوية والفحوصات الطبية وسهولة حصول المرضى عليها | | | | | |
| 28. | تُستخدم في تقديم الخدمات الصحية معدات طبية حديثة ومتطورة | | | | | |
| 29. | المرافق في المركز متاحة للأشخاص ذوي الإعاقة | | | | | |

يرجى شرح كيف أثرت عمليات إدارة المعرفة على جودة خدمات الرعاية الصحية في مركزكم الاستشفائي الجامعي (CHU). لا تتردد في إعطاء أمثلة إذا كان أمكن ذلك.....

.....

.....

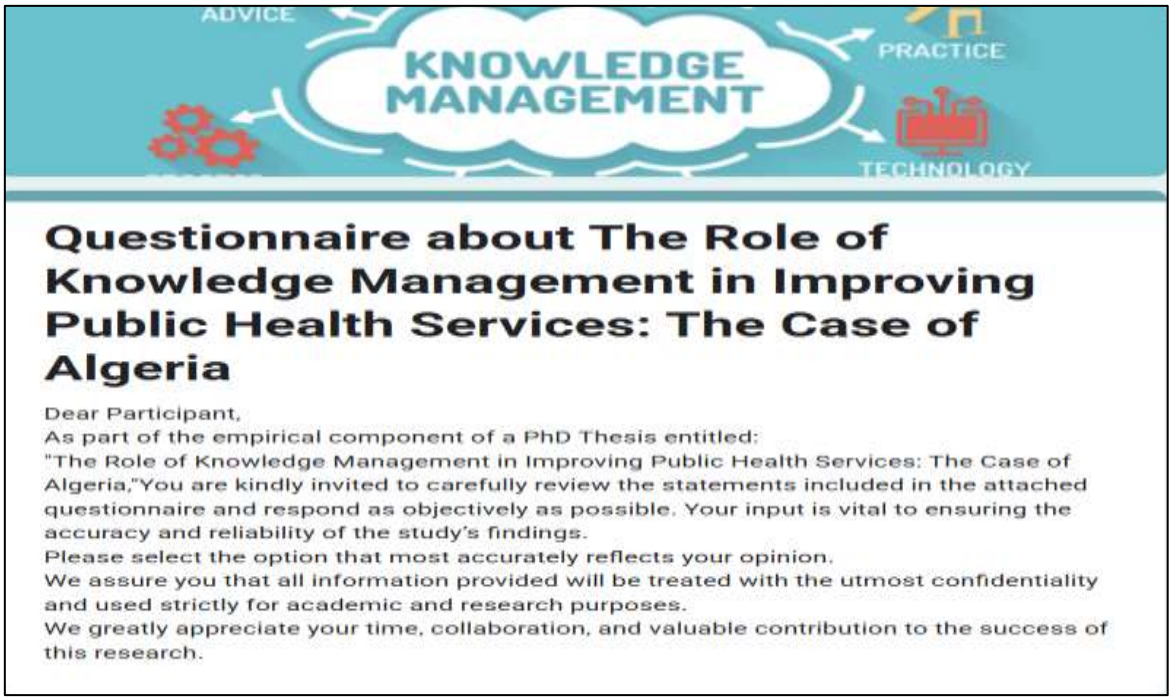
.....

| استبيان إلكتروني باللغة العربية | استبيان إلكتروني باللغة الفرنسية | استبيان إلكتروني باللغة الإنجليزية |
|---|---|---|

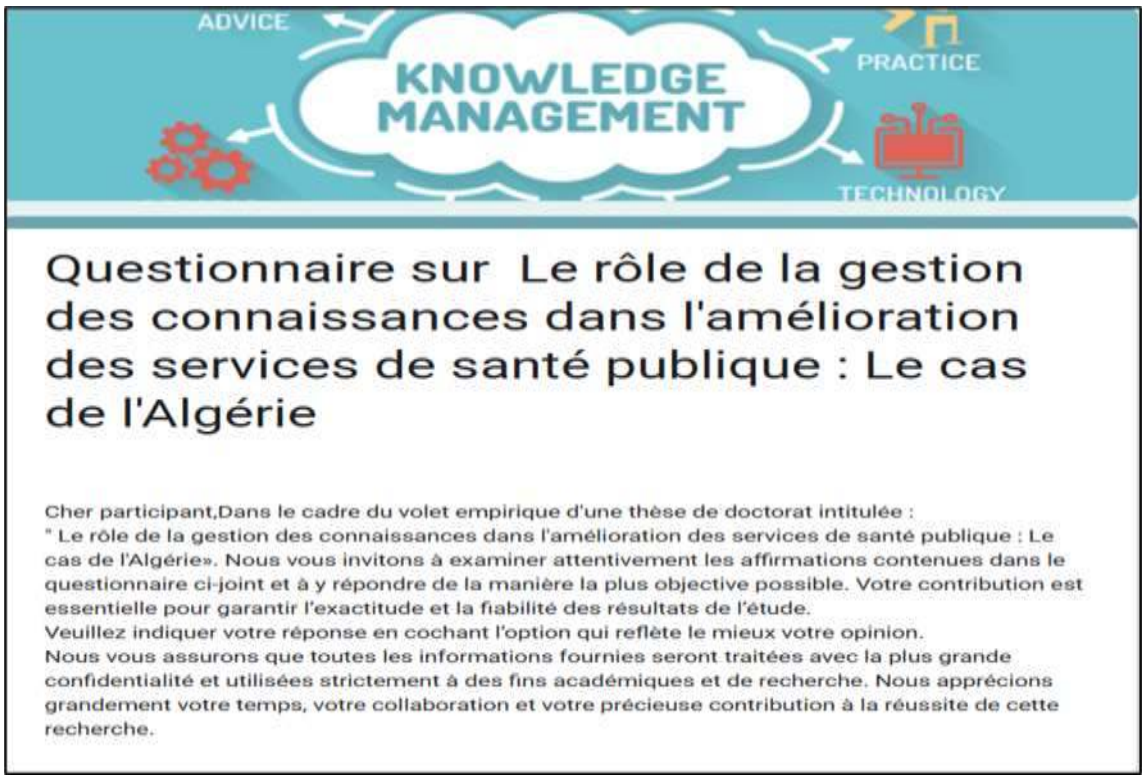
## APPENDIX 08

### Study Questionnaire (Electronic Version)

https://forms.gle/sXFNhmtVXVbPv4LL6



https://forms.gle/n1UjuJcEc2ZRvo7A7



https://forms.gle/ECVPJQUJtks3Lbvc8




## استبيان حول دور إدارة المعرفة في تحسين الخدمات الصحية العمومية: حالة الجزائر

تحية طيبة وبعد:

في إطار التّحضير لإعداد الدّراسة التّطبيقية الخاصة بأطروحة الدّكتوراه الموسومة بـــ: دور إدارة المعرفة في تحسين الخدمات الصحية العمومية: حالة الجزائر، يُرجى منكم التّكرم بقراءة عبارات الاستبيان المرفقة بدقة، والإجابة عنها بموضوعية، لما لذلك من انعكاس على صِحة النّتائج، وذلك بإختيار الإجابة الأنسب، كما نؤكد لكم أنّ البيانات المقدّمة من طرفكم سيتم التّعامل معها بسرية ولأغراض البحث العلمي فقط.

ولكم الشكر الجزيل مُسبقًا على تعاونكم معنا ومُساهمتكم في إثراء هذا العمل البحثي.

## Appendix 09:

| مقرر المادة التعليميةSyllabus: برمجيات إحصائية حرة | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| التعرف على المادة التعليمية | | | | | | | | | |
| مسمى المادة | برمجيات إحصائية حرة<br>Free statistical software<br>Logiciels statistiques libres | | | | | | | | الرمز |
| الأرصدة | | | | | | | | | UEF 3.2 |
| المعاملات | | | | | | | | | |
| الميدان | العلوم الاقتصادية والتسيير والعلوم التجارية | | | | | | | | |
| الحجم الساعي | | | | | | | طريقة التقييم | | |
| محاضرات | أعمال موجهة | أعمال تطبيقية | الحجم الساعي الأسبوعي | الحجم الساعي السداسي | اختبار فصلي | التقييم المستمر | العروض الشفوية | التقارير المخبرية | اختبار شفهي |
| 1سا 30 | 1سا 30 | // | 03سا 00 | 45سا 00 | 2 | 2 | 2 | // | // |
| درجة رقمنة المادة | ☒المنهج الرقمي<br>☒الموارد عبر الإنترنت<br>☒الدرجات الجامعية (خلال السداسي) في الإنترنت | | | | | | | | |
| جودة التدريس | ☒تصحيح أوراق الامتحان (يمكن للطالب الاطلاع عليها)<br>☒استقبال الطلبة<br>☒ المرافقة<br>☒تقييم الجودة من قبل الأستاذ (الاستبيانات: مرتين في السنة)<br>☒التقييم الذاتي من قبل الإدارة (مرة واحدة / 3 سنوات) | | | | | | | | |
| مسؤول المادة التعليمية | | | | | | | | | |
| الاسم، اللقب | ..... | الرتبة | ..... | | | | | | |
| تحديد موقع المكتب | ..... | البريد الالكتروني المهني | ..... | | | | | | |
| رقم الهاتف | ..... | توقيت الدرس ومكانه | ..... | | | | | | |

| تحليل الاحتياجات |
| --- |
| تبدأ عملية تصميم البرامج التعليمية بتحليل الاحتياجات للتعرف على المهارات والكفاءات التي يحتاجها الطلاب لتحقيق الأهداف التعليمية. يمكن أن يشمل هذا التحليل دراسة للسوق واحتياجات سوق العمل، واستطلاعات للمجتمع والمؤسسات التعليمية، وتقييمات لمستوى المهارات الحالي للطلاب. |
| **الكفاءات المستهدفة** |
| |
| **الهدف العام للمادة التعليمية** |
| بنهاية هذا المقياس، سيكون الطالب قادراً على:<br>1. **إتقان التعامل مع البرمجيات الحرة:** استخدام البرامج الإحصائية المفتوحة المصدر (**R، gretl ،JASP ،jamovi**) في معالجة وتحليل البيانات بكفاءة.<br>2. **إجراء الدراسات القياسية:** تنفيذ النمذجة الاقتصادية القياسية وتحليل السلاسل الزمنية باستخدام برنامج **Gretl**.<br>3. **التحليل الإحصائي المتقدم:** القيام بالاختبارات الإحصائية (مثل اختبارات t-test، وتحليل التباين ANOVA، والانحدار) وتفسير نتائجها باستخدام **jamovi** و**JASP**<br>4. **اتخاذ القرارات الكمية:** حل مشكلات التحسين وبحوث العمليات باستخدام برنامج **QSB** و**QM**.<br>5. **إدارة البيانات:** استيراد البيانات من مصادر مختلفة، تنظيفها، وتجهيزها للتحليل داخل هذه البرمجيات. |
| **الكلمات المفتاحية للمادة التعليمية** |
| البرمجيات الحرة (Free Software)؛ برمجية R؛ .Gretl؛ Jamovi؛ JASP؛ WinQSB؛ QM. |
| **محاور المادة التعليمية** |
| **البرمجيات الحرة (Free Software)** : المصادر المفتوحة في معالجة البيانات.<br>• برمجية **R**.<br>• **Gretl**: للنمذجة الاقتصادية القياسية.<br>• **Jamovi**: للتحليل الإحصائي الحديث والسهل.<br>• **JASP**: للتحليلات الإحصائية الكلاسيكية والبيزية.<br>• **WinQSB/QM for Windows**: بحوث العمليات والتحسين.<br>ملاحظة: برنامج WinQSB/QM for Windows ليست برمجية حرة، ولكن تعتبر شاملة في بحوث العمليات وسهلة الاستعمال. وفي البحوث الأكاديمية المنشورة يفضل استخدام مكتبات معينة في لغة R و Python متخصصة في بحوث العمليات. |

| الهيكل التنظيمي(Structure organisationnel) للمادة التعليمية | |
|---|---|
| البطاقة المفاهمية الذهنية | إستعراض الخارطة الذهنية المعرفية الخاصة بمحاور المادة التعليمية |
| إستعراض موارد مختلفة | صور، جداول، معادلات، مخططات و أشكال، روابط لفيديوهات توضيحية |
| نظام الدخول للمادة التعليمية (Le systèmeD'entré) | |
| وضوح أهداف الدروس وفق الصياغة العلمية لأفعال تصنيف بلوم | |
| إستعراض أنشطة للمدخلات القبلية (التغذية الرجعية feed back عبارة عن QUIZ | |
| إرتباط المكتسبات القبلية بمحتوى المادة التعليمية | الأنشطة التفاعلية للمكتسبات القبلية وعلاقته بالمادة الحالية(اجراء اختبارات القبول les tests d'entrées) |
| نظام التعلم SystémeD'apprentissage | |
| إستعراض محتوى لإكتساب المعرفة و للتعلم الذاتي و تطبيقها | المعرفة، التعلم الذاتي، الإدراك savoir, auto apprentissage, savoir faire |
| بناء محتوى الدروس على أساس المكتسبات القبلية | |
| إستعراض تمرين في كل درس | الإختبارات التقييمية les postes-tests عبارة عن QUIZ |
| نظام الخروج Système de sortie | |
| تقييم الكفاءات المستهدفة حسب الأهداف المسطرة | أنشطة تقييمية مختلفة الطرح |
| أنشطة تدعيمية للطالب في حالة فشله | توجيه الطالب إلى عدة موارد وإجراءات تعليمية لتعويض هذا النقص |
| إستراتيجية تعزيزية عند نجاح الطالب | توفير مواد تعليمية إضافية للطلبة الذين يحتاجون لتعزيز معارفهم |
| بيبليوغرافيا Bibliographie | |
| توافر عدد مناسب لقائمة المراجع للمادة التعليمية | |
| إحترام المنهجية العلمية في توثيق المراجع للمادة التعليمية | |
| البرنامج التفصيلي للمادة التعليمية | |

| الاسبوع | الكفاءة المستهدفة | المحاور والمفاهيم المستهدفة |
|---|---|---|
| الأسبوع 01 | | البرمجيات الحرة(Free Software)<br>• تعريف البرمجيات الحرة (Free Software).<br>• النشأة أو كيف بدأت فكرة إنشاء برمجيات حرة؟<br>• الفرق بين البرمجيات الحرة والمصادر المفتوحة (Open Source) .<br>• لماذا يعتبر R برمجية حرة (Free Software) ومصدر مفتوح (Open Source) في آن واحد. |
| الأسبوع 02 | | برمجية R<br>• التعريف بالبرنامج، النشأة والمؤسسة التي تدعمه.<br>• الاختصاص الذي يميل له.<br>• نقاط القوة والضعف.<br>• تثبيت البرنامج. |
| الأسبوع 03 | | برمجية R<br>❖ واجهة البرنامج:<br>• إدخال البيانات: يتم إدخال البيانات غالبًا عن طريق قراءة ملفات من مصادر مختلفة (مثل CSV، Excel، قواعد البيانات ...إلخ)<br>• معالجة البيانات: تتم المعالجة عبر كتابة أكواد برمجية وأوامر تستخدم الحزم والدوال الإحصائية المتاحة. يتم تنفيذ الأوامر في سطر الأوامر (Console) أو عبر تشغيل مقاطع نصية (Scripts) في المحرر. |
| الأسبوع 04 | | • حفظ المخرجات: يمكن حفظ النتائج الإحصائية، الجداول، والرسوم البيانية كملفات نصية أو صور عالية الجودة (مثل PDF أو PNG) باستخدام أوامر مخصصة لذلك. |
| الأسبوع 05 | | برمجية Gretl<br>• التعريف بالبرنامج، النشأة والمؤسسة التي تدعمه.<br>• الاختصاص الذي يميل له.<br>• نقاط القوة والضعف.<br>• تثبيت البرنامج. |

| | | |
|---|---|---|
| الأسبوع 06<br>الأسبوع 07 | | برمجية Gretl<br>❖ واجهة البرنامج:<br>• إدخال البيانات:<br>- يتم إدخال البيانات (مثل CSV، Excel....إلخ)<br>- تعريف السلسلة: تحديد نوع البيانات (مقطعية Cross-sectional، أو سلاسل زمنية Time series أو Panel).<br>• معالجة البيانات:<br>- الإحصاء الوصفي (المتوسط، الانحراف المعياري والقيم المتطرفة ...إلخ)<br>- معالجة وتوليد متغيرات جديدة (متغيرات جديدة، متباطئة وصورية)<br>- التعامل مع القيم المفقودة (Missing Values).<br>- التحليل مثلا : تقدير نموذج باستخدام ( Ordinary Least Squares).<br>• حفظ المخرجات. |
| الأسبوع 08 | | برمجية JASP<br>• التعريف بالبرنامج، النشأة والمؤسسة التي تدعمه.<br>• الاختصاص الذي يميل له.<br>• نقاط القوة والضعف.<br>• تثبيت البرنامج.<br>ملاحظة: يعتبر JASP أفضل بديل حر لبرنامج SPSS نظراً لسهولته الفائقة والواجهة الجيدة. |
| الأسبوع 09<br>الأسبوع 10 | | برمجية JASP<br>❖ واجهة البرنامج:<br>• إدخال البيانات: يتم إدخال البيانات بالاعتماد على ملفات بصيغة (CSV، Excel)، ولا يتم إدخال البيانات يدوياً داخل JASP لا يوجد محرر خلايا مثل Excel.<br>• معالجة البيانات:<br>- المعالجة في JASP تتم عبر واجهة بصرية. لتغيير نوع متغير (مقياس، رتبي، اسمي)، انقر فقط على أيقونة المتغير.<br>- إنشاء متغيرات عبر استخدام "محرر الصيغ البصري" ( Drag & Drop Formula) لجمع متغيرين أو حساب اللوغاريتم دون كتابة كود.<br>- يدعم JASP إضافة أكواد R (R Console) داخلية، لكنها اختيارية.<br>• حفظ المخرجات. |

| | | |
|---|---|---|
| الأسبوع 11 | | برمجية Jamovi<br>• التعريف بالبرنامج، النشأة والمؤسسة التي تدعمه.<br>• الاختصاص الذي يميل له.<br>• نقاط القوة والضعف.<br>• تثبيت البرنامج. |
| الأسبوع 12 | حل وضعية عملية | برمجية Jamovi<br>❖ واجهة البرنامج:<br>• إدخال البيانات:<br>- يتم إدخال أو استيراد البيانات (مثل CSV، Excel،...إلخ)، كما يملك **محرر بيانات كامل** (Data Grid) يشبه Excel ؛ يمكنك الكتابة فيه مباشرة.<br>- يمكن تعريف المتغيرات (اسمية، رتبية، مستمرة) وتغيير تسمية الفئات بسهولة.<br>• **معالجة البيانات:**<br>- **واجهة رسومية (بدون أكواد)** ترميز البيانات باستخدام واجهة بصرية سهلة.<br>- **التحليل الآني:** اختيار الاختبار من القوائم مثل (T-Tests) أو (ANOVA) وسحب المتغيرات، تظهر النتائج فوراً في الشاشة المقابلة دون الحاجة لضغط "Run".<br>- إضافة **Rj Editor** تسمح لك بكتابة أكواد R داخل البرنامج.<br>• **حفظ المخرجات:**<br>- تنسيق APA: الجداول تظهر منسقة وجاهزة للنشر العلمي مباشرة.<br>- تصدير الرسوم: يمكن حفظ الرسوم البيانية بنقرة يمين كصور (PNG, PDF, SVG) بجودة عالية.<br>- يمكن تصدير ملف النتائج بالكامل كملف PDF أو ملف HTML عبر موقع jamovi الرسمي. |
| الأسبوع 13 | | برمجية WinQSB/QM for Windows<br>• التعريف بالبرنامج، النشأة والمؤسسة التي تدعمه.<br>• الاختصاص الذي يميل له.<br>• نقاط القوة والضعف.<br>• تثبيت البرنامج.<br>ملاحظة: يمكن المفاضلة بين البرنامجين، حسب رغبة الأستاذ. |

| | | |
|---|---|---|
| الأسبوع 14 | | برمجية QM for Windows<br>❖ واجهة البرنامج:<br>• إدخال البيانات. تتم عملية الإدخال عبر خطوات منظمة:<br>- اختيار النموذج: من القائمة اليسرى، اختر مثلاً: البرمجة الخطية Linear Programming.<br>- نافذة الإعدادات (Creation Screen): ستفتح نافذة تطلب منك:<br>✓ Title: اسم المسألة.<br>✓ Number of Constraints: عدد القيود (المحددات).<br>✓ Number of Variables: عدد المتغيرات (المنتجات مثلاً).<br>✓ Objective: هل الهدف تعظيم أرباح (Max) أم تدنية تكاليف (Min).<br>✓ تعبئة الجدول: قم بإدخال المعاملات، أمام كل متغير وقيد.<br>• معالجة البيانات: في هذه المرحلة يقوم البرنامج بالعمليات الحسابية:<br>- الضغط على Solve: بمجرد الانتهاء من إدخال البيانات.<br>- الانتقال للنتائج: سيتحول البرنامج من وضع "إدخال البيانات" (Edit mode) إلى وضع "النتائج" (Results mode)، يمكنك رؤية النتائج بأشكال مختلفة:<br>✓ Solution: الحل النهائي.<br>✓ Iterations: خطوات الحل بالتفصيل (مثل جداول السيمبلكس).<br>✓ Dual: المسألة المقابلة.<br>✓ Graph: الرسم البياني (إذا كان لديك متغيرين فقط).<br>• حفظ المخرجات. |
| الأسبوع 15 | | برمجية WinQSB<br>❖ واجهة البرنامج:<br>• إدخال البيانات.<br>• معالجة البيانات.<br>• حفظ المخرجات. |
| الكفاءات المتخصصة والإضافية للمادة التعليمية | | |
| | | |

خلال تقديم المادة التعليمية في المحاضرة:

- يتم التعرف واكتساب المعارف والمفاهيم اللازمة لتوظيفها في الأعمال الموجهة
- يتم مناقشة كل المشاكل التي يطرحها الطلبة في حصة الأعمال الموجهة
- يتم التفاعل فيما بين الطلبة، بطرح الأسئلة والإجابة عليها والمناقشة المفتوحة في شكل فرق لتعزيز العمل التشاركي.

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## Appendix 10:

## Output of the JASP software

**Pearson's Correlations**

| | | | Pearson's r | P |
|---|---|---|---|---|
| Knowledge_Management_Processes | - | Knowledge_Management_Processes1 | 0.776 | < .001 |

**Pearson's Correlations**

| | | | Pearson's r | p |
|---|---|---|---|---|
| The_Quality_of_Health_Services | - | The_Quality_of_Health_Services1 | 0.962 | < .001 |

**Pearson's Correlations**

| | | | Pearson's r | p |
|---|---|---|---|---|
| All_Questionnaire | - | All_Questionnaire1 | 0.881 | < .001 |

## Correlation

***Pearson's Correlations***

| | | | Pearson's r | p |
|---|---|---|---|---|
| KA1 | - | KA2 | 0.484 | < .001 |
| KA1 | - | KA3 | 0.216 | < .001 |
| KA1 | - | KA4 | 0.261 | < .001 |
| KA1 | - | KA5 | 0.287 | < .001 |
| KA1 | - | KA6 | 0.259 | < .001 |
| KA1 | - | Knowledge_Acquisition | 0.625 | < .001 |
| KA2 | - | KA3 | 0.215 | < .001 |
| KA2 | - | KA4 | 0.258 | < .001 |
| KA2 | - | KA5 | 0.192 | < .001 |
| KA2 | - | KA6 | 0.193 | < .001 |
| KA2 | - | Knowledge_Acquisition | 0.570 | < .001 |
| KA3 | - | KA4 | 0.413 | < .001 |
| KA3 | - | KA5 | 0.241 | < .001 |
| KA3 | - | KA6 | 0.280 | < .001 |
| KA3 | - | Knowledge_Acquisition | 0.631 | < .001 |
| KA4 | - | KA5 | 0.431 | < .001 |
| KA4 | - | KA6 | 0.422 | < .001 |
| KA4 | - | Knowledge_Acquisition | 0.727 | < .001 |
| KA5 | - | KA6 | 0.345 | < .001 |
| KA5 | - | Knowledge_Acquisition | 0.645 | < .001 |

***Pearson's Correlations***

| | | | Pearson's r | p |
|---|---|---|---|---|
| KA6 | - | Knowledge_Acquisition | 0.670 | < .001 |

***Pearson's Correlations***

| | | | Pearson's r | p |
|---|---|---|---|---|
| KC7 | - | KC8 | 0.581 | < .001 |
| KC7 | - | KC9 | 0.418 | < .001 |
| KC7 | - | KC10 | 0.432 | < .001 |
| KC7 | - | KC11 | 0.544 | < .001 |
| KC7 | - | KC12 | 0.453 | < .001 |
| **KC7** | **-** | **Knowledge_Creation** | **0.773** | **< .001** |
| KC8 | - | KC9 | 0.499 | < .001 |
| KC8 | - | KC10 | 0.396 | < .001 |
| KC8 | - | KC11 | 0.424 | < .001 |
| KC8 | - | KC12 | 0.357 | < .001 |
| **KC8** | **-** | **Knowledge_Creation** | **0.728** | **< .001** |
| KC9 | - | KC10 | 0.568 | < .001 |
| KC9 | - | KC11 | 0.320 | < .001 |
| KC9 | - | KC12 | 0.292 | < .001 |
| **KC9** | **-** | **Knowledge_Creation** | **0.692** | **< .001** |
| KC10 | - | KC11 | 0.441 | < .001 |
| KC10 | - | KC12 | 0.431 | < .001 |
| **KC10** | **-** | **Knowledge_Creation** | **0.731** | **< .001** |
| KC11 | - | KC12 | 0.685 | < .001 |
| **KC11** | **-** | **Knowledge_Creation** | **0.780** | **< .001** |
| **KC12** | **-** | **Knowledge_Creation** | **0.733** | **< .001** |

*Pearson's Correlations*

| | | | Pearson's r | p |
|---|---|---|---|---|
| KS13 | - | KS14 | 0.364 | < .001 |
| KS13 | - | KS15 | 0.501 | < .001 |
| KS13 | - | KS16 | 0.350 | < .001 |
| KS13 | - | KS17 | 0.474 | < .001 |
| KS13 | - | KS18 | 0.541 | < .001 |
| KS13 | - | KS19 | 0.334 | < .001 |
| **KS13** | **-** | **Knowledge_Sharing** | **0.729** | **< .001** |
| KS14 | - | KS15 | 0.415 | < .001 |
| KS14 | - | KS16 | 0.266 | < .001 |
| KS14 | - | KS17 | 0.426 | < .001 |
| KS14 | - | KS18 | 0.416 | < .001 |
| KS14 | - | KS19 | 0.208 | < .001 |
| **KS14** | **-** | **Knowledge_Sharing** | **0.654** | **< .001** |
| KS15 | - | KS16 | 0.527 | < .001 |
| KS15 | - | KS17 | 0.442 | < .001 |
| KS15 | - | KS18 | 0.437 | < .001 |
| KS15 | - | KS19 | 0.295 | < .001 |
| **KS15** | **-** | **Knowledge_Sharing** | **0.738** | **< .001** |
| KS16 | - | KS17 | 0.395 | < .001 |
| KS16 | - | KS18 | 0.280 | < .001 |

*Pearson's Correlations*

| | | | Pearson's r | p |
|---|---|---|---|---|
| KS16 | - | KS19 | 0.343 | < .001 |
| **KS16** | **-** | **Knowledge_Sharing** | **0.640** | **< .001** |
| KS17 | - | KS18 | 0.509 | < .001 |
| KS17 | - | KS19 | 0.431 | < .001 |
| **KS17** | **-** | **Knowledge_Sharing** | **0.751** | **< .001** |
| KS18 | - | KS19 | 0.403 | < .001 |
| **KS18** | **-** | **Knowledge_Sharing** | **0.743** | **< .001** |
| **KS19** | **-** | **Knowledge_Sharing** | **0.614** | **< .001** |

***Pearson's Correlations***

| | | | Pearson's r | p |
|---|---|---|---|---|
| KST20 | - | KST21 | 0.447 | < .001 |
| KST20 | - | KST22 | 0.488 | < .001 |
| KST20 | - | KST23 | 0.596 | < .001 |
| KST20 | - | KST24 | 0.441 | < .001 |
| KST20 | - | KST25 | 0.155 | .002 |
| KST20 | - | KTS26 | 0.422 | < .001 |
| KST20 | - | KTS27 | 0.477 | < .001 |
| **KST20** | **-** | **Knowledge_Storage** | **0.736** | **< .001** |
| KST21 | - | KST22 | 0.599 | < .001 |
| KST21 | - | KST23 | 0.298 | < .001 |
| KST21 | - | KST24 | 0.499 | < .001 |
| KST21 | - | KST25 | 0.259 | < .001 |
| KST21 | - | KTS26 | 0.330 | < .001 |
| KST21 | - | KTS27 | 0.284 | < .001 |
| **KST21** | **-** | **Knowledge_Storage** | **0.667** | **< .001** |
| KST22 | - | KST23 | 0.431 | < .001 |
| KST22 | - | KST24 | 0.508 | < .001 |
| KST22 | - | KST25 | 0.286 | < .001 |
| KST22 | - | KTS26 | 0.413 | < .001 |
| KST22 | - | KTS27 | 0.340 | < .001 |
| **KST22** | **-** | **Knowledge_Storage** | **0.731** | **< .001** |
| KST23 | - | KST24 | 0.481 | < .001 |
| KST23 | - | KST25 | 0.239 | < .001 |
| KST23 | - | KTS26 | 0.529 | < .001 |
| KST23 | - | KTS27 | 0.573 | < .001 |
| **KST23** | **-** | **Knowledge_Storage** | **0.766** | **< .001** |
| KST24 | - | KST25 | 0.200 | < .001 |
| KST24 | - | KTS26 | 0.414 | < .001 |
| KST24 | - | KTS27 | 0.522 | < .001 |
| **KST24** | **-** | **Knowledge_Storage** | **0.734** | **< .001** |
| KST25 | - | KTS26 | 0.420 | < .001 |
| KST25 | - | KTS27 | 0.132 | .009 |
| **KST25** | **-** | **Knowledge_Storage** | **0.479** | **< .001** |
| KTS26 | - | KTS27 | 0.429 | < .001 |
| **KTS26** | **-** | **Knowledge_Storage** | **0.712** | **< .001** |
| **KTS27** | **-** | **Knowledge_Storage** | **0.691** | **< .001** |

**Pearson's Correlations**

| | | | Pearson's r | p |
|---|---|---|---|---|

***Pearson's Correlations***

| | | | Pearson's r | p |
|---|---|---|---|---|
| KAP28 | - | KAP29 | 0.500 | < .001 |
| KAP28 | - | KAP30 | 0.352 | < .001 |
| KAP28 | - | KAP31 | 0.287 | < .001 |
| KAP28 | - | KAP32 | 0.263 | < .001 |
| KAP28 | - | KAP33 | 0.353 | < .001 |
| KAP28 | - | KAP34 | 0.465 | < .001 |
| **KAP28** | **-** | **Knowledge_Application** | **0.622** | **< .001** |
| KAP29 | - | KAP30 | 0.531 | < .001 |
| KAP29 | - | KAP31 | 0.487 | < .001 |
| KAP29 | - | KAP32 | 0.494 | < .001 |
| KAP29 | - | KAP33 | 0.492 | < .001 |
| KAP29 | - | KAP34 | 0.457 | < .001 |
| **KAP29** | **-** | **Knowledge_Application** | **0.767** | **< .001** |
| KAP30 | - | KAP31 | 0.607 | < .001 |
| KAP30 | - | KAP32 | 0.526 | < .001 |
| KAP30 | - | KAP33 | 0.481 | < .001 |
| KAP30 | - | KAP34 | 0.331 | < .001 |
| **KAP30** | **-** | **Knowledge_Application** | **0.739** | **< .001** |
| KAP31 | - | KAP32 | 0.637 | < .001 |
| KAP31 | - | KAP33 | 0.549 | < .001 |
| KAP31 | - | KAP34 | 0.461 | < .001 |
| **KAP31** | **-** | **Knowledge_Application** | **0.775** | **< .001** |
| KAP32 | - | KAP33 | 0.602 | < .001 |
| KAP32 | - | KAP34 | 0.473 | < .001 |
| **KAP32** | **-** | **Knowledge_Application** | **0.772** | **< .001** |
| KAP33 | - | KAP34 | 0.586 | < .001 |
| **KAP33** | **-** | **Knowledge_Application** | **0.780** | **< .001** |
| **KAP34** | **-** | **Knowledge_Application** | **0.729** | **< .001** |

***Pearson's Correlations***

| | | | Pearson's r | p |
|---|---|---|---|---|
| REL1 | - | REL2 | 0.638 | < .001 |
| REL1 | - | REL3 | 0.222 | < .001 |
| REL1 | - | REL4 | 0.389 | < .001 |
| REL1 | - | REL5 | 0.503 | < .001 |
| **REL1** | **-** | **Reliability** | **0.742** | **< .001** |
| REL2 | - | REL3 | 0.298 | < .001 |
| REL2 | - | REL4 | 0.433 | < .001 |
| REL2 | - | REL5 | 0.492 | < .001 |
| **REL2** | **-** | **Reliability** | **0.765** | **< .001** |
| REL3 | - | REL4 | 0.567 | < .001 |
| REL3 | - | REL5 | 0.304 | < .001 |
| **REL3** | **-** | **Reliability** | **0.660** | **< .001** |
| REL4 | - | REL5 | 0.444 | < .001 |
| **REL4** | **-** | **Reliability** | **0.779** | **< .001** |
| **REL5** | **-** | **Reliability** | **0.738** | **< .001** |

***Pearson's Correlations***

| | | | Pearson's r | p |
|---|---|---|---|---|

***Pearson's Correlations***

| | | | Pearson's r | p |
|---|---|---|---|---|
| RES6 | - | RES7 | 0.443 | < .001 |
| RES6 | - | RES8 | 0.420 | < .001 |
| RES6 | - | RES9 | 0.475 | < .001 |
| RES6 | - | RES10 | 0.509 | < .001 |
| RES6 | - | RES11 | 0.244 | < .001 |
| **RES6** | **-** | **Responsiveness** | **0.710** | **< .001** |
| RES7 | - | RES8 | 0.338 | < .001 |
| RES7 | - | RES9 | 0.397 | < .001 |
| RES7 | - | RES10 | 0.450 | < .001 |
| RES7 | - | RES11 | 0.284 | < .001 |
| **RES7** | **-** | **Responsiveness** | **0.658** | **< .001** |
| RES8 | - | RES9 | 0.612 | < .001 |
| RES8 | - | RES10 | 0.574 | < .001 |
| RES8 | - | RES11 | 0.328 | < .001 |
| **RES8** | **-** | **Responsiveness** | **0.749** | **< .001** |
| RES9 | - | RES10 | 0.547 | < .001 |
| RES9 | - | RES11 | 0.408 | < .001 |
| **RES9** | **-** | **Responsiveness** | **0.785** | **< .001** |
| RES10 | - | RES11 | 0.431 | < .001 |
| **RES10** | **-** | **Responsiveness** | **0.805** | **< .001** |
| **RES11** | **-** | **Responsiveness** | **0.641** | **< .001** |

***Pearson's Correlations***

| | | | Pearson's r | p |
|---|---|---|---|---|
| ASS12 | - | ASS13 | 0.325 | < .001 |
| ASS12 | - | ASS14 | 0.406 | < .001 |
| ASS12 | - | ASS15 | 0.394 | < .001 |
| ASS12 | - | ASS16 | 0.380 | < .001 |
| **ASS12** | **-** | **Assurance** | **0.635** | **< .001** |
| ASS13 | - | ASS14 | 0.452 | < .001 |
| ASS13 | - | ASS15 | 0.481 | < .001 |
| ASS13 | - | ASS16 | 0.403 | < .001 |
| **ASS13** | **-** | **Assurance** | **0.717** | **< .001** |
| ASS14 | - | ASS15 | 0.717 | < .001 |
| ASS14 | - | ASS16 | 0.599 | < .001 |
| **ASS14** | **-** | **Assurance** | **0.824** | **< .001** |
| ASS15 | - | ASS16 | 0.626 | < .001 |
| **ASS15** | **-** | **Assurance** | **0.838** | **< .001** |
| **ASS16** | **-** | **Assurance** | **0.799** | **< .001** |

***Pearson's Correlations***

| | | | Pearson's r | p |
|---|---|---|---|---|
| EMP17 | - | EMP18 | 0.652 | < .001 |
| EMP17 | - | EMP19 | 0.526 | < .001 |
| EMP17 | - | EMP20 | 0.506 | < .001 |
| EMP17 | - | EMP21 | 0.547 | < .001 |
| EMP17 | - | EMP22 | 0.523 | < .001 |
| **EMP17** | **-** | **Empathy** | **0.797** | **< .001** |
| EMP18 | - | EMP19 | 0.598 | < .001 |

***Pearson's Correlations***

| | | | Pearson's r | p |
|---|---|---|---|---|
| EMP18 | - | EMP20 | 0.568 | < .001 |
| EMP18 | - | EMP21 | 0.619 | < .001 |
| EMP18 | - | EMP22 | 0.496 | < .001 |
| **EMP18** | **-** | **Empathy** | **0.826** | **< .001** |
| EMP19 | - | EMP20 | 0.607 | < .001 |
| EMP19 | - | EMP21 | 0.520 | < .001 |
| EMP19 | - | EMP22 | 0.419 | < .001 |
| **EMP19** | **-** | **Empathy** | **0.774** | **< .001** |
| EMP20 | - | EMP21 | 0.550 | < .001 |
| EMP20 | - | EMP22 | 0.521 | < .001 |
| **EMP20** | **-** | **Empathy** | **0.790** | **< .001** |
| EMP21 | - | EMP22 | 0.561 | < .001 |
| **EMP21** | **-** | **Empathy** | **0.800** | **< .001** |
| **EMP22** | **-** | **Empathy** | **0.747** | **< .001** |

***Pearson's Correlations***

| | | | Pearson's r | p |
|---|---|---|---|---|
| TAN23 | - | TAN24 | 0.610 | < .001 |
| TAN23 | - | TAN25 | 0.462 | < .001 |
| TAN23 | - | TAN26 | 0.515 | < .001 |
| TAN23 | - | TAN27 | 0.370 | < .001 |
| TAN23 | - | TAN28 | 0.501 | < .001 |
| TAN23 | - | TAN29 | 0.371 | < .001 |
| **TAN23** | **-** | **Tangibles** | **0.782** | **< .001** |
| TAN24 | - | TAN25 | 0.388 | < .001 |
| TAN24 | - | TAN26 | 0.327 | < .001 |
| TAN24 | - | TAN27 | 0.403 | < .001 |
| TAN24 | - | TAN28 | 0.362 | < .001 |
| TAN24 | - | TAN29 | 0.268 | < .001 |
| **TAN24** | **-** | **Tangibles** | **0.669** | **< .001** |
| TAN25 | - | TAN26 | 0.420 | < .001 |
| TAN25 | - | TAN27 | 0.427 | < .001 |
| TAN25 | - | TAN28 | 0.593 | < .001 |
| TAN25 | - | TAN29 | 0.357 | < .001 |
| **TAN25** | **-** | **Tangibles** | **0.737** | **< .001** |
| TAN26 | - | TAN27 | 0.427 | < .001 |
| TAN26 | - | TAN28 | 0.475 | < .001 |
| TAN26 | - | TAN29 | 0.358 | < .001 |
| **TAN26** | **-** | **Tangibles** | **0.703** | **< .001** |
| TAN27 | - | TAN28 | 0.446 | < .001 |
| TAN27 | - | TAN29 | 0.307 | < .001 |
| **TAN27** | **-** | **Tangibles** | **0.659** | **< .001** |
| TAN28 | - | TAN29 | 0.462 | < .001 |
| **TAN28** | **-** | **Tangibles** | **0.774** | **< .001** |
| **TAN29** | **-** | **Tangibles** | **0.642** | **< .001** |

***Pearson's Correlations***

| | | | | | Pearson's r | P |
|---|---|---|---|---|---|---|

***Pearson's Correlations***

| | | | Pearson's r | P |
|---|---|---|---|---|
| Knowledge_Acquisition | - | Knowledge_Creation | 0.628 | < .001 |
| Knowledge_Acquisition | - | Knowledge_Sharing | 0.551 | < .001 |
| Knowledge_Acquisition | - | Knowledge_Storage | 0.516 | < .001 |
| Knowledge_Acquisition | - | Knowledge_Application | 0.422 | < .001 |
| **Knowledge_Acquisition** | **-** | **Knowledge_Management_Processes** | **0.752** | **< .001** |
| Knowledge_Creation | - | Knowledge_Sharing | 0.620 | < .001 |
| Knowledge_Creation | - | Knowledge_Storage | 0.582 | < .001 |
| Knowledge_Creation | - | Knowledge_Application | 0.450 | < .001 |
| **Knowledge_Creation** | **-** | **Knowledge_Management_Processes** | **0.809** | **< .001** |
| Knowledge_Sharing | - | Knowledge_Storage | 0.533 | < .001 |
| Knowledge_Sharing | - | Knowledge_Application | 0.480 | < .001 |
| **Knowledge_Sharing** | **-** | **Knowledge_Management_Processes** | **0.795** | **< .001** |
| Knowledge_Storage | - | Knowledge_Application | 0.617 | < .001 |
| **Knowledge_Storage** | **-** | **Knowledge_Management_Processes** | **0.844** | **< .001** |
| **Knowledge_Application** | **-** | **Knowledge_Management_Processes** | **0.767** | **< .001** |

***Pearson's Correlations***

| | | | Pearson's r | p |
|---|---|---|---|---|
| Reliability | - | Responsiveness | 0.561 | < .001 |
| Reliability | - | Assurance | 0.598 | < .001 |
| Reliability | - | Empathy | 0.616 | < .001 |
| Reliability | - | Tangibles | 0.480 | < .001 |
| **Reliability** | **-** | **The_Quality_of_Health_Services** | **0.772** | **< .001** |
| Responsiveness | - | Assurance | 0.707 | < .001 |
| Responsiveness | - | Empathy | 0.571 | < .001 |
| Responsiveness | - | Tangibles | 0.560 | < .001 |
| **Responsiveness** | **-** | **The_Quality_of_Health_Services** | **0.827** | **< .001** |
| Assurance | - | Empathy | 0.661 | < .001 |
| Assurance | - | Tangibles | 0.575 | < .001 |
| **Assurance** | **-** | **The_Quality_of_Health_Services** | **0.851** | **< .001** |
| Empathy | - | Tangibles | 0.572 | < .001 |
| **Empathy** | **-** | **The_Quality_of_Health_Services** | **0.838** | **< .001** |
| **Tangibles** | **-** | **The_Quality_of_Health_Services** | **0.805** | **< .001** |

## Unidimensional Reliability

*Frequentist Scale Reliability Statistics*

| | | | 95% CI | |
|---|---|---|---|---|
| Coefficient | Estimate | Std. Error | Lower | Upper |
| Coefficient ω | 0.723 | 0.022 | 0.680 | 0.766 |
| Coefficient α | 0.718 | 0.023 | 0.672 | 0.764 |
| Guttman's λ2 | 0.724 | 0.022 | 0.681 | 0.768 |
| Split-half coefficient | 0.764 | 0.024 | 0.717 | 0.811 |

*Frequentist Individual Item Reliability Statistics*

| Item | Coefficient ω (if item dropped) | | | Coefficient α (if item dropped) | | |
|---|---|---|---|---|---|---|
| | Estimate | Lower 95% CI | Upper 95% CI | Estimate | Lower 95% CI | Upper 95% CI |
| KA1 | 0.696 | 0.648 | 0.743 | 0.683 | 0.631 | 0.735 |
| KA2 | 0.703 | 0.657 | 0.750 | 0.697 | 0.647 | 0.746 |
| KA3 | 0.699 | 0.651 | 0.746 | 0.694 | 0.643 | 0.745 |
| KA4 | 0.634 | 0.577 | 0.691 | 0.645 | 0.583 | 0.707 |
| KA5 | 0.683 | 0.633 | 0.733 | 0.678 | 0.629 | 0.728 |
| KA6 | 0.683 | 0.633 | 0.733 | 0.679 | 0.624 | 0.734 |

## Unidimensional Reliability

*Frequentist Scale Reliability Statistics*

| Coefficient | Estimate | Std. Error | 95% CI | |
|---|---|---|---|---|
| | | | Lower | Upper |
| Coefficient ω | 0.836 | 0.013 | 0.810 | 0.861 |
| Coefficient α | 0.834 | 0.013 | 0.809 | 0.859 |
| Guttman's λ2 | 0.838 | 0.012 | 0.815 | 0.862 |
| Split-half coefficient | 0.890 | 0.011 | 0.867 | 0.912 |

*Frequentist Individual Item Reliability Statistics*

| Item | Coefficient ω (if item dropped) | | | Coefficient α (if item dropped) | | |
|---|---|---|---|---|---|---|
| | Estimate | Lower 95% CI | Upper 95% CI | Estimate | Lower 95% CI | Upper 95% CI |
| KC7 | 0.798 | 0.766 | 0.830 | 0.798 | 0.766 | 0.830 |
| KC8 | 0.810 | 0.780 | 0.840 | 0.809 | 0.779 | 0.839 |
| KC9 | 0.823 | 0.796 | 0.851 | 0.820 | 0.792 | 0.847 |
| KC10 | 0.812 | 0.783 | 0.842 | 0.808 | 0.780 | 0.837 |
| KC11 | 0.799 | 0.768 | 0.831 | 0.798 | 0.767 | 0.829 |
| KC12 | 0.811 | 0.781 | 0.841 | 0.810 | 0.781 | 0.839 |

## Unidimensional Reliability

*Frequentist Scale Reliability Statistics*

| Coefficient | Estimate | Std. Error | 95% CI | |
|---|---|---|---|---|
| | | | Lower | Upper |
| Coefficient ω | 0.823 | 0.014 | 0.796 | 0.850 |
| Coefficient α | 0.820 | 0.015 | 0.792 | 0.849 |
| Guttman's λ2 | 0.823 | 0.014 | 0.795 | 0.851 |
| Split-half coefficient | 0.848 | 0.016 | 0.817 | 0.878 |

*Frequentist Individual Item Reliability Statistics*

| Item | Coefficient ω (if item dropped) | | | Coefficient α (if item dropped) | | |
|---|---|---|---|---|---|---|
| | Estimate | Lower 95% CI | Upper 95% CI | Estimate | Lower 95% CI | Upper 95% CI |

*Frequentist Individual Item Reliability Statistics*

| | Coefficient ω (if item dropped) | | | Coefficient α (if item dropped) | | |
|---|---|---|---|---|---|---|
| Item | Estimate | Lower 95% CI | Upper 95% CI | Estimate | Lower 95% CI | Upper 95% CI |
| KS13 | 0.791 | 0.759 | 0.823 | 0.788 | 0.753 | 0.822 |
| KS14 | 0.813 | 0.784 | 0.842 | 0.811 | 0.780 | 0.842 |
| KS15 | 0.790 | 0.758 | 0.823 | 0.786 | 0.751 | 0.820 |
| KS16 | 0.810 | 0.780 | 0.839 | 0.806 | 0.776 | 0.837 |
| KS17 | 0.786 | 0.754 | 0.819 | 0.783 | 0.748 | 0.818 |
| KS18 | 0.789 | 0.756 | 0.822 | 0.786 | 0.752 | 0.820 |
| KS19 | 0.814 | 0.785 | 0.843 | 0.812 | 0.782 | 0.843 |

## Unidimensional Reliability

*Frequentist Scale Reliability Statistics*

| | | | 95% CI | |
|---|---|---|---|---|
| Coefficient | Estimate | Std. Error | Lower | Upper |
| Coefficient ω | 0.848 | 0.012 | 0.825 | 0.871 |
| Coefficient α | 0.842 | 0.013 | 0.817 | 0.867 |
| Guttman's λ2 | 0.849 | 0.012 | 0.825 | 0.872 |
| Split-half coefficient | 0.890 | 0.011 | 0.869 | 0.912 |

*Frequentist Individual Item Reliability Statistics*

| | Coefficient ω (if item dropped) | | | Coefficient α (if item dropped) | | |
|---|---|---|---|---|---|---|
| Item | Estimate | Lower 95% CI | Upper 95% CI | Estimate | Lower 95% CI | Upper 95% CI |
| KST20 | 0.822 | 0.795 | 0.849 | 0.817 | 0.787 | 0.846 |
| KST21 | 0.835 | 0.810 | 0.860 | 0.827 | 0.800 | 0.854 |
| KST22 | 0.825 | 0.798 | 0.851 | 0.817 | 0.788 | 0.846 |
| KST23 | 0.817 | 0.789 | 0.845 | 0.813 | 0.782 | 0.843 |
| KST24 | 0.823 | 0.796 | 0.850 | 0.816 | 0.788 | 0.845 |
| KST25 | 0.855 | 0.833 | 0.877 | 0.853 | 0.828 | 0.878 |
| KTS26 | 0.828 | 0.801 | 0.854 | 0.820 | 0.791 | 0.849 |
| KTS27 | 0.830 | 0.804 | 0.856 | 0.825 | 0.797 | 0.852 |

## Unidimensional Reliability

*Frequentist Scale Reliability Statistics*

| | | | 95% CI | |
|---|---|---|---|---|
| Coefficient | Estimate | Std. Error | Lower | Upper |
| Coefficient ω | 0.863 | 0.011 | 0.842 | 0.884 |
| Coefficient α | 0.862 | 0.012 | 0.838 | 0.886 |
| Guttman's λ2 | 0.865 | 0.012 | 0.842 | 0.888 |
| Split-half coefficient | 0.902 | 0.010 | 0.882 | 0.922 |

*Frequentist Individual Item Reliability Statistics*

| | Coefficient ω (if item dropped) | | | Coefficient α (if item dropped) | | |
|---|---|---|---|---|---|---|
| Item | Estimate | Lower 95% CI | Upper 95% CI | Estimate | Lower 95% CI | Upper 95% CI |
| KAP28 | 0.864 | 0.843 | 0.885 | 0.863 | 0.839 | 0.887 |
| KAP29 | 0.841 | 0.817 | 0.866 | 0.838 | 0.811 | 0.866 |
| KAP30 | 0.845 | 0.821 | 0.869 | 0.843 | 0.815 | 0.872 |
| KAP31 | 0.838 | 0.812 | 0.863 | 0.836 | 0.807 | 0.865 |
| KAP32 | 0.838 | 0.813 | 0.863 | 0.837 | 0.808 | 0.867 |
| KAP33 | 0.836 | 0.810 | 0.861 | 0.835 | 0.806 | 0.864 |
| KAP34 | 0.848 | 0.824 | 0.871 | 0.845 | 0.818 | 0.873 |

## Unidimensional Reliability

*Frequentist Scale Reliability Statistics*

| | | | 95% CI | |
|---|---|---|---|---|
| Coefficient | Estimate | Std. Error | Lower | Upper |
| Coefficient ω | 0.785 | 0.017 | 0.751 | 0.819 |
| Coefficient α | 0.788 | 0.017 | 0.754 | 0.822 |
| Guttman's λ2 | 0.794 | 0.016 | 0.762 | 0.826 |
| Split-half coefficient | 0.852 | 0.015 | 0.823 | 0.882 |

*Frequentist Individual Item Reliability Statistics*

| | Coefficient ω (if item dropped) | | | Coefficient α (if item dropped) | | |
|---|---|---|---|---|---|---|
| Item | Estimate | Lower 95% CI | Upper 95% CI | Estimate | Lower 95% CI | Upper 95% CI |
| REL1 | 0.755 | 0.715 | 0.794 | 0.746 | 0.705 | 0.787 |
| REL2 | 0.739 | 0.697 | 0.781 | 0.731 | 0.686 | 0.777 |
| REL3 | 0.787 | 0.753 | 0.822 | 0.786 | 0.745 | 0.828 |
| REL4 | 0.743 | 0.702 | 0.784 | 0.730 | 0.684 | 0.776 |
| REL5 | 0.735 | 0.693 | 0.778 | 0.745 | 0.702 | 0.787 |

## Unidimensional Reliability

*Frequentist Scale Reliability Statistics*

| | | | 95% CI | |
|---|---|---|---|---|
| Coefficient | Estimate | Std. Error | Lower | Upper |
| Coefficient ω | 0.819 | 0.014 | 0.791 | 0.847 |
| Coefficient α | 0.815 | 0.015 | 0.785 | 0.845 |
| Guttman's λ2 | 0.818 | 0.015 | 0.789 | 0.847 |
| Split-half coefficient | 0.811 | 0.019 | 0.773 | 0.849 |

*Frequentist Individual Item Reliability Statistics*

| | Coefficient ω (if item dropped) | | | Coefficient α (if item dropped) | | |
|---|---|---|---|---|---|---|
| Item | Estimate | Lower 95% CI | Upper 95% CI | Estimate | Lower 95% CI | Upper 95% CI |
| RES6 | 0.796 | 0.763 | 0.828 | 0.790 | 0.757 | 0.824 |
| RES7 | 0.804 | 0.773 | 0.835 | 0.800 | 0.766 | 0.834 |

*Frequentist Individual Item Reliability Statistics*

| | Coefficient ω (if item dropped) | | | Coefficient α (if item dropped) | | |
|---|---|---|---|---|---|---|
| Item | Estimate | Lower 95% CI | Upper 95% CI | Estimate | Lower 95% CI | Upper 95% CI |
| RES8 | 0.782 | 0.747 | 0.816 | 0.777 | 0.739 | 0.815 |
| RES9 | 0.771 | 0.736 | 0.807 | 0.766 | 0.728 | 0.803 |
| RES10 | 0.762 | 0.725 | 0.800 | 0.759 | 0.721 | 0.797 |
| RES11 | 0.822 | 0.794 | 0.850 | 0.820 | 0.788 | 0.851 |

## Unidimensional Reliability

*Frequentist Scale Reliability Statistics*

| | | | 95% CI | |
|---|---|---|---|---|
| Coefficient | Estimate | Std. Error | Lower | Upper |
| Coefficient ω | 0.824 | 0.014 | 0.796 | 0.852 |
| Coefficient α | 0.817 | 0.015 | 0.788 | 0.846 |
| Guttman's λ2 | 0.823 | 0.014 | 0.795 | 0.851 |
| Split-half coefficient | 0.820 | 0.018 | 0.784 | 0.856 |

*Frequentist Individual Item Reliability Statistics*

| | Coefficient ω (if item dropped) | | | Coefficient α (if item dropped) | | |
|---|---|---|---|---|---|---|
| Item | Estimate | Lower 95% CI | Upper 95% CI | Estimate | Lower 95% CI | Upper 95% CI |
| ASS12 | 0.823 | 0.794 | 0.851 | 0.820 | 0.788 | 0.851 |
| ASS13 | 0.826 | 0.798 | 0.854 | 0.813 | 0.780 | 0.845 |
| ASS14 | 0.763 | 0.724 | 0.801 | 0.752 | 0.711 | 0.793 |
| ASS15 | 0.754 | 0.714 | 0.794 | 0.745 | 0.701 | 0.789 |
| ASS16 | 0.780 | 0.744 | 0.815 | 0.770 | 0.734 | 0.807 |

## Unidimensional Reliability

*Frequentist Scale Reliability Statistics*

| | | | 95% CI | |
|---|---|---|---|---|
| Coefficient | Estimate | Std. Error | Lower | Upper |
| Coefficient ω | 0.878 | 0.010 | 0.860 | 0.897 |
| Coefficient α | 0.878 | 0.011 | 0.857 | 0.899 |
| Guttman's λ2 | 0.879 | 0.011 | 0.858 | 0.899 |
| Split-half coefficient | 0.896 | 0.011 | 0.876 | 0.917 |

*Frequentist Individual Item Reliability Statistics*

| | Coefficient ω (if item dropped) | | | Coefficient α (if item dropped) | | |
|---|---|---|---|---|---|---|
| Item | Estimate | Lower 95% CI | Upper 95% CI | Estimate | Lower 95% CI | Upper 95% CI |
| EMP17 | 0.857 | 0.834 | 0.879 | 0.856 | 0.831 | 0.882 |
| EMP18 | 0.848 | 0.824 | 0.872 | 0.848 | 0.820 | 0.875 |
| EMP19 | 0.861 | 0.839 | 0.883 | 0.860 | 0.836 | 0.885 |
| EMP20 | 0.857 | 0.835 | 0.880 | 0.856 | 0.831 | 0.881 |

*Frequentist Individual Item Reliability Statistics*

| | Coefficient ω (if item dropped) | | | Coefficient α (if item dropped) | | |
|---|---|---|---|---|---|---|
| Item | Estimate | Lower 95% CI | Upper 95% CI | Estimate | Lower 95% CI | Upper 95% CI |
| EMP21 | 0.855 | 0.832 | 0.878 | 0.854 | 0.830 | 0.878 |
| EMP22 | 0.868 | 0.847 | 0.889 | 0.868 | 0.844 | 0.891 |

## Unidimensional Reliability

*Frequentist Scale Reliability Statistics*

| | | | 95% CI | |
|---|---|---|---|---|
| Coefficient | Estimate | Std. Error | Lower | Upper |
| Coefficient ω | 0.839 | 0.013 | 0.814 | 0.863 |
| Coefficient α | 0.835 | 0.012 | 0.811 | 0.859 |
| Guttman's λ2 | 0.838 | 0.012 | 0.815 | 0.862 |
| Split-half coefficient | 0.889 | 0.011 | 0.867 | 0.911 |

*Frequentist Individual Item Reliability Statistics*

| | Coefficient ω (if item dropped) | | | Coefficient α (if item dropped) | | |
|---|---|---|---|---|---|---|
| Item | Estimate | Lower 95% CI | Upper 95% CI | Estimate | Lower 95% CI | Upper 95% CI |
| TAN23 | 0.803 | 0.773 | 0.834 | 0.799 | 0.769 | 0.829 |
| TAN24 | 0.822 | 0.794 | 0.850 | 0.818 | 0.791 | 0.846 |
| TAN25 | 0.812 | 0.783 | 0.841 | 0.807 | 0.777 | 0.837 |
| TAN26 | 0.817 | 0.789 | 0.846 | 0.812 | 0.784 | 0.840 |
| TAN27 | 0.824 | 0.796 | 0.851 | 0.819 | 0.793 | 0.845 |
| TAN28 | 0.803 | 0.773 | 0.834 | 0.798 | 0.768 | 0.829 |
| TAN29 | 0.834 | 0.809 | 0.860 | 0.830 | 0.805 | 0.854 |

## Unidimensional Reliability

*Frequentist Scale Reliability Statistics*

| | | | 95% CI | |
|---|---|---|---|---|
| Coefficient | Estimate | Std. Error | Lower | Upper |
| Coefficient ω | 0.934 | 0.005 | 0.925 | 0.944 |
| Coefficient α | 0.933 | 0.005 | 0.923 | 0.943 |
| Guttman's λ2 | 0.935 | 0.005 | 0.926 | 0.945 |
| Split-half coefficient | 0.958 | 0.004 | 0.950 | 0.966 |

*Frequentist Individual Item Reliability Statistics*

| | Coefficient ω (if item dropped) | | | Coefficient α (if item dropped) | | |
|---|---|---|---|---|---|---|
| Item | Estimate | Lower 95% CI | Upper 95% CI | Estimate | Lower 95% CI | Upper 95% CI |
| KA1 | 0.933 | 0.924 | 0.943 | 0.932 | 0.922 | 0.943 |
| KA2 | 0.933 | 0.924 | 0.943 | 0.932 | 0.922 | 0.943 |
| KA3 | 0.934 | 0.924 | 0.943 | 0.933 | 0.923 | 0.943 |
| KA4 | 0.932 | 0.923 | 0.942 | 0.931 | 0.921 | 0.942 |

*Frequentist Individual Item Reliability Statistics*

| | Coefficient ω (if item dropped) | | | Coefficient α (if item dropped) | | |
|---|---|---|---|---|---|---|
| Item | Estimate | Lower 95% CI | Upper 95% CI | Estimate | Lower 95% CI | Upper 95% CI |
| KA5 | 0.933 | 0.923 | 0.942 | 0.932 | 0.921 | 0.942 |
| KA6 | 0.932 | 0.923 | 0.942 | 0.931 | 0.921 | 0.942 |
| KC7 | 0.931 | 0.922 | 0.941 | 0.930 | 0.920 | 0.941 |
| KC8 | 0.931 | 0.921 | 0.941 | 0.930 | 0.920 | 0.941 |
| KC9 | 0.933 | 0.923 | 0.942 | 0.932 | 0.921 | 0.942 |
| KC10 | 0.932 | 0.922 | 0.942 | 0.931 | 0.920 | 0.942 |
| KC11 | 0.931 | 0.921 | 0.941 | 0.930 | 0.920 | 0.941 |
| KC12 | 0.932 | 0.922 | 0.942 | 0.931 | 0.921 | 0.942 |
| KS13 | 0.932 | 0.923 | 0.942 | 0.931 | 0.921 | 0.942 |
| KS14 | 0.932 | 0.922 | 0.942 | 0.931 | 0.920 | 0.942 |
| KS15 | 0.932 | 0.922 | 0.942 | 0.931 | 0.920 | 0.942 |
| KS16 | 0.933 | 0.923 | 0.942 | 0.932 | 0.921 | 0.942 |
| KS17 | 0.932 | 0.922 | 0.942 | 0.931 | 0.921 | 0.942 |
| KS18 | 0.932 | 0.922 | 0.942 | 0.931 | 0.921 | 0.942 |
| KS19 | 0.933 | 0.924 | 0.943 | 0.932 | 0.922 | 0.943 |
| KST20 | 0.931 | 0.921 | 0.941 | 0.930 | 0.920 | 0.941 |
| KST21 | 0.932 | 0.922 | 0.941 | 0.931 | 0.920 | 0.941 |
| KST22 | 0.931 | 0.921 | 0.941 | 0.930 | 0.919 | 0.941 |
| KST23 | 0.932 | 0.922 | 0.942 | 0.931 | 0.921 | 0.942 |
| KST24 | 0.931 | 0.922 | 0.941 | 0.931 | 0.920 | 0.941 |
| KST25 | 0.934 | 0.925 | 0.943 | 0.933 | 0.923 | 0.943 |
| KTS26 | 0.932 | 0.922 | 0.942 | 0.931 | 0.921 | 0.942 |
| KTS27 | 0.932 | 0.923 | 0.942 | 0.931 | 0.921 | 0.942 |
| KAP28 | 0.934 | 0.924 | 0.943 | 0.933 | 0.922 | 0.943 |
| KAP29 | 0.931 | 0.922 | 0.941 | 0.930 | 0.920 | 0.941 |
| KAP30 | 0.931 | 0.921 | 0.941 | 0.930 | 0.920 | 0.941 |
| KAP31 | 0.931 | 0.921 | 0.941 | 0.930 | 0.919 | 0.941 |
| KAP32 | 0.932 | 0.922 | 0.941 | 0.931 | 0.920 | 0.941 |
| KAP33 | 0.933 | 0.923 | 0.942 | 0.932 | 0.921 | 0.942 |
| KAP34 | 0.933 | 0.924 | 0.943 | 0.932 | 0.922 | 0.943 |

## Unidimensional Reliability

*Frequentist Scale Reliability Statistics*

| | | | 95% CI | |
|---|---|---|---|---|
| Coefficient | Estimate | Std. Error | Lower | Upper |
| Coefficient ω | 0.938 | 0.005 | 0.929 | 0.947 |
| Coefficient α | 0.938 | 0.005 | 0.929 | 0.948 |
| Guttman's λ2 | 0.940 | 0.005 | 0.930 | 0.949 |
| Split-half coefficient | 0.956 | 0.004 | 0.947 | 0.965 |

*Frequentist Individual Item Reliability Statistics*

| | Coefficient ω (if item dropped) | | | Coefficient α (if item dropped) | | |
|---|---|---|---|---|---|---|
| Item | Estimate | Lower 95% CI | Upper 95% CI | Estimate | Lower 95% CI | Upper 95% CI |
| REL1 | 0.937 | 0.928 | 0.946 | 0.937 | 0.927 | 0.947 |
| REL2 | 0.937 | 0.928 | 0.946 | 0.937 | 0.927 | 0.947 |
| REL3 | 0.937 | 0.928 | 0.946 | 0.937 | 0.926 | 0.947 |
| REL4 | 0.937 | 0.928 | 0.946 | 0.937 | 0.927 | 0.947 |

*Frequentist Individual Item Reliability Statistics*

| | Coefficient ω (if item dropped) | | | Coefficient α (if item dropped) | | |
|---|---|---|---|---|---|---|
| Item | Estimate | Lower 95% CI | Upper 95% CI | Estimate | Lower 95% CI | Upper 95% CI |
| REL5 | 0.937 | 0.928 | 0.946 | 0.937 | 0.927 | 0.947 |
| RES6 | 0.936 | 0.926 | 0.945 | 0.936 | 0.925 | 0.946 |
| RES7 | 0.936 | 0.927 | 0.945 | 0.936 | 0.926 | 0.946 |
| RES8 | 0.936 | 0.927 | 0.945 | 0.936 | 0.926 | 0.947 |
| RES9 | 0.936 | 0.927 | 0.946 | 0.936 | 0.926 | 0.947 |
| RES10 | 0.936 | 0.926 | 0.945 | 0.936 | 0.926 | 0.946 |
| RES11 | 0.938 | 0.930 | 0.947 | 0.939 | 0.928 | 0.949 |
| ASS12 | 0.936 | 0.927 | 0.945 | 0.936 | 0.926 | 0.946 |
| ASS13 | 0.936 | 0.927 | 0.946 | 0.937 | 0.926 | 0.947 |
| ASS14 | 0.935 | 0.926 | 0.945 | 0.936 | 0.925 | 0.946 |
| ASS15 | 0.935 | 0.926 | 0.945 | 0.935 | 0.925 | 0.946 |
| ASS16 | 0.935 | 0.926 | 0.945 | 0.936 | 0.925 | 0.946 |
| EMP17 | 0.936 | 0.926 | 0.945 | 0.936 | 0.925 | 0.946 |
| EMP18 | 0.936 | 0.927 | 0.945 | 0.936 | 0.925 | 0.946 |
| EMP19 | 0.936 | 0.927 | 0.945 | 0.936 | 0.926 | 0.946 |
| EMP20 | 0.935 | 0.926 | 0.945 | 0.935 | 0.925 | 0.946 |
| EMP21 | 0.936 | 0.926 | 0.945 | 0.936 | 0.925 | 0.946 |
| EMP22 | 0.935 | 0.926 | 0.945 | 0.936 | 0.925 | 0.946 |
| TAN23 | 0.936 | 0.927 | 0.945 | 0.936 | 0.926 | 0.946 |
| TAN24 | 0.935 | 0.926 | 0.945 | 0.935 | 0.925 | 0.946 |
| TAN25 | 0.937 | 0.928 | 0.946 | 0.937 | 0.927 | 0.947 |
| TAN26 | 0.937 | 0.928 | 0.946 | 0.937 | 0.927 | 0.947 |
| TAN27 | 0.936 | 0.927 | 0.945 | 0.936 | 0.926 | 0.947 |
| TAN28 | 0.937 | 0.928 | 0.946 | 0.937 | 0.927 | 0.947 |
| TAN29 | 0.939 | 0.930 | 0.948 | 0.939 | 0.929 | 0.949 |

## Unidimensional Reliability

***Frequentist Scale Reliability Statistics***

| | | | 95% CI | |
|---|---|---|---|---|
| **Coefficient** | **Estimate** | **Std. Error** | **Lower** | **Upper** |
| **Coefficient ω** | **0.953** | **0.003** | **0.947** | **0.960** |
| **Coefficient α** | **0.953** | **0.003** | **0.947** | **0.960** |
| **Guttman's λ2** | **0.955** | **0.003** | **0.949** | **0.962** |
| **Split-half coefficient** | **0.974** | **0.003** | **0.969** | **0.979** |

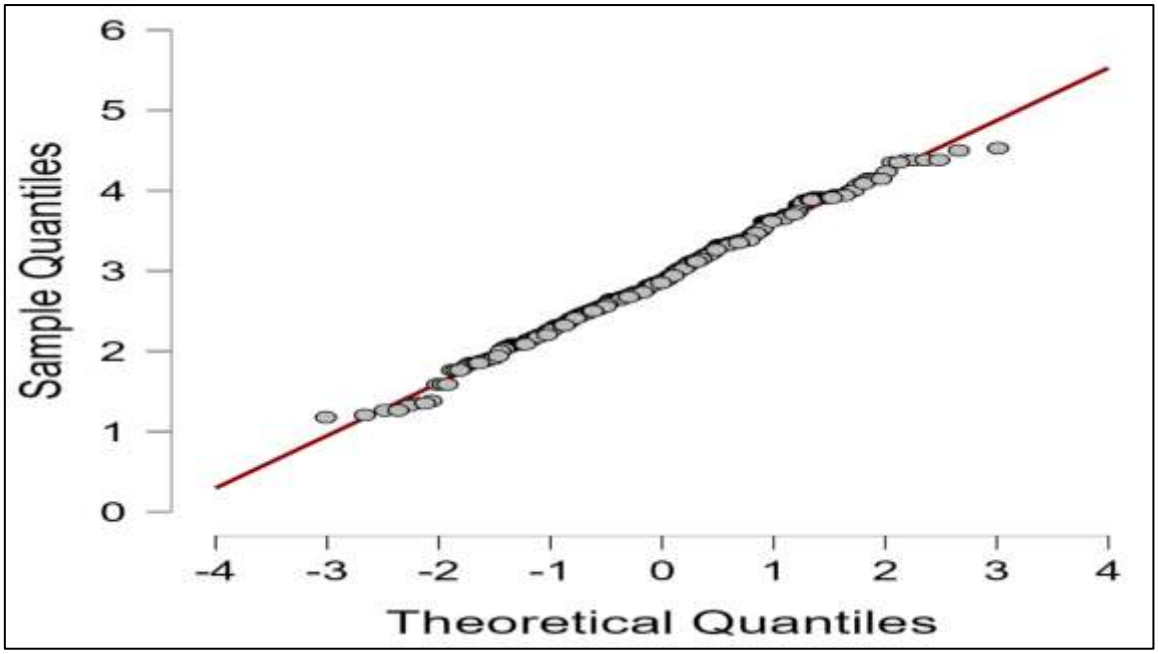
## Descriptive Statistics

*Descriptive Statistics*

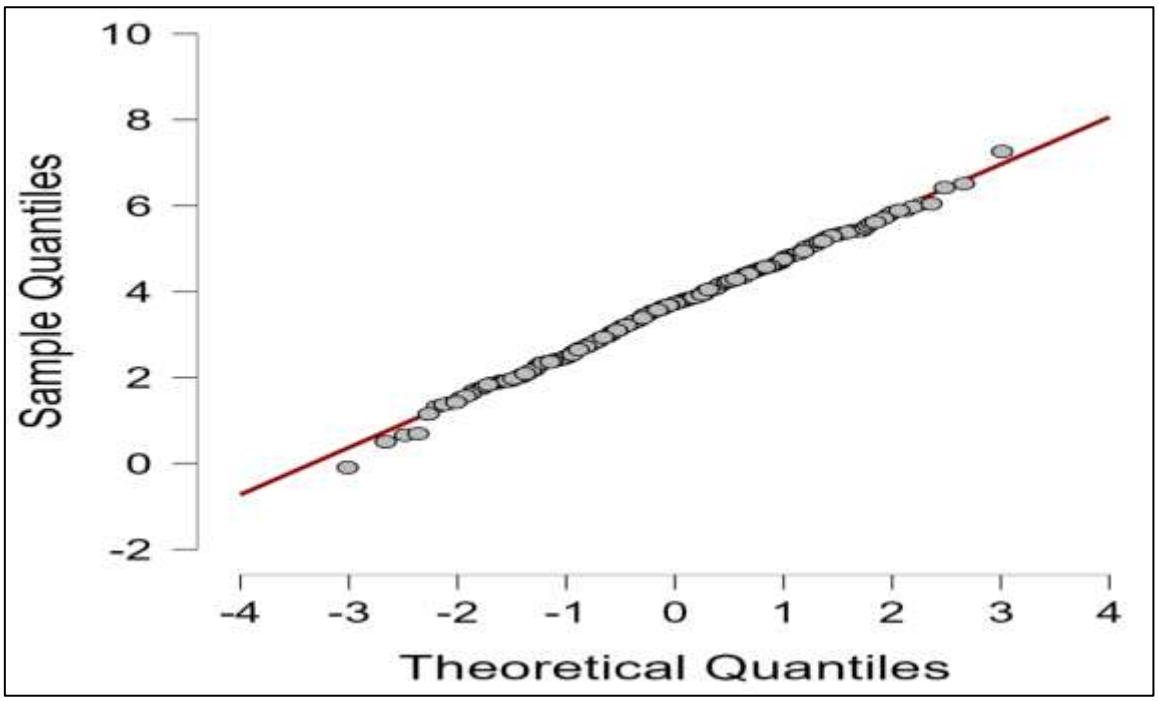
| | Knowledge_Management_Processes | The_Quality_of_Health_Services1 |
|---|---|---|
| Valid | 385 | 385 |
| Missing | 0 | 0 |
| Shapiro-Wilk | 0.994 | 0.997 |
| P-value of Shapiro-Wilk | .143 | .777 |

**Q-Q Plots**

**Knowledge_Management_Processes**




**The_Quality_of_Health_Services**




## Frequency Tables

*Frequencies for Gender*

| Gender | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Male | 149 | 38.7 | 38.7 | 38.7 |
| Female | 236 | 61.3 | 61.3 | 100.0 |
| Missing | 0 | 0.0 | | |

# APPENDIX

*Frequencies for Gender*

| Gender | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Total | 385 | 100.0 | | |

*Frequencies for Age*

| Age | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| 20-29 Years old | 151 | 39.2 | 39.2 | 39.2 |
| 30-39 Years old | 90 | 23.4 | 23.4 | 62.6 |
| 40-49 Years old | 92 | 23.9 | 23.9 | 86.5 |
| 50 Years old and above | 52 | 13.5 | 13.5 | 100.0 |
| Missing | 0 | 0.0 | | |
| Total | 385 | 100.0 | | |

*Frequencies for Qualification*

| Qualification | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| High school or below | 23 | 6.0 | 6.0 | 6.0 |
| Secondary school Certificate (Baccalaureate) | 43 | 11.2 | 11.2 | 17.1 |
| University degree | 167 | 43.4 | 43.4 | 60.5 |
| Postgraduate Studies | 152 | 39.5 | 39.5 | 100.0 |
| Missing | 0 | 0.0 | | |
| Total | 385 | 100.0 | | |

*Frequencies for Profession*

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Doctor | 138 | 35,8 | 35,8 | 35,8 |
| | Dentist | 6 | 1,6 | 1,6 | 37,4 |
| | Pharmacist | 20 | 5,2 | 5,2 | 42,6 |
| | Medical Biologist | 14 | 3,6 | 3,6 | 46,2 |
| | Nurse | 140 | 36,4 | 36,4 | 82,6 |
| | Physiotherapist | 9 | 2,3 | 2,3 | 84,9 |
| | Psychiatrist | 3 | ,8 | ,8 | 85,7 |
| | Radiology Technician | 3 | ,8 | ,8 | 86,5 |
| | Pharmaceutical Assistant | 6 | 1,6 | 1,6 | 88,1 |
| | Clinical Psychologist | 14 | 3,6 | 3,6 | 91,7 |
| | Administrative | 32 | 8,3 | 8,3 | 100,0 |
| | Total | 385 | 100,0 | 100,0 | |

*Frequencies for Professional_Category*

| Professional_Category | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Medical staff | 183 | 47.5 | 47.5 | 47.5 |

*Frequencies for Professional_Category*

| Professional_Category | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Paramedical staff | 170 | 44.2 | 44.2 | 91.7 |
| Administrative staff | 32 | 8.3 | 8.3 | 100.0 |
| Missing | 0 | 0.0 | | |
| Total | 385 | 100.0 | | |

*Frequencies for Department*

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Neurology Department | 50 | 13,0 | 13,0 | 13,0 |
| | Pediatrics Department | 47 | 12,2 | 12,2 | 25,2 |
| | Ophthalmology Department | 25 | 6,5 | 6,5 | 31,7 |
| | Cardiology Department | 34 | 8,8 | 8,8 | 40,5 |
| | Radiology Department | 5 | 1,3 | 1,3 | 41,8 |
| | Central Pharmacy Department | 14 | 3,6 | 3,6 | 45,5 |
| | Central Laboratory Department | 28 | 7,3 | 7,3 | 52,7 |
| | Dental Care Department | 14 | 3,6 | 3,6 | 56,4 |
| | Hematology Department | 31 | 8,1 | 8,1 | 64,4 |
| | Department of Physical Medicine and Rehabilitation | 24 | 6,2 | 6,2 | 70,6 |
| | Department of Blood Transfusion Services | 25 | 6,5 | 6,5 | 77,1 |
| | Gynecology | 14 | 3,6 | 3,6 | 80,8 |
| | Department of Internal Medicine | 50 | 13,0 | 13,0 | 93,8 |
| | Department of Gastroenterology | 24 | 6,2 | 6,2 | 100,0 |
| | Total | 385 | 100,0 | 100,0 | |

*Frequencies for Years_of_Experience*

| Years_of_Experience | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Less than 5 Years | 150 | 39.0 | 39.0 | 39.0 |
| 5–10 Years | 73 | 19.0 | 19.0 | 57.9 |
| 11–16 Years | 64 | 16.6 | 16.6 | 74.5 |
| 17-22 Years | 35 | 9.1 | 9.1 | 83.6 |
| More than 22 years | 63 | 16.4 | 16.4 | 100.0 |
| Missing | 0 | 0.0 | | |
| Total | 385 | 100.0 | | |

*Frequencies for Wilaya_of_UHC*

| Wilaya_of_UHC | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Blida | 101 | 26.2 | 26.2 | 26.2 |
| Algiers | 101 | 26.2 | 26.2 | 52.5 |
| Tizi Ouzou | 98 | 25.5 | 25.5 | 77.9 |
| Béjaia | 85 | 22.1 | 22.1 | 100.0 |
| Missing | 0 | 0.0 | | |
| Total | 385 | 100.0 | | |

## Descriptive Statistics

*Descriptive Statistics*

| | KA1 | KA2 | KA3 | KA4 | KA5 | KA6 | Knowledge_Acquisition |
|---|---|---|---|---|---|---|---|
| Valid | 385 | 385 | 385 | 385 | 385 | 385 | 385 |
| Missing | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean | 2.997 | 3.039 | 2.348 | 2.470 | 2.813 | 3.166 | 2.806 |
| Std. Deviation | 1.074 | 0.977 | 1.249 | 1.146 | 1.123 | 1.276 | 0.738 |

*Descriptive Statistics*

| | KC7 | KC8 | KC9 | KC10 | KC11 | KC12 | Knowledge_Creation |
|---|---|---|---|---|---|---|---|
| Valid | 385 | 385 | 385 | 385 | 385 | 385 | 385 |
| Missing | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean | 2.660 | 2.704 | 2.966 | 3.210 | 2.636 | 2.434 | 2.768 |
| Std. Deviation | 1.162 | 1.104 | 1.139 | 1.109 | 1.239 | 1.178 | 0.855 |

*Descriptive Statistics*

| | KS13 | KS14 | KS15 | KS16 | KS17 | KS18 | KS19 | Knowledge_Sharing |
|---|---|---|---|---|---|---|---|---|
| Valid | 385 | 385 | 385 | 385 | 385 | 385 | 385 | 385 |
| Missing | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean | 2.735 | 2.434 | 2.922 | 3.213 | 2.839 | 3.117 | 3.249 | 2.930 |
| Std. Deviation | 1.131 | 1.304 | 1.108 | 1.116 | 1.106 | 1.218 | 1.134 | 0.806 |

***Descriptive Statistics***

| | KST 20 | KST 21 | KST 22 | KST 23 | KST 24 | KST 25 | KTS 26 | KTS 27 | Knowledge Storage |
|---|---|---|---|---|---|---|---|---|---|
| Valid | 385 | 385 | 385 | 385 | 385 | 385 | 385 | 385 | 385 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Missing | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean | 2.444 | 3.140 | 2.997 | 2.610 | 2.862 | 3.829 | 2.888 | 2.442 | 2.902 |
| Std. Deviation | 1.280 | 1.234 | 1.207 | 1.419 | 1.199 | 1.215 | 1.166 | 1.316 | 0.867 |

*Descriptive Statistics*

| | KAP 28 | KAP 29 | KAP 30 | KAP 31 | KAP 32 | KAP 33 | KAP 34 | Knowledge_Application |
|---|---|---|---|---|---|---|---|---|
| Valid | 385 | 385 | 385 | 385 | 385 | 385 | 385 | 385 |
| Missing | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean | 3.452 | 3.075 | 2.753 | 3.026 | 2.886 | 3.278 | 3.603 | 3.153 |
| Std. Deviation | 1.170 | 1.206 | 1.183 | 1.136 | 1.202 | 1.120 | 1.193 | 0.868 |

*Descriptive Statistics*

| | Knowledge_ Acquisition | Knowledge _Creation | Knowledg e_Sharing | Knowledg e_Storage | Knowledge_ Application | Knowledge_Manag ement_Processes |
|---|---|---|---|---|---|---|
| Valid | 385 | 385 | 385 | 385 | 385 | 385 |
| Missi ng | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean | 2.806 | 2.768 | 2.930 | 2.902 | 3.153 | 2.919 |
| Std. Devi ation | 0.738 | 0.855 | 0.806 | 0.867 | 0.868 | 0.661 |

*Descriptive Statistics*

| | REL1 | REL2 | REL3 | REL4 | REL5 | Reliability |
|---|---|---|---|---|---|---|
| Valid | 385 | 385 | 385 | 385 | 385 | 385 |
| Missing | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean | 4.068 | 4.018 | 3.582 | 3.678 | 4.008 | 3.871 |
| Std. Deviation | 1.059 | 0.967 | 1.085 | 1.102 | 1.012 | 0.769 |

*Descriptive Statistics*

| | RES6 | RES7 | RES8 | RES9 | RES10 | RES11 | Responsiveness |
|---|---|---|---|---|---|---|---|
| Valid | 385 | 385 | 385 | 385 | 385 | 385 | 385 |
| Missing | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean | 3.670 | 3.883 | 3.514 | 3.660 | 3.514 | 2.855 | 3.516 |
| Std. Deviation | 1.124 | 1.010 | 1.083 | 1.024 | 1.066 | 1.239 | 0.788 |

*Descriptive Statistics*

| | ASS12 | ASS13 | ASS14 | ASS15 | ASS16 | Assurance |
|---|---|---|---|---|---|---|
| Valid | 385 | 385 | 385 | 385 | 385 | 385 |
| Missing | 0 | 0 | 0 | 0 | 0 | 0 |

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*Descriptive Statistics*

| | ASS12 | ASS13 | ASS14 | ASS15 | ASS16 | Assurance |
|---|---|---|---|---|---|---|
| Mean | 3.909 | 3.099 | 3.730 | 3.842 | 3.839 | 3.684 |
| Std. Deviation | 0.921 | 1.171 | 0.971 | 0.986 | 1.148 | 0.794 |

*Descriptive Statistics*

| | EMP17 | EMP18 | EMP19 | EMP20 | EMP21 | EMP22 | Empathy |
|---|---|---|---|---|---|---|---|
| Valid | 385 | 385 | 385 | 385 | 385 | 385 | 385 |
| Missing | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean | 3.590 | 3.784 | 3.818 | 3.592 | 3.748 | 3.717 | 3.708 |
| Std. Deviation | 1.115 | 0.996 | 1.057 | 1.032 | 1.039 | 1.088 | 0.832 |

*Descriptive Statistics*

| | TAN23 | TAN24 | TAN25 | TAN26 | TAN27 | TAN28 | TAN29 | Tangibles |
|---|---|---|---|---|---|---|---|---|
| Valid | 385 | 385 | 385 | 385 | 385 | 385 | 385 | 385 |
| Missing | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean | 3.574 | 4.023 | 3.132 | 3.779 | 3.605 | 3.200 | 3.332 | 3.522 |
| Std. Deviation | 1.293 | 1.049 | 1.188 | 1.071 | 0.976 | 1.125 | 1.239 | 0.807 |

*Descriptive Statistics*

| | Knowledge_ Acquisition | Knowledge _Creation | Knowledg e_Sharing | Knowledg e_Storage | Knowledge_ Application | Knowledge_Manag ement_Processes |
|---|---|---|---|---|---|---|
| Valid | 385 | 385 | 385 | 385 | 385 | 385 |
| Missi ng | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean | 2.806 | 2.768 | 2.930 | 2.902 | 3.153 | 2.919 |
| Std. Devi ation | 0.738 | 0.855 | 0.806 | 0.867 | 0.868 | 0.661 |

*Descriptive Statistics*

| | Reliabili ty | Responsiven ess | Assuran ce | Empath y | Tangibl es | The_Quality_of_Health_Se rvices |
|---|---|---|---|---|---|---|
| Valid | 385 | 385 | 385 | 385 | 385 | 385 |
| Missing | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean | 3.871 | 3.516 | 3.684 | 3.708 | 3.522 | 3.647 |
| Std. Deviatio n | 0.769 | 0.788 | 0.794 | 0.832 | 0.807 | 0.655 |

*Descriptive Statistics*

| | Reliability | Responsiveness | Assurance | Empathy | Tangies | The_Quality_of_Health_Services |
|---|---|---|---|---|---|---|
| Valid | 385 | 385 | 385 | 385 | 385 | 385 |
| Missing | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean | 3.871 | 3.516 | 3.684 | 3.708 | 3.522 | 3.647 |
| Std. Deviation | 0.769 | 0.788 | 0.794 | 0.832 | 0.807 | 0.655 |

## Correlation

*Pearson's Correlations*

| | | | Pearson's r | p |
|---|---|---|---|---|
| Knowledge_Management_Processes | - | The_Quality_of_Health_Services | 0.530 | < .001 |

## Linear Regression

*Model Summary - The_Quality_of_Health_Services*

| Model | R | $R^2$ | Adjusted $R^2$ | RMSE |
|---|---|---|---|---|
| $M_0$ | 0.000 | 0.000 | 0.000 | 0.655 |
| $M_1$ | 0.530 | 0.281 | 0.279 | 0.556 |

*Note.* $M_1$ includes Knowledge_Management_Processes

*ANOVA*

| Model | | Sum of Squares | df | Mean Square | F | p |
|---|---|---|---|---|---|---|
| $M_1$ | Regression | 46.30 | 1 | 46.296 | 149.9 | < .001 |
| | Residual | 118.29 | 383 | 0.309 | | |
| | Total | 164.59 | 384 | | | |

*Note.* $M_1$ includes Knowledge_Management_Processes
*Note.* The intercept model is omitted, as no meaningful information can be shown.

*Coefficients*

| wModel | | Unstandardized | Standard Error | Standardized | t | p |
|---|---|---|---|---|---|---|
| $M_0$ | (Intercept) | 3.647 | 0.033 | | 109.31 | < .001 |

*Coefficients*

| wModel | | Unstandardized | Standard Error | Standardized | t | p |
|---|---|---|---|---|---|---|
| $M_1$ | (Intercept) | 2.114 | 0.128 | | 16.46 | < .001 |
| | Knowledge_Management_Processes | 0.525 | 0.043 | 0.530 | 12.24 | < .001 |

## Linear Regression

*Model Summary - The_Quality_of_Health_Services*

| Model | R | $R^2$ | Adjusted $R^2$ | RMSE |
|---|---|---|---|---|
| $M_0$ | 0.000 | 0.000 | 0.000 | 0.655 |
| $M_1$ | 0.604 | 0.365 | 0.356 | 0.525 |

*Note.* $M_1$ includes Knowledge_Acquisition, Knowledge_Creation, Knowledge_Sharing, Knowledge_Storage, Knowledge_Application

*ANOVA*

| Model | | Sum of Squares | df | Mean Square | F | p |
|---|---|---|---|---|---|---|
| $M_1$ | Regression | 60.03 | 5 | 12.005 | 43.52 | < .001 |
| | Residual | 104.56 | 379 | 0.276 | | |
| | Total | 164.59 | 384 | | | |

*Note.* $M_1$ includes Knowledge_Acquisition, Knowledge_Creation, Knowledge_Sharing, Knowledge_Storage, Knowledge_Application

*Note.* The intercept model is omitted, as no meaningful information can be shown.

*Coefficients*

| Model | | Unstandardized | Standard Error | Standardized | t | p |
|---|---|---|---|---|---|---|
| $M_0$ | (Intercept) | 3.647 | 0.033 | | 109.309 | < .001 |
| $M_1$ | (Intercept) | 2.035 | 0.126 | | 16.215 | < .001 |
| | Knowledge_Acquisition | 0.056 | 0.049 | 0.063 | 1.127 | .260 |
| | Knowledge_Creation | 0.100 | 0.046 | 0.130 | 2.153 | .032 |
| | Knowledge_Sharing | 0.004 | 0.046 | 0.005 | 0.095 | .925 |
| | Knowledge_Storage | -0.016 | 0.045 | -0.021 | -0.362 | .717 |
| | Knowledge_Application | 0.385 | 0.040 | 0.511 | 9.523 | < .001 |

*Model Summary - The_Quality_of_Health_Services*

| Model | R | $R^2$ | Adjusted $R^2$ | RMSE |
|---|---|---|---|---|
| $M_0$ | 0.000 | 0.000 | 0.000 | 0.655 |
| $M_1$ | 0.604 | 0.365 | 0.356 | 0.525 |

*Note.* $M_1$ includes Knowledge_Acquisition, Knowledge_Creation, Knowledge_Sharing, Knowledge_Storage, Knowledge_Application

*ANOVA*

| Model | | Sum of Squares | df | Mean Square | F | p |
|---|---|---|---|---|---|---|
| $M_1$ | Regression | 60.03 | 5 | 12.005 | 43.52 | < .001 |
| | Residual | 104.56 | 379 | 0.276 | | |
| | Total | 164.59 | 384 | | | |

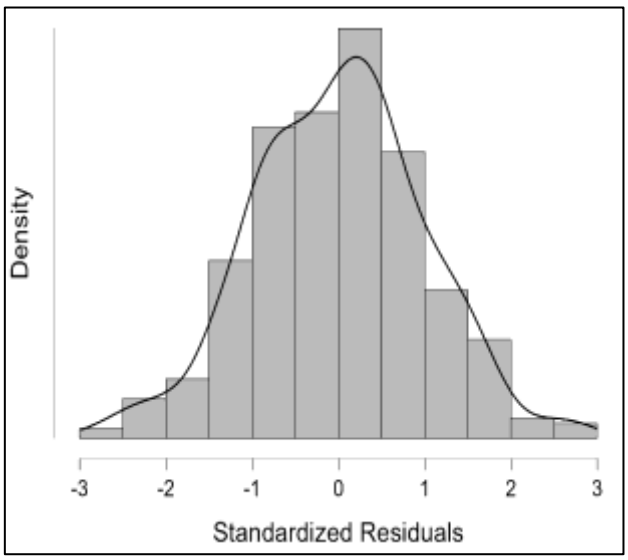
*Note.* $M_1$ includes Knowledge_Acquisition, Knowledge_Creation, Knowledge_Sharing, Knowledge_Storage, Knowledge_Application

*Note.* The intercept model is omitted, as no meaningful information can be shown.

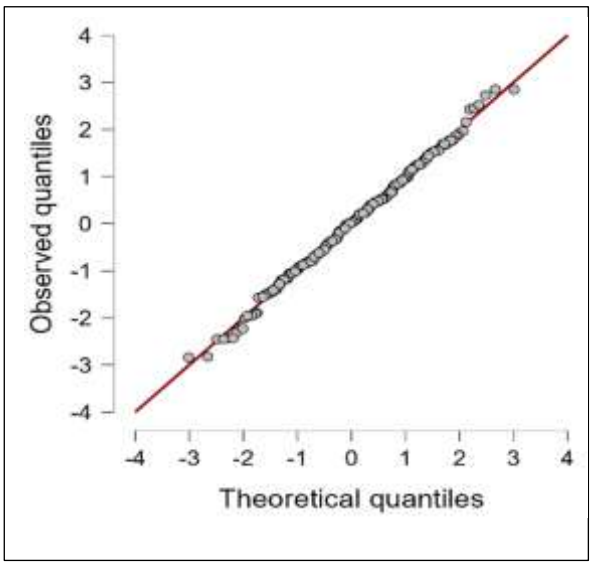
*Coefficients*

| Model | | Unstandardized | Standard Error | Standardized | t | p | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tolerance | VIF |
| $M_0$ | (Intercept) | 3.647 | 0.033 | | 109.309 | < .001 | | |
| $M_1$ | (Intercept) | 2.035 | 0.126 | | 16.215 | < .001 | | |
| | Knowledge_Acquisition | 0.056 | 0.049 | 0.063 | 1.127 | .260 | 0.543 | 1.840 |
| | Knowledge_Creation | 0.100 | 0.046 | 0.130 | 2.153 | .032 | 0.458 | 2.183 |
| | Knowledge_Sharing | 0.004 | 0.046 | 0.005 | 0.095 | .925 | 0.530 | 1.888 |
| | Knowledge_Storage | -0.016 | 0.045 | -0.021 | -0.362 | .717 | 0.482 | 2.075 |
| | Knowledge_Application | 0.385 | 0.040 | 0.511 | 9.523 | < .001 | 0.583 | 1.715 |

**Standardized Residuals Histogram**




**Q-Q Plot Standardized Residuals**



## الملخص

**الخلفية:** يعد تحسين جودة الخدمة في المؤسسات الصحية هدفًا رئيسيًا، حيث يعتبر أداء العاملين في الرعاية الصحية عاملًا حاسمًا. وقد ظهرت إدارة المعرفة (KM) كآلية أساسية لتعزيز الكفاءة التنظيمية والحفاظ على تقديم خدمات عالية الجودة. على مدار العقود الماضية، قامت المؤسسات الصحية العامة بتطبيق أطر إدارة المعرفة بشكل متزايد لتحقيق أفضل النتائج في الأداء. تهدف هذه الدراسة إلى استكشاف دور إدارة المعرفة في تعزيز خدمات الصحية العمومية في مراكز الاستشفائية الجامعية في الجزائر.

**الطرق والأدوات:** اعتمدت هذه الدراسة منهجًا بحثيًا كميًا، حيث تم التركيز على البيانات العددية والتحليل الإحصائي للحصول على نتائج موضوعية وقابلة للتعميم. تم استخدام تصميم الدراسة المقطعية، وتم جمع البيانات الأولية من خلال استبيان منظم. يتكون الاستبيان، الذي يعتبر الأداة الرئيسية لجمع البيانات، من 63 بندًا تم تنظيمها في ثلاثة محاور رئيسية. تم توزيع الاستبيان على العاملين في الرعاية الصحية في مراكز الاستشفائية الجامعية الجزائرية بشكل ورقي وإلكتروني. تم تحليل البيانات باستخدام برنامجJASP باستخدام مجموعة من التقنيات والاختبارات الإحصائية لضمان موثوقية وصحة النتائج.

**النتائج:** تشير النتائج الرئيسية للدراسة إلى ما يلي:

- توجد علاقة ذات دلالة إحصائية بين عمليات إدارة المعرفة وجودة خدمات الصحية العمومية في مراكز الاستشفائية الجامعية الجزائرية عند مستوى معنوية ($\alpha \leq 0.05$).
- يوجد أثر ذو دلالة إحصائية لعمليات إدارة المعرفة في جودة خدمات الصحية العمومية في مراكز الاستشفائية الجامعية الجزائرية عند مستوى معنوية ($\alpha \leq 0.05$).
- لا يوجد أثر ذو دلالة إحصائية لاكتساب المعرفة في جودة خدمات الصحية العمومية في مراكز الاستشفائية الجامعية الجزائرية عند مستوى معنوية ($\alpha \leq 0.05$).
- يوجد أثر ذو دلالة إحصائية لخلق المعرفة في جودة خدمات الصحية العمومية في مراكز الاستشفائية الجامعية الجزائرية عند مستوى معنوية ($\alpha \leq 0.05$).
- لا يوجد أثر ذو دلالة إحصائية لمشاركة المعرفة في جودة خدمات الصحية العمومية في مراكز الاستشفائية الجامعية الجزائرية عند مستوى معنوية ($\alpha \leq 0.05$).

- لا يوجد أثر ذو دلالة إحصائية لتخزين المعرفة في جودة خدمات الصحية العمومية في مراكز الاستشفائية الجامعية الجزائرية عند مستوى معنوية ($\alpha \leq 0.05$).
- يوجد أثر ذو دلالة إحصائية لتطبيق المعرفة في جودة خدمات الصحية العمومية في مراكز الاستشفائية الجامعية الجزائرية عند مستوى معنوية ($\alpha \leq 0.05$).

**الخلاصة:** تُعد عمليات إدارة المعرفة، خاصة تطبيق المعرفة وخلق المعرفة، من العوامل الأساسية في تحسين جودة خدمات الرعاية الصحية المقدمة في مراكز الاستشفائية الجامعية في الجزائر. وتؤكد هذه النتائج على ضرورة دمج استراتيجيات إدارة المعرفة المنظمة في السياسات المؤسسية لتعزيز الجودة التنظيمية والخدمية. يجب على البحوث المستقبلية استكشاف المزيد من الآليات التي تؤثر بها ممارسات إدارة المعرفة على نتائج الرعاية الصحية، مع إيلاء اهتمام خاص للعوامل السياقية مثل الثقافة المؤسسية، والبنية التحتية التكنولوجية، وقدرة القوى العاملة. ستساعد مثل هذه الدراسات في تطوير أطر إدارة معرفة أكثر استدامة وقابلية للتكيف تلبي احتياجات المؤسسات الصحية العمومية في الجزائر والمحيطات المماثلة.

**الكلمات المفتاحية:** إدارة المعرفة، عمليات إدارة المعرفة، جودة الخدمة الصحية، الخدمات الصحية العمومية، مراكز الاستشفائية الجامعية.