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Competencies management and its impact on performance in higher education institutions

- Case study at the university of Tlemcen -

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ABSTRACT

Human Resource Management (HRM) structures are a crucial element of each company. For small businesses and large corporations alike, the human resources department is important for business success. HRM is very crucial in the process of effectively recruit and retain employees, improve and enhance the organisation, and maintain a healthy, accepting workplace culture and environment.

Competencies of employees seems to be a key element in the HRM process. The idea of competencies was introduced in higher education because of the disconnection between what was taught in classes and what was needed in the labour market. The research will emphasise the sector of higher education regarding both competencies and performance management.

This study explores the existing relationship between competency management and organisational performance with a focus on higher education institutions (HEIs). Performance of HEIs could be followed up via several resources, especially world ranking systems where qualitative and quantitative indicators are used to measure the performance of a HEI. The core of this study is Algerian higher education system, the way staff competencies and career are managed, their performance management and measurement.

As a case study, we chose the academic staff of the university of Tlemcen as a sample to explore variables linking competency management to organisational performance. A first phase was gathering quantitative data from existing databases and documents. A survey was conceptualised as second phase and was shared with teachers-researchers working at the university of Tlemcen. Data was gathered using google forms. Since the study's theoretical model includes multiple observed and both qualitative and quantitative variables, SPSS v26 is used to analyse data as a powerful statistical software through which observed, latent and multiple path analysis could be tested at the same time.

The results show that the relationship is confirmed but it is statistically weak. The existing gap in explaining this link is referred to the black box concept. Considerable efforts were made by the university and the higher education ministry trying to enhance and develop academic staff competencies. However, these efforts are still lacking and need more and further improvement. Many policies set up in higher education system are obsolete and need revision and improvement too. Universities are asked to provide a healthy atmosphere to enhance scientific production and develop teachers' competencies. At the end recommendations are given.

Keywords: Competencies, Performance, World University Rankings, Key performance Indicators, black box, University of Tlemcen.

الملخص بالعربية

تعد هياكل إدارة الموارد البشرية (HRM) عنصرًا حاسمًا في كل شركة، فسواء كانت الشركة ناشئة أوكبيرة، فإن قسم الموارد البشرية مهم لنجاح وازدهار الأعمال. تعد إدارة الموارد البشرية حاسمة للغاية في عملية توظيف الموظفين والاحتفاظ بهم بشكل فعال، وتحسين المنظمة وتعزيزها، والحفاظ على ثقافة وبيئة صحية ومقبولة في مكان العمل.

ويبدو أن كفاءات الموظفين عنصر أساسي في عملية إدارة الموارد البشرية. وقد تم استخدام فكرة الكفاءات في قطاع التعليم العالي بسبب الانفصال بين ما كان يدرَّس في الفصول وما هو مطلوب في سوق العمل. سيركز البحث على قطاع التعليم العالي فيما يتعلق بكل من تسيير الكفاءات وإدارة الأداء.

تستكشف هذه الدراسة العلاقة الموجودة بين إدارة الكفاءة والأداء التنظيمي مع التركيز على مؤسسات التعليم العالي. ويمكن متابعة أداء مؤسسات التعليم العالي عن طريق عدة مصادر، لا سيما أنظمة التصنيف العالمية التي تستخدم فيها المؤشرات النوعية والكمية لقياس أداء مؤسسات التعليم العالي. جوهر هذه الدراسة هو نظام التعليم العالي الجزائري، والطريقة التي يتم بها تسيير كفاءات الموظفين ومسيرتهم المهنية، وتسيير وقياس أدائهم.

كدراسة حالة، اخترنا هيئة التدريس لجامعة تلمسان كعينة لدراسة المتغيرات التي تربط تسيير الكفاءات بالأداء التنظيمي. وكانت المرحلة الأولى هي جمع البيانات الكمية من قواعد البيانات والوثائق المُتاحة. تم تصميم استبيان كمرحلة ثانية وتمت توزيعه على الأساتذة الباحثين لجامعة تلمسان. تم جمع البيانات باستخدام Google forms. نظرًا لأن النموذج النظري للدراسة يتضمن ملاحظة متغيرات متعددة نوعية وكمية، تم استخدام SPSS v26 لتحليل البيانات كبرنامج إحصائي قوي يمكن من خلاله اختبار تحليل المسارات الخفية والمتعددة في نفس الوقت.

تُظهر النتائج أن العلاقة بين المتغيرين مؤكدة لكنها ضعيفة إحصائيًا. يُشار إلى الفجوة الموجودة لشرح هته العلاقة إلى مفهوم الصندوق الأسود. بذلت الجامعة ووزارة التعليم العالي جهودًا كبيرة في محاولة لتعزيز وتطوير كفاءات الموظفين الأكاديميين. ومع ذلك، لا تزال هذه الجهود ناقصة وتحتاج إلى مزيد من التحسين. العديد من السياسات الموضوعة في نظام التعليم العالي عفا عليها الزمن وتحتاج إلى التنقيح والتحسين أيضًا. يُطلب من الجامعات توفير جو صحي لتعزيز الإنتاج العلمي وتطوير كفاءات الأساتذة الباحثين. تم اقتراح مجموعة من التوصيات في خاتمة الدراسة.

الكلمات الرئيسية: الكفاءات، الأداء، تصنيفات الجامعة العالمية، مؤشرات الأداء الرئيسية، الصندوق الأسود، جامعة تلمسان.

Table of contents

Aknowledgements 1
ABSTRACT I
الملخص بالعربية II
Table of contents III
List of tables VI
List of figures: VII
List of abbreviations X
Introduction 1
CHAPTER ONE : Introduction and Background of the Study 4
Section 1. Introduction 4
Section 2. Background 6
Section 3. Why choosing this topic ? 6
Section 4. Overview of the study 6
4.1. Importance of the study 6
4.2. Research Focus 6
4.3. Research Problem 7
4.4. Research Aim 7
4.5. Research Objectives 7
4.6. Research Questions 7
4.7. Research Hypothesis 8
4.8. Limits of the Study 8
4.9. Research Methodology 9
4.10. Quantitative Research 10
4.11. Qualitative Research 10
4.12. Data Collection Methods 10
4.13. Data Analysis 11
4.14. Ethical Undertakings 11
4.15. Merit of the Research and its Proposed Contribution 11
4.16. Research Protocol 12
4.17. Summary 12
CHAPTER TWO : Human resources and competency management 14
Section 1. Common HR Models 14
1.1. Job Demands Resources Model 14
1.2. Ulrich Model 14
1.3. Value-added Roles Model 15
1.4. Harvard Model 15
1.5. Guest Model 16
1.6. The Michigan Model 16
1.7. Normative Model 17
Section 2. Competency Management 18
2.1. Literature review : 18

2.2. The four levels of competency management: individual, collective, strategic et environnemental 29
Section 3. Higher education competencies 39
3.1. Professional competencies of teachers 39
3.2. Assessment of teacher competencies 40
3.3. Required competencies for a teacher-researcher in Algeria's higher education system 41
CHAPTER THREE: Organisational Performance 47
Section 1. Definition 47
Section 2. Organisational Performance 48
Section 3. Performance management 52
3.1. The performance management cycle model 53
3.2. Comparison of different approaches 54
Section 4. Performance measurement 55
4.1. Classification of output and outcome measures 55
4.2. The Balanced ScoreCard 56
4.3. Key performance Indicators 58
Section 5. Performane of the universities through World ranking systems 65
5.1. summary of the rankings history 65
5.2. Berlin Principles on the Ranking of HEIs 67
5.3. How can rankings be improved? 68
5.4. HEIs Rankings 69
CHAPTER FOUR: Linkage between HR management and performance 99
Section 1. Models linking between HRM and Performance 99
Section 2. Comments on the researches 103
2.1. HRM and individual performance 104
2.2. HRM and organisational performance 105
Section 3. The concept of the "black box" 106
Section 4. Chapter conclusion 108
CHAPTER FIVE: Case study 110
Section 1. An overview of Algeria's Higher Education: 110
1.1. Professional (vocational) training 111
1.2. Governing Bodies of Higher Education 112
1.3. Some overall indicators: 113
1.4. Scientific research structures in Algeria 114
Section 2. Administrative management of a teacher researcher in Algeria 115
2.1. general status of the public service 115
2.2. the special status of the research teacher 115
2.3. Technical Framework: 117
Section 3. the University of Tlemcen 124
3.1. Synopsis 124
3.2. Organigram 126
3.3. Supporting structures for academic staff competencies 129
Section 4. Performance indicators of the university of Tlemcen : 155

4.1. Scientometric indicators 155
Section 5. World ranking of the University of Tlemcen 178
5.1. Times Higher Education Ranking 178
5.2. Webometrics Ranking: 180
Section 6. Questionnaire **Erreur ! Signet non défini.**
6.1. Introduction 182
6.2. Respondents' nature 182
6.3. Research Instrument 183
6.4. Questionnaire resources 183
6.5. Research model 184
6.6. Research Variables Definitions 186
6.7. Steps followed: 188
6.8. Analysis tool 188
6.9. Reliability test of the study 188
6.10. Personal information of respondents 189
6.11. Testing Variables: 193
Section 7. Chapter Conclusion 224
Hypothesis testing : 225
The null hypothesis: 225
The alternate hypothesis: 225
The sub-hypothesis: 225
General conclusion 228
Suggestions and recommendations 229
Bibliography 234
Annex I : Questionnaire 246

List of tables

Table 1 Best Known HRM models 18
Table 2. Differentiation between competence and competency 24
Table 3 Instruments used by HR managers 26
Table 4. National framework of newly recruited teachers competencies in Algeria 41
Table 5. Major global rankings in order of year 70
Table 6. Indicators and Weights for ARWU 78
Table 7. Definition of Indicators 78
Table 8. Data Sources 79
Table 9. Statistics by Region 80
Table 10. Propositions to the “black box“ concept 106
Table 11. Documentation allowance in teachers salary system 119
Table 12. Suprvision allowance in teachers salary system 119
Table 13. Scientific qualification allowance 120
Table 14. distribution of the 9% personal contribution in social insurance 120
Table 15. International students enrolled at UoT for 2020/2021 132
Table 16. 12 competencies set by HE ministry 134
Table 17. Accompaniement cell courses during 2016 session 135
Table 18. CEIL students of foreign nationalities 142
Table 19. Number of fields, references, criteria and required evidences for each domain of the 145
Table 20. Certified students at the university of Tlemcen by domain 157
Table 21 Different sources for the study survey. 183
Table 22. Operational definition of the variables 187
Table 23. Contribution to students’ competencies Frequencies 194
Table 24. impact of tudents willingness to learn 195
Table 25. First semester assessment details, during the academic year 2019-2020 195
Table 26. Considering the teachers capabilities when distributing activities 197
Table 27 Descriptive Statistics for the whole unit of the pedagogical skills 198
Table 28. used platforms to teach online 200
Table 29. MOODLE and MSTeams usage indicators until the date of 04/28/2020 201
Table 30. Scientific production 204
Table 31. Example for h-index calculation 205
Table 32. Respondent’s h-index 205
Table 33. Satisfaction rating 208
Table 34. Anova test 213
Table 35. Respondents’ suggestions 219

List of figures:

Figure 1. The Harvard framework for human resource management 2
Figure 2. Use of the word Competence over time 23
Figure 3. Use of the word Competency over time : 23
Figure 4. Comparison of the use of words: Competence, performance, knowledge, skill over time 24
Figure 5. Establishment of a strategic competences acquisition program 37
Figure 6 Use over time for the word: performance 47
Figure 7. Performance management systems 53
Figure 8. Performance management in four stages 54
Figure 9. Comparison of management by objectives, performance appraisal and performance management 55
Figure 10. The balanced scorecard 57
Figure 11. Balanced scorecard components 58
Figure 12. explaining relations between BSC components 59
Figure 13. Organisational mechanical system 62
Figure 14. Chronology of ranking activities in the United States, 1870-1982 66
Figure 15. THE comprehensive methodology 72
Figure 16. Algerian universities ranked as 'young' in 2022 74
Figure 17. Arab region university ranking in 2021 75
Figure 18. Indicators of evaluation in Shangai ranking 80
Figure 19. Top universities worldwide in 2021 81
Figure 20. CWTS Leiden world university Ranking 2021 according to the scientific impact 83
Figure 21: CWTS Leiden African universities Ranking 2021 according to the scientific impact 83
Figure 22: CWTS Leiden university Ranking 2021 map 84
Figure 23. Indicators of Scimago ranking 85
Figure 24. World university ranking 2022 86
Figure 25. African university ranking 2022 87
Figure 26. Arab region used indicators 91
Figure 27. Papers and citations by broad subject area 91
Figure 28. Arab universities ranked in QS in 2022 93
Figure 29. Weight of indicators in webometrics ranking 2022 95
Figure 30. Design and weighting of indicators 96
Figure 31. Top 10 universities in Algeria 2022 96
Figure 32 Conceptual model of Guest 99
Figure 33. Conceptual model of Becker, Huselid, Pickus and Spratt 100
Figure 34. Conceptual model of Appelbaum, Bailey, Berrg & Kalleberg 100
Figure 35. Impact of HRM on organisational performance 106
Figure 36. Educational system diagram 111
Figure 37. HE institution's Net in Algeria 112
Figure 38. Research structures in Algeria 114
Figure 39. The picture of Mr. Aboubekr Belkaid 125
Figure 40. The university of Tlemcen Oganisation chart 127
Figure 41. The faculty organisation chart 128

Figure 42. Teachers evolution at the university of Tlemcen 129
Figure 43Candidates reponses on recruitment process 130
Figure 44. Laboratories staff per domain per grade: 140
Figure 45. Laboratories staff per grade 140
Figure 46. Average age by grade 140
Figure 47 Taught languages at CEIL, UoT 143
Figure 48. ENT web interface 147
Figure 49. Global Algerian scientific production per institution 156
Figure 50. Scientific production of Algerian HEIs (1970-2016) 157
Figure 51. Algerian production per institution 158
Figure 52. Different Uot affiliation names 159
Figure 53. Different Uot IDs 160
Figure 54. Scientific journals per university : 161
Figure 55. Algerian Journals per domain 163
Figure 56. Algerian journals visibility 163
Figure 57. Publication intensity 165
Figure 58. African scientific journals indexed in SCOPUS 166
Figure 59. Global Algerian production per year 166
Figure 60. Global Algerian production per language 167
Figure 61. Global Algerian production per co-Affiliation 167
Figure 62. Algeria's production in human and social sciences per document type: 168
Figure 63 Number of social science publications per country, Scopus and Web of Science, 2008–13 170
Figure 64. Algerian Pattents compared with other Arab countries 170
Figure 65. Publication per field in Arab world 171
Figure 66 Collaboration preferences to African researchers 172
Figure 67. Network of collaboration 173
Figure 68. Scientometric data per contry in Arab world 174
Figure 69. Subject bubble chart for Algerian publications 2020/2021 175
Figure 70. Country comparison between Algeria and other Arab countries by published documents in Scopus 175
Figure 71. Percentage of collaboration between Algerian researchers with other international ones since 1996 176
Figure 72. Publications regitered in SCOPUS database 2017-2020 177
Figure 73. Algerian universities ranking 2022 178
Figure 74. Ranking position 2017 to 2022 179
Figure 75. score of the 5 used indicators with a yearly breakdown 179
Figure 76. Top 20 cited researchers per h-index 180
Figure 77. Algerian research centers ranking 2022 181
Figure 78. Figure x. Le Boterf model of competencies components 184
Figure 79. Competency scheme 185
Figure 80. The black box in relating HRM to performance 185
Figure 81.Conceptual model of the case study 186
Figure 82. Chrobach's alpha reliability test for test sample 189
Figure 83. Chrobach's alpha reliability test 189
Figure 84. Respondents' gender distribution 189
Figure 85. Respondents Age 190

List of figures:

Figure 86. Respondents' grade 190
Figure 87. Respondents' highest degree level 191
Figure 88. Respondents experience in higher education. 191
Figure 89. Respondents' administrative positions 192
Figure 90. Respondents' fields of study 193
Figure 91. Respondents mastery of teaching mechanisms 193
Figure 92. Respondents' mastery of teaching mechanisms per grade 194
Figure 93. Satisfaction rate about accompaniment cell fro newly recruited teachers 198
Figure 94. Online courses 200
Figure 95. Respondents having an SNDL account 201
Figure 96. ICT usefullness 202
Figure 97. research competencies and laboratories 206
Figure 98. Effectiveness of recruitment system 207
Figure 99. Fairness in treating academic staff 208
Figure 100. Salary satisfaction 209
Figure 101. Bonuses satisfaction 209
Figure 102. Scientific production reward 210
Figure 103. Clearness of performance evaluation criteria 210
Figure 104. degree of agreement with the other parameters influencing performance 212

List of abbreviations

Acronym	Stands for:
AACU	Association of American Colleges and Universities
AHELO	Assessment of Higher Education Learning Outcomes
AMO	Ability, motivation and opportunity to participate
ANEM	National Agency for Employability
ARWU	Academic Ranking of World Universities
AUBR	Assessment of University- Based Research
BLEU	Bureau de Liaison Entreprise Université
BSC	Balanced Score Cards
CAQ	Quality Insurance Cell
CATI	Centre d'Appui à la Technologie et à L'Innovation.
CEIL	Intensive teaching center of languages
CRSIC	Centre Réseau, Système d'Information et de Communication, Télé-Enseignement et l'Enseignement à Distance
CSIC	Consejo Superior de Investigaciones Científicas
CWCU	Center for World-Class Universities
CWTS	Centre for Science and Technology Studies
DGRSDT	Direction Générale de La Recherche Scientifique et du Développement Technologique
EH	Entrepreneurship House
E-HRM	Electronic Human Resource Management
ENT	Environnement numérique du travail
EU	European Union
GDP	Gross Domestic Product
HE	Higher education
HEIs	Higher education institutions
HPWP	High Performance Work Practices
HPWS	High performance work system
HR	Human Resources
HRIS	Human Resources Information System
HRM	Human resources management
ICT	Information and Communication Technology
ILO	International Labour Organization
IREG	International Ranking Expert Group
IT	Information Technology
WoS	Web of Science

Introduction

Human Resources Management (HRM) is one of the key regions in any organisational strategy, which influences the success of its objectives.

HRM is described as a strategic and coherent technique to the control of an organisation's maximum valued assets – the humans operating there, who in my view and together make a contribution to the success of its objectives.

Boxall et al (2007) describe HRM as 'the control of labor and those in the direction of preferred ends'P. F. Boxall, Purcell, and Wright (2007). Storey (1989) believes that HRM may be seemed as a 'set of interrelated rules with an ideological and philosophical underpinning. He shows 4 components that represent the significant model of HRM:

1) a selected constellation of ideals and assumptions;

2) a strategic thrust informing selections approximately humans control;

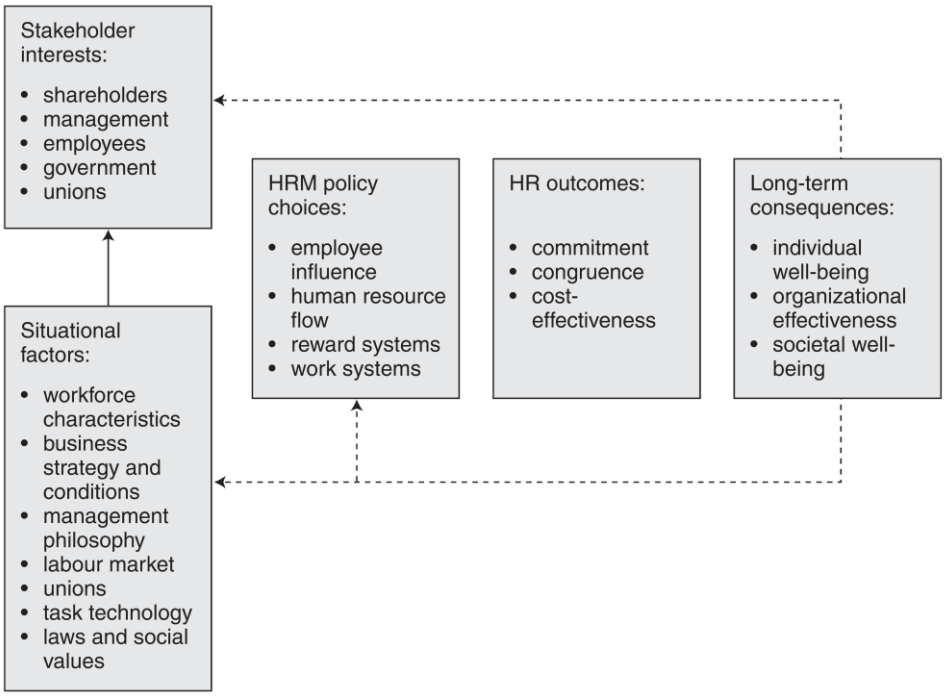
3) the critical involvement of line managers; and

4) reliance upon a hard and fast of 'levers' to form the employment relationship.

HRM is in addition described with the aid of using the 2 models of HRM advanced with the aid of using what is probably defined as its founding fathers. The different pioneers of HRM had been the Harvard School of Beer et al (Beer, Spector, Lawrence, Mills, & Walton, 1984), who advanced what Boxall calls the 'Harvard framework'(P. F. Boxall, 1992). This framework is primarily based totally on their notion that the issues of historic employees management can most effective be solved: whilst general managers broaden a point of view of the way they desire to peer personnel concerned in and advanced with the aid of using the enterprise, and of what HRM rules and practices can also additionally acquire the ones goals. Without both a crucial philosophy or a strategic vision – which may be provided most effective with the aid of general managers – HRM is possibly to stay a fixed of impartial activities, every guided with the aid of using its very own exercise tradition(Armstrong, 2008).

The Harvard framework as modelled by Beer et al is shown in Figure 1.

Figure 1. The Harvard framework for human resource management



Source: (Beer et al., 1984)

In the knowledge-based organisation as for instance the Higher Education Institutions (HEIs), human resources have the leading role in their development. Each HEI strives to evolve in order to occupy a leading place on research's market and the key strategy needed in this case is management of personnel development. One of the focus in this area is competencies management.

Competency has a lot of meanings and remains one of the most disperse terms in the management development sector, and the organisational and occupational literature. The definition of Chomsky (may be the oldest one) is that: Competence is the knowledge for a writer of his language. Competence is defined as: the ability of an individual to do a job properly. A competency is a set of defined behaviors that provide a structured guide enabling the identification, evaluation and development of the behaviors in individual employees. According to UNICEF, competencies are "sets of behaviors that are instrumental in the delivery of desired results"(UNICEF, 2009).

This thesis focuses on higher education sector, on the adopted system in managing its competencies. Since the competency is invisible, we cannot see a competence unless it is interacting through a work situation, performance will be studied as well to be able to explain these competencies.

CHAPTER ONE :

Introduction and Background to the Study

CHAPTER ONE : Introduction and Background of the Study

The aim of this chapter is to provide the foundation of this thesis by presenting a general introduction. It includes 10 sections. Section 1.2 provides a general introduction. Section 1.3 outlines the research objectives. Sections 1.4 and 1.5 discuss the research rationale and significance, respectively. Section 1.6 outlines the research questions, while Section 1.7 presents the theoretical framework. Section 1.8 presents the methodology adopted in this study and Section 1.9 provides an overview of the research context. Section 1.10 outlines the overall thesis organisation and structure and, finally, Section 1.11 presents a summary of this chapter.

Section 1. Introduction

The concept of human resources (HR) was introduced as one of the most valuable resources that organisations possess to achieve the desired competitive advantage (J. Barney, 1991).

That is, the degree of imitability of tangible assets is much greater than of intangible assets, especially HR (Huselid, 1995). In addition, the complexity and ambiguity of causal relationships in human attitudes and behavior further increase the barrier for imitation by other organisations. Consequently, researchers and practitioners have shifted their focus towards studying all the possible means through which they can obtain the most benefit from HR. As a result of such astonishing efforts, a realisation was established that HR need to be managed with deliberate care and, since then, the HRM system has captured the attention of many scholars over the past three decades. Despite the substantial empirical evidence regarding the positive effects that the HRM system may have on performance, there is a big question regarding how and why the HRM system affects performance (B. E. Becker & Huselid, 1999; Bowen & Ostroff, 2004; Delaney & Huselid, 1996; Savanevičienė, Stukaitė, & Šilingienė, 2008; P. M. Wright & Gardner, 2000). Many researchers have referred to this question as ‘the black box’, which represents the stage between HRM and performance. Such questions led Guest to call for a theory refinement regarding how HRM should be linked to Organisational Performance(D. E. Guest, 1997). As a response to Guest’s call, the HRM literature has revealed three main theoretical mechanisms linking the HRM system to OP, namely, the behavioral perspective, the human capital perspective and the individual-level performance perspective (Jiang, Lepak, Hu, & Baer, 2012).

The behavioral perspective mainly concerns how the HRM system affects OP through positive and constructive behaviors. Drawing on Kanfer (1992) conceptualisation of proximal and distal variables, the HRM system can affect OP only after it affects the most proximal variables(Kanfer, 1992). Employees’ attitudes and citizenship behavior are considered one of the important proximal variables in the mediating stage of the HRM system–OP relationship (Dyer & Reeves, 1995). Although employees’ ‘attitude is largely defined in terms of job satisfaction and organisational commitment, the focus of this study is on organisational commitment. This is because organisational commitment is considered more stable than job satisfaction in predicting employees’ behavior (Paré & Tremblay, 2007).

Conversely, the focus of both the human capital perspective and the individual-level performance is on employees’ competencies, such as knowledge, skills, and abilities (KSAs), in addition to their motivation. Several theoretical models have been proposed to address the human capital and individual performance perspective, among which the ability, motivation, opportunity to participate (AMO) model has received the greatest attention {Boselie, 2005, 67-94. AMO was proposed to serve as a mediating mechanism through which the HRM system affects OP. Despite

its popularity, few empirical efforts have investigated the mediating effect of AMO in the HRM–OP relationship.

Although the three perspectives (behavioral, human capital and individual-level performance) are essential for achieving a positive OP, researchers have focused on only one perspective when exploring how HRM affects OP. As Jiang et al. contend, integrating and studying the aforementioned perspectives simultaneously is needed to understand better the nature of the HRM–OP relationship (Jiang et al., 2012).

Another theoretical consideration that was found in the HRM literature is the well-established proposition that HRM system implementation is as important as the content of the HRM system (Boselie, Dietz, & Boon, 2005; Bowen & Ostroff, 2004). Employees may perceive the HRM system differently (weak climate) owing to poor implementation of the HRM system. This, in turn, may result in attitudes and behaviors that are a long way from what an HRM system intends to achieve (Lisa Hisae Nishii & Wright, 2007; Ramsay, Scholarios, & Harley, 2000). Accordingly, applying an HRM system does not necessarily mean that the organisation will achieve the desired performance unless it is perceived as a system of interrelated activities (B. E. Becker, Huselid, Pickus, & Spratt, 1997). The effective implementation of an HRM system is likely to produce a strong climate in which employees develop a shared interpretation of the HRM system and develop shared perceptions about what behaviors are expected and rewarded. According to Bowen and Ostroff (2004), a strong climate that is characterised by shared perceptions among employees is an important component to operationalise the AMO effectively (Bowen & Ostroff, 2004). To have such a strong climate, an HRM system needs to be distinctive in its presence and consistent in its messages, while delivering a well-developed consensus between HR managers and other managers with respect to HRM system objectives and practices. These attributes form what Bowen and Ostroff (2004) called a ‘strong HR system’. Despite the indispensable role that HRM system implementation (or the process of the HRM system) has in furthering our understanding of how the HRM system affects OP, the majority of HRM literature is heavily focused on defining the content of the HRM system (Brewster, Gollan, & Wright, 2013; Delmotte, De Winne, & Sels, 2012). This one-sided focus led Bowen and Ostroff (2004) to trigger researchers’ attention to the importance of studying the process approach of HRM alongside the content approach.

Accordingly, this study contributes to the HRM literature by introducing a comprehensive model that integrates both the content and process approach of the HRM system into one model to address the question of how the competency management system system affects OP in the higher education sector. To do so, a quantitative methodology was used where cross-sectional data were gathered through a questionnaire developed and distributed to a group of respondents, namely, academic staff of HEIs and subscribers.

HR Systems

HRM is historically guided by management theories and international practices. John R. Commons first coined the term human resource in his book titled ‘The Distribution of Wealth’ in 1893 (Popescu, 2016). With the evolution of time HR departments increasingly face critical challenges including the evolution from a small administrative to becoming a central and complex function which is integral to the effective functioning of organisations. It is however difficult to pinpoint the contributory factors. It is commonly understood; however, that the HR function should not be compromised as this would impact on the ability to deliver

on the multiple demands placed on the function by multiple stakeholders which include staff, organs of state and unions.

Section 2. Background

HR systems are under fire in Algeria, due to a range of contributing factors which include competing demands from labour, hirak pression, sectoral demands and challenges, and changing organisational dynamics. Given the dire challenges impacting on HRM in Algeria and globally, the researcher sought to locate the study in the higher education sector in order to investigate and contribute solutions to current issues. The focus of the study is on the HRM function, more precisely competencies management and associated systems and processes in universities in Algeria. The levers advancing social justice and there by driving institutional compliance on Algerian labour matters, HR models and competencies models will be explored, as will the need for performance management in universities.

Section 3. Why choosing this topic ?

Like many other African and developing countries, Algeria has a lot of raw-materials, Infrastructure, mines …It has one of the best fertile lands in the world, top 5 in the quality of many agricultural products / food: Olives, oranges, dates ... but still a third world country. On the other side, a lot of developed countries had limited natural resources. However, they reach the highest economic rankings: the secret is definitely human resources.

Besides, I have conducted a research in my bachelor dissertation on “competencies transfer in organisations”, I discovered that I really enjoyed working on a such multi-disciplinary subject. Since then, I decided to choose human resources competences as my field of research at a PhD level. I really believe that human is the key, if we know how to take care of him, we can extract the best of him, he can do miracles. I hope that I will contribute, even a little bit, for a day when I’ll see my country playing a leading role in Africa and why not in the whole world.

Section 4. Overview of the study

4.1. Importance of the study

My motivation on approaching this subject comes from the belief that this topic is especially important to the higher education sector, as scientific, cultural organisations have little to sell but their good students, trainings and research, which makes them uniquely dependent on their teachers and employees attitudes and motivations and on their management styles.

Therefore, HR competencies plays a crucial role in higher education sector.

I believe that the shifting role of the HR department towards a more strategic function in the future is of a major importance in the ever-changing sector today as the HR department is the connection between the top management and the staff, and especially since higher education faces several critical challenges that require organisations to build new competences in order to achieve a competitive advantage. Some of the main challenges are globalization, profitability through growth, technology, intellectual capital, and change.

4.2. Research Focus

This study undertook the university of Tlemcen (UoT), an Algerian public university as a for a case study. it offers graduate and postgraduate qualifications, which include bachelors,

masters and doctoral degrees. Till now, the type of public universities in Algeria are the most and major type . Private universities are still in a beginning stage.

4.3. Research Problem

The increasing complexity of HRM is a global phenomenon, as will be explored in the literature. The dynamic state of the discipline requires a critical review of what is required to address the issues and stabilise the function. The competency management functions in universities are folding under the pressure of competing demands, policy requirements, compliance related pressures and a fast faced environment. HR practitioners in the HE sector experience enormous pressure.

4.4. Research Aim

The primary aim of this study was to examine the competency management systems used in selected higher education institution in Algeria. In addition, transformative leadership models and competencies within HR in the HE sector within Algeria were explored. This research study seeks to contribute to the HRM and competencies management in universities. This exploratory work sought to ascertain the impact of HR models, HR competencies and transformative leadership, on employee performance, satisfaction and perception. Further, an analysis of the HR competencies required were identified. This study and its findings is intended to assist HR departments in their consideration of the need for transformational leadership, HR models and HR competencies that are relevant to the requirements of the HE sector. The findings will be used to inform new and relevant HRM strategies, structures and related processes

4.5. Research Objectives

The study will be conducted with the following objectives:

discusses the impact of the way top management perceives the importance of HR department and its expectations regarding the HR function, as well as the responsibilities given to that function, which seem to be not conducive to the shift of the HR function towards a strategic dimension.

Exploration of the influence factors of human resources management practices used by HEIs.

Define the performance indicators and its measurement tools

Examination and description of the correlation between competences management and a HEI performance.

To understand the challenges facing HR departments in higher education.

To find out how to measure performance of a HEI.

To evaluate the impact of HR practices on the performance of its academic staff

Suggest measures for improving the role of human resources department in university management.

4.6. Research Questions

The research objectives will be pursued further through the following sub-questions related to HR management systems in universities in Algeria:

This research will be based on the following problematic: How can competencies management affect performance of a higher education institution?

We can split this problematic into 4 main sub-questions:

- What is competency management?
- How is a higher education performance is measured and managed?
    - Is there a relationship between managing competencies and higher education performance?
- Do HR practitioners possess the necessary competencies to provide relevant and effective HR delivery in HE?

The data collected will be analysed to evaluate the current HR models, HR systems, strategies and processes.

4.7. Research Hypothesis

Almost every great step [in the history of science] has been made by the 'anticipation of nature', that is, by the invention of hypotheses which, though verifiable, often had very little foundation to start with. (Nagel, 1966)

Hypotheses bring clarity, specificity and focus to a research problem, but are not essential for a study (Kumar, 2011). The importance of hypotheses lies in their ability to bring direction, specificity and focus to a research study. They tell a researcher what specific information to collect, and thereby provide greater focus(Kumar, 2011).

In order to answer the study objectives, the following hypothesis are proposed to be verified:

The null hypothesis:

H_0: The competency management practices have no impact on HEIs performance.

The alternate hypothesis:

H_1: there is a relationship between competency management and performance at the university.

The sub-hypothesis:

- Competences management contribute positively to the performance of a university.
- Success in a scientific endeavour depends significantly on good systems of competencies management
- Even with a good competencies management system, the impact on performance will be very limited since higher education institutions are public institutions managed by rigid regulation and consequently cannot decide for their own procedures (recruitment criteria, incomes and expenditures, tuition fees, salaries…)
- The performance of a teacher is affected by his gender, grade and age

To test these hypotheses, we will use what it is called Empirical verification through building indicators and determine it with precision in order to make it measurable.

4.8. Limits of the Study

One major problem is that a competency is an existing concept However it is intangible and difficult to measure. It will be hard to detect the real competency before a recruitement and measure it after. I will seek for tangible performance indicators to see the degree of a given competency.

It is prooved that the link between competences, which are qualitative phenomena, and performance measured by quantitative indicators is not obvious.

The second limitation is that the case study will be limited on a given society: academic staff of the university of Tlemcen. The university performance doesn't rely on teachers and researchers only, all stakeholders play their crucial role in achieving goals.

4.9. Research Methodology

The methodology of the thesis will be based on the structure called: Introduction, Methods, Results, and Discussion (IMRaD). This method is the most prominent norm for the structure of a scientific paper of the original research type. The IMRAD structure has proved successful because it facilitates literature review, allowing readers to navigate more quickly to locate material relevant to their purpose.

The study will employ the objectives perspectives approach. Its endeavour will be both descriptive and correlational study.

A first research phase is conducted with the help of books, Internet databases, references, and articles. In addition, I will proceed with documentary analysis which involves obtaining data from existing documents without having to question people through interview, questionnaires or observe their behavior since documentary analysis is a valuable tool for contemporary scientists.

The Thesis will be divided into three specific chapters. After the Introduction, the main first part presents the literature review, including issues as knowledge management and knowledge transfer followed by a chapter dedicated to empirical evidence on the subject as it needs evidence from real situations to define the impact on organisations performance.

The third major part of this thesis is made up of a data presentation for my case study findings, where I describe and analyse the practical application case. Furthermore, the survey is analysed and recommendations will be given.

For the case study, a survey was established through google forms and distributed among the staff of the university of Tlemcen. Some managerial level staff will be interviewed face to face individually.

The sample will be mainly from the Faculty of Economics, in where I have more interaction with lecturers and teachers, and it have been extended to other faculties and institutes in order to have a representative sample of the university's population.

The obtained results will be treated with the SPSS for Windows version 26.0, software that creates graphics and statistics which will help in analysing the findings.

The very last part consists of a general conclusion, where I will summarise and reflect upon the different parameters discussed in the current research and give a personal opinion. Some ideas of how the results might affect the direction of future research : « *Good science opens new doors* »

The case study research methodology is set out in chapter five, wherein the research approach undertaken is set out in a comprehensive manner. This takes the form of a case study, which through a combination of methods, deals with contemporary events and uses a mixed methods approach incorporating both qualitative and quantitative research data collection techniques and analysis. This approach enabled the Researcher to gain diverse and detailed data and allows for the triangulation of such data. Creswell and Plano-Clark (2011), state that a mixed method research design is meaningful for the collection and analysis of quantitative and

qualitative research methods within a single study. Saunders, Lewis and Thorhnill (2009), mention that it is important not to rely solely on quantitative producing data, but to utilise more qualitative data in case studies such as the study under consideration (Saunders et al., 2009). Both qualitative and quantitative methods will be used to this effect.

4.10. Quantitative Research

Participant responses in qualitative research are semi-structured and differ from quantitative studies that posit fixed questions and require fixed responses. Burns and Grove (2005) offer a description of quantitative research as being structured and objective, while using a systematic procedure, which uses numerical data to gain insights into particular phenomena (Burns & Grove, 2005). Saunders and Stumpf (2016), describe this type of study as focusing on specific, narrow questions which are used to gather quantifiable data for large numbers of participants. This method enables data collection to be undertaken in an objective and impartial manner. Googleforms, an online survey software tool, was used for collecting data of the study. To this end, the quantitative research method included the development, distribution and analysis of questionnaires. In addition, an analysis of available documents was undertaken. A brief overview of data collection techniques is set out below.

4.11. Qualitative Research

The qualitative research methods used included direct observation of HR Practitioners and related processes, focus groups and systematic interviewing. Semi-structured interviews in a focus group setting were used to gather qualitative data that should be analysed inductively (Bogdan & Biklen, 2003). Bryman (2008), sets out that qualitative research places an emphasis on individuals' perceptions of what is important and how they view their work environment. This is done through in-depth investigations of individuals and their environment (Bryman, 2008). With this in mind, it is envisaged that this method of data collection will provide rich insights into HRM practices. Creswell, Klassen, Plano Clark, and Smith (2011), suggests that the presentation of data must be sensitive to the nuances of what people say and to the contexts in which their actions take place. Considering this, qualitative research is less generalised.

4.12. Data Collection Methods

4.12.1. Questionnaire

A questionnaire was conceptualised, developed with my supervisor. It was shared with a group of 20 teacher to test the reliability and validity of the questionnaire. After the test and some corrections, it was distributed to all teachers at the university. The questionnaire was divided into six sections. The sections were based on the following themes:

Personal information
Pedagogical competences
Digital competences
Research competences
Finance and rewards
General suggestions.

Each theme comprised 5 to 6 short questions. Google forms, an online tool was used to share the questionnaires and collect the data.

After receiving some responses from random participants, they complained from the length of this survey. So, I abridge it and stay on the necessary questions relevant for the study.

4.12.2. Contextual Document Analysis

A secondary data analysis was conducted using material available from different departments of the University of Tlemcen. Material available on general directory for scientific research and the ministry of higher education websites were analysed too. This data source provided detailed information on HRM systems, HR models and HR planning processes. This data source was readily available from the institution and provided insight into the approaches used for planning purposes with respect to the above-mentioned areas. The documents that were reviewed included HR strategic plans, annual operating plans, HR organograms, archival records and HR submissions.

4.13. Data Analysis

The nature of the study, along with its research objectives, usually determines the type and amount of data collected. In the context of this research project, the quality and knowledge of the participants and the quantitative dimensions of the responses are integral to the findings of the study. As supported by Hair Jr, Celsi, Money, Samouel, and Page (2011), qualitative data was obtained through the use of focus groups and quantitative data was gathered using structured questionnaire.

Pope, Ziebland, and Mays (2000), suggest that the vast amount of data generated from qualitative research techniques, including transcribed recordings of interviews and related fieldnotes, must undergo an analytical process using variant content analysis techniques. Field notes were written during and between sessions. Data analysis followed the sessions. The data was coded and clustered into themes for interpretation. To make content analysis a reality, the textual data had to be presented in a manner so organised as to allow the researcher to apply inductive reasoning for data analysis. A database of case study observations was created and maintained.

The data from the questionnaires was coded and extrapolated onto an Excel spread sheet under different themes.

The study utilised a mixed method approach with an emphasis toward qualitative data collection. A purposive sampling method was undertaken. As a result, statistical models could not be used.

4.14. Ethical Undertakings

The researcher ensured that all participants would partake in the study on a voluntary basis. Accordingly, the researcher obtained informed consent from all participants in the research study. The researcher made a commitment to minimise the risk of harm to any participant. The researcher upheld the anonymity and confidentiality of participants. Participants in the study were always afforded the opportunity to withdraw at any time of the data collection process. The researcher undertook to re-iterate to participants that they may withdraw from the study at any time during the data collection process without providing a reason. The researcher ensured that no deceptive practices were allowed.

4.15. Merit of the Research and its Proposed Contribution

The research study is intended to contribute to HR related empirical studies in universities in Algeria. The research findings which emanate from this study will be relevant to other universities in the sector. These findings would apply to traditional universities, as public sector institutions. Aspects of the study can be generalised to other sectors in Algeria. The study provides important insights into current HR management practices within universities.

It is envisioned that the study will make a valuable contribution to the advancement of localised conceptualisation and development of theoretical contributions in HRM and related fields. Further contributions will include the value added from a policy and practice basis in Algeria and beyond, drawing on ILO prescripts, country specific regulations and HRM theory. As the study is broad and undertakes an analysis of public management dimension, it is anticipated that the thrust of the study will glean key insights to foster trans-disciplinary insights and areas of collaboration.

4.16. Research Protocol

The presentation of this study encompasses four chapters. Chapter one is the introductory chapter, which provides an overview and background of the study. The second chapter is about HRM and competency models. The third will be about performance and different components of individual and collective performance of employees in a given organisation. Chapter four provides the detail of the higher education sector and its specificities while Chapter five sets out the case study methodology, qualitative and quantitative data collection, findings and discussion. The concluding sevtion summarises the study and makes recommendations for practice and further research.

4.17. Summary

This chapter highlighted the problem statement and set out the research objectives of the study. It provided a contextual overview of the study. The key themes to be covered in the literature review were set out. Further, the research methodology and the framework for the presentation of the study were given. The following chapter sets out the first part of the comprehensive literature review of the study. It presents the conceptual framework of the HRM function.

CHAPTER TWO :

Human resources and competency management

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Section 1. Common HR Models

1.1. Job Demands Resources Model

The Job Demands Resources Model is described by Bakker, Demerouti, and Euwema (2005), as focusing on job characteristics that have significant influence on employee well-being, which may manifest into job strain, burnout and low levels of engagement. The model has been built on both theory and practical research and is based on the calculated assumption, that every job is characterised by a variety of risk factors that are specific to a wide variety of occupational categories (Schaufeli & Bakker, 2004).

The job demands are associated with several individual; group; social, psychological and/or organisational aspects of the profession. These demand serious efforts at different levels as well a specific range of skills which are needed. During the workplace process, there are possibilities of personal, psychological or other costs, associated with emotional and/or work pressure related realities (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009). Job resources on the other hand, are related to organisational; personal; psychological, social and/or physical aspects of the workplace, that are instrumental in enhancing the opportunities for personal, professional and organisational growth and reducing the job demand. They on most occasions lead to better functionality, knowledge enhancement and personal and organisational development (Bakker et al., 2005). (Bakker et al., 2005). The existence of the two areas are fundamental to either contributing to strain, or motivation, in the respective cases (Bakker & Bal, 2010).

1.2. Ulrich Model

The Ulrich Model, also referred to as the Value-Proposition Model (VPM), was developed by Ulrich and Brockbank in 2005. According to Weinacker (2008), the development of the VPM was based on the Strategic Human Resources Management Model, originally created by McMann in 1992. The VPM assess HR within the context of the environment within which it operates. Significant focus is placed on the theories, choices and actions available to the HR professional ‘to enhance value in the form of energy’ to the flow of work, performance, information and people within the organisation (Weinacker, 2008). The key emphasis of this model is on the need for HR to deliver on strategic and administrative activities (Cooper, 2015). The fundamental aspect is the shared services centre, which consolidates administrative and specialist roles and activities into a centralised model. A critical aspect of the Ulrich Model is the role of the HR Business Partner (Cooper, 2015).

According to D Ulrich (1997), the originator of the theory and one of its key exponents, HR leaders contribute to the shaping of business and the achievement of strategic results. He wrote that four principal roles must be fulfilled to support a HR model, which would reflect the repositioning of the HR function. These are the roles of strategic partner, administrative expert, employee champion and change agent, which require a new range of competencies. He advanced the belief that employees are taking a more involved approach regarding decision-making processes that impact on them and require transparency of such transactions. This has an impact in how they (employees), evaluate and respond in their loyalty and commitment to the organisation (D Ulrich, 1997). The Ulrich model addresses the need for HR to deliver on

strategic and administrative activities. A key characteristic of this model is the suitability to larger, matrix type organisations (Cooper, 2015).

1.3. Value-added Roles Model

Brault and Beckwith (2003), developed a model called the Value-Added Roles Model, for use in higher education. The model was developed from Ulrich's Value Proposition Model. Four categories were classified as being of importance; provision of skilled staff, enhancing organisational effectiveness, motivating performance and finally the design and implementation of effective processes. Brault and Beckwith (2003)proposed that the adoption of a value-added HR paradigm requires certain supporting structures to be in place to ensure successful implementation of the model. This includes a redefinition of HR roles; the development of HR competencies, implementation of new approaches and an accountability based on outcomes. Losey et.al., however, questioned the relevance of a value-proposition model and the application of its divergent elements (M. Losey, S. R. Meisinger, & D. Ulrich, 2005). On the other hand, it has been pointed out that there was no empirical research conducted on the applicability or impact of this approach in higher education (Weinacker, 2008).

1.4. Harvard Model

Referred to as a soft model, the Harvard Model focused on four policies for effective HR management, which are employee influence, HR flow, reward systems and work systems (Beer et al., 1984; D Guest, 1989). The Harvard Model was developed by Beer et al. (1984), and D Guest (1989), with a focus on multi-stakeholder interests, relevance of situational factors and the long-term impact of HR policies and practices. The model was referred to as developmental humanism (Legge, 1995). The Harvard Model focused on the same four policies for effective HR management, employee influence, human resource flow, reward systems and work systems. These were, however, expanded to include the following:

- Organisational job design.
- Policy formulation and implementation.
- Management of change.
- Recruitment, selection and socialisation.
- Appraisal training and development.
- Manpower flows.
- Reward systems and communication systems.

This model is premised on policy choices and its impact on HR outcomes of commitment, competence and cost-effectiveness. The long-term benefits include well-being of individual staff members, organisational effectiveness and greater societal well-being. The system's focus was on a comprehensive and strategic HR system (Agyepong, Fugar, & Tuuli, 2010). Armstrong (2009b)Armstrong (2009), has written that personnel management challenges can be addressed through the vision embraced by general managers, with respect to how employees are involved in the organisation. The link between HR and general managers is emphasised. An important aspect of the Harvard Model is the need for the role that line managers are expected to play (Beer et al., 1984). Beer et al (1984), stressed the role of line managers who in their view, should assume additional accountability for ensuring the 'alignment of competitive strategy and personnel policies'. In addition, they advocate that line managers should also have the ability to set policies that impact on the development of personnel activities (Beer et al., 1984, Agyepong et al., 2010). Boselie and Brewster (2013), suggest that the Harvard Model be revised with theoretical highlights and applied insights, to

take cognisance of changes over the last twenty years. They use the example of stakeholder interest to suggest that broad underpinnings espoused by Beer et al. in 1984 be considered. This is with specific reference to multiple stakeholder interests, situational dynamics and consideration of long-term effects. They argue that an averment from the original model is not required, but that contemporary HRM research and practices, need to be considered.

Institutions, which utilise an open systems model, receive input from the environment and transforms these into outputs (Dave Ulrich, Younger, Brockbank, & Ulrich, 2012). According to Ulrich et al. (2012), the correlation between employee attitude and productivity is important. A favourable employee attitude leads to employees finding meaning in their work resulting in a demonstration of enhanced competence, commitment and contribution. Price (2007), indicates that this UK based model, is based on the correlation between employee behavior and commitment to strategic management goals. Classified as utilitarian, the employee relationship is between the employee and the employer organisation. As a soft model, the role of trade unions is not highly valued (Price, 2007).

1.5. Guest Model

The Guest Model is premised on the need for relevant policy choices to impact on 'HR commitment, competence and cost-effectiveness' (D Guest, 1989). The long-term benefits include well-being of individual staff members, organisational effectiveness and greater societal well-being. The Guest Model added more policy areas in addition to the four identified by the Harvard Model (D Guest, 1989). David Guest and Conway (2011), suggest that four key questions be considered and answered before further advancement in the HRM field takes place. The questions include how the measuring of HRM practices and systems takes place, which practices or combinations of practices, have the most impact on performance; what are the conditions under which certain HRM practices make positive differences and how is the existence of HR practices (content), and the effectiveness of their implementation process, established (Guest and Conway, 2011).

1.6. The Michigan Model

The 1980s witnessed the development of the Matching or Michigan Model (Legge, 2005). Unveiled in 1984, it was closely followed by the Harvard Model that same year. The Michigan Model was formulated by Fombrun and his colleagues and has been described as a hard model. Legge (2005), has explained that the Michigan Model is referred to as utilitarian instrumentalism and as HRM, thus defining the difference between this approach and the Harvard Model. The Model is significantly based on the principles of the combination of quality, excellence in sales and services, high staff/labour productivity and ultimately high rates of profitability. These principles represent the fundamental tenets of the mission and vision of organisations utilising the principles of the model (Legge, 2005). Jaap Paauwe (2004) indicated clearly that the Michigan Model followers' key focus is economic development through profit instead of emphasis on human moral and ethical values (Jaap Paauwe, 2004).This means that the proponents and followers of this model did not pay much attention to the human element in HRM, but their key interest was the management of resources through business and financial success (Legge, 2005).This means that the proponents and followers of this model did not pay much attention to the human element in HRM, but their key interest was the management of resources through business and financial success {Legge, 2005 #641}.

P. M. Wright and Snell (2005), expanded on the issue, connecting the model with re-organisation patterns, out-sourcing services and frequent staff dismissals, which according to Boselie, Brewster, and Paauwe (2009), are instrumental in increasing the economic value of an

organisation (Boselie et al., 2009, Wright and Snell, 2005). The initial bases of the model as outlined by Fombrun (1984)Fombrun (1984), concentrated on HRM strategies and their attachment to an overall business strategy. It has been written that when HRM strategies 'fit' the business strategy, company performance is mostly positive (Fombrun, 1984; Huselid & Becker, 1997).

The alignment of strategic 'fit' with individual HRM practices creates a successful functional system and elevates organisational performance, especially in the short and medium term (Delery & Doty, 1996) It can be gauged that as a top-down approach, the Michigan Model is substantially different from the Harvard Model, both in theory and practice (Brewster, 1995, Brewster, 1999, Paauwe and Boselie, 2003). The influence of a number of significant external factors, however, such as international and local competition; the changes in the labour markets; technological advances; national and international laws and conventions, wars and changes in societal values, have somehow brought the concrete application of their principles closer (Brewster & Mayrhofer, 2012). Legge (2005), critiqued the model as being too focused on the economic value in lieu of moral values, thereby making it a hard model.

1.7. Normative Model

The key characteristic of normative HRM is that there is 'a clear and direct relationship between institutional strategy and HRM'. Gill (1999), advises that normative HRM is characterised by two common themes. The first is that HR policies should be aligned to strategic business planning and are important for influencing a fitting organisational culture. The second aspect is that HR, as a valuable source can advance competitive advantage, which can be effectively managed or leveraged through inculcating a culture of commitment, through the development of appropriate policies (Gill, 1999; Legge, 1995). The normative perspective of HR is rooted on the conceptual understanding of 'soft' and 'hard' HRM, as exemplified above in relation to the Harvard and Michigan Models and their particularities, finding their realisation in the workplace (Mello, 2006; Torrington, Hall, & Taylor, 2005). In this sense the normative model despite a number of similarities, also has differences, when compared to the descriptive and analytical models (Schuler & Jackson, 2008).

The similarities lie in the reality that many of the important elements of the HRM models have common roots in the understanding of behaviorism-based theories, that deal with issues of leadership, organisational team work, motivation and key performance area (KPA) (Schuler & Jackson, 2008). (Gill, 1999), wrote that normative HRM is characterised by two common themes. The first is that HR policies should be aligned to strategic business planning, which is important for positively influencing 'appropriate organisational culture'. The second aspect is that HR is a valuable source of 'competitive advantage', which is effectively managed through 'policies that promote commitment' (Gill, 1999, Legge, 1995). The key characteristic of normative HRM is that there is a clearly structured relationship between the institutional strategy and HRM strategy.

Gill (1999:3), critiques that this linear approach to HR debases its strategic function. The contradictions in utilising a hybrid approach are brought to the fore by Gill (1999), who cites (Keenoy, 1990) and Legge, (1995:3), who highlight the discord that the two contradictory approaches create (Gill, 1999). They advance that the rhetoric posited, make strategic oriented action challenging and that the inherent contradictions present a discord, between advancing the interests of an organisations 'valued assets', its employees and the hard cost or expenditure related factors (Gill, 1999).

Table 2.2 identifies a variety of the best known and applied or utilised models existing at present with their hard or soft classification models, their origins and key proponents, their key characteristics, and their literature sources.

Table 1 Best Known HRM models

SCHOOLS	YEAR	APPROACH
The Michigan School	1984	It puts in the foreground the coherence of internal HR practices and the congruence between HRM practices and organisational strategy.
The Harvard Model	1984	Is based on the belief that the problems of historical Personnel Management can be solved only "when general managers develop a view point of how they wish to see employees involved in and developed by the enterprise, and of what HRM policies and practices may achieve those goals" (Armstrong, 2006)
The Guest Model	1987	HRM differs from Personnel Management for the following four reasons: It integrates human resources into strategic management; The perspective in unitary with the focus on individual; It works better in such organisations which have an "organic" structure; The emphasis is on a full and positive utilization of HR (Bratton and Gold, 2003)
Ulrich Model	2005	The fundamental aspect of this model is the shared services centre, which consolidates administrative and specialist roles and activities into a centralised model. A critical aspect of the Ulrich Model is the role of the HR Business Partner.

Source: (Govender, 2019)

Section 2. Competency Management

Since the 1990s, competency management has enjoyed growing interest both among researchers and practitioners of the organisation, especially because of the transversal nature of this thematic.

2.1. Literature review:

Noting that psychologists were the first to use the concept of competence, when they tried (White, 1959) to identify the characteristics of subjects influencing performance at work, Oiry (2005) (This is also the case for much more recent work (cf. Meyers & Houssemand, 2006).

The use of competency was originally initiated by David McClelland (McClelland, 1973) as an alternative to the trait and intelligence approaches to measuring and predicting human performance.

2.1.1. Definition

To avoid any interference or overlap in the meaning of some indispensable concepts to the research, I hereby will give their definitions.

Definition of Competence

Oxford dictionary definition (Oxford, 2020):

1. (*less frequent* **competency**) [uncountable, countable] **competence (in something) competence (in doing something)** the ability to do something well
   - *to gain a high level of competence in English*
   - *professional/technical competence*

   OPPOSITE **INCOMPETENCE**

2. [uncountable] (*law*) the power that a court, an organisation or a person has to deal with something
   - *The judge has to act within the competence of the court.*
   - *outside someone's area of competence*
3. [countable] (*less frequent* **competency***technology*) a skill that you need in a particular job or for a particular task
   - *The syllabus lists the knowledge and competences required at this level.*

Definition of Competency: see competence

Definitions in Merriam webster dictionary (Merriam-Webster, 2020):

Definition of competence

Competence noun

com·pe·tence | \ ˈkäm-pə-tən(t)s \

1: the quality or state of being competent: such as

a the quality or state of having sufficient knowledge, judgment, skill, or strength (as for a particular duty or in a particular respect)No one denies her *competence* as a leader.They have demonstrated their *competence* in their specialty or subspecialty by passing a comprehensive exam …— Rachael Migler

b *law* **:** legal authority, ability, or admissibilitya matter within the *competence* of a judge to adjudicate

c: the knowledge that enables a person to speak and understand a languagehas demonstrated *competence* in conversational Arabic— compare

d *biology***:** the ability to function or develop in a particular way: such as

(1)*embryology* **:** the ability of embryonic cells and tissue to undergo differentiation in response to an organizer

(2)*microbiology* **:** the capability of bacterial cells to take up exogenous DNA during genetic transformation

2: a sufficiency of means for the necessities and conveniences of life" … money can only give happiness where there is nothing else to give it. Beyond a *competence*, it can afford no real satisfaction … "— Jane Austen

Definition of Competency

Competency noun

com·’pe·’ten·’cy | \ ˈkäm-pə-tən(t)-sē \

plural competencies

1: COMPETENCE: such as

a: possession of sufficient knowledge or skill

Dr. Polidoro was cited for his outstanding contributions to the profession, his professional … *competency* … and dedication.— *Rhode Island*

At length horrible doubts overtake him as to the captain's *competency* to navigate his ship.— Herman Melville

b: legal authority, ability, or admissibility

They evaluated the defendant's *competency* to stand trial.

2: a specific area of competence

A "meister," or master, who works with the student at the jobsite will then be able to check off when an apprentice has achieved certain *competencies*. — Lynn Olson

I have always believed businesses that concentrate on a very few ***core competencies*** will do the best. — Bill Gates

When coming up with a list of different industries, positions, and professions to which your skills could transfer, the key is to think in terms of your *core competencies*. — John A. Challenger

According to the dictionary, the words *competence* and *competency* mean basically the same thing:

Competence (noun). ***a.*** The state or quality of being adequately or well qualified; ability. See Synonyms at *ability.* ***b.*** A specific range of skill, knowledge, or ability (American Heritage Dictionary, 2020).

Competency (noun). The quality of being adequately or well qualified physically and intellectually (Princeton's Word Net Web, 2020).

Given the dictionary definitions of competence and competency, it is no wonder that people are confused.

To begin with, the definitions are different. As an example, a definition of competency is provided by David Dubois and another definition of competence by Thomas Gilbert. Here is David Dubois' definition of *competency: "Those characteristics—knowledge, skills, mindsets, thought patterns, and the like—that when used whether singularly or in various combinations, result in successful performance"* (Dubois, 1998, p. v).

In contrast, *competence* equals worthy performance that leads directly to the most efficient accomplishment of organisational goals; that is the way that I use it and apply it in my work. The following definition is from Thomas Gilbert's definition and formulas in his book *Human Competence:* Human competence is a function of worthy performance (W), which is a function of the ratio of valuable accomplishments (A) to costly behavior (B).

Or

W = A/B

Performance = B + A

Competent people are those who can create valuable results without excessively costly behavior (T. F. Gilbert, 1996, p. 17).

As with the definitions, the areas of focus are also different.

- With competency models the area of focus is the definition of skills, knowledge, attributes, and behaviors that successful people have. It is thought that if other people know what skills, knowledge, attributes, and behaviors successful people have, these others will be motivated to acquire them and will in turn become more successful. Practitioners who develop competency models work with trainers, human resource professionals, subject matter experts, and in some cases managers to define the skills, knowledge, attributes, and behaviors that successful people demonstrate. The desired outcome is to replicate the competencies of successful people in less successful people through hiring, training, assessment, and development programs.
- With competence models the area of focus is the definition of measurable, specific, and objective milestones describing what people have to accomplish to consistently achieve or exceed the goals for their role, team, division, and whole organisation. T. F. Gilbert (1996) says,

"Improper guidance and feedback are the single largest contributors to incompetence in the world of work" (p. 91). The goal of competence models is to remove this cause of incompetence by providing clear and concise guidelines to success with clearly marked and measured milestones, in other words a Roadmap to Success. Because we at Competence Systems believe that any question about needs for training has to start with "what do people have to do?" we first define that very clearly, then the required skills, knowledge, and key tasks and behaviors to support competence become clear.

As with the definitions and areas of focus for competency and competence, the results obtained from these two frameworks are different. With competency modeling, the result is a list, graphic, spreadsheet, or interactive program that lists the skills, knowledge, attributes, and desirable behavior thought to be required for successful performance for a specific job role. One major problem is that these statements may be very broad and may not link directly to the actual day-to-day work or to the measurable results that the organisation requires and pays people for. Here are three implications of this missing link that I have witnessed with several clients:

1. People may interpret competencies differently, which can lead to variability in performance.

2. People may not see the connection between achievement of competencies and their day-to-day jobs. For example, sales reps are motivated to be as successful as possible—their paycheck is dependent on it, but they are focused on what they need to do day in and day out to meet their goals for the quarter. Sales representatives and managers are not interested in attaining high-level skills, knowledge, behaviors, or attributes just for the sake of having them, unless they see a direct and immediate application to winning more business *now.*

3. Managers may have a difficult time systematically assessing, developing, and coaching competencies because they are subjective, they are not easily measurable, and they are often very high level and are not directly observable in day-to-day performance. For example, one manager stated to me "my sales organisation is trying to drive double-digit growth, replicate top performers, and decrease inefficiencies and variables within the sales force. Neither my managers nor I sees a ready-to-use, easy way to apply competency models to help our sales organisation achieve these objectives. They are just at too high of a level and too far removed from what we are trying to accomplish day in and day out."

With competence models the result is a framework that defines the following:

• The process used to generate the required results

• The critical step-by-step accomplishments, related tasks, and best practices that top performers consistently achieve to meet or exceed the goals of the business

• The skills and knowledge required to support achievement of critical accomplishments

• The environmental supports required to build, support, and maintain desired performance and competence levels, as well as the current obstacles obstructing achievement of needed results (Teodorescu, 2006)

Based on the work of numerous authors on the concept of "competence" (Durand, 2000; Le Boterf, 1994; Sanchez, Heene, & Thomas, 1996), we can define the latter as the capacity of an individual, a work group or a company , to mobilize and combine resources (knowledge, know-how and behavior), with a view to implementing a specific activity or process of action. In our opinion, this definition allows us to describe the competence both through its nature and its consequences, which constitutes a response to the criticism formulated by Meschi (1997), regarding incomplete definitions and inoperative skills, offered until then.

- ‘A competence is a personal capability that becomes visible through showing successful behavior in a specific contextual situation. A competence is dynamic over time and developable to some extent. A competence consists of an integrated set of knowledge, skills and attitudes, where also personal characteristics and aspects of the professional functioning influence the development of competences in some way.’ (Dochy & Nickmans, 2005, p. 35e36)

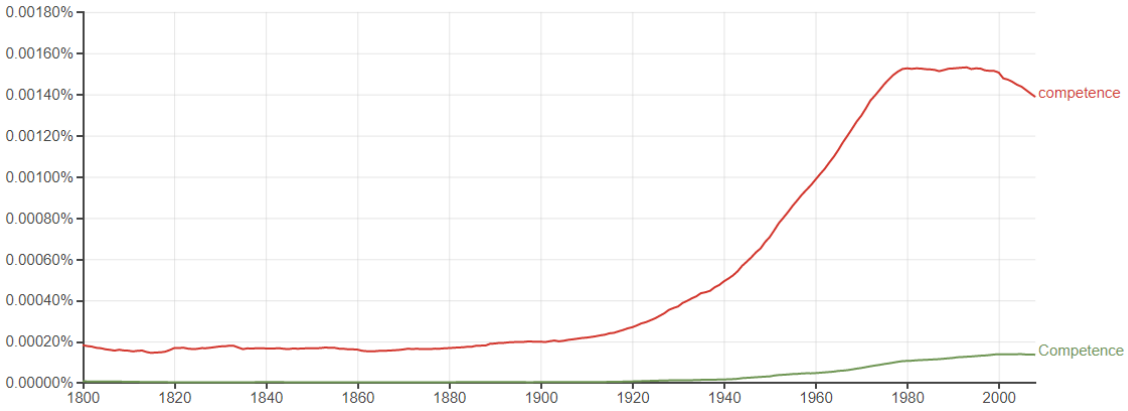
- Competence is the ability to apply knowledge, know-how and behavior in execution situations (standard FD X50-183, paragraph 3.8 AFNOR)
- Based on the work of numerous authors on the concept of “competence” (Le Boterf, 1994; Sanchez, Heene and Thomas, 1996; Durand, 2000), we define the latter as the capacity of an individual, a work group or a company, to mobilize and combine resources (knowledge, know-how and behavior), with a view to implementing a specific activity or process of action. In our opinion, this definition allows us to describe the competence both through its nature and its consequences, which constitutes a response to the criticism formulated by Meschi (1997), regarding incomplete definitions and ineffective skills, offered until then.
- Competency management: we consider "competency management" to be all managerial actions engaged by one or more organisation (s) in order to manage and develop competences. Thus, competency management combines both the management of competences in its function of "development and application of management rules" (Jaques, Patrick, & Frédérique, 2002), and the development of competences resulting from two modes learning: exploitation and exploration (March, 1991). Learning by exploitation consists in exploiting regularities, in learning by repeated practice, in facing management situations that present a certain recurrence. Learning by exploration allows the search for new development opportunities for competences.

2.1.2. The use of the word competence, performance over time

Today, the web search engines, which are part of the Digital Revolution, are transforming manuscripts and printed resources into digital resources, immediately available all over the world. Several universal digital libraries exist: among them we find the Google Books, Project Gutenberg, Internet Archive libraries, and many others which concern more specific subjects. On the digitalised texts available from these libraries, we can perform several analyses. an interesting tool provided by Google exists, which can help researchers in bibliographical and reference research. It can be used for the history of science, acquiring references unknown to researchers. This tool is the Ngram Viewer(Sparavigna & Marazzato, 2015).

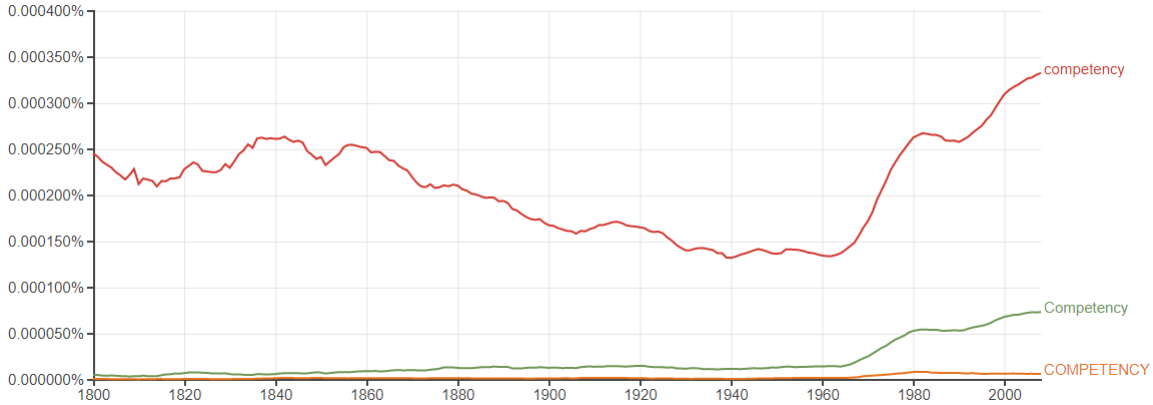
The **Google Ngram Viewer** or **Google Books Ngram Viewer** is an online search engine that charts the frequencies of any set of comma-delimited search strings using a yearly count of *n*-grams found in sources printed between 1500 and 2008 in Google's text corpora in English, Chinese (simplified), French, German, Hebrew, Italian, Russian, or Spanish. There are also some specialized English corpora, such as American English, British English, English Fiction, and English One Million...(Wikipedia, 2019a)

Figure 2. Use of the word Competence over time



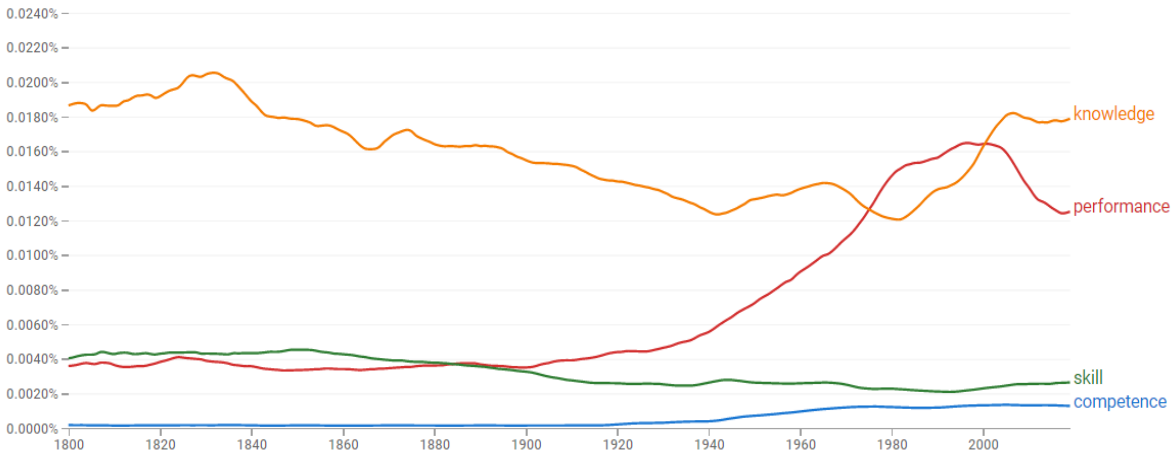
Source (google books Ngram viewer, 2019a)

Figure 3. Use of the word Competency over time :



Source (Google books Ngram viewer, 2019b)

Figure 4. Comparison of the use of words: Competence, performance, knowledge, skill over time



Source: (Google books Ngram viewer, 2019b)

From the figures above, wecan see that the use of the word competency knew an interest by writers since early 60s. By the same, the wors performance as well has special taking care starting from the same period. The literature as a conclusion gives an importance to these words when the human resources management starts with the behavioural science era when in contrast to human relations which assume that happy workers are productive workers, the behavioural scientists have been goal and efficiency- oriented and consider understanding of human behavior to be the major means to that end. They have tried several sophisticated research methods to understand the nature of work and the people in the work environment.

2.1.3. Differenciation between competence and competency:

The Table 2 below shows the main differences between competence and competency.

Table 2. Differentiation between competence and competency

Competence	Competency
1. Skill-based	Behaviour-based
2. Standard attained	Manner of behaviour
3. What is measured	How the standard is achieved.

Source : Centranum (2019)

2.1.4. Typology:

They can be split into various categories. Common categories are

1. Core competencies: apply across various roles with a profession or an organisation or like Teamwork & Communication. They can be also values of the organisation such as Customer Focus.
2. Functional Competencies are those that apply within a particular function of the organisation such as Human Resources Job Analysis

3. Professional Competencies: concern a particular professions such as Accounting, Internal Audi...
4. Technical Competencies: rely on technical and engineering type roles, an example is Root Cause Fault Analysis
5. Clinical Competencies apply to healthcare roles – an example is Patient Confidentiality
6. Leadership Competencies are those behaviors and skills that are required to successfully lead a group or organisation.

Competencies are normally structured into a heading and overall description with a group of standards (behaviors) that are important to the organisation.

Competencies become part of a competency model or framework. A large organisation will have many competency frameworks covering the various categories, functions and professional/technical disciplines (Centranum, 2019).

2.1.5. 2.2.2 HR Competencies, Qualifications, Professional Membership and Ethics

2.1.5.1. HR Competencies

HR professionals require a wide range of competencies to meet both current and emerging organisational challenges. HR professionals need to pursue learning and professional development initiatives throughout their career, to maximise their contributions to the organisations they serve (M. Losey, S. Meisinger, & D. Ulrich, 2005). The traditional roles of HR professionals being responsible for designing HRM policies in relation to a business plan, the transacting of the applicable policies into daily processes and procedures, with employees being the beneficiaries of these policies has fundamentally changed. The new HRM system, has resulted in HR professionals being critical players in business planning processes, while supervisors and managers grapple with and are required to interpret policies and the implementation thereof. Employees, particularly high performers, are actively involved in negotiating their contracts of employment and related employment conditions (Jackson, Schuler, & Jiang, 2014). HR practitioners give effect to human capital development and the related correlation and impact on quality of life (Abbott, 2012).

HR professionals help to maximise shareholder returns through the use of HR practices. To give effect to HR practices, a range of relevant competencies are required (Abbott, 2012). The development of critical HR competencies are integral to promote transformation in universities (Schultz, 2010). Competencies are defined as behaviors, which establish excellent performance in a particular work context (Mangaleswaran & Srinivasan, 2015). New competencies required by HR professionals include the need to adopt a research-based approach to solutions; the consideration of supply and demand trends, scenario plans and the development and implementation of HR policies and procedures to meet identified requirements (Schultz, 2010). Jackson et al. (2014), correctly indicate that the HRM system is characterised by an interdependence between three key elements; HR professionals, line managers and the targeted employees. They further set out the roles that each element plays in the ‘HR Triad relationship’ as espoused by Jackson and Schuler (2003), (Jackson et al., 2014). Huselid, Jackson, and Schuler (1997), as well as B. E. Becker and Huselid (2006), submit that HR managers are more adept at technical or operational HR activities, as opposed to the executive strategy. They advocate the need for further research on ‘the common body of knowledge’; skills, competencies and behaviors needed to be effective workforce strategy matters, which apply to HR and line management roles (Huselid et al., 1997). Boninelli and Meyer (2004) and Schultz

(2010), advocate that HR managers are under stress to fulfil the dual mandate of functional and strategic leadership and therefore require a range of managerial, strategic and HR specific competencies (Boninelli and Meyer, 2004, Schultz, 2010).

Much has been written about the strategic HR function. DE SILVA (2012), attests that a strong correlation exists between institutions with efficient HRM policies and practices and strategic decision-making, which is strongly influenced by strategy and structure. He also considers the transitionary nature of what was the 'personnel management function', reinforcing the marginalisation of the function in terms of its management activities and hierarchy over the last twenty years and attributes the shift from personnel function to HR management, to a more strategic orientation and the delivery of management objectives (De Silva, 2012). The need to build relevant competency capability is now a strategic imperative of the Algerian higher education in order to develop a range of competencies and HR standards for HR practitioners. A targeted approach to elevate HR competencies should enhance delivery of HRM and support to the wider organisation.

Generalist HRM competencies include a combination of business dynamics; systems; processes; project management; change management, knowledge management and research skills (Boninelli and Meyer, 2004, Burchell, 2002, Govender, 2013, Ulrich, 1997). The capability to effectively work in the different sub-areas requires in-depth knowledge, adequate training and experience in a specific sub-field. According to Govender (2013), specialisation in a specific sub-discipline of HR, requires that an HR manager enhance their knowledge in that discipline, over and above the generalist HR knowledge and skills he/she would ordinarily have. Fundamentally, HR managers utilise three essential instruments in their work. These instruments are policies, programmes and plans COYLE-SHAPIRO et al. (2013). A brief overview is presented in Table 3.

Table 3 Instruments used by HR managers

POLICIES	Local sets of rules or codes, used to co-ordinate people management activities
PROGRAMMES	Interventions designed to achieve specific objectives such as a change programme following a merger or redundancy programme
PLANS	Specific instruments or tools

Source: *Adapted from Coyle-Shapiro et al. (2013:14)*

In a pioneering contribution Burchell (2002), describes the following as specific HR competencies required to enhance HR management capability:

- Change management, to ensure a proactive, anticipatory role in managing organisational change as opposed to a reactive role.
- Knowledge of strategic roles and functions, to promote a better understanding of the strategic roles in HR management.
- E-Technology in HR, to promote self-service and simplify HR administration.

- Effective HR administration, to ensure on-going and efficient HR administrative systems are implemented and maintained.

Coyle-Shapiro et al. (2013:13), highlight the need for the HR practitioner to develop many skills required for the understanding of employee behavior and actions; development of theory and tools, the ability to plan for and react to changes. They advance that a combination of social disciplines, including, but not limited to economics, industrial relations and organisational behavior are required. They indicate that HR policy is fundamentally multi-disciplinary in nature, conjecturing that the capability to recognise and develop HR policies is not a 'trivial intellectual task' (Coyle-Shapiro et al., 2013).

Effort needs to be made to avoid the long-term effects of incorrect HR decisions and practices (Coyle-Shapiro et al., 2013). These incorrect applications can be avoided through planning and implementing relevant and well-researched HR practices. Any shift in the HRM approaches used, requires a re-assessment of the HR competencies that will be required to support this change. The different areas of HR impact on each other, therefore no HR policy can be analysed in a silo (Coyle-Shapiro et al., 2013).

The Deloitte Human Capital Trends Report (2016) indicates that many HR organisations recognise the need for upskilling the abilities, competencies and experience of their teams (Deloitte, 2016). The diversification of the workforce due to globalisation, requires a reorientation toward inclusivity from an organisational dynamic perspective. In addition, digital technological advancements require innovative practices for digital HR considerations. Agility in dealing with the fast pace of change, is another consideration that businesses need to be apprised of and finally, the very nature of the employer-employee relationship has changed. Employees are mobile and are in charge of their employment contracts; the latter being remunerative and social in nature (DELOITTE, 2016).

In addition, we consider "competency management" to be the set of managerial actions undertaken by one or more organisation (s) in order to manage and develop skills. Thus, skills management combines both skills management in its function of "drawing up and applying management rules" (Aubret, Gilbert and Pigeyre, 2002, p. 1), and skills development resulting from two modes learning: exploitation and exploration (March, 1991). Operational learning consists of exploiting regularities, of learning by repeated practice, of facing management situations that present a certain recurrence. Exploration learning, on the other hand, enables the search for new development opportunities for skills.

2.1.5.2. HR Qualifications

The Oxford Dictionary's definition of a profession is used by Janse van Rensburg (2009), which is defined as a "basic aspect of work, which involves mastery over a body of knowledge and skills". Additionally, it is a vocation where one is in service to others, formal learning is assumed, alongside a cognition of ethics, integrity and the promotion of public good. A social contract between the profession and society must be in place (Van Rensburg, 2009).

Turning to Goosen (2011), one finds that tertiary institutions may neglect to deliberate on the needs of industry, thereby falling short on training graduates in specific tasks (Goosen, 2011). She opines the need for institutions to deliberate and meet the needs of both the individual learner and the organisation. In the academic milieu, institutions and departments in universities in most African countries have changed the titles of their courses from Personnel Management or Personnel Administration to HRM. This has also applied to the names of faculties and departments. The content of the courses, however, have not been reviewed or

changed to match the requirements of the HRM model. Moreover, there has not been a serious effort to re-orient or disseminate the HRM knowledge and competencies of the teaching staff (Goosen, 2011).

The question arises as to whether it meets the needs of an evolutionary function and discipline.

2.1.5.3. HR Ethics

The application of HRM requires the exercise of social responsibility. Engelbrecht and Van Aswegen (2009), reinforce the need for HR practitioners to uphold ethical behavior as they discharge their administrative, monitoring and compliance. HRM must be concerned with the interests and well-being of employees and act ethically, regarding the needs of people in the organisation and community. SCHOEMAN (2017) highlights the important role that HR plays in setting and maintaining ethical culture in three critical aspects: ethical standards, ethical awareness and operational ethics (Schoeman, 2017). This is indicative of the central role that HR plays in advancing ethical behaviors. HR has a critical role in advancing an ethical institutional culture and creating an ethical workplace for their employees (Schoeman, 2017).

Macey, Schneider, Barbera, and Young (2009), reveal that peers and supervisors, unfair HR practices, low employment security, inappropriate performance standards and lack of resources contribute to employees leaving jobs. Employees want to feel valued and cared for and employee well-being is a joint responsibility between the line manager and HR (Hill et al., 2008). This could alleviate role ambiguity, role conflict and fluctuations in role over-load or under-load. This demonstrates the role of HR in ensuring a fair and equitable workplace and environment. The importance of ethics is demonstrated in the UK, where adherence to ethical conduct in business practice and HR practices is prioritised. This was reinforced by the European Union in 2000, when it committed to endorse companies that committed to the demonstrated practice of commitment and respect for human and trade union rights (Rose, 2007).

Rose (2007) and MARKOULLI, LEE, BYINGTON, and FELPS (2017), reveal that the core aspects of ethics, values, and morals have increased in complexity and are open to interpretation in a post-modern era. The importance of ethics, values and morals and their embeddedness in HRM is highlighted. The importance of these is ascribed to the impact that HRM has on individuals' lives. Individuals' and their families' livelihoods, starting with employment; remuneration, discipline and work-life harmony and balance are impacted (Markoulli et al., 2017, Rose, 2007).

While ethics can be viewed from a micro-perspective, various global initiatives have sought to address ethics throughout the world. An example of this is 'The Global Compact', a code of good practice developed by the United Nations and launched in July 2000. The Global Compact encouraged institutions to implement nine human rights values into their business strategies. A core focus is on stakeholders' needs. Another global endeavour is the Declaration of Fundamental Principles and Rights at Work (Internatioanl Labour Organisation, 2003). Launched in 1998 by the ILO, the focus is on the eradication of forced labour; eradication of child labour, freedom of association and the right to work in environments that are free from discrimination (International Labour Organisation, 2003). Another global initiative is the Guidelines for Multinational Corporations, developed by the Organisation for Economic Co-operation and Development (OECD). In this initiative, behavioral principles related to employment and industrial relations; environmental impact; combating bribery; consumer interests; science and technology, competition and taxation are addressed (Rose, 2007). Despite

global or local ethical standards being adopted or aspired toward within organisations, the HR manager has an important role to play in cultivating and sustaining such endeavours (Brewster, Sparrow, & Harris, 2005). The HR managers' role in inculcating and sustaining an ethical culture is stressed by Brewster et al., as follows:

- Nurturing of an ethical organisational culture.
- Recruitment of staff who set the tone of the organisation and uphold its values and ethical climate.
- Resolution of ethical conflict when it occurs.
- Dealing with the aftermath of an ethical conflict.

As seen from the discussion above, it can be said that the role of HR is often under-estimated and under-valued in its ability to maintain and advance ethical principles. Because HRM has a tremendous impact on individuals' lives in terms of their livelihoods, the entire cycle of employment, beginning with the appointment, remuneration, discipline and work-life harmony and balance, there should be more recognition and support for HR managers in their quest for maintaining ethical standards in the workplace (Brewster et al., 2007). Lutz (2009), laments the need for ethical management practices on a global level. This re-enforces the need to focus on ethical management practices.

2.2. The four levels of competency management: individual, collective, strategic et environmental

(Loufrani-Fedida, 2008)

Based on the typology drawn up by Retour (2005), the objective of this section is to highlight

the four levels of analysis or the four privileged inputs to approach the competency management:

- management of individual skills (1);
- the management of collective skills, attributed to a work group, to a team (2);
- the management of strategic or key skills, which are apprehended at level of the company as a whole, and which allow it to gain an advantage sustainable competitive (3);
- the management of environmental competences. The latter refer to skills held by suppliers, customers, research laboratories, etc., which are most often outside the direct control of the company (4).

2.2.1. individual competency management:

The individual level of competency management is made up of " individual skills "attached to a person regardless of where it is put into action (extra-professional activities for example) and the "professional competence" exercised in a work situation. Emerging first in the field of linguistics, the notion of individual competence has enjoyed growing success in recent years in disciplines as diverse as psychology, ergonomics, education and training sciences, sociology of work, without forgetting of course the increased interest in human resources management (HRM). For the purpose of this study, we propose to focus on how this last, HRM, defines and characterises the notion of individual competence. In recent years, faced with the evolution of information and communication technologies (ICT), the globalization of competition and the emergence of new organisational configurations, individual competence has become one of the key terms of HRM. For many authors, the notion of competence is seen

as a new logic of HRM (Courpasson & Livian, 1991; Parlier, 1996), even as the "*pivot of human resources management* "(Pichault & Nizet, 2000, p. 128). This discipline of management sciences, no longer able to be satisfied with the economic and industrial approach of the workforce, experienced the transition from notions of "position" to that of "work situation" from "career" to "employability", from "work" to "activity" and from "qualification" to " skill ".Zarifian (1988) thus sees in competency the emergence of a new model of organisation and management of the workforce.

In the literature, there is an abundance of definitions to present the concept of individual competency. MEIGNANT (1990) defines it as "validated operational know-how: know-how, that is to say the ability to do (and not just to know); operational, that is to say implemented concretely in a work situation; validated, that is to say recognized by the environment. This is another way of saying "useful, usable, used" ". This definition, borrowed from the negotiators of the A. CAP 20001 agreement, emphasizes the utility dimension of the skill for the organisation. P. GILBERT and PARLIER (1992) propose, for their part, to enrich skills by defining them as "sets of knowledge, capacities for action and behavior, structured according to a goal and in a given type of situation. As for Le Boterf (1994), he defines it as in the following way: "Competence is not a state or knowledge possessed. She does not is reduced neither to knowledge nor to know-how (…). There is only competence in act (…). Competence does not lie in the resources (knowledge, capacities, etc.) to mobilize but in the very mobilization of these resources (…). The concept of competence denotes a dynamic reality, a process, more than a state. It is by implementing the skill that one becomes competent (...). Competence is proven in action ".

Despite the richness of these definitions, it is the triptych "knowledge, know-how, soft skills", which represents one of the most widespread definitions (Courpasson and Livian, 1991; Gilbert and Parlier, 1992; Durand, 2000) . Competence is therefore based on the concept of knowledge ("knowledge"), on a component relating to practical experience ("know-how" or "know-how") and on a behavioral component ("knowledge -being" or " the ability to adapt "). The main interest of this definition is its didactic nature: it is simple, understandable and easy to remember. However, this triptych is the subject of much debate, as it relies on terms whose meaning is imprecise and evaluation delicate. In particular, the use of interpersonal skills is frequently criticized, because it is suspected of a lack of objectivity. Also, the triptych "knowledge, know-how, interpersonal skills" has a major limit: it does not take into account the combinatorial and structured nature of the skill. However, even if individual competence turns out to be more complex than the simple triptych "knowledge, know-how, interpersonal skills", the practices of companies remain centered on this triptych, because there still remains the most operational description of competence for managerial purposes, if not always relevant (Grimand, 1996).

In this perspective, the objective of HRM is to obtain the best level among employees of individual competency, that is to say the best level of knowledge, know-how and soft skills, with regard to what is required for each job. The levers of action at this level are mainly recruitment evaluation, remuneration, Workforce strategic planning (GPEC in French: Gestion prévisionnelle des emplois et des compétences) (1.4), training (1.5), management of careers (1.6) and finally inter-job mobility (1.7). This is how the management of individual competences now appear to be widely instrumented (Paraponaris, 2003; Roger, 2004).

2.2.1.1. Recruitment of individual competencies

For the company, recruiting means looking "elsewhere" for new skills. Without entering in a precise analysis of recruitment processes, two main sources information is used to recruit (Beyou, 2003). On the business side, the recruitment is generally the result of a specific need for the skills required, in order to entrust an individual a certain number of activities in a given context: this is the job profile. Most often, this job profile is accompanied by a description of a set of qualities or personal characteristics deemed necessary (soft skills), such as dynamism or autonomy. On the individual side, the information requested covers the diploma, experience and sometimes results obtained previously.

2.2.1.2. Assessment of people's competencies

Because it is necessary for a number of management situations (training, recruitment, remuneration, career management, etc.), the evaluation is particularly important to the business. Assessing an individual's skills is for the company to define the criteria which will serve as a basis for this evaluation, and the conditions for this evaluation and finally, to set up a system for recognizing this evaluation (Beyou, 2003). Simplifying, we find two main categories of criteria for evaluating employees:

- the first is based on performance. This is management by quantified objectives (example: achieve a given turnover);
- the second is based on carrying out activities and skills. This is attribution and then verification of the achievement of qualitative objectives such as types of activities to be carried out, skills to be acquired or developed.

There are relatively many techniques for assessing individual competencies (annual appraisal interviews, skills assessments, Assessment centers, 360 °, etc.). Bernaud (1999) distinguishes four major models' assessment of skills in the workplace:

- the *declarative* model. Competence is declared by the interested party or by a third party without use of direct observation of the conduct;
- the *analogic* model. Competence is observed and assessed in a context and in a task chosen to be analogous to the performance domain considered. If this model constitutes, in theory, an ideal form in the detection of competences, its use is relatively burdensome for businesses;
- the *analytical* model. It is located at a higher explanatory level, by examining the determinants of competence. This model consists of carefully analysing the work, then inferring the individual characteristics sought for a position or a job family.
- the *holistic* model. It refers to generalized competence, since it postulates the existence of transversal know-how in a varied range of work situations. However, this evaluation technique deviates from real professional situations.

2.2.1.3. The remuneration of skills

According to Tremblay and Sire (1999), the will of French companies is geared more towards construction of mechanisms aimed at encouraging the development of skills, which a truly proactive approach to compensation for skills as such. However, when implemented, remuneration for skills is adopted by companies for four major reasons (Saint-Onge, 1998-1999):

- develop and maintain their productivity as efficiently as possible;
- use their staff more flexibly;
- make better use of new technologies and support new values of management (such as quality management or participatory management);

- benefit from a more motivated and more committed staff, improve teamwork and enrich jobs so as to offer more opportunities for rewards to their incumbents.

Regarding competencies compensation practices, they are very different from one company to another. Marbach (1999)defines five models of compensation for skills: remuneration for skills used in a position, in a job at variable geometry, in an individualized professional situation, in a professional career (proven capacity), and finally in a function predicted in the short or long term (capacity potential).

2.2.1.4. The strategic workforce planning (GPEC)

GPEC, which for most companies is an essential HRM policy, corresponds to the design and implementation of preventive actions to anticipate problems of quantitative and qualitative adjustment of jobs and skills, both on an individual and collective level, faced with internal and / or external constraints (Joyeau & Retour, 1999). According to these authors, the implementation of the GPEC corresponds to two objectives:

- adapt human resources in a proactive approach, in other words by according to the evolving needs of the business. The GPEC is therefore an aid tool to the decision;
- make human resources a factor of economic development.

So, doing GPEC means asking the following questions: what are the skills that we will need tomorrow**?** How to respond to the lack of skills**?** The General directorate must therefore invest in this area, since these are its strategic choices which will guide the competence to be developed in the future. Beyond the fact that the different conceptions of the GPEC develop according to the main objectives of the company, Joyeau and Retour (1999) identify two main trends in the GPEC. First of all, it seems that GPEC is an increasingly individualized. Then, companies favour the management of employees through control, detriment of autonomy. Moreover, although the GPEC is potentially a valuable tool for the economic development of a company, this tool does not work well. For Defélix, Dubois and Retour (1997), the GPEC is in crisis. In fact, on the one hand, companies encounter many difficulties related to the instrumentation of the procedures, accentuated by the changes and uncertainties in the environment, and on the other hand, companies seek to transfer the responsibility for forecasting to employees.

2.2.1.5. Training of individuals

Training is the first factor in the development of individual skills. Of a qualitative point of view, the comparison between an individual's current skills and skills attached to the profession exercised or to a probable profession of tomorrow, determine the training to be implemented to prepare for change in the company as at the global level than at the level of each individual. The identification of deviations induces the definition of the educational objectives of the company training plan. From a point of view quantitative, forecasts of the workforce required for a given profession, accompanied by the study of the foreseeable evolution of the organisation's workforce (age pyramid, turnover, etc.), make it possible to forecast the distribution of staff across the various trades and to support everyone's development towards these professions.

2.2.1.6. Career management

The study of a person's competence, combined with the study of their personal aspirations and professional, allows to consider its possible development paths in the medium term. This professional development generally involves a need to acquire skills necessary for the performance of the target profession and not mastered by the individual. The acquisition of these competences can be achieved by training but also by building a career path during which

the individual will be required to learn and implement the acquired skills. A career plan is then defined, at the end of which the person should reach the targeted profession with the maximum chance of success.

2.2.1.7. Inter-jobs mobility

Mobility is an essential element of HR policy in particular because career management can no longer be based on fixed and only vertical paths. Indeed, fostering horizontal inter-jobs mobility makes it possible on the one hand, for the individual, to vary the tasks and on the other hand, to enrich the organisation by a permanent "mixing" of skills.

2.2.2. The management of collective competences

When talking about skills management in the collective level, it turns around the notion of "Collective competency", skills attributed to a work group, to a team. Consequently, they recurrently appear in the context of project teams (Project teams are the most widespread and oldest example of collective skills. Indeed, the project team is first seen as a collective competence, because it involves the coordinated intervention of concerned and concerted individuals on a common project), autonomous or semi-autonomous operations, or informally when groups emerge around a common professional goal. According to Bataille (1999), collective competence is the recognized capacity of a collective of work, to face a situation that could not be assumed by each of its members alone. For Le Boterf (2000), individual competence only becomes interesting if it knows deal with the skills of others. The notion of interdependence then appears as a starting point for the emergence of collective competences. Moreover, a collective of work is defined, in the first place, as a situation in which there is a interdependence among team members. However, considering that this definition is too vague, Everaere (1999) specifies that interdependence must translate into interaction, that is to say “in acts deliberately oriented towards collective action. Individuals interact when they join the collective project, participate effectively and cooperate in a way concrete. Consistently joint and simultaneous work is not necessarily required to interact. Individuals can most often work alone. But since they carry out their actions while being aware of the complementarity of their actions with those of the others, we can say that there is interaction ". Thus, the collective of work is defined not only by a situation of interdependence, but also by a effective interaction between several people.

Whether in business or in the literature, it is often stipulated that the collective competence is “more than the sum of individual competences”. But what does exactly this formula? For Dupuich (2006), collective competences can be defined as "a combination of differentiated knowledge put into a situation to achieve a common goal”. Collective competences are therefore combinatorial nature. But how to make this combination possible? How to spend individual competences to the collective competences of a team?

From the major work on this theme, we have identified five main conditions for the emergence of collective skills at the level of work groups:

- the search for collective intelligence (cleverness);
- the elaboration of shared representations;
- effective interpersonal communication;
- efficient cooperation between team members;
- collectively learn knowledge from experience.

2.2.2.1. The search for collective intelligence

According to Amherdt, Dupuich-Rabasse, Emery, and Giauque (2000), the search for collective intelligence is the determining factor in the emergence and development of collective

competences. Lévy (2013) defines it as "an intelligence distributed everywhere, ceaselessly valued, coordinated in real time, which results in an effective mobilization of competences ". It can also be defined as being the result of optimal mobilisation of individual skills, in order to create concurrent synergies in pursuit of a common goal (Amherdt, Dupuich-Rabasse, Emery and Giauque, 2000). Under these conditions, there is collective intelligence when "we observe collective use, within a company, scattered information held by different individuals at work and that this approach aims to generate a consensus of collective action through processes individual and collective cognitive competences ". Consequently, companies can no longer satisfy the individual actions of actors, but must integrate them into sets harmonious and creative collaborations.

Also, the transition from individual intelligence to collective intelligence is established thanks to access for all actors to the production and dissemination of knowledge. In other words, research of collective intelligence requires the sharing of knowledge. In particular, this collective intelligence can be developed through the use of information&communication technologies (ICT). The latter promote the development of new knowledge, That is to say, they connect, in real time, the knowledge and competences of individuals (Dupuich-Rabasse, 2006). This then results in a greater diffusion of knowledge, a increased participation, or even "a mutual recognition and enrichment of people "(Lévy, 1994, p. 29).

2.2.2.2. The development of shared representations

Collective competences emerge and develop through mental representations shared, common benchmarks, which allow effective regulation of job. More precisely, the individual representations are focused in a frame of reference common, a collective representation, which results from a common and progressive development. Grimand (1996) specifies that "there is nothing spontaneous about this elaboration: it presupposes a space discussion, the confrontation of points of view on the work, on the part of stakeholders with interests and sometimes divergent issues ". The common frame of reference is therefore built as the team experiences, in dealing with problems, in taking action and collective research. In addition, this common frame of reference must know how to evolve, otherwise it risks lose relevance (Allard-Poesi, 1997). Applied to the study of collective skills, the notion of collective representations, considered as a dynamic construct, is often linked to the sharing of representations at within the group. Developed in social interaction, led by actors, shared collective representations are based on common values on which the individual can base his participation, his motivation and find meaning in his own action. In Moreover, Allard-Poesi (1997) specifies that interactions influence the representations that evolve according to the communication and influence processes operating in the groups. Finally, if interactions become the central place for structuring a consensual vision of the reality between the individuals of a group, this common representation also involves effective inter-individual communication that can be understood by all members of the organisation.

2.2.2.3. Effective interpersonal communication

According to Le Boterf (2000), the "know and know-how" skills of individuals do not acquire the status of collective competence only when they are communicated and exchanged. In fact, these are the exchange of information resulting from interactions between members of the work group, who are at the origin of the emergence of collective competence. The latter supposes thus, for to exist, a situation of person-to-person communication. The main means of inter-personal communication, at work within groups of work, unquestionably remains the common language. Within work collectives, language common, more precisely called the

language of work or professional language, occupies an important place in the process of emergence of collective competence. Technical jargon incomprehensible to the non-specialist, the working language is oriented by research economy and efficiency, it aims to automate production and understanding of language in a finalized framework (Grimand, 1996). Indeed, the languages professionals are largely built from known professional codes and recognized by people of the same profession. For example, the languages used by engineers come from specialized training and professional experience. They allow significant time savings, insofar as the explanation of a word thereby becomes unnecessary, since it is commonly known by employees and shared by members of the same work team or the same category professional. This common language manifests itself in the rapid pooling of relevant information, the ability to react to weak signals, the use of a "company dictionary", or even a "common knowledge" as the Anglo-Saxon. Also, the constitution of a common language reinforces confidence and belonging to the group since it is sealed off from outside members.

2.2.2.4. Efficient cooperation between team members

Cooperation between team members is another condition to consider in the emergence of collective competence. Facilitate and maintain relationships of solidarity (good understanding between individuals, mutual trust between each member of the team), ensure the cohesion and synergy of the working groups, jointly resolve problems are crucial in terms of collective competences development. It is through adaptation and coordination processes within the work teams that the effects of synergies can develop collectively. The collective competence implies, in fact, a pooling of individual competences to co-act or co-produce. It is by seeking to pool knowledge and experiences that constitutes a collective competence. Providing the team with individual competences is an essential condition complementarity and versatility. “Knowing how to cooperate” is therefore cooperation and daily mutual aid: team members talk, discuss to find a solution to a problem, etc. In this situation of mutual dependence, it is necessary to know how to listen to the point of seen from the other. Everyone must be able to count on the other members of the team, call on their knowledge or skills, find availability. Thus, cooperation between members of a work team will enable collective problem solving.

2.2.2.5. Knowledge to learn collectively from experience

"Knowing how to learn" is another component in the development of a collective competence. There is only collective competence when the team members shoot the lessons from their own experience or learning and use them within the community. A management error was made, a procedure was incorrectly applied, a misunderstanding was caused with a client, a change in method was positive or negative. All these situations can be instructive. It is, in fact, a collective learning in common experience and through common action. In other words, collective competences are forged in and through constant learning.

Capitalizing on learning is also essential. It takes the form of a collective memory, making it possible to build a base of knowledge, values and common guiding principles. In fact, the existence of a collective memory allows collective competences made up of continuing despite the disappearance of people or teams.

2.2.3. Management of strategic skills

The organisational level of competences management refers to "strategic competences", also called "key competences" or "fundamental competences". These are the competences, understood at the level of the company as a whole, and which allow it to obtain a sustainable competitive advantage, that is to say, able to resist the threats of competitors. The diagnosis of strategic competences is therefore essential to understand why, in the same industry, thanks to

identical competitive conditions, and with comparable strategies, some companies succeed where others fail.

2.2.3.1. Definition and characterization of strategic competences

Hamel and Prahalad (1995), the company is like a tree. The trunk and main branches are the basic products, the small branches are the units and the leaves, flowers and fruits are the products sold to customers. The root that provides nourishment, support and stability is strategic competence. So fundamental competences are the roots of productivity. They are made up of four factors:

- knowledge;
- technical systems (technical know-how);
- management systems (managerial know-how);
- values and standards (corporate culture).

Strategic competencies are defined "as the capacities which underlie pre-eminence in a range of products or services" (Hamel and Prahalad, 1995, p. 209), or as "a set of knowledge and technologies which enable the 'company to offer a particular advantage to customers'. More precisely, in the sense of Hamel and Prahalad (1995), to be qualified as strategic or fundamental, skills must meet three very general characterization criteria: bring real added value to customers. It is the client who decides in the last instance whether the competence is fundamental or not. Of course, he can only build his judgment on the observable consequences on the products, but if this competence significantly increases the value in the eyes of the customer, then this competence can be considered as strategic;

- be different from those of competitors. To be fundamental, the competence must be unique, unmatched on the market. This does not mean that she belongs exclusively to a company, but quite simply that any capacity to little nearly universal within a given sector of activity only deserves this qualifier if the company shows a level of competence clearly superior to that of all its competitors;
- - supply a diversity of offers on different markets. Strategic competences serve as a springboard to new markets where they can be transferred. This is why a fundamental competences is measured by its elasticity, that is to say in depending on the number of possible gateways on the markets of tomorrow. In other terms, strategic competences are transversal in relation to products and company services. They are deployed in several strategic segments at the same time, or in several parts of the company. Some companies succeed better than others and know how to use their strategic competences for a large range of products. For example, the core competence of HONDA is based on perfect mastery of engine technology, whether intended for vehicles of Formula 1 or lawn mowers.

From this characterization, Hamel and Prahalad (1995) differentiate three major domains of fundamental competences:

- the production process (quality, flexibility, cost, speed of execution, meeting deadlines);
- the market access process (brand management, marketing, sales, distribution, logistics);
- the distinctive functional contribution of the product, ie, the capacity of the company to differentiate its product thanks to a particular function.

2.2.3.2. The strategic competences management methodology

According to Hamel and Prahalad (1995), the management team as a whole must fully understand and participate in the next six stages of competences management.

Step 1. ***Identifying existing organisational resources and competences***

Managers inventory the company's resources and competences in a way completely random or for the sake of power.

Step 2. ***Identification of strategic resources and competences***

In an organisation, the number of organisational resources and skills is so high that it is necessary to limit the analysis to resources and skills strategic organisational.

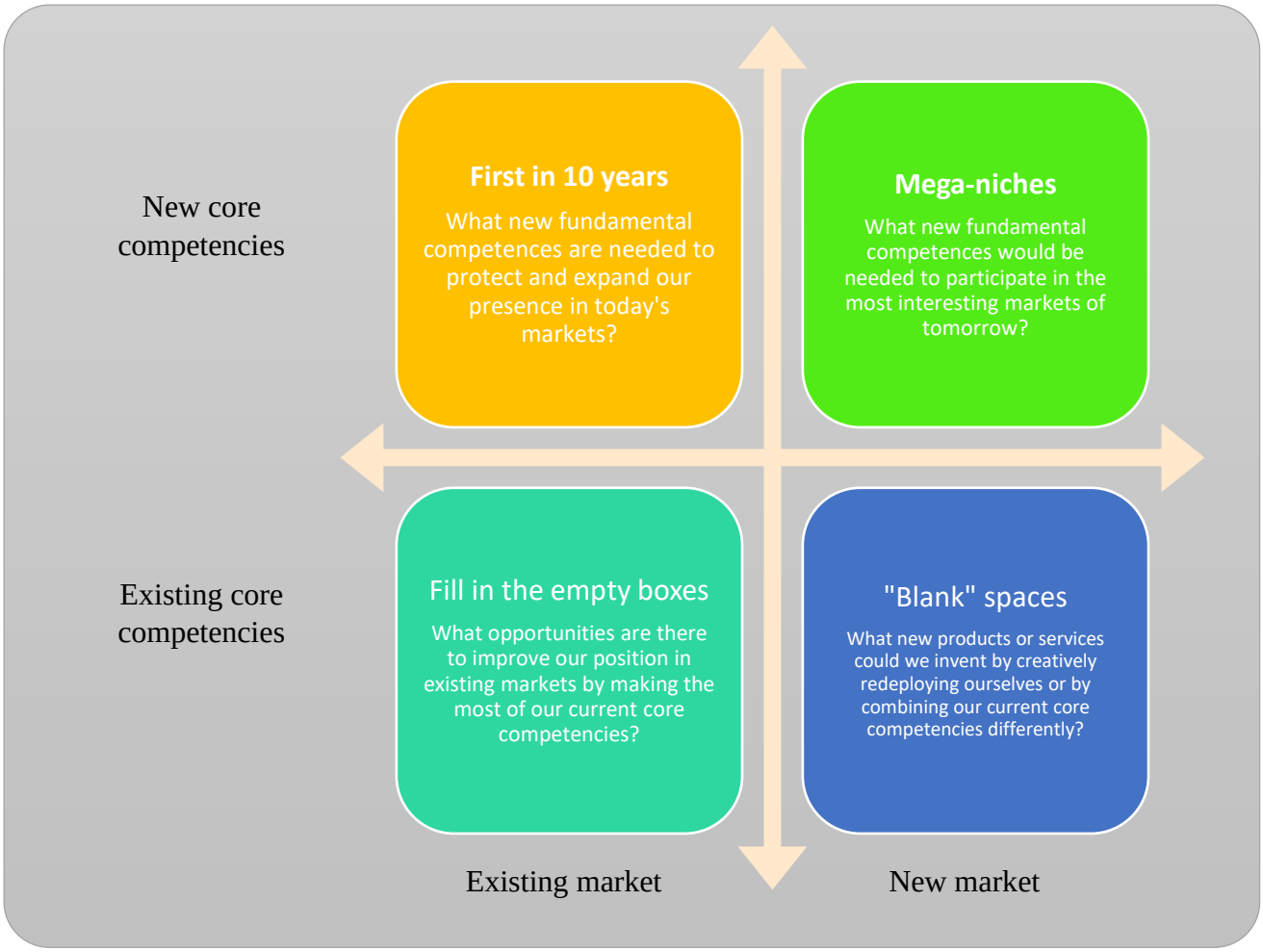
Step 3. ***Deployment of strategic competences***

Strategic competences need to be implemented to become more reliable and maintain. Indeed, if the strategic competence is not maintained, used, implemented, it depreciates over time and will thus cause the company's position against its competitors (customers forget, technologies are imitated, etc.).

Step 4. ***Setting up a new program for strategic competences acquisition***

Hamel and Prahalad (1995) recommend here that companies develop a " strategic architecture", defined as a map of the future that is used to identify strategic competences to be developed and the technologies that fuel them. To establish an acquisition plan of new competences, the company can design a matrix that opposes the type of market in which the company is located (existing or new), the nature of fundamental competences (existing or new) (see figure 5).

Figure 5. Establishment of a strategic competences acquisition program



Source: Hamel et Prahalad (1995, p. 240)

Step 5 - The development of new strategic competences

It takes five to ten years or more to achieve global supremacy in a strategic competence category. It is therefore essential to ensure stability over time between the teams responsible for the development of these competences, and a willingness on the part of the management to carry out this action. The notion of clairvoyance is also decisive. According to Hamel and Prahalad (1995), clairvoyance consists in imagining the potential of the future according to the strategic organisational competences that the company possesses. Here, the authors recommend spotting opportunities that escape the attention of the competition or being able to tap other resources through early and unremitting efforts to develop the necessary skills that competitors would deem out of reach.

Step 6 - Protecting strategic competences against competitors and a dreadful adversary: "the wear and tear of time"

There are many ways to lose the preeminence in terms of strategic competences (insufficient funding, decentralization, etc.). The fight against the erosion of strategic competences therefore requires permanent vigilance on the part of managers. Regular meetings to "take stock of competences" should address issues such as the investments required, plans to strengthen the technologies and knowledge concerned, distribution methods, the evolution of alliances and external procurement.

2.2.4. Management of environmental skills

The environmental level of competences management refers to "environmental skills". According to the terms of Retour (2005), these skills refer to the skills held by entities or actors outside the direct control of the company (suppliers, customers, research laboratories, etc.). Their mobilisation can more or less significantly change the management of skills available internally in the company. Underlying this level of skill analysis, we find the classic question of the company's outsourcing choices, symbolised by the famous question: do or get done? In other words, it is a question of determining which skills will be mobilized internally and which will be implemented outside the company. Albouy and Retour (2002) highlight some consequences that company managers should keep in mind when making their choice in this area.

First, the authors show that one of the most important consequences for employees who stay and who have seen their colleagues leave the company is psychological. In fact, staff now know that the leaders of their company will not hesitate to entrust other companies with activities that do not or no longer fall within their strategic competences. However, in the current context of hyper competition and permanent change in companies, strategic positioning can quickly change. Such an activity carried out internally today may not be so tomorrow. Under these conditions, involvement, that is, the attachment of individuals to their business, is increasingly difficult to achieve in a context of increasing outsourcing. This is why these decisions must be accompanied by communication action with regard to the employees who remain.

Then, another consequence relates to the people within a company in charge of outsourcing actions. They have an essential role of interface with regard to suppliers by having to be able to define the needs of the company, to write precise specifications, to identify potential service providers, to negotiate the price conditions, to quality, lead time, or to follow

the progress of the order. The role of buyers is therefore fundamental. In the majority of cases, they must agree to be in a generalist position vis-à-vis specialized service providers.

Finally, according to Albouy and Retour (2002), the outsourcing of activities presents other dangers. There is a risk of loss of know-how or quality control when a field of action hitherto conducted internally is entrusted to one or more subcontractors. The illustrations are numerous of companies which have entrusted the management of their IT or the maintenance of their equipment to external companies. For example, a large French hotel group decided a few years ago to outsource its cleaning and cleaning activities. The employees of this service provider carried out their work by concentrating only on the cleaning operations themselves, without dwelling on or giving special consideration to the customers they might meet, prioritizing their productivity goals. Over time, comments and reactions from customers indicated that they were more and more unwell by the coldness and distance of the people in charge of cleaning. This situation has led the managers of this hotel group to reinstate all cleaning activities under their direct control by asking the employees concerned to behave attentively to customers, in accordance with the values desired by the company.

Section 3. Higher education competencies

Higher education is playing an important role since the beginning of the 21st century. More than ever, people are convinced today that knowledge and skills obtained at universities are crucial to personal well-being, as well as to the social and economic health of cities, nations and regions. Universities have become institutions of a global world, in addition to assuming their traditional local and national roles. The answers to global challenges (energy, water and food security, urbanization, human wellbeing, climate change, etc.) are increasingly dependent on technological innovation and the sound scientific advice brokered to decision-makers. The findings contributed by research institutes and universities to the reports of the Intergovernmental Panel on Climate Change and the Consensus for Action[i] statement illustrate the decisive role these institutions are playing in world affairs.

3.1. Professional competencies of teachers

The idea of competences was introduced in higher education because of the disconnection between what was taught in classes and what was needed in the labour market. There was a need to teach the ability to apply knowledge in practice rather than to teach just so that students would accumulate knowledge (Everwijn, Bomers, & Knubben, 1993; Malone & Supri, 2012; Mulder, 2012). The revival of Competence-Based Education (CBE) relates to the shift to a knowledge-based society and a constructivist view of learning. The industrial society, which was supply-driven and focused on steering, shifted to a knowledge-based society with a demand-driven attitude in which facilitating the learner….(Koenen, Dochy, & Berghmans, 2015)

Teacher competency is defined as the combination of knowledge, skills, attitudes, values and personal characteristics, empowering the teacher to act professionally and appropriately in a situation, deploying them in a coherent way (Ching-Shan, 2018; Koster & Dengerink, 2008). Teaching staff need competencies to innovate and adapt, enabling them to respond to students' outcomes(Ramesh et al., 2019). The terms 'competence' and 'competency' have been used inconsistently in literature. 'Competence' is a task related capability or outcome and is seen as an array of abilities across domains related to performance in a specific context, whereas

'competency' concerns a particular ability and is an individual oriented state(McMullan et al., 2003). Professional competence is the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individual and community being served (Epstein & Hundert, 2002). Teachers' competencies affect their values, behaviors, communication, aims, practices and support professional development and curricular studies (Selvi 2010; Sarybayeva, Berkinbayev, and Kurbanbekov 2018; Maaranen et al. 2019). They also aid in predicting professional wellbeing and success of the teachers. Liakopoulou (2011) contributed to a systematic and analytical description of the content of the professional knowledge required for the successful performance of a teacher's pedagogical and didactic work. Teaching competence also bears the marks of perception, value and beliefs that the individual carries when they enter teacher training programme (Chong and Cheah 2009; Gabrys-Barker 2010; Bhargava and Pathy 2011; Vijay-kumar 2013; Barnes et al. 2019). It is established that there lies a strong relationship between teacher competence and effective teaching. The most important factors which contribute to the acquisition of teacher competences are individual study followed by the continuing professional development, through training courses, the collaborative learning and the initial teacher education (Marcut and Kifor 2017; Glaesser 2019). Kunter et al. (2013) observed that general academic ability of the teachers did not contribute to their professional competence and to affect student outcomes as much as their pedagogical content knowledge, professional beliefs, work-related motivation, enthusiasm for teaching, and self-regulatory skills on instructional quality. Faculty in higher education. institutions are predominately hired for technical expertise (Adams 2002) and with little teaching experience (Austin 2002). Even exemplary teachers' knowledge of effective teaching strategies is far from being fully developed (Hativa, Barak, and Etty 2001) and the teaching efficiency can always be improved (Bass 1999; Sarybayeva, Berkinbayev, and Kurbanbekov 2018).

3.2. Assessment of teacher competencies

Efficient human resource management needs an accurate assessment of available competences

as well as effective mapping of desired competences for specific jobs and positions.

A detailed quantification scheme together with a mathematical approach would aid in accurate competence analytics (Bohlouli et al., 2017). Caena (2014) outlined the intertwining of teacher competence frameworks with other areas of education policy highlighting the key competences in school education, the quality of initial teacher education, and the continuous professional development of teachers. While the competency frameworks can aid in focusing on the development of expertise in pedagogical practice, they do not consider the factors beyond the classroom or school which affect educational success and this limitation of the competency frameworks must be recognized while using them for teacher assessment (Hayes, Chang, & Jeon, 2017). The duties of teachers in higher education include teaching, research and administrative service. They need to produce products of their research, connect the research results to teaching and offer professional service to society (Chen, 2015). Student evaluations of teaching have endorsed that even effective teachers still have room for improvement. The National Panel Report of the Association of American Colleges and Universities reported effective university faculty are those who employ teaching practices to help all students achieve their goals. The AACU called for an analysis of the teaching needs of faculty in order to provide professional development focused on enhancing teaching and learning. Studies have shown that

the ranking of the in-service needs by the beginning teachers is different from that perceived by teacher educators and state supervisors. There is no significant difference between the in-service needs identified using Borich needs assessment and the quadrant analysis model (Garton & Chung, 1997). Student teacher's perception on teacher and teaching profession can play a significant role in developing competencies to be an adept teacher (Bhargava & Pathy, 2011). Mulder (2012) provided a comprehensive and holistic approach for competence based education and training based on theory building, empirical research and practical experience(Mulder, Eppink, & Akkermans, 2011). The Five-Component Future Competence Model of advocates that learning competence is the core of future oriented competence, and the model can be used for university faculty members and also farming, depending on the business model used by the farmers (Ramesh et al., 2019).

3.3. Required competencies for a teacher-researcher in Algeria's higher education system

The key competencies of a teacher researcher in Algeria's higher education are regulated by the decree n° 932 of july 28th, 2016 setting the modalities of pedagogical accompaniment for the benefit of the newly recruited research teacher. This decree is for objective to create an accolpaniement cell for the newly recruited teachers at the very beginning of teir careers. This accompaniement has known improvement from one year to another starting with some courses to a complete training intended for teachers-researchers in the national level. The university of Constantine has been selected to deliver the training.

A national framework of newly recruited teacher's competencies(MESRS, no year), has been published in order to clarify the aims and purposes of training in terms of the professional competencies expected of a newly recruited teacher-researcher with the aim of making his teaching activity as effective as possible in an appropriate context. It provides the frame of reference for the quality of educational support for teachers. According to this framework, there are 12 key competencies every teacher should have in order to perform his/her duties perfectly. These competencies have been detailed to sub-competencies to make them clearer and more explicit. I have translated the framework and rephrase them in questions, so I propose that each new teacher respond to them with a scale from 1 to 5 after each end of training to see if he got the needed competency.

Table 4. National framework of newly recruited teachers competencies in Algeria

Competencies	Sub_competence
C1. The teacher has mastery of classical and innovative teaching tools (ICT) This skill allows the teacher-researcher to develop his aptitudes in the field of didactics and the learning of his discipline and to put his knowledge into practice.	I Understand and master the didactic teaching mechanisms and learning my discipline and how it is learned by theories and appropriate practices taking into account the contribution of research;
	I Integrate the innovative tools necessary for the exercise of his profession to allow individualisation of learning and developing collaborative learning for students;
	I why and how to use ICT for: 1) - Knowledge exchange, 2) - Self-training; 3) - As a means of developing the motivation and dynamism of teaching at students and 4) as an instrument of reflexivity and professional development for the teacher;
	Identify and respond to the needs of the student.

C2. The teacher ensures a cognitive climate in the teaching process This competency relates to the instrumental skills that must be ensured through the development of cognitive skills in order to make teaching meaningful and relevant to students.	I understand the purpose of university training; I understand the importance of didactics in the transmission of knowledge, teaching and research; I Transmit to students that knowledge is constantly evolving. the only way to have it is to learn how to learn I Know my students' abilities; I support my students and provide them with assistance in responding to the course requirements (specify the objectives of a course or a task for ex) I demonstrate responsibility, honesty, trust and respect; I am enthusiastic and generate enthusiasm when teaching my students; I know the basic concepts of educational psychology and adapt my teaching to diversity of students; I know the regulations of the teacher-researcher profession. I learned about methodological assembly in the conception of the teaching courses through pedagogical committees and training teams; I understand the challenges of pedagogical monitoring (veille pédagogique) in LMD training; I understand the importance of job referential, competencies framework and training programs.
C3. Becoming aware of the pedagogical dialogue (dialogues "in which someone who knows the truth instructs someone who is in error" Skidmore (2006)) This skill allows the student to develop his motivation for learning, to adjust his mental actions and to recognize himself as a thinking being, and above all to reduce the distance between the teacher and the student and between the students themselves.. It also allows the teacher to help the student to become a teacher about himself and to give meaning to his studies, to improve the levels of studies and to fight against failures and dropping out.	I am aware of the relationship of the student's mental actions with pedagogical task (pay attention, note taking, understanding, analysis, synthesis, memorization, reflection); I create teacher-student (Teach-learn) pedagogical interaction and cooperation; I know the difficulties of the students during the pedagogical act and work to overcome them through the practice of pedagogical dialogue; I plan and implement effective and efficient teaching activities (content and methods); I pay attentive to my students needs (formative evaluation of mid-session, discussion outside the group, etc.) I am patient and adapt to the different levels of students; I can discover and frame any risky act, while intervening with respect and developing a culture of non-violence.
C4. Conduct dynamic techniques of developing the student's skills (motivation to self-study) This competency allows the student to integrate the skills, knowledge and abilities necessary for the accomplishment of a learning task.	I understand the challenges of the LMD in academic and professional teaching; I plan and implement student-centered teaching by developing their generic and specific skills potential; I understand the pedagogical need in tutoring didactics; I set up plans and methodological programs for the tutored action;

It is a know-how combined with a variety of resources that the teacher plans and implements for the development of skills in the student through interactive teaching, the problem-solving approach, case analysis, project-based pedagogy, collaborative work. These so-called "active" practices lead the student to search for himself, select resources, interact and understand problem situations close to his daily life and professional life.	I am aware about moving towards the competency-based approach perceived as the construction of curricula centered not on results, but on progression in learning; I am aware about moving from teaching to learning and, consequently, give the student more autonomy in his learning process, participate in the construction of his individual learning path and initiate him into collective and individual work; I make the student an active element capable of acting, groping, making & verifying hypotheses, succeeding in their educational task and progressing.
C5. Using group animation techniques in an educational situation (tutorials, labs, internships)	I use adapted animation techniques according to the specificity of each course I master the practical modalities of cognitive and behavioral coaching in pedagogy I encourage the exchange of points of view between the students
C6. Learning about collaborative work in pedagogical committees and training teams This skill makes it possible to learn to collaborate within a team and to be part of a framework of complementarity and continuity of teaching processes.	I understand the importance of didactic communication and pedagogical techniques; I know how to work in a multi-disciplinary and/or interdisciplinary team to share my pedagogical project / program (ex: pedagogical committee, training team) I understand the usefulness of specifications and pedagogical roadmaps; I can edit pedagogical guides in accordance with the objectives of the course taught; I set up educational, technical, and human resources in line with the pedagogical specifications; I participate actively in meetings organized by the faculty, department, section or group,
C7. Initiation to the practice of tutoring and accompanying students (in internship) Cette compétence permet à l'étudiant de bénéficier tout au long de son parcours d'un dispositif d'accompagnement et de soutien visant à faciliter son orientation, d'assurer la cohérence pédagogique de son parcours et de favoriser son projet de formation. L'utilisation intensive des réseaux sociaux pour accroître les possibilités de dialogue avec l'étudiant est à encourager.	I am trained to the principles, methods and practices of tutoring which correspond to: o Help with the student's personal work (learning work methods, taking notes, oral training, documentary work etc.); o Promote the integration of the student in community life (scientific & cultural clubs, Bringing them closer to their administration,…) o Supporting students in difficulty (especially new and disabled), which requires the deployment of tutors to identify them, discuss with them and help them organize their work; o Support the students developing their skills: self-learninig techniques; behavioral skills, teamwork… I know accompany or guide students in internships. This takes various forms: o Help in finding an internship; o Supporting students in a professional environment which enables them to become aware of the realities of the business and to develop their relational and professional capacities;

	o Support by adapted teaching methods by structuring a reflection around the professions to which the student aspires.
C8. Mastery of oral and written expression in teaching and research settings This skill makes it possible to implement and animate teaching situations through oral and written styles that make it possible to communicate effectively in the language of teaching and research	I master a clear and relevant oral and written language;
	I have the skills to speak and write in a coherent and reasoned manner, to speak and write in an appropriate manner and to have lexical knowledge and conventional expressions associated with various teaching and research situations.
	I can write a scientific paper in line with methodological and ethical recommendations
C9. Develop initiatives and innovation in knowledge and know-how This skill allows the teacher-researcher to confirm his place in the university as an innovator and user of knowledge and lead him to constantly and in-depth revisit his roadmap to provide the return on investment expected from him. , which essentially translates into meeting the needs of its students.	I master the content and objectives of my discipline and develop modern and appropriate teaching approaches to improve teaching by carrying out several actions over time:
	o Establishment of pedagogical and distance learning platforms;
	o Implementation of monitoring tools to concretize in reality the role of the university in society.
	o Reconcile theory and practice with particular emphasis by organizing seminars, case simulations, field surveys, etc.
	I master the bibliographic research techniques;
	I capitalize and enhance the produced knowledge
C10. Identifying the potential of pedagogical action This competency allows university education to respond and adapt effectively and efficiently to the needs that the student may experience in the natural process of his or her development. It allows the university to train employable executives, capable of evolving in external or internal socio-economic contexts.	I understand the link between knowledge perception and knowledge acquisition
	I adapt the teaching to the cognitive possibilities of the student in the LMD.
	I Identify training systems based on a student-centered learning approach
	I understand the importance of quality assurance and I practice it,
	I take an interest in the quality of learning for student success, innovations and uses of technology;
	I understand the cohesion of the training objectives;
	I plan and implement teaching situations favoring the facilitation of professional integration of the student;
	I contribute to animating the University-company interface and contribute to implementing the economic aspect of one of the missions of the university, namely service to the community
C11. To evaluate collectively and individually the progress in the acquisition of knowledge, know-how and soft skills This competency makes it possible to collect information on the evolution of the performance of the teaching process of students and to take a critical look leading to the	I understand the specificity of the academic and the university evaluation;
	I adapt the teaching to the cognitive possibilities of the student;
	I master the evaluation instruments to measure the performance of training by using indicators to assess student progress (rate of transition, promotion rate, repetition rate, survival rate, etc.). The objective is to confer on a quality standard of teaching activities;
	I master the knowledge control methods according to the criteria set in the curricula specifications (Written questions (IE), test on the

development of reflective thinking on the attitudes to be undertaken in order to improve the quality of teaching and achieve the goal set.	practical work, report, presentation, final test (EF), catch-up test (ER), averaging, progression rules, etc.);
	I Instill in the student the principle of formative evaluation and self-evaluation;
	I identify students' difficulties with a view to promoting their success
C12. Use of the evaluation grid in relation to the objectives of the institution's training plan	I master the practice of developing the evaluation grid and understand the guidelines that govern the grid;
	I can define an evaluation grid with descriptors in line with the level of competence targeted during the training;
	I guarantee the effectiveness and efficiency of training, know the mapping of acquired skills and measure the impact levels of pedagogical training on the professional development of the teacher and / or student in relation to goals of the establishment.

CHAPTER THREE :

Organisational Performance

CHAPTER THREE: Organisational Performance

Section 1. Definition

"Performance" was introduced in France in the 19th century; It's an English word, coming from the sporting vocabulary, initially confined to the performance of race horses! In English performance is a noun of the verb perform, an abbreviation of the Anglo-Norman performer, itself from the old French perfourmer. In other words, the term crossed the Channel over a thousand years ago when William the Conqueror moved to England with his vassals. The French language will continue to be used for centuries at the court of England, in particular because successive kings will frequently marry French princesses, the most famous of which is Eleanor of Aquitaine. Thus, parfourme was found in a law enacted in French in the XIVth century by the king of England Edouard III: Et que il plese a nostre seigneur le roy de parfourmer la grace qu'elle y a promys ("may it please our Lord King to fulfill the promised grace "). As for the roots of parfourmer (to pronounce by rolling the "r" and pronouncing the final, which gives something like parrrfourrrmère…), they probably come from the Latin perficere means to do completely, complete, quite close meaning, in current French, to perfect.

So:

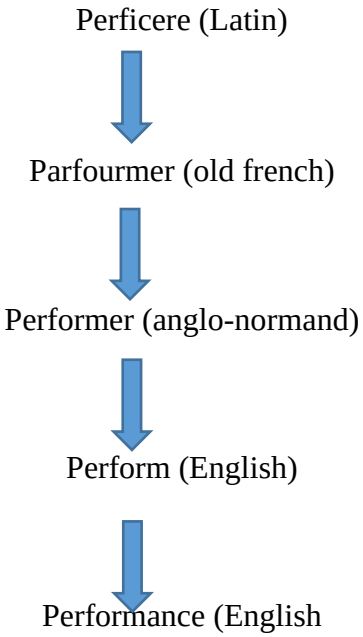
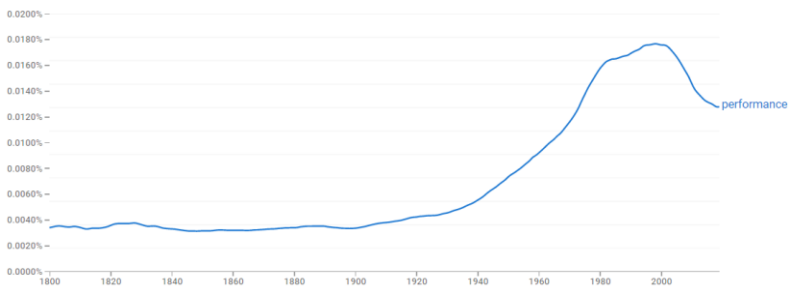


Figure 6 Use over time for the word: performance



Source :(Google books Ngram viewer, 2020)

From theatrical performance to sports performance

Performance is used as early as the 16th century in England in the world of theater. A performance is then a spectacle, a representation, a meaning that still exists in English today. Thus, performance anxiety refers to ... stage fright.

In French, the great Larousse in 1922 defined performance as the "Result obtained in each of its exhibitions by a racehorse, any champion: a magnificent performance." At that time, the term was still reserved for the sports sphere, but gradually the term was applied to the athletes themselves, or to their tool: we speak of the performance of a racing car. The notion of artistic performance, which came from English, gradually spread in the 1960s and 1970s. It stems from the theatrical use of the word: it is an action performed by an artist, often having a unique character, usually in front of spectators.

In French, when performance joined the field of managerial vocabulary, it was quite naturally the sporting aspect that prevailed: according to the CNRTL (national center for textual and lexical resources) the two most relevant synonyms of the word performance are "feat" and "prowess".

Work performance can be defined as performing the job well or job requirements (Campbell, 1990). This is why work performance can be defined as “individual variable which is something single related to the person himself” (Campbell, 1990). Companies always give priority to work performance which is critical target for managers because performance level will directly reflect total outcomes. In accordance, managers need to observe different behaviors of their employees so that monitoring this performance.

Performance, a false friend: let's be vigilant about linguistic nuances! indeed, in English, performance most often retains its "classic" meaning, namely the result of an action, its realization or its description: Sterling performance on the Stock Exchange is expressed by the behavior of the pound sterling on the stock market. .

To some extent, therefore, performance is a bogus friend. It also helps to relativize the invocations so frequent to performance: In sport as in life, a performance, in other words an exploit, a feat, is rare, it must be carefully prepared, and it cannot be a permanent state. ….(Lay, 2017)

Root in the lineage of Taylorism: the search for performance (in terms of productivity, quality, deadlines, and finally costs),

Work performance can be defined as performing the job well or job requirements (Campbell, 1990). Therefore, work performance can be defined as “individual variable which is something single related to the person himself” (Campbell, 1990). Companies always give priority to work performance which is critical target for managers because performance level will directly reflect total outcomes. In accordance, managers need to observe different behaviors of their employees so that monitoring this performance(Abuzbaid, 2017).

Section 2. Organisational Performance

The concept of organisational performance is based upon the idea that an organisation is the voluntary association of productive assets, including human, physical and capital resources, for the purpose of achieving a shared purpose (J. B. Barney, 2001). Those providing the assets will only commit to the organisation as long as they are satisfied with the value they receive in exchange, relative to alternative uses of the assets. The essence of performance is the creation of value, and value creation is the essential overall performance criteria for any organisation. How that value is created is the essence of most empirical research. According to SHRM, people are a key resource and a critical element in an organisation’s performance. The

main rationale for strategic HRM is that by integrating HRM with the organisation's strategy and by applying particular systems of HRM practices, employees will be managed more effectively; individual and organisational performance will improve; and, therefore, success will follow (Saini, 2003)

There are many indicators of organisational performance. Paauwe (J Paauwe & Richardson, 1997) distinguish between two kinds of outcomes of HRM policies: financial outcomes (such as output of the organisation; market share; profit; and, market value) and non-financial outcomes (such as absence; labour turnover; and employee motivation and satisfaction) (Delery & Shaw, 2001; D. E. Guest, 1997).

Financial indicators are mainly "hard" and clear; and perhaps this explains why most of the research on HRM and organisational performance is dominated by the economic/financial perspective (Boselie, Paauwe, & Jansen, 2000). Financial performance measures are often used or mentioned for determining the success of the organisation (B. Becker & Gerhart, 1996; Den Hartog, Boselie, & Paauwe, 2004; P. M. Wright, Gardner, & Moynihan, 2002). However, these "hard" numbers may be affected to a large extent by "soft" aspects (non-financial factors) such as the well-being of employees (Boselie and Paauwe, 2000). Social aspects (also non-financial factors) such as culture, working climate and quality of working life are considered to be of relevance to explaining success of the organisations (Bowen and Ostroff, 2004; Burton, Lauridsen and Obel, 2004).

As noted by P. M. Wright (1998), there seems to be a consensus within the realm of strategic HRM that maximising organisational performance, particularly financial performance, is the major goal to be achieved. This preference for financial measures of performance has been shown by Rogers and Wright (1998), who reviewed the literature and noted that out of 80 dependent variables included in the strategic HRM research, accounting measures such as return on assets, return on equity, profits and sales and market measures (such as stock price and Tobin's Q – market value2), were mostly used in more than half of the reviewed research. In addition, based on the overview by (Boselie et al., 2005), financial measures were represented in half of the 104 articles included in their analysis. Profit was the most common followed by various measures of sales performance.

The dominance of the economic logic in measuring performance is criticised in recent literature (Janssens & Steyaert, 2009). Based on research conducted in HRM journals, it is argued that academics are not considering broader moral, social and political questions of HRM practice and policy and are focusing intently on narrow and managerialistic financial measures (Janssens and Steyaert, 2009). In their debate on the issue, Janssens and Stayaert (2009: 145) suggest taking the employee back into HRM research by "bringing employees back into the equation of HRM and performance" (Paauwe, 2008). Moreover, they propose that opportunities for further theoretical development will exist "if HRM devotes more attention to underlying conflicts at work, focuses more explicitly on the implications of new forms of work for employees without assuming a harmony of interests, and considers the broader political - economic forces influencing the way work is managed" (2009: 147) . Moreover, they encourage scholars to incorporate the employees' perspectives in their research by examining individual variables such as motivation, job satisfaction, and psychological contract.

In line with softer approaches to HRM, the issue of employee well-being has received some attention as an important outcome of HRM policies and practices that can influence employee performance. Research has found positive associations between HRM and employee well-being (Appelbaum, Bailey, Berg, Kalleberg, & Bailey, 2000; D. E. Guest, 1999). Clinton

and Guest (2014) found that there exists a positive relationship between HRM and the well-being of employees. However, the relationship between HRM and employee well-being is not clear. According to Green (2004), some HRM approaches have led to a greater intensification of work, which then furthers the possibility of producing negative outcomes for employee well-being.

The performance outcome of HRM can be captured in a variety of ways according to Dyer and Reeves (1995). They distinguish between financial outcomes (e.g., profits; sales; market share); organisational outcomes (e.g., output measures such as productivity; quality; efficiencies); HR-related outcomes (e.g., attitudinal and behavioral impacts among employees, such as job satisfaction, affective commitment and intention to quit); and, employee outcomes (e.g. performance, absenteeism and turnover). In terms of selecting an effective and appropriate measure of performance, Becker and Gerhart (1996: 791) note that the "appropriate dependent variable will vary with the level of analysis"; for instance, at the business unit-level of analysis, perhaps the productivity of research and development personnel or their turnover rate may be more important for firms pursuing a differentiation strategy whereas the productivity of a firm's production staff may be more critical for firms following cost leadership strategy.

According to Bell (2009) "high commitment and high-performance companies are able to deliver sustained performance because they have developed the following organisational pillars: performance alignment; psychological alignment; and, capacity for learning and change". The fit of all systems, practices, people with organisational strategy, the emotional attachment of employees to achieve mission and values of the company and the desire among employees for continuous learning and change are the basic ingredients for high performance. Certain limitations apply to the implementation of the previously stated high performance three pillar model. Bell (2009) mentioned national culture and differences between countries, the value of individualism or group identity and the extent to which different cultures accept the reinforcing of power as examples of the issues limiting the implementation of the three pillars model.

Further, "the focus should be on variables that have inherent meaning for a particular context" (Becker and Gerhart, 1996: 791). For example, efficiency-based financial measures such as return on assets or return on equity may be more appropriate for firms pursuing cost leadership strategies in most of their business units whereas sales growth or revenue growth may be more appropriate for firms pursuing product differentiation strategies for the majority of their business units. Thus, it may be more appropriate for strategic HRM research to include multiple indicators of firm performance and make differential predictions based on them.

Drawing from existing research, measures of performance can vary and should be selected because of their relevance and appropriateness to the sector or business under study or the strategic stance of the organisation concerned. Wright et al. (2003) provide as measures of performance workers' compensation, the quality of products, shrinkage, productivity, operating expenses and profitability.

Another important aspect in conceptualising performance is the source of data. The investment in the human capital of the organisation suggests that the employees are the intended targets and recipients of such investments. However, what has not been examined in the macro approach to studying HRM practices is the perspective of the employees who are the intended targets and recipients of the HRM practices. The source of input has typically been senior HR managers, who are likely to be responsible for the implementation of these programs. However, by only asking senior management about the programs that they are responsible for, they

usually (and most of the times subconsciously) responded in a sense of what they initially intended to implement. In her study on HRM as a subunit, Tsui (1990) found that, compared to executives and managers, the employees gave the lowest rating to HRM effectiveness.

Huselid and Becker (1996) suggest that there is a difference between an espoused policy and the actual practice that employees experienced, and Becker and Gerhart (1996) argue that there is a difference between what the researches says that firms should do and what firms actually do. Wright and Nishii (2004) also make a distinction between intended, actual and perceived HRM practices. Intended HRM practices are those practices that are developed and intended to be implemented in the organisation. The actual HRM practices are the implemented HRM practices that are actually present in the organisation, and the perceived HRM practices reflect the perceptions of employees of the HRM practices. These perceptions might be leading determinants for employee performance (Guest, 1999; Den Hartog et al, 2004).

Most of the research on employees' attributions and attitudes has focused on the desired behavioral reactions to HRM practices and little attention has been paid to employee attributions with respect to the "why" of specific HRM practices (Lisa H Nishii, Lepak, & Schneider, 2008). According to Fiske and Taylor (1991) people can attach different meanings to social stimuli. The acknowledgment of the role of employee perceptions is essential in translating HRM practices into desired organisational outcomes. Based on this rationale the current thesis utilised the perceived system of HRM practices as its main independent variable.

Relevant research (Nishii, Lepak and Schneider, 2008) has shown that HR attributes may be divided in two categories: a) those that can relate positively to employee attitudes (HRM practices designed with the intention of enhancing service quality and employee well-being); and, b) those that can relate negatively to employee attitudes (designed to reduce costs and exploit employees). The results of the same research support the view that an identical set of HRM practices may not even exhibit similar effects within a single organisation, having in mind that individuals give a different meaning to HRM practices dependent on their immediate context. It is, therefore, important to acknowledge that there is a difference between what is intended to be implemented and what actually takes place. Employee perceptions of practices may be different from what the organisation intends (Whitener, 2001). Employees' perceptions of HRM practices may also be significantly different from those of senior management and the HR professionals in the organisation. Therefore, in order to fully understand the impact HRM practices can have on both employee outcomes and organisational performance, it is important to study the employee, as these workers are the targeted recipients of the HRM practices.

To study the effect of HRM interventions, it is preferable to use outcome variables that are closely linked to these interventions, for example: attitudinal outcomes (e.g. employee satisfaction, motivation, commitment, trust), behavioral outcomes (e.g. employee turnover, absence), productivity (output per unit, effort), and quality of services or products (Jaap Paauwe & Boselie, 2005).

Moreover, Paauwe and Boselie (2005) state that a whole range of international companies more or less use the same HRM principles and practices; however, there is a need to look beyond practices such as staffing, performance appraisal and management of human resource planning. These are kinds of hygiene factors, which, if not delivered cost-effectively will lead to underperformance of the organisation. A real contribution to performance will only happen once HRM is approached from a more holistic and balanced perspective, including the value system of the organisation (organisational climate and culture). By adding the unique aspects of climate and culture, an alignment between individual values, corporate values and

societal values could be realised. Moreover, as Paauwe and Boselie (2005: 80) claimed "this will be a unique blending for each organisation, which is difficult to grasp by outsiders (including competitors) and thus contributes to sustained competitive advantage".

In an attempt to contribute/add to the acceleration of the process of strategic dynamism of European universities, Bonaccorsi and Daraio (2007) debate the demanding challenge of representing the internal differentiation of systems in higher education institutions by using the appropriate quantitative indicators. According to their study, horizontal or vertical differentiation of higher education institutions requires the usage of different metrics of their performance. The framework of measuring performance adopted by Bonaccorsi and Daraiois includes a combination of quantitative indicators and qualitative data, the latter being considered difficult to collect. The framework itself includes measurement of: inputs (human resources, financial resources and the infrastructure), processes (organisation, decision making processes and strategy/ profiling of the institution) and outputs (educational, research and third mission).

Given different conceptualisations of performance, the existence of multiple types of performance indicators, and the fact that it is difficult to choose the appropriate measures to evaluate performance (Venkatraman & Grant, 1986), it is important to clearly differentiate these outcomes and investigate the impact of human capital, employee attitudes and behaviors and HRM for multiple outcomes if we are to fully understand the HRM-firm performance relationship. The strategic HRM literature generally assumes that the effect of HRM practices progresses from more proximal HR-related outcomes to intermediate ones, and finally to distal financial and market outcomes. Therefore, the outcome measures can be ordered from proximal to distal (Dyer & Reeves, 1995) with employees as an anchor. Thus, HR-related outcomes would be the most proximal factors leading to organisational outcomes. Organisational outcomes, in turn, may lead to financial, market or accounting outcomes (Becker and Huselid, 1998).

In the current thesis, the integration of the resource-based view and the behavioral perspective (and social exchange theory) makes it imperative that HR-related outcomes such as employee performance and productivity are examined as the more proximal outcomes to the level of human capital, and perceptions and reactions to the social exchange relationship. According to Paauwe and Boselie (2005) and Wright et al. (2003: 24) "the logical next step is to link these HR-related outcomes to organisational outcomes such as sales and profits or stock price". Therefore, the proposed conceptual model progresses from the HR-related outcomes to the organisational outcomes as the most distal ones (taking into consideration that financial or accounting outcomes are difficult or almost impossible to measure or obtain in institutions of higher education). In addition, as mentioned earlier, the current study utilises a novel approach in terms of the source of inputs (by the employees).

Section 3. Performance management

Let's have a look to the process of performance management that was defined by Latham, Sulsky, and Macdonald (2007) as follows:

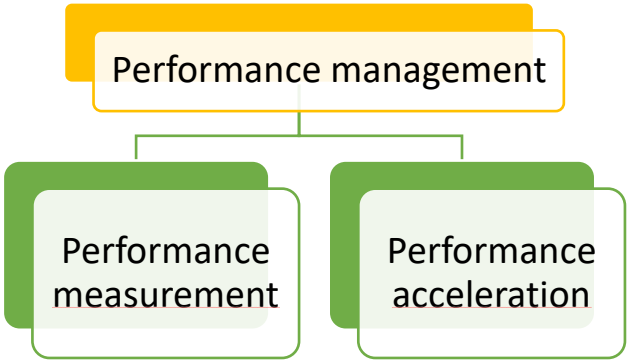
The process of performance management consists of the following four steps:

1. Desired job performance is defined.
2. Specific challenging goals are set as to what the person or team should start doing, stop doing or do differently.

3. The individual's performance on the job is observed.
4. Feedback is provided and a decision is made about, training, transferring, promoting, demoting or terminating the contract of an individual.

Performance management is composed of 2 different systems

Figure 7. Performance management systems



Source: The author

The Work Foundation research into performance management conducted by Kathy Armstrong and Adrian Ward (2005) reached the following conclusion about the impact of performance management: Performance management has the potential to improve the performance of organisations and act as a lever to achieve cultural change. A focus on performance can bring real rewards for organisations. Performance management can be the key space or mechanism for dialogue in an organisation. An organisation's choice of where to focus its attention on relation to performance management may in part determine its future and can certainly guide its culture.

If we can't define performance, we can't measure or manage it. It has been pointed out by Bates and Holton III (1995) that: 'Performance is a multi-dimensional construct, the measurement of which varies depending on a variety of factors. They also state that it is important to determine whether the measurement objective is to assess performance outcomes or behavior. Latham, Sulsky and Macdonald (2007) emphasize that an appropriate definition of performance is a prerequisite for feedback and goal setting processes. They state that a performance theory is needed that stipulates:

- the relevant performance dimensions;
- the performance standards or expectations associated with different performance levels;
- how situational constraints should be weighed (if at all) when evaluating performance;
- the number of performance levels or gradients;
- the extent to which performance should be based on absolute or comparative standards.

3.1. The performance management cycle model

Performance management is a systematic process for improving organisational performance by developing the performance of individuals and teams. It is a means of getting better results by understanding and managing performance within an agreed framework of planned goals, standards and competency requirements. Processes exist for establishing shared

understanding about what is to be achieved, and for managing and developing people in a way that increases the probability that it will be achieved in the short and longer term. It is owned and driven by line management (Armstrong, 2009a). Performance management is much more than appraising individuals. It contributes to the achievement of culture change and it is integrated with other key HR activities, especially human capital management, talent management, learning and development and reward management. Thus, performance management helps to achieve horizontal integration and the "bundling" of HR practices so that they are interrelated and therefore complement and reinforce each other. As an important part of a high-performance work system, it contributes to the development of more effective work systems that largely determine levels of performance.

One of the earliest versions of a performance management model has been published by Peter Drucker. In his 1954 book "*The Practice of Management"*, he proposed the concept: Management by Objectives (MBO). MBO proposes that individual goals should be aligned with organisational goals. It is the responsibility of management to cascade higher level, organisational goals into smaller, individual goals. This way the employee is contributing towards realizing the goals of the overall business. This alignment between individual and team objectives and the organisational goals is not always easy to achieve but a good goal to keep in mind.

Figure 8. Performance management in four stages

Source: (Academy to Innovate HR, 2021)

3.2. Comparison of different approaches

To have an idea about the difference between management by objectives, performance appraisal and performance management, a comparison is set out below.

Figure 9. Comparison of management by objectives, performance appraisal and performance management

Management by objectives	Performance appraisal	Performance management
• Emphasis on individual integrating objectives • Emphasis on quantified requirements and performance measures • Annual appraisal • No ratings • Backward looking • Focus on performance achievements • Top-down system • Monolithic system • Packaged system • Complex paper work • May not be a direct link to pay • Applied to managers • Owned by line managers and personnel department	• Individual objectives may be included • Some qualitative performance objectives may also be included • Annual appraisal • Ratings • Backward looking • Focus on levels of performance and merit • Top-down system • Monolithic system • Usually tailor made • Complex paper work • Often linked to performance pay • Applied to all staff • Owned by HR department	• Focus on organisational, and individual objectives • Covers both outputs (results) and inputs (competencies) • All the year round • May not have ratings • Forward looking • Focus on development as well as performance • Joint process • Flexible process • Tailor made • Paper work minimized • May not be linked to performance pay • Applied to all staff • Owned by line managers

Source : (Armstrong, 2009a)

Section 4. Performance measurement

An output is a result that can be measured quantifiably, while an outcome is a visible effect that is the result of effort but cannot necessarily be measured in quantified terms. There are components in all jobs that are difficult to measure quantifiably as outputs. But all jobs produce outcomes even if they are not quantified. It is therefore often necessary to measure performance by reference to what outcomes have been attained in comparison with what outcomes were expected, and the outcomes may be expressed in qualitative terms as a standard or level of competence to be attained. That is why it is important when agreeing objectives to answer the question: 'How will we know that this objective has been achieved?' The answer needs to be expressed in the form: 'Because such and such will have happened.' The 'such and such' will be defi ned either as outputs in such forms as meeting or exceeding a quantified target, completing a project or task satisfactorily (what is 'satisfactory' having been defi ned), or as outcomes in such forms as reaching an agreed standard of performance or delivering an agreed level of service.

4.1. Classification of output and outcome measures

Output measures or metrics includes:

- financial measures – income, shareholder value, added value, rates of return, costs;
- units produced or processed, throughput; level of take-up of a service;
- sales, new accounts;

• time measures – speed of response or turnaround, achievements compared with timetables, amount of backlog, time to market, delivery times.

Outcome measures includes:

• attainment of a standard (quality, level of service etc);
• changes in behavior;
• completion of work/project;
• acquisition and effective use of additional knowledge and skills;
• reaction – judgement by others (colleagues, internal and external customers).

4.2. The Balanced Scorecard

The balanced scorecard (BSC) is a strategic planning and management system. Organisations use BSCs to:

- Communicate what they are trying to accomplish
- Align the day-to-day work that everyone is doing with strategy
- Prioritize projects, products, and services
- Measure and monitor progress towards strategic targets

The name "balanced scorecard" comes from the idea of looking at strategic measures in addition to traditional financial measures to get a more "balanced" view of performance. The concept of balanced scorecard has evolved beyond the simple use of perspectives and it is now a holistic system for managing strategy. A key benefit of using a disciplined framework is that it gives organisations a way to "connect the dots" between the various components of strategic planning and management, meaning that there will be a visible connection between the projects and programs that people are working on, the measurements being used to track success (KPIs), the strategic objectives the organisation is trying to accomplish, and the mission, vision, and strategy of the organisation.

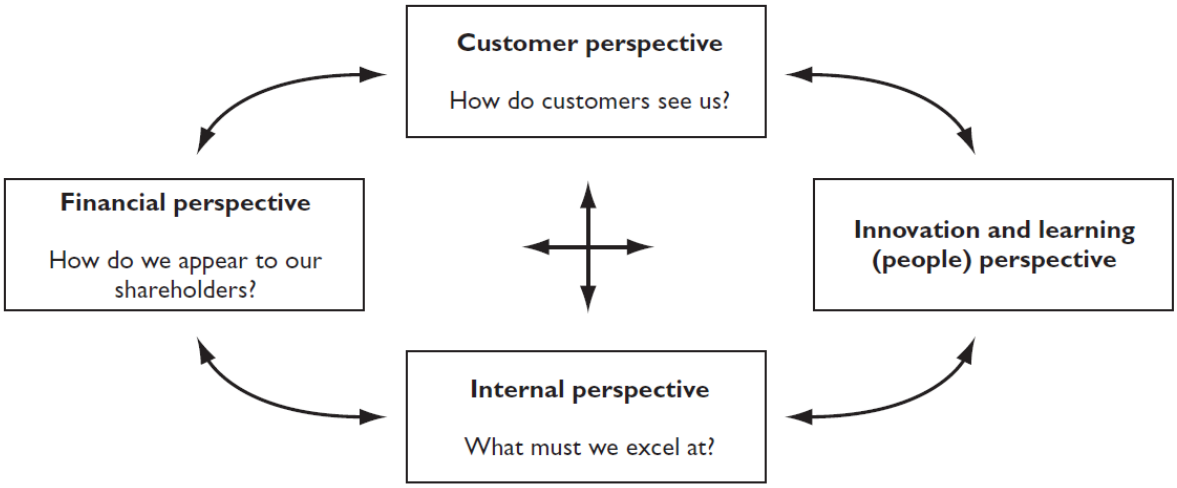
The Balanced Scorecard (BSC) is one of the most essential available tools to perform and enhance performance. It is a strategic plannig tool used to ensure the alignment of the university's activities to the Vision and Mission in addition to the performance monitoring against strategic goals. It also allows for prioritising of initiatives and activities. The data derived from the KPls are fed into the BSC and a variety of reports are generated. Such reports include diamond, time, score, and pie charts. Furthermore, the probability and impact of risk factors at micro and macro level can be generated as well. The essential information required include Baseline Value, Medium Value, Maximum Value, Target Value and Current Value The BSC is used to measure progress and performance of individual entities within the organisation as well as the institution as a whole, evaluate the extent to which the KPls - and subsequently objectives and goals . are met. In addition, it is used to monitor initiatives and the progress of initiative owners and different entities within the organisation (Zoqaqi, 2013).

BSCs are used extensively in industry and business, government, and non-profit organisations in the world. More than 50% of major companies in the USA, Asia and Europe are using the BSC, with use growing in those areas as well as in the Middle East and Africa. A recent global study by Bain & Co listed balanced scorecard fifth on its top ten most widely used management tools around the world. BSC has also been selected by the editors of Harvard Business Review as one of the most influential business ideas of the past 75 years.

Traditionally, scorecards tended to concentrate on financial measures. The aim of the balanced scorecard as originally formulated by Kaplan and Norton (1992, 1996) was to counter

the tendency of companies to concentrate on short-term financial reporting (Kaplan & Norton, 1992, 1996). They emphasized that 'no single measure can provide a clear performance target or focus attention on the critical areas of the business. Managers want a balanced presentation of both financial and operational measures.' Their original concept of the scorecard required managers to answer four basic questions, which means looking at the business from four related perspectives as shown in Figure 10.

Figure 10. The balanced scorecard

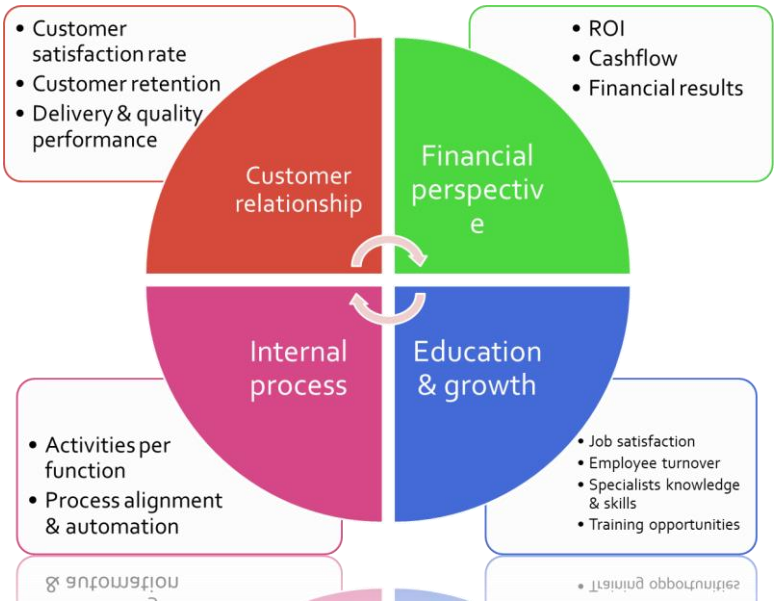


Source: based on Kaplan and Norton (1992)

Some organisations have replaced the innovation and learning perspective with a broader people or human capital element. Kaplan and Norton believe that the balanced scorecard approach 'puts strategy and vision, not control at the centre'. They suggest that while it defines goals, it assumes that people will adopt whatever behaviors and take whatever actions are required to achieve those goals: 'Senior managers may know what the end result should be, but they cannot tell employees exactly how to achieve that result, if only because the conditions in which employees operate are constantly changing.' They claim that the balanced scorecard can help to align employees' individual performance with the overall strategy: 'Scorecard users generally engage in three activities: communicating and educating, setting goals and linking rewards to performance measures.'

The figure below shows the BSC components:

Figure 11. Balanced scorecard components

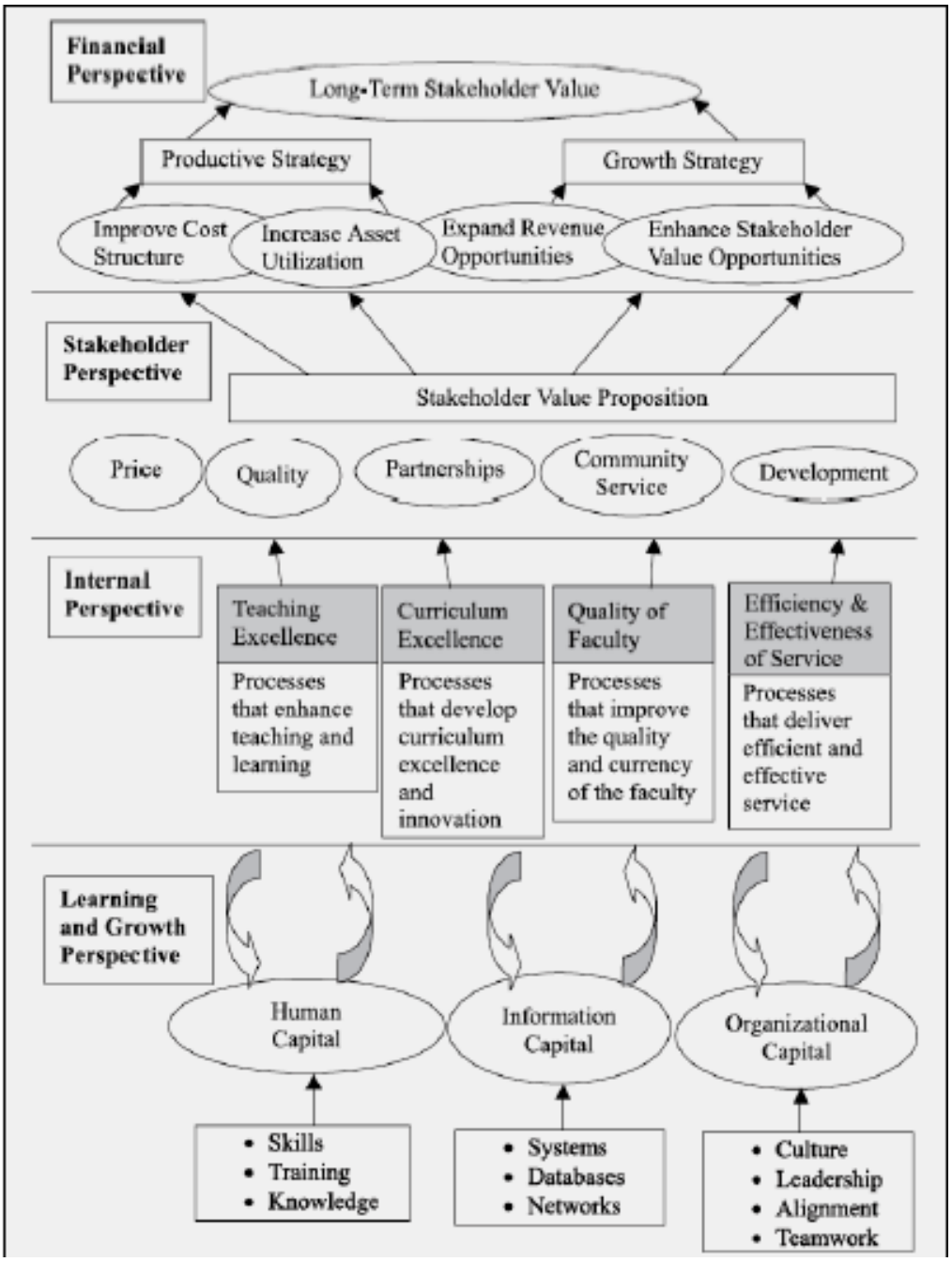


Source: adapted from Kaplan and Norton (1992)

4.3. Key performance Indicators

For each objective on the strategy map, at least one measure or Key Performance Indicator (KPI) will be identified and tracked over time. KPIs indicate progress toward a desirable outcome. Strategic KPIs monitor the implementation and effectiveness of an organisation's strategies, determine the gap between actual and targeted performance and determine organisation effectiveness and operational efficiency.

Figure 12. explaining relations between BSC components



Source: adapted from Kaplan, Kaplan, Norton, and Norton (2004)

4.3.1. Key Performance Indicators: definition (KPIs)

Key performance indicators (KPIs) are the results or outcomes that are identified as being crucial to the achievement of high performance and provide the basis for setting objectives and measuring performance (Armstrong, 2009a). They must take account of the requirements of all stakeholders and should add social responsibility to the list of business objectives by including discretionary environmental initiatives, diversity and employee well-being in the set of KPIs. A KPI is a special kind of metric. It measures something that is strategically important to the organisation such as sales per square metre, added value per employee, rate of stock turnover, cost per unit of output, time to market and levels of employee

engagement. In other words, as Schiff (2008) put it: 'A KPI is a metric that matters. You can have many metrics, but an organisation needs only a handful of KPIs. Everything can't be considered "key," or nothing will stand out from the pack and get the attention it deserves.' The range of KPIs in different organisations is typically between six and 12, with potentially dozens of supporting metrics. However, the number depends on the type of organisation and can be as low as three or as high as 24. KPIs provide the basis for defining the crucial goals for which individuals are accountable. The measurement system has to ensure that performance in relation to the KPIs is recorded and analysed and that this information is passed on to accountable managers for action.

Scorecards

Scorecards record performance related to a set of KPIs. In effect, they are report cards on the organisation's performance. For example, they can show sales per square metre in a store, comparing actuals with targets and analysing trends. As Dagan (2007) emphasizes: 'You should also not get carried away with trying to jam too many KPIs into your scorecard displays. Although the optimal number depends on your organisation, a rule of thumb is that 6 to 10 KPIs are sufficient in most cases.' It should be possible to drill down into supporting tabular and graphical data to investigate any issues raised by the scorecard.

4.3.2. 4 steps formula for creating Key Performance Indicators

Possessing knowledge on how to write KPIs is extremely valuable for any business. There are 4 steps approach proposed to writing KPIs:

Step 1 - *Determine the Key Strategic Objectives*

Before writing KPIs, the organisation first needs to determine which of it's strategic objectives it is trying to gauge. A Strategic Objective is a high-level statement that outlines what exactly an Institution wants to achieve, with a clearly stated deadline.

E.g. Strategic Objective: *Increase the flow of the marketing pipeline.*

Step 2 - *Define Success*

Now that you've identified your strategic objectives, you'll need to begin thinking about what the success of each objective looks like. Sticking with the same example used in Step 1, if my objective is to increase the flow of the marketing pipeline, the success of this objective means increasing the number of contacts that enter the pipeline and increasing the number of contacts that pass through the end of the pipeline and get handed over to Sales. By first defining what success looks like, deciding how you will measure the success of your objective becomes a lot easier.

When defining the success of a KPI, the organisation will usually find there are multiple parts to the definition of its objective's success. In the example used above, we found there were two parts to achieving success of our objective

1. Increasing the number of contacts that enter the pipeline.
2. Increasing the number of contacts that pass through the end of the pipeline and get handed over to Sales.

As mentioned earlier, it might be useful to look through some KPIs examples to help get some inspiration for how an organisation can define the success of the key business objectives. Again, it should avoid copying KPIs straight from a list, as, chances are, they won't perfectly fit it's strategic objectives. Instead, use the KPI examples as a way to ideate how it can measure the success of its own strategic objectives.

Step 3 - *Decide on measurement*

The next step will be the need to decide how success will actually be measured. Going back to the previous example once again, we've identified that the success of our objective means increasing the number of contacts that enter our pipeline and increasing the number of contacts that pass through the end of our pipeline.

Let's start with the first part of this - Increasing the number of contacts that enter our pipeline. Contacts enter our marketing pipeline when they subscribe to our mailing list or exchange their details for content for the first time. When contacts engage in either activity, they automatically get added to our marketing automation platform as a subscriber. Using the number of new subscribers added to our marketing automation platform over a time period is an easy way for us to measure the number of contacts entering our marketing pipeline.

Now let's look at the second part - Increasing the number of contacts that pass through the end of our marketing pipeline. Contacts pass through the end of the marketing pipeline when they're ready to be handed over to our Sales Team. We use the term "SQL" (Sales Qualified Lead) to define a lead that has moved through the end of our marketing pipeline and is ready for our Sales Team to pick up. Our marketing automation platform adds a tag on each contact profile to identify which life-cycle stage they are in based on certain activity. Again, through our marketing automation software, we can use the number of contacts who become a SQL in a given time period to measure our success.

This is where it might be wise to start considering dashboard software to track and display KPIs. An organisation will likely use various platforms and tools across its business to measure their KPIs, but having a central location to track and view all departmental and organisational KPIs will ensure they have a clear view of their success.

Step 4 - *Write the KPIs*

An indicator should follow the SMART format (specific, measurable, attainable, relevant, and time-bound), to ensure that indicators will be clear and measurable, they should be understood by everyone within the organisation. That means no jargon (if possible), and keeping them to one sentence long. We suggest a structure as follows:

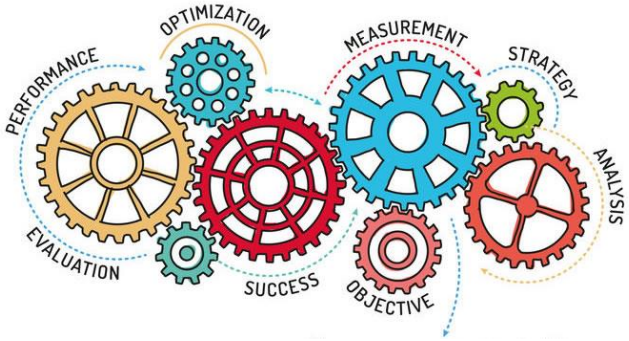
INDICATOR = *Action* + *Detail* + *Value* + *Unit* + *Deadline*

Example: *Increase first year to third-year retention rates to 90% by 30/06/2022*

Starting off with a verb forces to be specific about what we are trying to do. A metric and unit ensure your KPI is measurable and a deadline will do wonders for staying timely on our progress.

Key performance indicators act like a mechanical wheel in a management system where all parts are joint together to achieve the same objective. The following figure illustrate the different system parts of the organisational mechanism:

Figure 13. Organisational mechanical system



Source: (Hoffman, 2019)

4.3.3. KPIs Updating & Modification

The business strategy and information need of organisations are rarely static. They change, yet too often the KPIs do not. Too often companies go through the process of designing their KPIs and then they run with exactly the same KPIs for five or ten years, even though their strategy has changed several times during the same period. Whenever there is a change in strategy, corporate priorities or the questions you need to answer, you need to review and update your KPIs to make sure you only measure what you need to measure, and that the KPIs remain relevant and aligned to the new strategy. (Marr, 2015)

Results of the performance review meetings directly impact the KPls. They are improved and modified to better reflect progress and performance. KPls that are no longer relevant and/or KPls that have been fully achieved and require no further progress can be removed and replaced with KPls that reflect new objectives and initiatives. Values for each KPI are updated every semester/year. The values are updated upon receiving related solid evidence. Subsequently, objectives will be revised to help better achieve the strategic goals of the University(Zoqaqi, 2013).

4.3.4. KPIs in Higher Education

Higher education KPIs are values that are measurable used by educational institutions to measure and track their progress on specific objectives of the business. Furthermore, KPIs help higher education institutions monitor and evaluate how well they're performing and direct their policy formulation and target setting.

This part provides the most common higher education KPIs as set by Ordenes Pat (Ordenes, 2019), and also includes a brief description of why a HEI may want to use each. He suggests that at least 2 KPIs are picked for each of key business objectives. The KPIs are broken up into 4 categories including, financial KPIs, administrative/enrolment KPIs, student outcome KPIs, and research KPIs.

4.3.4.1. Financial KPIs

We've only included 4 in this category, however there are many more.

- **Excess of Fund Revenues Over Fund Expenditure**

The excess of fund revenue after fund expenditure has been deducted allows HEIs institutions to calculate the profit they've generated for the period. This surplus enables higher education institutions to invest in their facilities, infrastructure, and teaching so that they can

provide a better service. This KPI is designed to inform the operating efficiency and cost productivity of the institution's core activities.

KPI Example: Increase excess of fund revenue over fund expenditure to 50 million € by 31/12/2021

- **Scholarship Expenditures as a Percentage of Total Fund Revenues**

This KPI looks at the percentage of funds generated by educational institutions that are being directed towards scholarships grants. Universities and other higher education institutions should try and maintain a percentage of their total fund revenue dedicated to scholarship grants.

KPI Example: *Increase scholarship expenditure from total fund revenue to 5% by 31/12/2021*

- **Endowment Market Value**

Endowments are an integral part of the financial structure of many HEIs. Therefore, tracking the market value of endowments can provide a fairly good gauge of their financial well-being. These assets provide HEIs with the ability to fund their operating costs with sources other than tuition and ensure a measure of stability by using them as a potential rainy-day fund.

KPI Example: *Increase endowment market value by 500,000 € by 31/12/2021*

- **Administrative Spending per Student**

This KPI measures the amount of money universities spend on administrative services on average for each of their enrolled students. Keeping on top of per-student spending is crucial to ensure the balance of spending across essential services is appropriate.

KPI Example*: Decrease average administrative spending per student to 20,000 € per student by 31/12/2021*

4.3.4.2. Admissions/Enrollment KPIs

Students are the lifeblood and purpose of a HEI - it's key to understand how they are passing through the organisation.

- **First Year to Third Year Retention Rate**

This KPI measures and reports on the percentage of first-year students who complete 3 successive years of study with the university (That means a bachelor degree in LMD system). There are many reasons a student might drop out and not make it from the first year to their third. However, a university with low retention rates can signify an institution that doesn't take good care of its first-year students.

KPI Example: *Increase first year to third-year retention rates to 90% by 31/07/2022*

- **Admin Rate**

The admin rate is a KPI which measures and informs management of the percentage of those who applied to the university and who were offered acceptance to study.

KPI Example: *Increase admin rate to 95% by 31/12//2022*

4.3.4.3. Student Outcome KPIs

The educational institution exists to provide the best possible service to it’s students, so it is crucial to measure success in this area.

- **Student to Teacher Ratio**

Measure how many students are admitted per class, per teacher. If you have a low student to teacher ratio, you're creating the best opportunity to give each student the attention they need. This is something that can be your unique selling point when attracting prospective staff and students, as it indicates that plenty of contact time and support will be available.

KPI Example: *Decrease student to teacher ratio to 40:1 by 31/12/2021*

- **Student Attendance Rate**

By measuring how frequently students attend their classes, you'll get an idea of student satisfaction and engagement. A low attendance rate should raise alarm bells, giving you the opportunity to investigate why students aren't turning up.

KPI Example: *Increase student attendance rate to 97% by 31/07/2022*

- **Course Completion/Graduation Rate**

Is the course too difficult? Is the workload unreasonable? Does the institution have the correct materials for students to use? In a similar way, students hitting their highest potential grades will signify a good balance of materials, facilities, courses, and teaching. This helps measure the success of the institution and often goes towards the placing in university rankings.

KPI Example: *Increase graduation rate to 80% by 31/07/2022*

4.3.4.4. Research KPIs

Research KPIs provide universities with information regarding their performance in providing relevant and valued research to the community they serve.

- **Research Income**

Research funds earned by an institution provide an indication of its effectiveness in conducting relevant and valued research, while also informing the community about how the university funds its efforts towards the advancement of knowledge. An institution's share of research income is a proxy measure of research relevance and competitiveness.

KPI Example: *Increase research income to 200 million € by 31/12/2022*

- **Number of Publications Per Academic Staff**

The numbers of refereed publications in reputable journals is a KPI which measures the research output of a university.

KPI Example: *Increase publications per academic staff to 5% by 31/07/2022*

Section 5. Performane of the universities through World ranking systems

In recent years university rankings have become increasingly important worldwide; the number of global rankings has grown and it is predicted that it will keep growing4. Rankings went global in 2003 when Shanghai Jiao Tong University published the results of the first global university ranking. The importance of rankings seems to have grown exponentially.

A ranking is a relationship between a set of items such that, for any two items, the first is either 'ranked higher than', 'ranked lower than' or 'ranked equal to' the second. In mathematics, this is known as a weak order or total preorder of objects. It is not necessarily a total order of objects because two different objects can have the same ranking. The rankings themselves are totally ordered. For example, materials are totally preordered by hardness, while degrees of hardness are totally ordered (Wikipedia, 2019b).

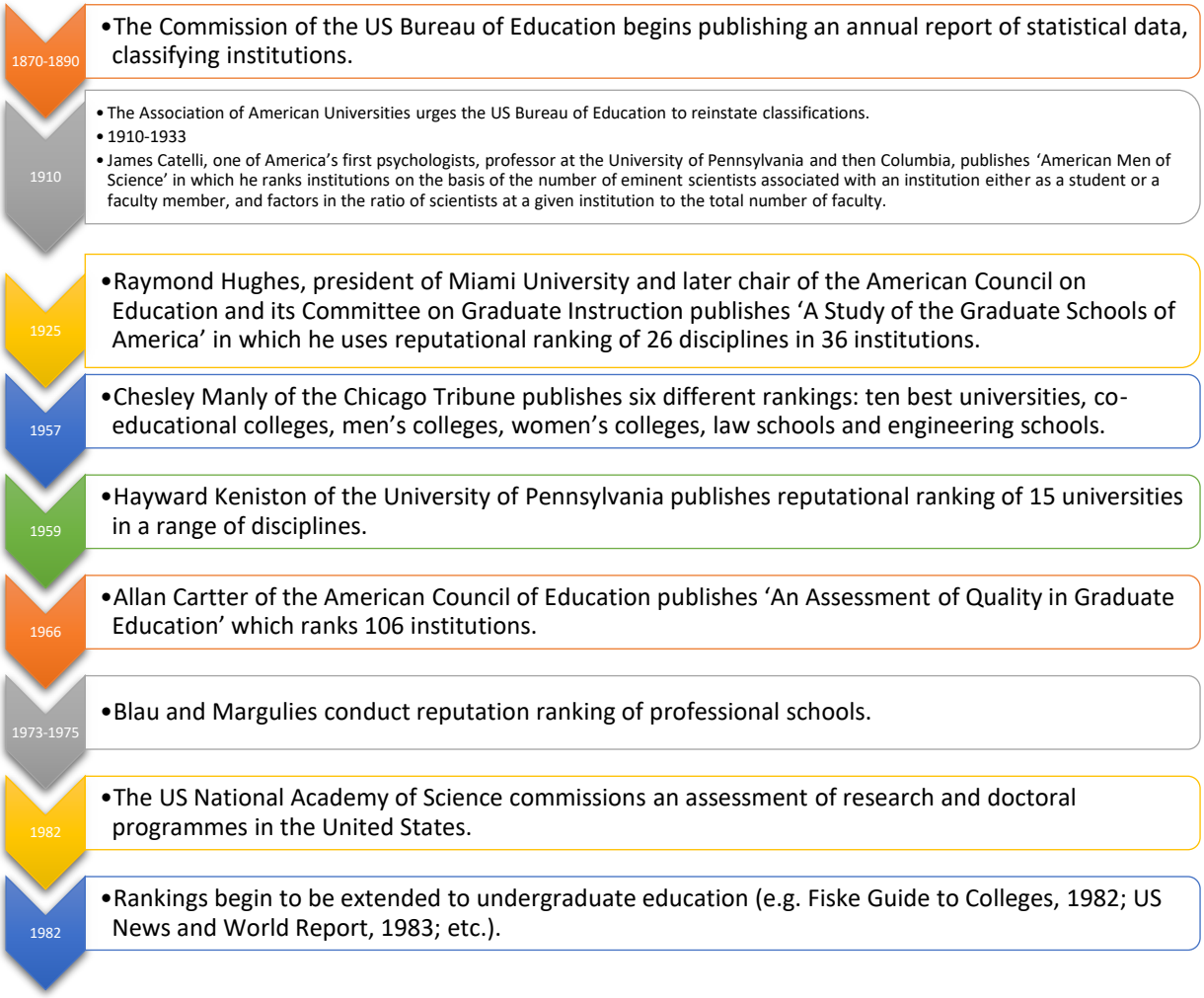
Rating 1. A position on a scale 2. An evaluation of status, especially of financial status 3. A number, letter, or other mark that refers to the ability of something. For instance, a sports rating system is a system that analyses the results of sports competitions to provide objective ratings for each team or player. Rankings are then derived by sorting each team's ratings and assigning an ordinal rank to each team starting with the highest rated team earning the #1 rank.

The lack of internationally comparable data is a challenge. That's why it was mandatory to build a comprehensive system and universal parameters to make possible the classification of the HEIs all over the world.

5.1. summary of the ranking's history

The first nationwide university ranking was published in 1983 in the United States by US News and World Report. However, classifications and specialised university rankings with a narrower focus had already been compiled in the US since 1870, see figure 14 (Salmi & Saroyan, 2007). The era of global rankings started with the publication of the first results of the Shanghai Jiao Tong University ranking called 'Academic Ranking of World Universities' (hereafter referred to as ARWU) in 2003. Publication of the results of the first round of ARWU in 2003 "stirred the fire" (Van Raan, 2005). The results shocked the world and particularly Europe, as, in the ARWU ranking, US and UK universities strongly dominated the Top 20 and Top 100 lists. The creation of the Times Higher Education Supplement World University Ranking in 2004 (later Times Higher Education Ranking, hereafter referred to as THE) was, in a way, a European answer to ARWU. Since then, more global university rankings have emerged (Rauhvargers, 2011).

Figure 14. Chronology of ranking activities in the United States, 1870-1982



Source: The author, adapted from Salmi and Saroyan (2007)

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It is important to know that the league tables include roughly 1% to 3% of universities (200-500 universities) out of approximately 17,000 universities in the world. Secondly, it is important to note that the rankings producing global league tables use methodologies that simply cannot produce stable results for more than 700-1200 universities in global league tables and just around 300 universities in subject area rankings).

5.2. Berlin Principles on the Ranking of HEIs

To improve the situation, it became clear that some common principles were needed that those who produce rankings could follow. A set of guidelines was drawn up by the International Ranking Expert Group (IREG) [1] in 2006. They are called the 'Berlin Principles on Ranking of Higher Education Institutions' (IREG, 2006), hereafter referred to as the 'Berlin Principles'. The main Berlin Principles are as follows:

• With regard to purposes and goals, rankings should: be clear about their purpose and their target groups, recognise the diversity of institutions and take the different missions and goals of institutions into account, provide clarity about their information sources. They should specify the linguistic, cultural, economic, and historical contexts of the educational systems being ranked. • With regard to design and weighting of indicators, rankings should: be transparent regarding the methodology; choose indicators according to their relevance and validity; measure outcomes in preference to inputs whenever possible; and make the weights assigned to different indicators (if used) prominent and limit changes to them.

• With regard to collection and processing of data, rankings should: pay due attention to ethical standards and good practice recommendations; use audited and verifiable data whenever possible; include data that are collected with proper procedures for scientific data collection; and apply measures of quality assurance to ranking processes themselves.

• Regarding presentation of ranking results, rankings should: provide consumers with a clear understanding of all of the factors used to develop a ranking and offer them a choice in how rankings are displayed; be compiled in a way that eliminates or reduces errors in original data; and be organised and published in a way that errors and faults can be corrected. There is no doubt that the Berlin Principles are a good guide, and ranking providers often claim that they comply with them. Reality, however, looks somewhat different. For instance, a group of researchers at Minnesota University quantified the Berlin Principles and rank the rankers themselves according to their congruence with the best practices described in the Berlin Principles (Stoltz et al., 2010). Using scores from 1 (no congruence), 2 (poor congruence), 3 (fair congruence), 4 (good congruence) to 5 (excellent congruence), the Minnesota University group of researchers ranked 25 European university rankings. 13 out of 25 rankings in this exercise failed to meet at least score 3 (fair congruence), among them the Times Higher Education (THE-QS) global ranking, which scored only 2.25. The researchers also found that the rankings basically fell short in their methodologies, showing closer congruence with the Berlin Principles in relation to transparency and customer friendliness. But do league tables provide the information students want? It is one of the principles of 'good ranking' as embodied in the Berlin Principles that rankings should be geared towards their target group, and it can be safely said that, at least until recently, this aspect was given too little attention. It was simply assumed that whatever indicators were available must be relevant, and that this would apply to all groups of readers of rankings (King, Locke et al. 2008). In autumn 2010, the IREG announced that it would start a rankings audit exercise. The audit is to be carried out using 20 criteria based on the Berlin Principles. Responsibility for the ranking audit lies with the Executive Committee of the IREG Observatory, which will also nominate the members of each audit team. The IREG Executive Committee has a mixed composition of ranking providers and experts who have followed developments in rankings. The IREG ranking audit procedure is modelled on higher education quality assurance procedures: a self-evaluation report is

[1] IREG was established in 2004 by UNESCO CEPES and Institute for Higher Education Policy in Washington.

produced on the audited ranking based on a questionnaire, and the audit team then performs an on-site visit. After the visit, the audit team compiles an audit report to be approved by the IREG Observatory Executive Committee. Positively audited rankings will be awarded an "IREG approved" label. It is not easy to meet the requirements of the Berlin Principles. And since it has been demonstrated that existing rankings more often than not fail to comply with some of them, the involvement of independent experts in the audit procedure would greatly enhance its credibility

Trends in recent years demonstrate that the number of global university rankings is likely to keep growing, although they will become more specialised. Policy makers and society at large often see global university rankings as tools for university "transparency", although it might be difficult to argue the reverse – i.e. that, were there no rankings, universities would be "non-transparent".

The landscape of existing global university rankings is diverse covering:

- University rankings whose main purpose is to produce league tables of top universities only – the Shanghai Academic Ranking of World Universities (ARWU) ranking, mainly based on research indicators; the Times Higher Education (THE) ranking initially in cooperation with Quacquarelli Symonds (THE-QS), since 2010 THE in cooperation with Thomson Reuters (THE-TR); and using a different set of indicators; the Russian Reitor ranking, and others.
- University rankings concerning research performance only – with or without league tables − the Leiden Ranking with no composite score, the Taiwan Higher Education Accreditation Evaluation Council university ranking (HEEACT) with a league table based on a composite score, and the EU Assessment of University- Based Research (AUBR) which is a research assessment methodology targeted at transparency for various purposes, rather than a ranking.
- University rankings and classifications using a number of indicators with no intention of producing composite scores or league tables – the original German Centre of Higher Education Development (CHE) university ranking was designed to help potential students choose a university according to their requirements, the EU U-Map classification to allow them to find and compare universities with similar profiles, and the EU U-Multirank ranking to compare the performance of universities in various aspects of their activities.
- OECD is in the initial phases of its Assessment of Higher Education Learning Outcomes (AHELO), which is intended to benchmark universities according to the actual learning outcomes demonstrated by students.
- Rankings of universities only according to their visibility on the web – Webometrics

5.3. How can rankings be improved?

Ranking providers are trying to improve the methodology they use. However, the improvements are often technical rather than conceptual. For instance, it is important to use field normalised data, and, in this sense, the new mean normalised MNCS2 indicator does indeed improve the mathematics compared to the previous 'crown indicator' CPP/FCSm[1]. However, this is of no help to humanities, which remain ignored by nearly all the bibliometric indicators used in global league tables. Improving the calculation methods is not enough; rankings should make efforts to cover all research areas on an equal basis.

[1] See description of Leiden Ranking.

Several university rankings claim that they help students to make their choices. Rankings do have the potential to help students choose the appropriate university in their home country or abroad. However, few of the existing league tables are currently able to do so. One of the few examples is the CHE Ranking. Generally speaking, to serve potential students, most of the rankings first need to choose appropriate indicators and provide substantially more explanations on what the scores of the indicators actually mean.

Now that rankings attract a great deal of attention from the general public, politicians included, there is a demand for more 'democratic' rankings. So far, the global league tables indicate a few hundred universities which are the 'best' in the world. In so doing, they have created problems for the thousands of 'normal' universities which simply do their job, such as training specialists for the labour market and conducting fundamental or applied research. The current rankings disease seems to have created a need to be ranked, because 'if you are not in the tables – you don't exist'. It should be possible to change the rankings substantially to allow more HEIs to be 'in'. This is especially important for those institutions that have been created with a special function, for instance to serve the region in which they are located or to provide higher education to adult students or those working alongside their studies. Including more universities could be seen as a way of recognising the important contribution of those well-functioning institutions that suffer from the 'unwanted consequences' of rankings.

Nationally, rankings foster the acquisition and publication of reliable data on higher education. In an international context, rankings encourage the adoption of agreed definitions for those aspects on which data is collected. The results of global rankings can lead to both national debates and a focused analysis of the crucial factors involved which, in turn, can bring about (hopefully) positive policy adjustment.

Most global league tables also publish lists concerning the 'performance' of countries. These comparisons are made by counting each country's universities in the list of top universities, usually assigning a different number of points depending on whether the university appears in the Top 100, Top 100-200 or following top hundreds. The leading countries in the published lists then are the USA, the UK, Germany and France. However, if the published lists are 'normalised' by dividing the number of top universities by the number of inhabitants, new leaders appear, such as Switzerland, Sweden, Finland and Denmark (Salmi, 2010)

5.4. HEIs Rankings

5.4.1. Introduction:

According to the dictionary, a **ranking** represents a relationship between a set of items such that, for any two items, the first is either "ranked higher than", "ranked lower than" or "ranked equal to" the second. In mathematics, this is known as a weak order or total preorder of objects. It is not necessarily a total order of objects because two different objects can have the same ranking. (Pavel, 2015)

We begin to review the relevant literature by asking how the ranking of higher education institutions is defined. There is limited paper on how we can define ranking of higher education institutions conceptually. However, few recent literatures can help us to understand what it is. Shin (2011) views university rankings as a measure of organizational effectiveness. We can identify three mechanisms for quality measurements of higher education institutions: ranking, quality assurance and accountability (Shin, 2011, p. 25). Although these three mechanisms have been much in common because they provide information to the public and enhance institutional

quality, they differ in their goals, methods of evaluation, publishing of results, and the policy links (Shin, 2011, p. 25). On the other hand, Usher and Savino (2006; 2007) and Usher and Medow defined that "university rankings are lists of certain groupings of institutions (usually, but not always, within a single national jurisdiction), comparatively ranked according to a common set of indicators in descending order" (Usher & Medow, 2009, p. 4). They added that rankings also serve for public as information of their expenditure on education and help parents and students to make decision which college to go. Taken together and drawing from both definitions, we can understand that university ranking is information with scales of items ordered in rank based on individual institutional quality and serves for laymen and professionals as information. The rankings have also considered as a comparison of higher education institutions, especially research-oriented universities. Rankings compare countries, individual universities, and fields of study, such as management and business administration (Altbach, 2007). Comparisons among institutions might stimulate those who not fair so well to become better and thus the whole system might improve – if the indicators set the right incentives (Federkeil, 2008). Worldwide rankings norm higher education as a single global market of essentially similar institutions able to be arranged in a league table for comparative purposes (Marginson & Van der Wende, 2007). It has been also defined as quality assurance measurements by being an external assessment for higher education institutions. Federkeil (2008) defined rankings and league tables to be external assessment of higher education quality by nurturing transparency of the higher education system.

A table of new ranking websites for the last 20 years are cited in table 1 below:

Table 5. Major global rankings in order of year

Year	Ranking
2003	• Academic Ranking of World Universities (ARWU) (Shanghai Jiao Tong University), China
2004	• Webometrics (Spanish National Research Council), Spain
2007	• National Taiwan University Rankings (formerly Performance Ranking of Scientific Papers for Research Universities, HEEACT), Taiwan
2008	• Leiden Ranking (Centre for Science & Technology Studies, University of Leiden), Netherlands
2009	• SCImago Journal and Country Rank (SJR), Spain
2009	• University Ranking by Academic Performance (URAP) (Informatics Institute of Middle East Technical University), Turkey
2010	• QS World University Rankings (Quacquarelli Symonds), UK
2010	• THE World University Ranking (Times Higher Education), UK
2014	• U-Multirank (European Commission), Belgium

Source: Ellen Hazelkorn (2014) Rankings In Institutional Strategies And Processes: Impact Or Illusion?

5.4.2. Times Higher Education ranking (THE)

5.4.2.1. Definition:

The Times Higher Education World University Rankings was first published in 2004. In a way, it was an 'answer' to the Shanghai ARWU ranking that was first published in 2003.

The then Times Higher Education Supplement, which later became the independent Times Higher Education Ranking, used Quacquarelli-Symonds (QS) as its data collection and processing engine between 2004 and 2009. In 2009 the Times Higher Education (THE) announced that it was ceasing cooperation with QS and that a new cooperation was being established with Thomson Reuters (Baty, 2009). THE has since announced its new methodology for the 2010 World Universities Ranking. In the meantime, QS has started a new partnership with US News and World Report to set up yet another global ranking. The THE methodology for the period 2004-2009 and the methodology proposed for the 2010 ranking will therefore be described separately.

The approach used by the THE World University Ranking strongly differs from that of ARWU. While ARWU concentrates on research outputs, in the THE Ranking, a substantial share of the final score (initially 50%, later 40%) comes from a 'peer review' of universities, which is actually an internet reputation survey of academics. A further 10% of the final score is the result of a survey among employers.

THE is the data provider underpinning university excellence in every continent across the world. As the company behind the world's most influential university ranking, and with almost five decades of experience as a source of analysis and insight on higher education, it has unparalleled expertise on the trends underpinning university performance globally. Data and benchmarking tools are used by many of the world's most prestigious universities to help them achieve their strategic goals (Times Higher Education, 2020).

THE is one of the leading providers of higher education data for the world's research-led institutions. Its work with individual clients builds on the foundations of their World University Rankings, which have been adopted as a geo-political indicator as well as an aid to strategic management of institutions and a crucial factor in the study choices made by millions of students around the world.

Datapoints suite of tools is designed to provide detailed performance information across all of the core areas of university activity, as well as allowing comparison and benchmarking against other institutions – whether competitors or collaborators - across regions, subjects and other key criteria.

The insights derived allow leadership teams to set intelligent strategic goals and enhance their education and research environment. THE data enables comparison across more than 1,300 universities and has over 100 institutional subscribers already working with them.

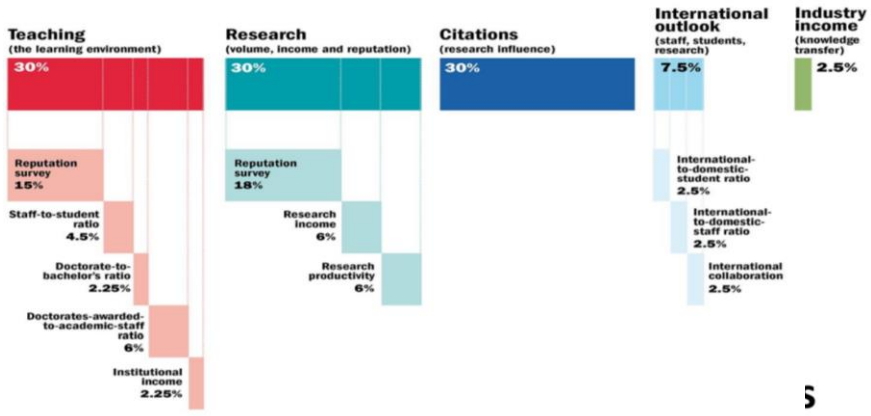
Even if an institution is not in the rankings their data suite will provide it with insight on how it can think about the institution's relative performance on a global basis.

For the WUR, THE's in-house data team now ranks 2,150 institutions worldwide, with one million data points analysed across 2,600 institutions in 93 countries. In 2016, the global media reach of the rankings was almost 700 million.

5.4.2.2. Methodology used by the Times Higher Education World University Rankings 2021

There are 13 separate performance indicators grouped into five areas: Teaching (the learning environment); Research (volume, income and reputation); Citations (research influence); International outlook (staff, students and research); and Industry income (knowledge transfer). THE bibliometric data is supplied by Elseiver.

Figure 15. THE comprehensive methodology



Source:(Times Higher Education, 2021b)

Teaching (the learning environment): 30%

Reputation survey: 15%
Staff-to-student ratio: 4.5%
Doctorate-to-bachelor's ratio: 2.25%
Doctorates-awarded-to-academic-staff ratio: 6%
Institutional income: 2.25%
This indicator is feeded by a survey of academic reputation to examine the perceived prestige of institutions in teaching and research.

Research (volume, income and reputation): 30%

Reputation survey: 18%
Research income: 6%
Research productivity: 6%
This indicator looks at a university's reputation for research excellence among its peers, based on the THE Academic Reputation Survey responses.

Citations (research influence): 30%

Research influence indicator captures the average number of times a university's published work is cited by scholars globally.

International outlook (staff, students, research): 7.5%:

Proportion of international students: 2.5%
Proportion of international staff: 2.5%
International collaboration: 2.5%
This indicator concerns the ability of a university to attract undergraduates, postgraduates and faculty from all over the planet is key to its success on the world stage.

Industry income (knowledge transfer): 2.5%

Defined by the ability of a university to help industry with innovations, inventions and consultancy has become a core mission of the contemporary global academy.

On October 30th, 2009, Times Higher Education announced that it had signed an agreement with Thomson Reuters to provide the data for its annual World University Rankings (Baty, 2009). This was followed by substantial changes in the set of indicators used and the overall methodology for the 2010 rankings. In June 2010, the new methodology with a new set of

indicators, which intended "to make the rankings more rigorous, balanced, sophisticated and transparent", was unveiled (Baty, 2010). The description of the methodology was first published in June 2010. It roughly described the categories and indicators, but with few details. Further changes in the methodology followed. When the THE-Thomson Reuters Ranking and its methodology were published on 16 September 2010, the indicator categories, weights and some indicators themselves had substantially changed compared to what had been previously announced. On 5 August 2010 (see Baty, 2010d), THE also announced that the new format of the THE Ranking would exclude several categories of universities: those that had not provided data, graduate schools, and those universities that had published fewer than 50 papers in 2008. The THE-Thomson Reuters Ranking used 13 separate indicators to compile the league tables for 2010. The description of the methodology used is less elaborate compared to that of the THE-QS rankings and, indeed, does not allow one to follow the calculation of the final scores from the raw data.

5.4.2.3. Young University Rankings 2019

The Times Higher Education Young University Rankings list the world's best universities that are 50 years old or younger. The 2019 ranking includes 351 universities, up from 250 in 2018.

The methodology used to rank in 2019 was the same as the World University Rankings to assess research-intensive universities across all their core missions: teaching, research, knowledge transfer and international outlook. However, the weightings are recalibrated to reflect the profile of missions of young universities. It uses 13 carefully calibrated performance indicators to provide the most comprehensive and balanced comparisons, trusted by students, academics, university leaders, industry and governments. The "Golden Age" rankings use the same weightings as the World University Rankings.

The performance indicators are grouped into five areas: teaching (the learning environment); research (volume, income and reputation); citations (research influence); international outlook (staff, students and research); and industry income (knowledge transfer).

Data collection

Institutions provide and sign off their institutional data for use in the rankings. On the rare occasions when a particular data point is not provided, we enter a conservative estimate for the affected metric, to avoid penalising an institution too harshly with a "zero" value for data that it overlooks or does not provide, but we do not reward it for withholding them.

Getting to the final result

Moving from a series of specific data points to indicators, and finally to a total score for an institution, requires us to match values that represent fundamentally different data. THE uses a standardisation approach for each indicator, and then combine the indicators in the proportions indicated to the right.

The standardisation approach we use is based on the distribution of data within a particular indicator, where we calculate a cumulative probability function, and evaluate where a particular institution's indicator sits within that function.

For all indicators except for the Academic Reputation Survey, THE calculate the cumulative distribution function of a normal distribution using Z-scoring. For the data in the Academic Reputation Survey we use the cumulative distribution function of an exponential distribution in the calculations.

The table is based on the same 13 performance indicators as the flagship THE World University Rankings, but the weightings have been adjusted to give less weight to reputation.

Below, the latest ranking for Algerian universities considered as 'young'. The surprise this year is the university of Setif 1 who is in 140's place far from its successor with more than 260 position (copared with other young universities).

Figure 16. Algerian universities ranked as 'young' in 2022

Rank	Name Country/Region	No. of FTE Students	No. of students per staff	International Students	Female:Male Ratio
=140	Ferhat Abbas Sétif University 1 Algeria	34,622	22.5	1%	63 : 37
401+	University of Abou Bekr Belkaïd Tlemcen Algeria	42,261	21.2	1%	67 : 33
401+	Badji Mokhtar University – Annaba Algeria	46,884	16.1	1%	51 : 49
401+	University of Béjaïa Algeria	41,728	24.3	1%	61 : 39
401+	University of Biskra Algeria	33,639	23.8	1%	64 : 36
401+	Blida 1 University Algeria	32,458	22.4	1%	62 : 38
401+	M'Hamed Bougara University of Boumerdès Algeria	32,159	21.8	1%	60 : 40

401+	University of Mohamed Boudiaf at M'Sila Algeria	35,290	23.9	0%	58 : 42
401+	University of Science and Technology of Oran Mohamed-Boudiaf Algeria	20,966	12.5	1%	49 : 51
Reporter	Université 8 Mai 1945 Guelma Algeria	16,105	18.4	1%	69 : 31
Reporter	University Abdelhamid Ibn Badis Mostaganem Algeria	24,635	19.3	1%	66 : 34
Reporter	University of Jijel Algeria	25,634	24.7	0%	72 : 28
Reporter	Université d'Oran 2 Mohamed Ben Ahmed Algeria	26,883	28.5	1%	47 : 53

Source: (Times Higher Education, 2022)

5.4.2.4. Arab University Rankings 2021:

The Times Higher Education Arab University Rankings 2021 reveal the strength of higher education across the Arab region. The methodology is based on the same framework as the World University Rankings, with some adjustments and new metrics have been included to reflect the features and missions of universities in the Middle East and North Africa.

Universities are judged across all their core missions – teaching, research, society and international outlook – to provide the most comprehensive and balanced comparisons available.

Saudi Arabia's King Abdulaziz University tops the inaugural table for the region, with the Kingdom claiming four of the top five positions and five of the top 10.

The first Algerian university is ranked after the 91st position (the UoT).

Figure 17. Arab region university ranking in 2021

Rank	Name Country/Region	Overall	Citations	International Outlook	Research	Teaching	Society
1	King Abdulaziz University Saudi Arabia Explore	97.9	99.0	88.4	99.8	98.0	96.7
2	Qatar University Qatar	92.8	94.6	88.6	100.0	85.4	93.5
3	King Abdullah University of Science and Technology (KAUST) Saudi Arabia	92.6	99.8	77.5	100.0	92.3	50.0

4	Prince Mohammad Bin Fahd University Saudi Arabia Explore	90.1	100.0	93.8	93.3	79.5	92.7
5	King Fahd University of Petroleum and Minerals Saudi Arabia	89.7	89.6	71.9	99.7	85.5	80.8
6	Khalifa University United Arab Emirates Explore	88.8	87.0	77.4	97.1	89.5	60.0
7	United Arab Emirates University United Arab Emirates Explore	88.4	74.3	86.1	99.1	86.5	89.0
91–100	University of Abou Bekr Belkaïd Tlemcen Algeria	32.9–38.8	8.1	32.5	46.5	49.4	12.2
91–100	Ajman University United Arab Emirates	32.9–38.8	31.3	83.6	33.6	34.9	11.6
91–100	University of Anbar Iraq	32.9–38.8	12.8	29.3	48.2	39.4	67.3
91–100	University of Béjaïa Algeria	32.9–38.8	18.1	38.5	32.7	38.7	61.4
91–100	Ferhat Abbas Sétif University 1 Algeria	32.9–38.8	28.5	41.3	34.5	49.3	11.6
91–100	Université Frères Mentouri Constantine 1 Algeria	32.9–38.8	11.4	34.4	45.8	53.6	15.5

Source: (times Higher Education, 2021a)

5.4.3. Shanghaî ranking

Also called ARWU (Academic Ranking of World Universities). The story of ARWU actually begins in 1998 when Shanghai Jiao Tong University (SJTU) was selected by the Chinese government to be among the first group of nine universities in the ‘985 Project’. This project was set up in response to a statement by Jiang Zemin (the then President of the People’s Republic of China) that China must have a certain number of top, world-class universities (Liu, 2009). From 1999 to 2001, a SJTU team worked on a project to benchmark top Chinese universities with US research universities ‘in order to find out the gap between Chinese universities and world-class universities’ (Liu & Cheng, 2005). According to Liu (Liu, 2009), after the team submitted its report to the Chinese Ministry of Education and it was published, Chinese and foreign reactions to the report recommended making it into a real ranking of world universities. This ranking was first published in June 2003 by the Center for World-Class Universities (CWCU), Graduate School of Education (formerly the Institute of Higher Education) of Shanghai Jiao Tong University, China, and updated on an annual basis. Since

2009 ARWU has been published and copyrighted by Shanghai Ranking Consultancy, a fully independent organization on higher education intelligence and not legally subordinated to any universities or government agencies.

ARWU uses six objective indicators to rank world universities, including the number of alumni and staff winning Nobel Prizes and Fields Medals, number of highly cited researchers selected by Clarivate Analytics, number of articles published in journals of Nature and Science, number of articles indexed in Science Citation Index - Expanded and Social Sciences Citation Index, and per capita performance of a university. More than 1800 universities are actually ranked by ARWU every year and the best 1000 are published.

Although the initial purpose of ARWU was to find the global standing of top Chinese universities, it has attracted a great deal of attention from universities, governments and public media worldwide. ARWU has been reported by mainstream media in almost all major countries. Hundreds of universities cited the ranking results in their campus news, annual reports or promotional brochures. A survey on higher education published by The Economist in 2005 commented ARWU as "the most widely used annual ranking of the world's research universities". Burton Bollag, a reporter at Chronicle of Higher Education wrote that ARWU "is considered the most influential international ranking".

One of the factors for the significant influence of ARWU is that its methodology is scientifically sound, stable and transparent. The EU Research Headlines reported ARWU work on 31st December 2003: "The universities were carefully evaluated using several indicators of research performance." Chancellor of Oxford University, Chris Patten, said "it looks like a pretty good stab at a fair comparison." Professor Simon Margison of Institute of Education, University of London commented that one of the strengths of "the academically rigorous and globally inclusive Jiao Tong approach" is "constantly tuning its rankings and invites open collaboration in that".

ARWU and its content have been widely cited and employed as a starting point for identifying national strengths and weaknesses as well as facilitating reform and setting new initiatives. Bill Destler, the President of the Rochester Institute of Technology, drew reference to ARWU to analyze the comparative advantages that the Western Europe and US have in terms of intellectual talent and creativity in his publication in the journal Nature. Martin Enserink referred to ARWU and argued in his paper published in Science that "France's poor showing in the Shanghai ranking ... helped trigger a national debate about higher education that resulted in a new law... giving universities more freedom" (Shanghai Ranking, 2020).

5.4.3.1. Candidate Universities

Every university that has any Nobel Laureates, Fields Medalists, Highly Cited Researchers, or papers published in *Nature* or *Science* is considered in the ranking. In addition, universities with significant number of papers indexed by Science Citation Index-Expanded (SCIE) and Social Science Citation Index (SSCI) are also included. In total, ARWU rank more than 2000 universities and publish the best 1000.

5.4.3.2. Ranking Criteria and Weights

Universities are ranked by several indicators of academic or research performance, including alumni and staff winning Nobel Prizes and Fields Medals, highly cited researchers, papers published in *Nature* and *Science*, papers indexed in major citation indices, and the per capita academic performance of an institution. For each indicator, the highest scoring institution is assigned a score of 100, and other institutions are calculated as a percentage of the top score. The distribution of data for each indicator is examined for any significant distorting effect; standard statistical techniques are used to adjust the indicator if necessary. Scores for each indicator are weighted as shown below to arrive at a final overall score for an institution. The highest scoring institution is assigned a score of 100, and other institutions are calculated as a percentage of the top score. An institution's rank reflects the number of institutions that sit above it.

Table 6. Indicators and Weights for ARWU

Criteria	Indicator	Code	Weight
Quality of Education	Alumni of an institution winning Nobel Prizes and Fields Medals	Alumni	10%
Quality of Faculty	Staff of an institution winning Nobel Prizes and Fields Medals	Award	20%
	Highly Cited Researchers	HiCi	20%
Research Output	Papers published in *Nature* and *Science**	N&S	20%
	Papers indexed in Science Citation Index-Expanded and Social Science Citation Index	PUB	20%
Per Capita Performance	Per capita academic performance of an institution	PCP	10%
Total			100%

* For institutions specialized in humanities and social sciences such as London School of Economics, N&S is not considered, and the weight of N&S is relocated to other indicators.

Table 7. Definition of Indicators

Indicator	Definition
Alumni	The total number of the alumni of an institution winning Nobel Prizes and Fields Medals. Alumni are defined as those who obtain bachelor's, master's or doctoral degrees from the institution. Different weights are set according to the periods of obtaining degrees. The weight is 100% for alumni obtaining degrees after 2011, 90% for alumni obtaining degrees in 2001-2010, 80% for alumni obtaining degrees in 1991-2000, and so on, and finally 10% for alumni obtaining degrees in

	1921-1930. If a person obtains more than one degree from an institution, the institution is considered once only.
Award	The total number of the staff of an institution winning Nobel Prizes in Physics, Chemistry, Medicine and Economics and Fields Medal in Mathematics. Staff is defined as those who work at an institution at the time of winning the prize. Different weights are set according to the periods of winning the prizes. The weight is 100% for winners after 2011, 90% for winners in 2001-2010, 80% for winners in 1991-2000, 70% for winners in 1981-1990, and so on, and finally 10% for winners in 1921-1930. If a winner is affiliated with more than one institution, each institution is assigned the reciprocal of the number of institutions. For Nobel prizes, if a prize is shared by more than one person, weights are set for winners according to their proportion of the prize.
HiCi	The number of Highly Cited Researchers selected by Clarivate Analytics. The Highly Cited Researchers list issued in December 2018 (2018 HCR List as of December 6, 2018) was used for the calculation of HiCi indicator in ARWU 2019. Only the primary affiliations of Highly Cited Researchers are considered.
N&S	The number of papers published in *Nature* and *Science* between 2014 and 2018. To distinguish the order of author affiliation, a weight of 100% is assigned for corresponding author affiliation, 50% for first author affiliation (second author affiliation if the first author affiliation is the same as corresponding author affiliation), 25% for the next author affiliation, and 10% for other author affiliations. When there are more than one corresponding author addresses, we consider the first corresponding author address as the corresponding author address and consider other corresponding author addresses as first author address, second author address etc. following the order of the author addresses. Only publications of 'Article' type is considered.
PUB	Total number of papers indexed in Science Citation Index-Expanded and Social Science Citation Index in 2018. Only publications of 'Article' type is considered. When calculating the total number of papers of an institution, a special weight of two was introduced for papers indexed in Social Science Citation Index.
PCP	The weighted scores of the above five indicators divided by the number of full-time equivalent academic staff. If the number of academic staff for institutions of a country cannot be obtained, the weighted scores of the above five indicators is used. For ARWU 2019, the numbers of full-time equivalent academic staff are obtained for institutions in USA, UK, France, Canada, Japan, Italy, China, Australia, Netherlands, Sweden, Switzerland, Belgium, South Korea, Czech, Slovenia, New Zealand etc.

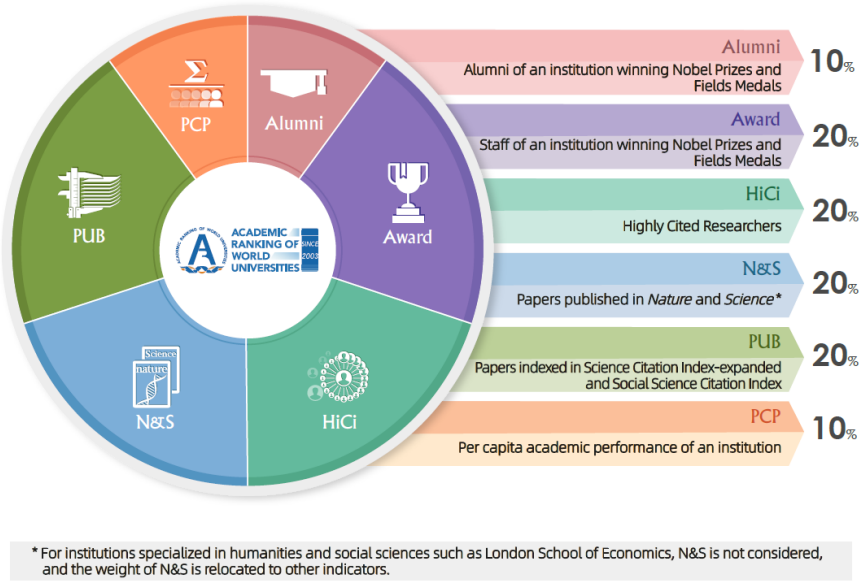
Table 8. Data Sources

Indicator	Data Source
Nobel Prize	http://www.nobelprize.org/
Fields Medals	http://www.mathunion.org/

HiCi	https://clarivate.com/hcr/
N&S	http://www.webofscience.com/
PUB	http://www.webofscience.com/
Others	The number of academic staff data is obtained from national agencies such as National Ministry of Education, National Bureau of Statistics, National Association of Universities and Colleges, National Rector's Conference.

The next figure explains each component percentage in evaluating universities:

Figure 18. Indicators of evaluation in Shangai ranking



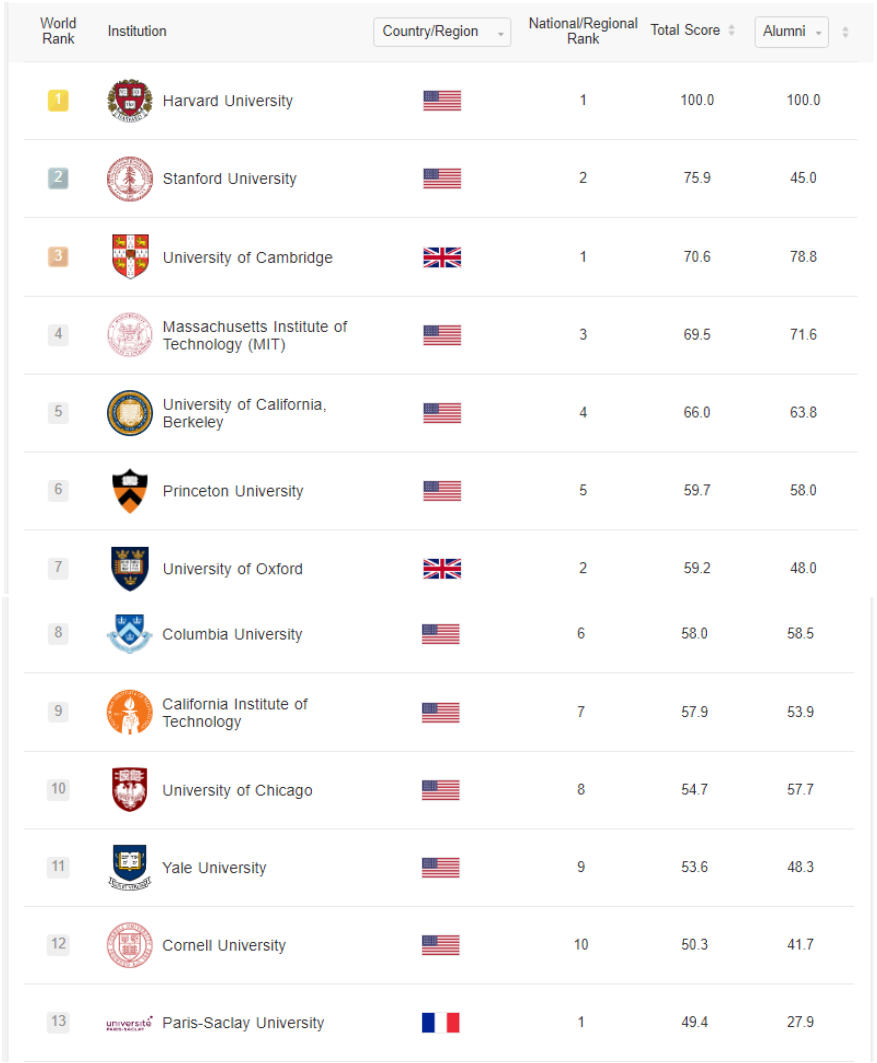
Source: Shanghai Ranking, 2021

Table 9. Statistics by Region

Region	Top 20	Top 100	Top 200	Top 300	Top 400	Top 500	501-1000
Americas	16	49	76	109	140	164	106
Europe	4	34	79	117	157	193	179
Asia/Oceania	—	17	45	72	100	137	206
Africa	—	—	—	2	3	6	9
Total	20	100	200	300	400	500	500

5.4.3.3. Academic Ranking of World Universities 2021

Figure 19. Top universities worldwide in 2021



World Rank	Institution	Country/Region	National/Regional Rank	Total Score	Alumni
1	Harvard University		1	100.0	100.0
2	Stanford University		2	75.9	45.0
3	University of Cambridge		1	70.6	78.8
4	Massachusetts Institute of Technology (MIT)		3	69.5	71.6
5	University of California, Berkeley		4	66.0	63.8
6	Princeton University		5	59.7	58.0
7	University of Oxford		2	59.2	48.0
8	Columbia University		6	58.0	58.5
9	California Institute of Technology		7	57.9	53.9
10	University of Chicago		8	54.7	57.7
11	Yale University		9	53.6	48.3
12	Cornell University		10	50.3	41.7
13	Paris-Saclay University		1	49.4	27.9

Source: (Shanghai Ranking, 2021)

5.4.4. Leiden (CWTS) ranking

The Leiden Ranking provider is the Centre for Science and Technology Studies (CWTS) at Leiden University (the Netherlands), which has developed its own bibliographic indicators. The results of the Leiden Ranking were first published in 2008. On 2 August 2010, updated results were posted on the internet. This ranking concentrates on research performance only. with a special focus on scientific output.

The Leiden Ranking offers several indicators. The Leiden Ranking provides information exclusively about the research done at universities. Research is represented in publications, and carefully collected data about these publications forms the basis for the Leiden Ranking. This basis also ensures the independence of the Leiden Ranking, since there is no reliance on data submitted by the universities themselves. Finally, because universities are complex institutions that have a variety of forms, contexts and missions, their performance

cannot be represented by a single number. The Leiden Ranking presents a variety of indicators to explore the performance of universities from different angles.

5.4.4.1. Data

The CWTS Leiden Ranking 2021 is based on bibliographic data from the Web of Science database produced by Clarivate Analytics. Below we discuss the Web of Science data that is used in the Leiden Ranking. We also discuss the enrichments made to this data by CWTS.

The Web of Science database consists of several citation indices. The Leiden Ranking uses data from the Science Citation Index Expanded, the Social Sciences Citation Index, and the Arts & Humanities Citation Index. The Leiden Ranking is based on Web of Science data because Web of Science offers a good coverage of the international scientific literature and generally provides high quality data.

The Leiden Ranking does not consider conference proceedings publications and book publications. This is an important limitation in certain research fields, especially in computer science, engineering, and the social sciences and humanities.

CWTS enriches Web of Science data in several ways. First, CWTS performs its own citation matching (i.e., matching of cited references to the publications they refer to). Furthermore, in order to calculate the various indicators included in the Leiden Ranking, CWTS identifies publications by industrial organizations in Web of Science, CWTS performs geocoding of the addresses listed in publications, CWTS assigns open access labels (gold, hybrid, bronze, green) to publications, and CWTS disambiguates authors and attempts to determine their gender. Most importantly, CWTS puts a lot of effort in assigning publications to universities consistently and accurately. This is by no means a trivial issue. Universities may be referred to using many different name variants, and the definition and delimitation of universities is not obvious at all. The methodology employed in the Leiden Ranking to assign publications to universities is discussed below.

The CWTS Leiden Ranking 2021 includes 1225 universities worldwide. These universities have been selected based on their number of Web of Science indexed publications in the period 2016–2019.

5.4.4.2. CWTS Leiden Ranking 2021

This ranking offers important insights into the scientific performance of over 1200 major universities worldwide. Below we provide some general information about the Leiden Ranking. 1225 university is ranked in 2021. The observed phenomenon is that Chinese takes 12 places among the top 20 which give an idea about the research and development aspect which has been enhanced tremendously in China.

Figure 20. CWTS Leiden world university Ranking 2021 according to the scientific impact

	University	P	P(top 10%)	PP(top 10%)
1	Harvard Univ	34234	7246	21.2%
2	Shanghai Jiao Tong Univ	26265	2638	10.0%
3	Zhejiang Univ	25964	2917	11.2%
4	Univ Toronto	23454	3226	13.8%
5	Tsinghua Univ	21225	3018	14.2%
6	Univ Michigan	18756	2780	14.8%
7	Huazhong Univ Sci & Technol	18750	2260	12.1%
8	Sichuan Univ	18731	1653	8.8%
9	Univ São Paulo	18611	1242	6.7%
10	Peking Univ	18526	2091	11.3%
11	Jilin Univ	17890	1338	7.5%
12	Johns Hopkins Univ	17337	2673	15.4%
13	Seoul Natl Univ	17289	1299	7.5%
14	Xi'an Jiaotong Univ	17265	1760	10.2%
15	Sun Yat-sen Univ	17177	1794	10.4%

Source: (Leiden, 2022)

In the next figure, the top African universities are displayed, and we notice that only one university from Algeria is ranked which is the Houari Boumediene Science and Technology university at the 17th position.

It is sad to see that only one Algerian university was ranked according to Leiden ranking. By looking at previous editions of 2018, 2017 & 2016, the Algerian universities still have no presence. This is due to the database that is considered by this ranking: Web of Science. This explain a lot about the quality of the Algerian publications that is still too far from the high standards in publishing papers and proceeding. Algeria as shown in the case study chapter has a very few publications in WoS.

Figure 21: CWTS Leiden African universities Ranking 2021 according to the scientific impact

	University	P	P(top 10%)	PP(top 10%)
1	Cairo Univ	4293	246	5.7%
2	Univ KwaZulu-Natal	3601	221	6.1%
3	Univ Cape Town	3401	316	9.3%
4	Univ Pretoria	3204	226	7.1%
5	Univ Witwatersrand	3167	208	6.6%
6	Stellenbosch Univ	3036	252	8.3%
7	Univ Sfax	2760	171	6.2%
8	Ain Shams Univ	2373	135	5.7%
9	Mansoura Univ	2067	139	6.7%
10	Alexandria Univ	1975	120	6.1%
11	Univ Tunis El Manar	1967	80	4.1%
12	Univ Johannesburg	1797	170	9.4%
13	Zagazig Univ	1659	132	7.9%
14	North-West Univ	1465	111	7.6%
15	Univ Monastir	1416	71	5.0%
16	Assiut Univ	1363	77	5.7%
17	Univ Sci Technol Houari Boumediene	1153	50	4.4%
18	Univ Free State	1122	77	6.8%

Source: (Leiden, 2022)

Let's take now a wider look per countries to see how many universities are ranked in Africa and a part of Europe.

Figure 22: CWTS Leiden university Ranking 2021 map

Source: (Leiden, 2022)

5.4.5. SciMago Institutions ranking (SIR)

SCIMAGO INSTITUTIONS RANKINGS

The SCImago Institutions Rankings (SIR) is a classification of academic and research-related institutions ranked by a composite indicator that combines three different sets of indicators based on research performance, innovation outputs and societal impact measured by their web visibility.

It provides a friendly interface that allows the visualization of any customized ranking from the combination of these three sets of indicators. Additionally, it is possible to compare the trends for individual indicators of up to six institutions. For each large sector it is also possible to obtain distribution charts of the different indicators.

For comparative purposes, the value of the composite indicator has been set on a scale of 0 to 100. However the line graphs and bar graphs always represent ranks (lower is better, so the highest values are the worst).

SCImago Standardization: In order to achieve the highest level of precision for the different indicators, an extensive manual process of disambiguation of the institution's names has been carried out. The development of an assessment tool for bibliometric analysis aimed to characterize research institutions involves an enormous data processing task related to the identification and disambiguation of institutions through the institutional affiliation of documents included in Scopus. The objective of SCImago, in this respect, is twofold:

1. Definition and unique identification of institutions: The drawing up of a list of research institutions where every institution is correctly identified and defined. Typical issues on this task include institution's merge or segregation and denomination changes.
2. Attribution of publications and citations to each institution. We have taken into account the institutional affiliation of each author in the field 'affiliation' of the database. We have developed a mixed system (manual and automatic) for the assignment of affiliations to one or more institutions, as applicable. As well as an identification of multiple documents with the same DOI and/or title. Thoroughness in the identification of institutional affiliations is one of the key values of the guaranteed standardization process, in any case, the highest possible levels of disambiguation. Institutions can be grouped by the countries to which they belong.

Multinational institutions (MUL) which cannot be attributed to any country have also been included.

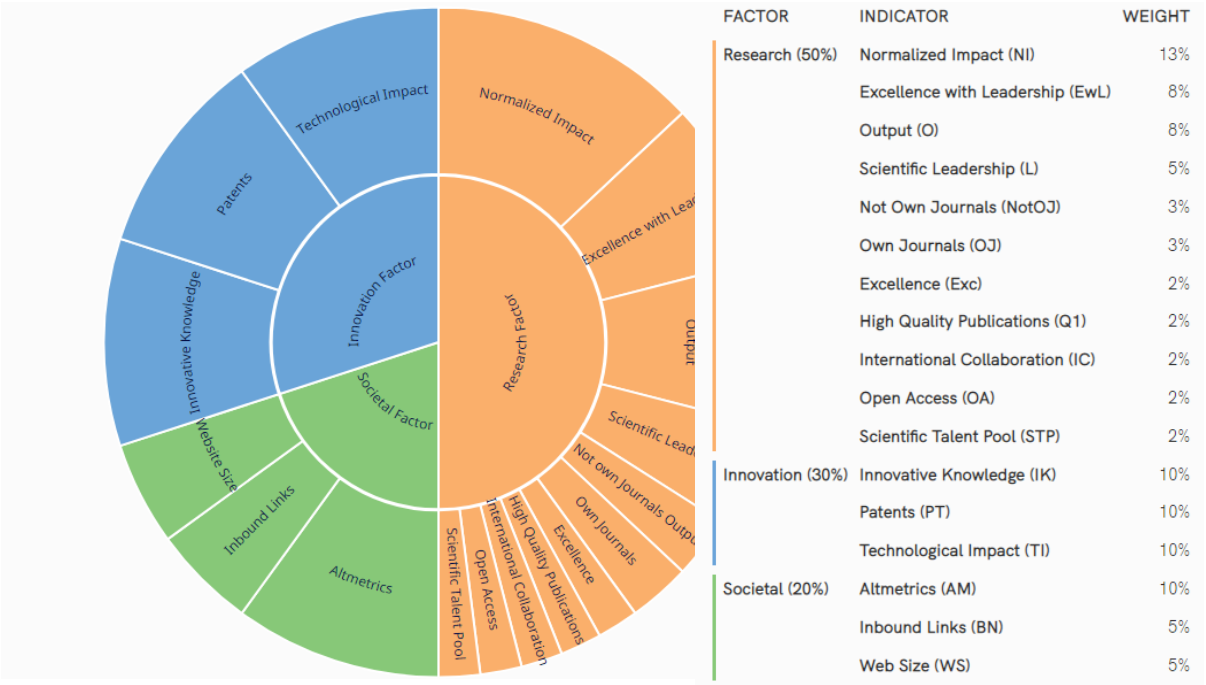
For the ranking purposes, the calculation is generated each year from the results obtained over a period of five year ending two years before the edition of the ranking.
The inclusion criterion is that the institutions had published at least 100 works included in the SCOPUS database during the last year of the selected time period.
The source of information used for the indicators for innovation is PATSTAT database.
The sources of information used for the indicators for web visibility are Google and Ahrefs.
Unpaywall database is used to identify Open Access documents.
Altmetrics from PlumX metrics and Mendeley are used for Societal Factor.
The SIR is a League Table. The aim of SIR is to provide a useful metric tool for institutions, policymakers and research managers for the analysis, evaluation and improvement of their activities, outputs and outcomes.

Best Quartile is obtained by the institution in its country comparing the quartiles based on the overall indicator, research factor, innovation factor and societal factor.

5.4.5.1. Indicators

Indicators are divided into three groups intended to reflect scientific, economic and social characteristics of institutions. The SIR includes both, size-dependent and size-independent indicators; that is indicators influenced and not influenced by the size of the institutions. In this manner, the SIR provides overall statistics of the scientific publication and other output of institutions, at the same time that enables comparisons between institutions of different sizes. It needs to be kept in mind that, once the final indicator has been calculated out of the combination of the different indicators (to which a different weigh has been assigned) the resulting values have been normalized on a scale of 0 to 100.

Figure 23. Indicators of Scimago ranking



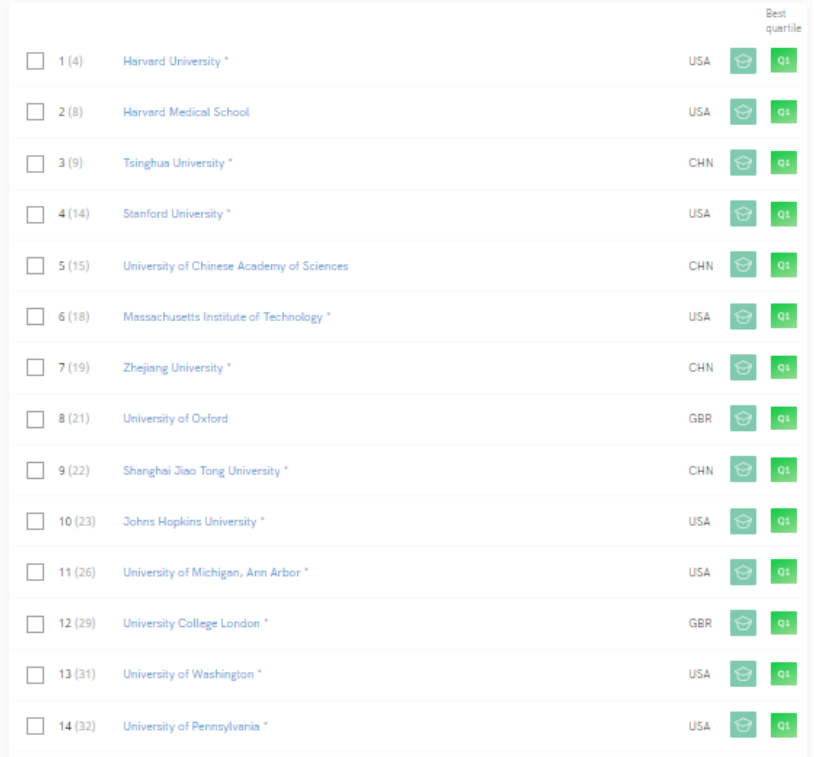
FACTOR	INDICATOR	WEIGHT
Research (50%)	Normalized Impact (NI)	13%
	Excellence with Leadership (EwL)	8%
	Output (O)	8%
	Scientific Leadership (L)	5%
	Not Own Journals (NotOJ)	3%
	Own Journals (OJ)	3%
	Excellence (Exc)	2%
	High Quality Publications (Q1)	2%
	International Collaboration (IC)	2%
	Open Access (OA)	2%
	Scientific Talent Pool (STP)	2%
Innovation (30%)	Innovative Knowledge (IK)	10%
	Patents (PT)	10%
	Technological Impact (TI)	10%
Societal (20%)	Altmetrics (AM)	10%
	Inbound Links (BN)	5%
	Web Size (WS)	5%

Source: (Scimago, 2022b)

5.4.5.2. Scimago ranking 2022

4364 university are ranked in 2022 with a domination of Americans and Chinese.

Figure 24. World university ranking 2022



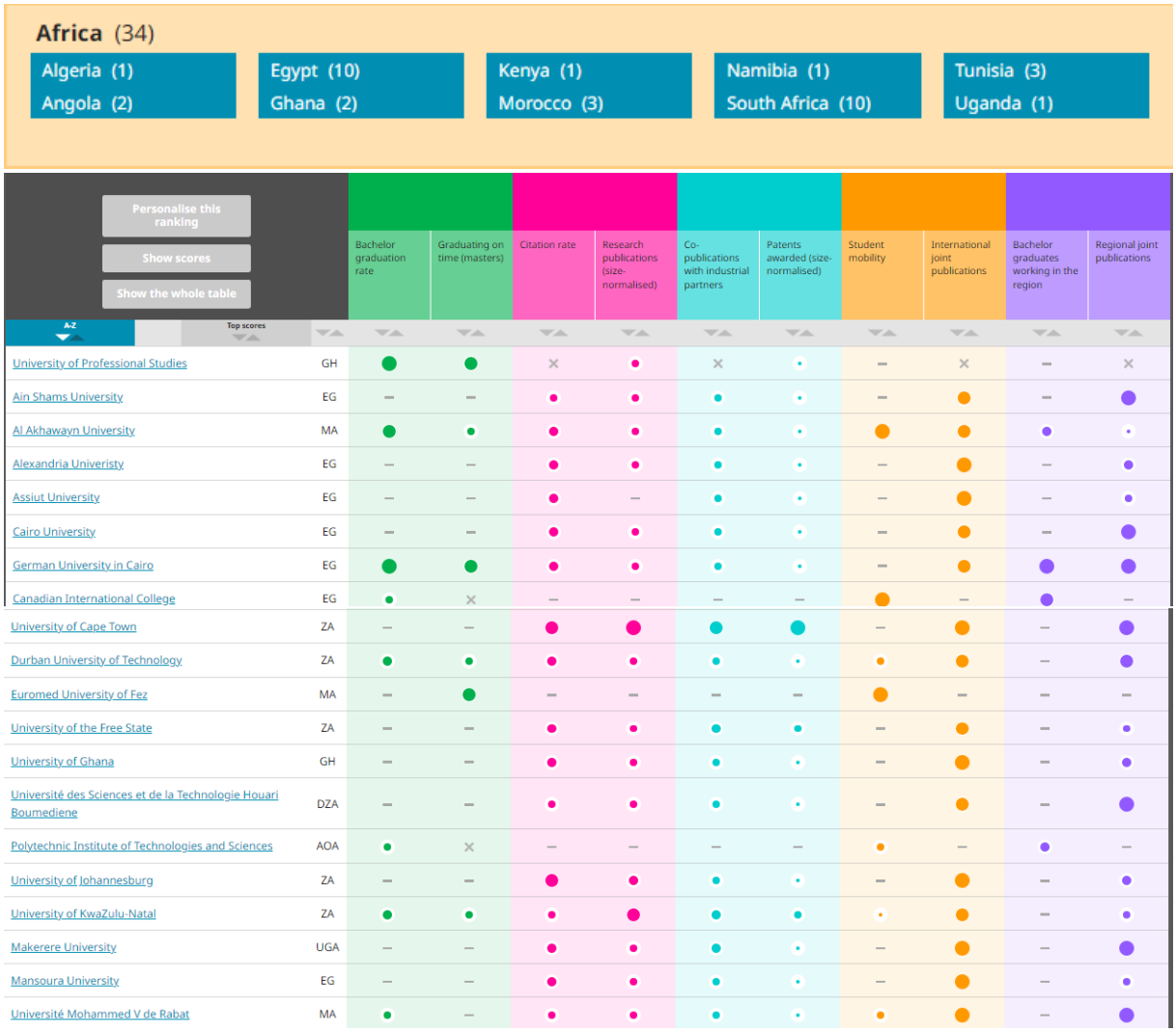
Source: (Scimago, 2022d)

5.4.6. U-Map -/- U-Multirank

U-Map has been developed to classify all European HEIs regardless of the institution type, focus etc. and it reflects the variety of missions and profiles of European higher education institutions, without providing a final score. U-Map uses indicators that characterise the focus and intensity of various aspects of the work of HEIs rather than performance, impact or quality. U-Map indicators cover teaching level and subject focus, student body, research intensity, knowledge exchange, international orientation and regional involvement. U-Map has two visualisation tools: one to find higher education institutions which fit the characteristics set by the user, and one which allows the detailed comparison of up to three selected HEIs. Lack of internationally comparable data is a challenge to U-Map. Common definitions have yet to be developed to enable comparison of data from different countries. Until comparable data from across the EU has been collected, U-Map will have to rely on national and institutional data, and will therefore be more appropriate for comparing institutions within a country rather than internationally. U-Map is still being tested and data are being pre-filled by HEIs from volunteering countries. 30. U-Multirank is planned as a multidimensional ranking including all aspects of an HEI's work – education, research, knowledge exchange and regional involvement. No final score of a HEI will be calculated, but, until now, it is unclear how third parties will be prevented from turning the ranking results into a league table (Boulton, 2010). U-Multirank will utilise data from Thomson Reuters for its bibliometric indicators. The other indicators will be based on self-reported data by HEIs on students, teachers, and research (except publications/citations). A large variety of data will be taken from student satisfaction surveys.

All indicator scores derived from bibliometric analysis are based on information extracted from publications that are indexed in the CWTS-licensed edition of the Web of Science (WoS) database (Science Citation Index Expanded, Social Sciences Citation Index, and Arts & Humanities Citation Index). The WoS contains approximately 13,000 active information sources, mostly peer-reviewed scholarly journals. The underlying bibliographic information relates to publications classified as 'research article' and 'review article'. The WoS is currently one of the two best sources covering worldwide science across all disciplines. In order to be able to meaningfully calculate some of the bibliometric indicators, we have imposed a threshold on the number of publications per university (50 WoS publications over the period 2012-2016 for the institution as a whole; 20 WoS publications for individual fields of science in the subject rankings).

Figure 25. African university ranking 2022



Source: (U-Multirank, 2022)

We can see in the figure above that only one Algerian university is ranked, as the previous ranking: Houari Boumediene university of science and technology. This can be explained by its high score in international joint publication with 53.3% (B score) in addition

to the research publications indexed in the Web of Science core collections database with 2265 pulication.

5.4.7. QS World University Rankings

Quacquarelli Symonds (QS).World University Rankings is an annual publication of university rankings. Previously known as Times Higher Education–QS World University Rankings, the publisher had collaborated with Times Higher Education (THE) magazine to publish its international league tables from 2004 to 2009 before both started to announce their own versions. QS then chose to continue using the pre-existing methodology while Times Higher Education adopted a new methodology to create their rankings.

Historically, A perceived need for an international ranking of universities for UK purposes was highlighted in December 2003 in Richard Lambert's review of university-industry collaboration in Britain[16] for HM Treasury, the finance ministry of the United Kingdom. Amongst its recommendations were world university rankings, which Lambert said would help the UK to gauge the global standing of its universities.

The idea for the rankings was credited in Ben Wildavsky's book, The Great Brain Race: How Global Universities are Reshaping the World, to then-editor of Times Higher Education (THE), John O'Leary. THE chose to partner with educational and careers advice company Quacquarelli Symonds (QS) to supply the data, appointing Martin Ince, formerly deputy editor and later a contractor to THE, to manage the project.

Between 2004 and 2009, QS produced the rankings in partnership with THE. In 2009, THE announced they would produce their own rankings, the Times Higher Education World University Rankings, in partnership with Thomson Reuters. THE cited an asserted weakness in the methodology of the original rankings, as well as a perceived favoritism in the existing methodology for science over the humanities, as two of the key reasons for the decision to split with QS.

QS retained intellectual property in the prior rankings and the methodology used to compile them[citation needed] and continues to produce rankings based on that methodology, which are now called the QS World University Rankings.

THE created a new methodology with Thomson Reuters, and published the first Times Higher Education World University Rankings in September 2010.

The QS system now comprises the global overall and subject rankings (which name the world's top universities for the study of 48 different subjects and five composite faculty areas), alongside five independent regional tables (Asia, Latin America, Emerging Europe and Central Asia, the Arab Region, and BRICS).

Being the only international ranking to have received International Ranking Expert Group (IREG) approval, the QS ranking is viewed as one of the three most-widely read university rankings in the world, along with Academic Ranking of World Universities and Times Higher Education World University Rankings. According to Alexa Internet, it is the most widely viewed university ranking worldwide. However, it has been criticized for its overreliance on subjective indicators and reputation surveys, which tend to fluctuate over the years. Concern also exists regarding the global consistency and integrity of the data used to generate QS ranking results

The QS World University Rankings continue to enjoy a remarkably consistent methodological framework, compiled using six simple metrics that effectively capture university performance. Since faculty area normalisation was introduced in 2015 to ensure that institutions specialising in Life Sciences and Natural Sciences were not unduly advantaged, avoiding fundamental changes. In doing so, QS aim to ensure that year-on-year comparisons remain valid, and that unnecessary volatility is minimised.

Thus, universities continue to be evaluated according to the following six metrics:

1. Academic Reputation
2. Employer Reputation
3. Faculty/Student Ratio
4. Citations per faculty
5. International Faculty Ratio
6. International Student Ratio

Academic reputation (40%)

The highest weighting of any metric is allotted to an institution's Academic Reputation score. Based on our Academic Survey, it collates the expert opinions of over 94,000 individuals in the higher education space regarding teaching and research quality at the world's universities. In doing so, it has grown to become the world's largest survey of academic opinion, and, in terms of size and scope, is an unparalleled means of measuring sentiment in the academic community.

Employer reputation (10%)

Students will continue to perceive a university education as a means by which they can receive valuable preparation for the employment market. It follows that assessing how successful institutions are at providing that preparation is essential for a ranking whose primary audience is the global student community.

Our Employer Reputation metric is based on almost 45,000 responses to our QS Employer Survey and asks employers to identify those institutions from which they source the most competent, innovative, effective graduates. The QS Employer Survey is also the world's largest of its kind.

Faculty/Student Ratio (20%)

Teaching quality is typically cited by students as the metric of highest importance to them when comparing institutions using a ranking. QS have determined that measuring teacher/student ratios is the most effective proxy metric for teaching quality. It assesses the extent to which institutions are able to provide students with meaningful access to lecturers and tutors and recognizes that a high number of faculty members per student will reduce the teaching burden on each individual academic.

Faculty/student Ratio constitutes 20 percent of an institution's final score.

Citations per faculty (20%)

Teaching is one key pillar of an institution's mission. Another is research output. QS measure institutional research quality using our Citations per Faculty metric. To calculate it, the total number of citations received by all papers produced by an institution across a five-year period by the number of faculty members at that institution.

To account for the fact that different fields have very different publishing cultures – papers concerning the Life Sciences are responsible nearly half of all research citations as of 2015 –citations are normalised. This means that a citation received for a paper in Philosophy is measured differently to one received for a paper on Anatomy and Physiology, ensuring that, in evaluating an institution's true research impact, both citations are given equal weight.

QS use a five-year publication window for papers, so for this edition they looked at papers published from 2013 to 2017; then take a look at a six-year citation window; reflecting the fact that it takes time for research to be effectively disseminated. In this edition they look for citations from 2013-2018.

All citations data is sourced using Elsevier's Scopus database, the world's largest repository of academic journal data. This year, QS assessed 74 million citations from 13.5 million papers once self-citations were excluded.

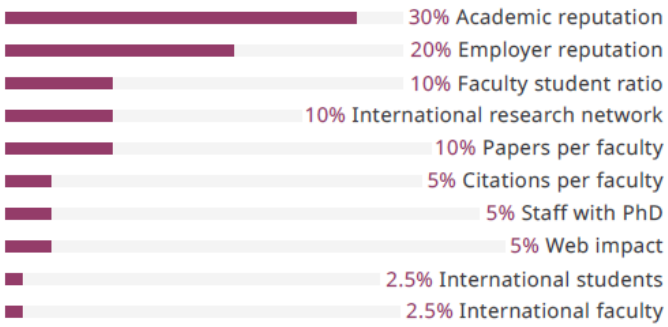
International faculty ratio/International student ratio (5% each)

A highly international university acquires and confers a number of advantages. It demonstrates an ability to attract faculty and students from across the world, which in turn suggests that it possesses a strong international brand. It implies a highly global outlook: essentially for institutions operating in an internationalised higher education sector. It also provides both students and staff alike with a multinational environment, facilitating exchange of best practices and beliefs. In doing so, it provides students with international sympathies and global awareness: soft skills increasingly valuable to employers. Both of these metrics are worth 5% of the overall total.

5.4.7.1. QS Arab Region University Rankings 2022

This regional methodology differs from that used for the QS World University Rankings. The unique approach adopted for the regional rankings is based on feedback collected from the region, the expert identification of those factors of most importance to the region's universities and other tertiary education stakeholders, and the availability of data. Like QS's other rankings, it examines university performance according to four key aspects of their mission: teaching, research, employability and internationalization. Ten indicators are used to form this regional university ranking:

Figure 26. Arab region used indicators



Source: (QS, 2022)

Academic reputation 30% Results are derived from the annual survey conducted by QS, which is designed to evaluate the perceptions of academics worldwide regarding the best research institutions in the world. For this 2020 edition, over 94,000 responses were recorded globally, making this the world's largest repository of expert insight into institutional academic performance.

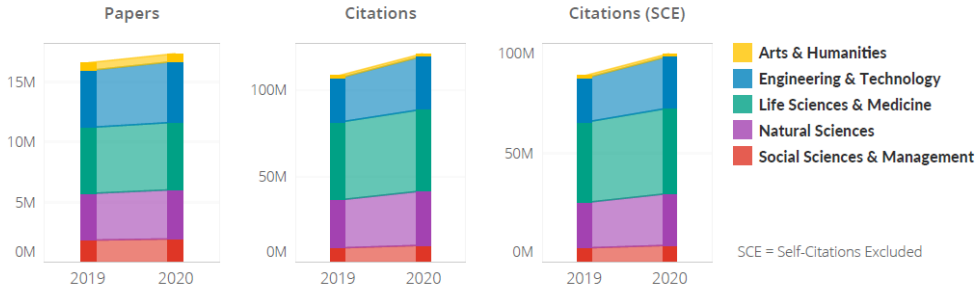
Employer reputation 20%

Results are derived from the annual QS Employer Survey, which collates the views of employers around the world regarding the relative abilities of institutions to provide successful, employable graduates. For the 2020 edition, almost 45,000 responses were analysed.

Research

Citations per papers 5% / papers per faculty 10% For the regional rankings QSadopt a slightly different approach to that used for the overall QS World University Rankings. We use two indicators to evaluate institutional research productivity - in the form of Papers per Faculty - and research impact, using Citations per Paper. As with the QS World University Rankings, using a publications window of papers published between 2013-2017 and a six-year citation window encompassing 2013 through 2018. These indicators are calculated using data from Elsevier's Scopus database. Furthermore, only those institutions producing more than 100 papers in the last five years are eligible for the citations per faculty indicator. The rest of the data is treated in the same way as for the QS World University Rankings: self-citations are excluded from the analysis, the paper and citations data are normalized, ensuring the citations achieved in each of the five broad faculty areas are weighted equally, and a variable affiliation cap is in place to exclude any anomalous results where a paper has an extraordinarily high number of affiliations for its field.

Figure 27. Papers and citations by broad subject area



Source: QS (2020)

International research network 10%

Using Scopus data in the same publishing window as the rest of the research indicators (above), this indicator made its debut in last year's evaluation of the Arab region's universities. The indicator uses the Margalef Index to assess the degree of international diversity of each evaluated institution's research collaborations. This indicator uniquely combines research with internationalization to offer insight into university performance.

Teaching commitment

Student to faculty ratio 10%

This is the ratio between the number of academic staff and number of students. A higher number of teachers per student is perceived as an indirect indicator of institutional commitment to high-quality teaching.

Staff with phd 5%

The Staff with PhD is a proxy measure for teaching quality. It reflects a university's commitment to ensuring that they are acquiring faculty members with expertise in their field – a commitment that can be expected to lead to improved research and teaching alike. This indicator is also one cited by students as being important to them. This indicator, alongside the 'Student to Faculty Ratio' metric, measures a university's commitment to facilitating high-quality interaction between teachers and students. Internationalization

International faculty 2.5%

The international Faculty Index measures the proportion of faculty members at an institution that are international. It is a proxy measure for how internationally attractive the university is to academic staff.

International students 2.5%

Similar in nature to the International Faculty Index, the International Students Index is based on the proportion of students that are international. It is a proxy measure for how internationally attractive the university is to students. Attracting international faculty and students can be challenging for institutions that have not yet received high levels of international recognition – at least when compared to household university names.

Web impact 5%

This indicator seeks to assess the effectiveness with which institutions are making use of new technologies. Baseline information is provided by the Ranking Web of Universities (www.webometrics. info), although the results are refactored to exclude the Excellence indicator, which is already considered in the metrics related to scientific research.

Figure 28. Arab universities ranked in QS in 2022

Rank	University	Overall Score	International Students Ratio	International Research Network
1	King Abdulaziz University (KAU) Jeddah,Saudi Arabia	100	78.9	99.9
2	Qatar University Doha,Qatar	97.8	98.5	99.4
3	King Fahd University of Petroleum & Minerals Dhahran,Saudi Arabia	97.7	37.6	95
4	American University of Beirut (AUB) Beirut ,Lebanon	97.2	79.2	94.3
5	United Arab Emirates University Al Ain,United Arab Emirates 5 QS Stars	95.8	65.8	96.1
6	King Saud University Riyadh,Saudi Arabia 5 QS Stars	91.8	38.4	100
7	Sultan Qaboos University Muscat,Oman	86	11	99.6
8	American University of Sharjah Sharjah,United Arab Emirates	84.5	100	58.3
9	Khalifa University Abu Dhabi,United Arab Emirates 5 QS Stars	84.4	81.3	95.8
10	University of Jordan Amman,Jordan 5 QS Stars	81.3	61	95.8
121-130	Université des Sciences et de la Technologie... Bab Ezzouar,Algeria	-	1.3	57.2
131-150	University of Tlemcen Tlemcen,Algeria	-	3.7	20.3
131-150	Université des Sciences et de la Technologie... Oran,Algeria	-	-	20.8
151-180	Ferhat Abbas Setif University 1 Setif,Algeria	-	3	29.1
151-180	Universite d'Oran Oran,Algeria	-	-	14.6
151-180	Université de Bejaia Béjaia,Algeria	-	1.7	18.6
151-180	University Djillali liabes of Sidi Bel Abbes Sidi bel Abbes,Algeria	-	4.9	15.5

Source: Quacquarelli Symonds (2022)

It is necessary to highlight that we are talking here about 2 different rankings: World and Arab region. Each ranking has its own tailored methodology giving greater visibility to universities in each region. Note that 7 Algerian universities were ranked in 2022. We notice that there is no Algerian university was ranked in the QS world university rankings at least in the last 3 versions. However, our neighbour Tunisia does exist in 2022 world ranking with 3 universities. Morocco as well is present with the university Mohammed V.

5.4.8. Webometrics Ranking

The "Webometrics Ranking of World Universities" is an initiative of the Cybermetrics Lab, a research group belonging to the Consejo Superior de Investigaciones Científicas (CSIC), the largest public research body in Spain.

CSIC is among the first basic research organizations in Europe. The CSIC consisted in 2006 of 126 centers and institutes distributed throughout Spain. The organization collaborates with other institutions of the Spanish R&D system (universities, autonomous governs, other public and private research organisms) and with social, economic, national or foreign agents to which contributes with its research capacity and human and material resources in the development of research projects or under the form of consultancy and scientific and technical support. CSIC was founded in 1939 from a previous body, the Junta para la Ampliación de Estudios e Investigaciones Científicas created in 1907 under the leadership of the Spanish Nobel Prize Prof. Ramón y Cajal. The Cybermetrics Lab, part of the CSIC, is devoted to the quantitative analysis of the Internet and Web contents specially those related to the processes of generation and scholarly communication of scientific knowledge. This is a new emerging discipline that has been called Cybermetrics or Webometrics. The Cybermetrics Lab using quantitative methods has designed and applied indicators that allow us to measure the scientific activity on the Web. The cybermetric indicators are useful to evaluate science and technology and they are the perfect complement to the results obtained with bibliometric methods in scientometric studies.

The specific areas of research include:

- Development of Web indicators to be applied on the areas of the Spanish, European, Latinamerican and World R&D
- Quantitative studies about the scientific communication through electronic journals and repositories, and the impact of the Open Access initiatives.
- Development of indicators about resources in the Society of Information
- Indicators and social networks visualization on the Web with friendly, dynamic and interactive graphic interfaces
- Desing and evaluation of documental analysis techniques of Web resources
- Genre studies applied to the scholar activity on the Web
- Development of applied cybermetrics techniques based on the positioning on search engines of Web domains
- Analysis of the information usage through Web data mining of log files (Webometrics, 2022a)

The original aim of the Ranking was to promote Web publication. Supporting Open Access initiatives, electronic access to scientific publications and to other academic material are our primary targets. However web indicators are very useful for ranking purposes too as they are not based on number of visits or page design but on the global performance and visibility of the universities.

5.4.8.1. Methodology

Since 2004, the Ranking Web (or Webometrics Ranking) is published twice a year (data is collected during the first weeks of January and July for being public at the end of both months), covering more than 31 000 Higher Education Institutions worldwide. They intend to motivate both institutions and scholars to have a web presence that reflect accurately their activities. If the web performance of an institution is below the expected position according to

their academic excellence, university authorities should reconsider their web, open access and transparency policy, promoting substantial increases of the volume and quality of their electronic publications.

Data is collected between 1 and 20 of January or July, depending of the edition. Each variable is obtained at least two times during that period and the maximum value is chosen for discarding mistakes or errors. Volatility of search engines is very high, so figures can be different and not easily replicated if the search is performed days later. Google info is very geographically biased, so for our purposes the data are collected using the google.com mirror domain, English as language of the interface and Madrid (Spain) as location.

Figure 29. Weight of indicators in webometrics ranking 2022

INDICATORS	MEANING	METHODOLOGY	SOURCE	WEIGHT
PRESENCE	Public knowledge shared	DISCONTINUED		
VISIBILITY	Web contents Impact	Number of **external networks** (subnets) linking to the institution's webpages (normalized and then the maximum value is chosen)	*Ahrefs Majestic*	50%
TRANSPARENCY (or OPENNESS)	Top cited researchers	Number of **citations** from **Top 210 authors** (excl. top 20 outliers) See Transparent Ranking for additional info	*Google Scholar Profiles*	10%
EXCELLENCE (or SCHOLAR)	Top cited papers	Number of **papers** amongst the top 10% most cited in each one of the all 27 disciplines of the full database Data for the five year period: **2016-2020**	*Scimago*	40%

Source: (Webometrics, 2022c)

Composite indicators: Design and Weighting of Indicators

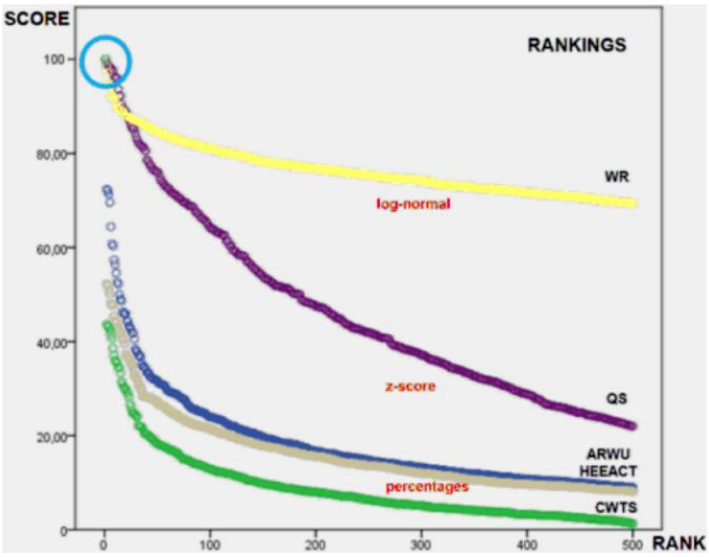
Probably one of the major contributions of the Shanghai Ranking was to introduce a composite indicator, combining with a weighting system a series of indicators. The composite indicator can be designed with different sets of variables and weightings according to the developer's needs and models.

Webometrics uses an "a-priori" scientific model for building the composite indicator. Other rankings choose arbitrary weights for strongly dependent variables and even combine raw values with ratios. None of them follow a logical ratio between activity related and impact related variables, i.e. each group representing 50% of the total weighting. Referring to the individual variables, some of them have values larger than zero for only a few universities and others segregate universities according to differences so small that they are even lower than their error rates.

Prior to combination the values should be normalized, but the practice of using percentages is mostly incorrect due to the power law distribution of the data.

Webometrics log-normalize the variables before combining according to a ratio 1:1 between activity/presence and visibility/impact groups of indicators.

Figure 30. Design and weighting of indicators



Source: (Webometrics, 2022c)

5.4.8.2. Algerian universities ranking 2022:

In 2022, 103 Algerian HEIs were taken into consideration to be ranked in webometrics ranking web of the universities. The first university in Algeria USTHB is in position 2156 worldwide. However, according to the Impact indicator (Number of external networks (subnets) linking to the institution's webpages), the university of M'sila is far better at the first place.

Figure 31. Top 10 universities in Algeria 2022

ranking	World Rank	University	Det.	Impact Rank*	Openness Rank*	Excellence Rank*
1	2156	Université des Sciences et de la Technologie Houari Boumediene	»	7142	1517	1684
2	2306	Université des Frères Mentouri Constantine 1 (Ex Université Mentouri)	»	5718	1267	2336
3	2394	Université Abou Bekr Belkaid Tlemcen	»	5169	1968	2462
4	2478	Université de M'Sila	»	3097	2008	3338
5	2654	Université d'Oran 1 Ahmed Ben Bella	»	5122	2815	2771
6	2751	University Ferhat Abbas Setif	»	9184	1696	2189
7	2777	Djillali Liabes university of Sidi Bel Abbes	»	10179	2069	1958
8	2796	Université de Bejaia	»	8139	1895	2469
9	2819	Université Mohamed Khider Biskra	»	7323	1839	2692
10	3141	Université Badji Mokhtar de Annaba	»	11817	2419	2167

Source: (Webometrics, 2022b)

5.4.9. Other rankings

- The Taiwan Higher Education Accreditation and Evaluation Council Ranking (hereafter referred to as HEEACT Ranking) is an annual world university ranking that has been produced since 2007. The HEEACT Ranking evaluates and ranks performance in terms of the publication of scientific papers for the top 500 universities worldwide, using data drawn from SCI and SSCI.

- World's Best Universities Ranking − US News & World Report in cooperation with Quacquarelli Symonds (QS) Early in 2010, the US News and World Report (USNWR) began cooperation with QS and, on 25 February 2010, posted its new 2009 ranking on the web. This was done with a report. U.S. News & World Report is a multifaceted digital media company dedicated to helping consumers, business leaders and policy officials make important decisions in their lives. We use world-class data and technology to publish independent reporting, rankings, journalism and advice. The company is privately owned by Mortimer B. Zuckerman (US News World Report, 2022).
- Green metrics University Rankings: The UI GreenMetric World University Ranking is an initiative of Universitas Indonesia which is being launched in 2010. The aim of this ranking is to provide the result of online survey regarding the current condition and policies related to Green Campus and Sustainability in the Universities all over the world. It is expected that by drawing the attention of university leaders and stake holders, more attention will be given to combating global climate change, energy and water conservation, waste recycling, and green transportation. (Greenmetric, 2022)
- Global Universities Ranking − Reitor (Peŭmop) : The Reitor Global Universities Ranking is carried out by a ranking agency30, Reitor (also Reiter, in the original Russian language *Peŭmop*), located in Moscow. However, the 'ideology' of the ranking originates from both Reitor and Lomonosov Moscow State University (STRF, 2008; Doneckaja, 2009). The first Reitor Global University Ranking was compiled during 2008, and the results were posted in February 2009. Although, it has been stated that there is an intention to turn it into a periodic ranking, no further information has been supplied on this matter.

CHAPTER FOUR

Linkage between human resources management and performance

CHAPTER FOUR: Linkage between HR management and performance

Introduction

In this chapter, in order to seek for the existing link between HRM practices and performance, we will explore the existing studies in the literature which relate the two. Let's begin with taking a look to the most famous models of linkage.

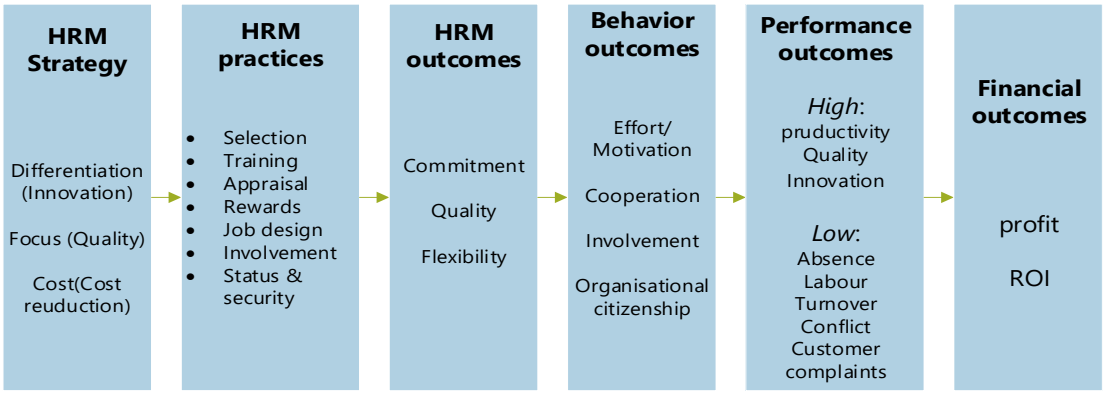
It is emphasised that the performance of an individual as well as the company performance and success depend on individual competencies (Savanevičienė et al., 2008).

A considerable number of research has been conducted recently on the existing link between HRM and performance, and how the former impacts the latter. But it is also necessary to understand how that impact is made in order to justify, develop and implement effective HR policies and practices. D Ulrich (1997) comments that managers and HR professionals "need to be able to explain conceptually how and why HR practices lead to their outcomes".

Section 1. Models linking between HRM and Performance

D. E. Guest (1997) established a model with 6 boxes, starting with a Porter-like strategy typology –distinguishing differentiation/innovation, focus/quality and cost reduction oriented HRM strategies – and ending with the financial outcomes **R**eturn **O**n **I**nvestment (ROI) and profits. Thus, the overall strategy derives HR practices (See Figure 32)

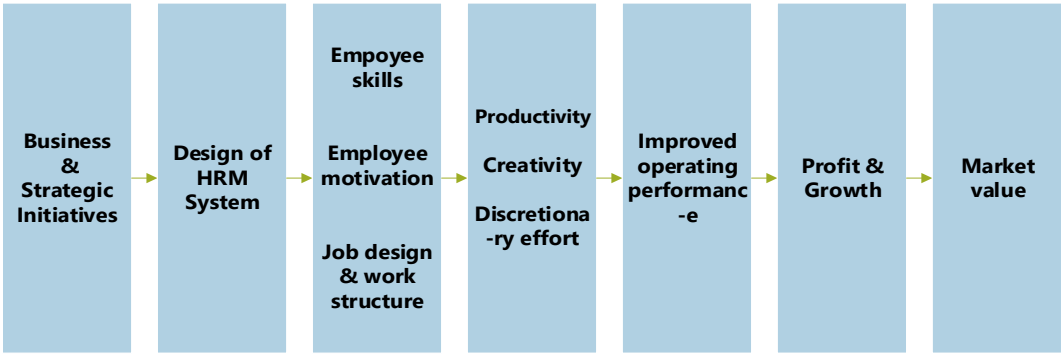
Figure 32 Conceptual model of Guest



Source: Guest (1997)

P. M. Wright, Gardner, and Moynihan (2003) question how many boxes should be taken into account when studying the HRM - performance linkage. B. E. Becker et al. (1997) model incorporates 7 boxes, starting with 'business and strategic initiatives' and finishing with 'market value'. In their model the design of the HRM system is derived from the overall business strategy (see figure 33)

Figure 33. Conceptual model of Becker, Huselid, Pickus and Spratt



Source: Becker et al. (1997)

Appelbaum et al. (2000) present the AMO-model (a theory focuses on high performance work systems: A=Ability, M=Motivation, O=Opportunity) that links 3 boxes. The first box covers high performance work systems and comprises: (1) ability/skills (e.g., formal and informal training, education), (2) motivation/incentives (e.g., employment security, information sharing, internal promotion opportunities, fair payment, PRP) and (3) opportunity to participate (e.g., autonomy, team membership, communication). The second box consists of effective discretionary effort and the final box reflects the plant performance (e.g., quality and throughput time, labor cost per unit of output, operating profit). Figure 34 offer a visual representation of their model.

Figure 34. Conceptual model of Appelbaum, Bailey, Berrg & Kalleberg

Source: Appelbaum et al (2000)

Many other human resource management researchers indicate that HRM practices demonstrably cause improvements in organisational performance. Practitioners too would like to be able to justify their existence by saying to their bosses and their colleagues that this is the case. Below a summary of some research that has been carried over the last years or so, most of which at least shows that there is a link between good HRM practice and firm performance:

- The Harvard model (Beer et al., 1984) works as a strategic roadmap to guide all managers in their relations with their employees and concentrate on the hard and soft aspects of HRM. It strives at employee commitment and not control. It also works on the premise that employees need to be congruent, competent and cost-effective.

- As showed by (Jeffrey Bradford Arthur, 1990; 1992) who gathered data from 30 US strip mills in order to assess impact on labor efficiency and scrap rate by reference to the existence of either a high commitment strategy or a control strategy. He concluded that firms with a high commitment strategy had significantly higher levels of both productivity and quality than those with a control strategy.

- Huselid (1995) analysed the responses of 968 US firms to a questionnaire exploring the use of high-performance work practices and showed that productivity is influenced by employee motivation; financial performance as well is influenced by employee skills, motivation and organisational structures.

- Huselid and Becker (1996) An index of HR systems in 740 firms was created to indicate the degree to which each firm adopted a high-performance work system firms with high values on the index had economically and statistically higher levels of performance.

- Appelbaum et al. (2000) study the impact of high-performance work systems (HPWSs) in 44 manufacturing facilities - over 4,000 employees were surveyed-. They found that HPWSs produced strong positive effects on performance. They are associated with workshop practices that raise the levels of trust, increase workers' intrinsic reward from work and thereby enhance organisational commitment.

- D Guest, Michie, Sheehan, and Conway (2000) analysed the 1998 Workplace Employment Relations Study (WERS) survey which sampled some 2,000 workplaces and obtained the views of about 28,000 employees. They demonstrate the existence of a strong association between HRM and both workplace performance and employee attitudes.

- Gerhart, Wright, and McMahan (2000) in their paper entitled "measurement error in research on the human resources and firm performance relationship: further evidence and analysis" provided new evidence on how the reliability of HR-related measures may differ at different levels of analysis. They suggest substantial measurement error in the types of HR effectiveness and HR practice measures typically used to predict firm performance

- Thompson (2002) study the impact of high-performance work practices such as team working, appraisal, job rotation, broad-banded grade structures and sharing of business information in UK aerospace establishments. The number of HR practices and the proportion of the workforce covered appeared to be the key differentiating factor between more and less successful firms.

- West et al. (2002) conducted a research in 61 UK hospitals obtaining information on HR strategy, policy and procedures from chief executives and HR directors and mortality rates. In their findings they identify an association between certain HR practices and lower mortality rates. As noted by Professor West: "If you have HR practices that focus on effort and skill; develop people's skills; encourage co-operation, collaboration, innovation and synergy in teams for most, if not all employees, the whole system functions and performs better".

- Khatri and Budhwar (2002) surveys 3000 HR professionals, consultants, line executives and academicians. That study reports that line executives thought that computer literacy was the most critical HR competence, whereas academicians argue that a broad knowledge of and a clear vision for HR were the most important issues, and consultants believe that ability to change things is the most important factor in the excellence of HR performance

- D. E. Guest, Michie, Conway, and Sheehan (2003) made an exploration of the relationship between HRM and performance in 366 UK companies using objective and subjective performance data and cross-sectional and longitudinal data. Some evidence was shown of an association between HRM, as described by the number of HR practices in use, and performance, but there was no convincing indication that the greater application of HRM is likely to result in improved corporate performance.

- Purcell, Kinnie, Hutchinson, Rayton, and Swart (2003) perform a University of Bath longitudinal study of 12 companies to establish how people management impacts on organisational performance. The most successful companies had 'the big idea'. They had a clear vision and a set of integrated values. They were concerned with sustaining performance and flexibility. Clear evidence existed between positive attitudes towards HR policies and practices, levels of satisfaction, motivation and commitment, and operational performance. Policy and practice implementation (not the number of

HR practices adopted) is the vital ingredient in linking people management to business performance and this is primarily the task of line managers.

- P. Wright, Gardner, Moynihan, and Allen (2004) used data from 45 business units (with 62 data points), the study examines how measures of HR practices correlate with past, concurrent, and future operational performance measures. The results indicate that correlations with performance measures at all three times are both high and invariant, and that controlling for past or concurrent performance virtually eliminates the correlation of HR with future performance.

- Boselie and Paauwe (2004) indicates that the domain of strategic contribution is positively correlated with financial competitiveness, whereas the domain of HR technology is negatively correlated with this performance outcome. This is not completely in line with the global HRCS findings. In Europe, the study found only one domain (strategic contribution) to be positively related to financial competitiveness, in contrast to the global results that suggest four out of five domains to be positively linked to financial competitiveness. Fourth, all domains reveal relatively high correlations with each other.

- Jaap Paauwe and Boselie (2005) in their paper "HRM and performance: What's next?" attempted to extend the theoretical and methodological issues in the HRM and performance debate: what constitutes HRM, what is meant by the concept of performance and what is the nature of the link between them. They conclude that there is see convergence arising around AMO theory and the associated set of HR practices. They suggest to opt for a stakeholders' approach, which also implies opting for a multi-dimensional concept of performance.

- Katou (2008) in his paper: Measuring the impact of collected data from 178 organisations using a questionnaire survey in the Greek manufacturing sector, and analysed using the 'structural equation modelling' methodology. The results indicated that the relationship between HRM policies (resourcing and development, compensation and incentives, involvement and job design) and organisational performance is partially mediated through HRM outcomes (skills, attitudes, behavior), and it is influenced by business strategies (cost, quality, innovation).

- Long and Ismail (2011) examines the competencies - business knowledge, strategic contribution, HR delivery, personal credibility, HR technology and internal consultation- of human resource professionals in the manufacturing companies of Malaysia. A total of 89 firms responded to the survey exercise. This study uses quantitative methods such as spearmen r correlation and multiple regression analysis to test the variables. They found that the top nine ranking HR competency factors are from the domain of personal credibility and HR delivery. it is found that out of all HR competencies, the highest contributions to a firm's performance are strategic contribution and internal consultation.

- Ko and Smith-Walter (2013) used the 2011 Federal Employee Viewpoint Survey (FEVS), their study analyses HRM practices based on high-performance work systems (HPWS) in federal-level public sector organisations, and the effects on employees' work attitudes and organisational performance. They suggested that work attitudes mediate relationships between HRM practices and organisational performance positively.

- Kolibáčová (2014) describe the relationship between the competencies of employees and their performance. She used semi-structured interviews and analysis of internal documents as methodology. She evaluated competency and performance of 110 employees made by 22 evaluators. The results of the research suggest that companies should invest time and finances in increasing employee competencies, as they will contribute to higher performances.

- Elhazzam (2016) studied the Impact of Human Resource Management Practices (Human resource planning, recruitment and selection, training and development, compensation and performance appraisal) on Algerian southwest SMEs Performance. The results shows that all the five HRM practices are positively correlated with SMEs performance.

- Ahmed (2019) He took an E-HRM practicing organisation as base performance and compare it with E-HRM performing organisation to see whether organisational performance increase or not. He found that Informational E-HRM practicing organisation performance increases 73%, Interactional E-HRM practicing organisation performance increases 197% and finally, Transformational E-HRM practicing organisation performance increases 242% than no E-HRM practicing organisation.

- Gahlawat and Kundu (2019) in their paper "Participatory HRM and firm performance: unlocking the box through organisational climate and employee outcomes" examined the relationship between participatory HRM and firm performance through a series of mediators. They collected primary data from 569 respondents belonging to 207 organisations operating in India. Structural equation modeling and bootstrapping via process were used to analyse the hypothesized relationships between participatory HRM and firm performance. They found a positive linkage and that organisational climate, affective commitment and intention to leave serially mediate the relationship between participatory HRM and firm performance.

- Bendickson and Chandler (2019) conduct a study to investigate positive outcomes derived from **human** capital development programs on Operational Performance. They analyse data from 30 organisations and results a very positive impact on operational performance, which leads to greater revenue and sales.

- Rabab. Z and Toufik B. (2019) Conducted an analytical descriptive approach study to identify trends of the views of the administrative leaders at the University L'Arbi tbessi Tebessa, On the reality of the application of human competencies management functions and the role it plays In achieving efficiency, effectiveness, feasibility and sustainability on the The role of managing human competencies in improving the performance of institutions of higher education, a study of the views of a sample of administrative leaders at the University of Tebessa, Algeria. The study concluded that there is a positive relationship between the sub-variables which represent the functions of managing human competencies (Employment, Development, Motivation) And the dependent variable of efficiency, effectiveness, feasibility and sustainability of performance. The rate of HRM Practices & performance were qualified as "medium".

- Tajeddini, Martin, and Altinay (2020) conducted research in tourism firms, where they gather data from 201 tourism service firms located throughout Japan. They suggest that organisations can leverage the benefits associated with human-related factors to increase business performance.

- Anwar et al. (2020) study the green HRM and its influence on academic staff environmental performance using the AMO theory. Data were collected from two campuses of a renowned public research university in Malaysia and they conclude a positive relationship & the critical role of academic staff's environmentally friendly behavior for improving the environmental performance of a university.

- Swanson, Kim, Lee, Yang, and Lee (2020) in their paper explore the effect of leader competencies on knowledge sharing and job performance using social capital theory. The study shows leader competencies are critical for promoting knowledge sharing and enhancing employee job performance. Both knowledge sharing and employee job performance are found to have a direct effect on employee loyalty.

Section 2. Comments on the researches

Armstrong (2009b)(2009) analysed critically many of the studies listed above who used methodology to measure the association between the number of HR practices used by the firm and the financial results achieved by the firm. Their input variable treats the number of practices, while the dependent variable was profit or market value. Purcell *et al* (2003) have cast doubts on the validity of this approach. They demonstrated convincingly that research which only asks about the number and extent of HR practices can never be sufficient to understand the link between HR practices and business performance… It is

misleading to assume that simply because HR practices are present, they will be implemented as intended.

In 1997 David Guest commented that: "At present the studies report a promising association between HRM and outcomes, but we are not yet in a position to assert cause and effect". Ulrich (1997) has pointed out that: "HR practices seem to matter; logic says it is so; survey findings confirm it. Direct relationships between performance and attention to HR practices are often fuzzy, however, and vary according to the population sampled and the measures used". Purcell *et al* (2003) noted that 'Measures which use profit or shareholder value are too remote from the practice of people management to be useful". Any attempt to prove that good HR practice generates high economic returns has to confront the objection that there might be any number of reasons for high economic performance which have nothing to do with HRM. Wood and Paauwe produced comprehensive analyses of studies of the HRM/performance link.

Wood (1999) made a view on HRM/performance link studies. This empirical work (15 studies) "has concentrated on assessing the link between practices and performance, with an increasing disregard for the mechanisms linking them. This has meant that there has been no systematic link between HR outcomes and performance. Moreover, there has been an increasing neglect of the psychological processes that mediate or moderate the link between HR practices and performance".

Jaap Paauwe (2004) came with another view on HRM/performance link studies, his research on HR and performance has been based on a narrow-minded definition of performance which involves the use of limited analytical frameworks based on simple input/output reasoning. So, there is a substantial negligence of the process itself, the actors and stakeholders involved, the administrative heritage and institutional values. A systems-based approach is required which includes HRM practices and policies as input variables, HRM outcomes as intermediate variables and firm performance indicators as the dependent variables. Contingency variables such as size and technology need to be used as control variables.

Reference was made by Boselie et al. (2005) to the causal distance between an HRM input and an output such as financial performance: «Put simply, so many variables and events, both internal and external, affect organisations that this direct linkage strains credibility.' Another problem is the assumption some people make that correlations indicate causality – if variable A is associated with variable B then A has caused B. It might, but again it might not. This is linked to the issue of "reversed causality" which is the assumption, as Purcell et al. (2003) put it, «that more HR practices leads to higher economic return when it just as possible that it is successful firms that can afford more extensive (and expensive) HRM practices». They also comment that when successful firms invest heavily in HRM they may do so to help sustain high performance.

2.1. HRM and individual performance

There are three factors that affect the level of individual performance: motivation, ability and opportunity to participate. Vroom (1964) highlighted the first two factors, he made the following suggestions on the basis of his research: The effects of motivation on performance are dependent on the level of ability of the worker, and the relationship of ability to performance is dependent on the motivation of the worker. The effects of ability and motivation on performance are not additive but interactive. The data presently available on this question suggest something more closely resembling the multiplicative relationship depicted in the formula: **Performance = *f* (Ability × Motivation)**.

Vroom also pioneered expectancy theory which, as developed by Porter and Lawler (1968), proposes that high individual performance depends on high motivation plus possession of the necessary skills and abilities and an appropriate role and understanding of that role.

The third factor "opportunity to participate" as it affects performance, was focused by Bailey *et al* (2001) studying 45 establishments. They noted that «organizing the work process so that non-managerial employees have the opportunity to contribute discretionary effort is the central feature of a high-performance work system». (This was one of the earlier uses of the term «discretionary effort».) They stated that the other two components of a high-performance work system were incentives and skills.

The «AMO» formula put forward by P. Boxall and Purcell (2003) is a combination of the Vroom and Bailey *et al* ideas. This model asserts that performance is a function of Ability + Motivation + Opportunity to Participate (note that the relationship is additive not multiplicative). HRM practices therefore impact on individual performance if they encourage discretionary effort, develop skills and provide people with the opportunity to perform.

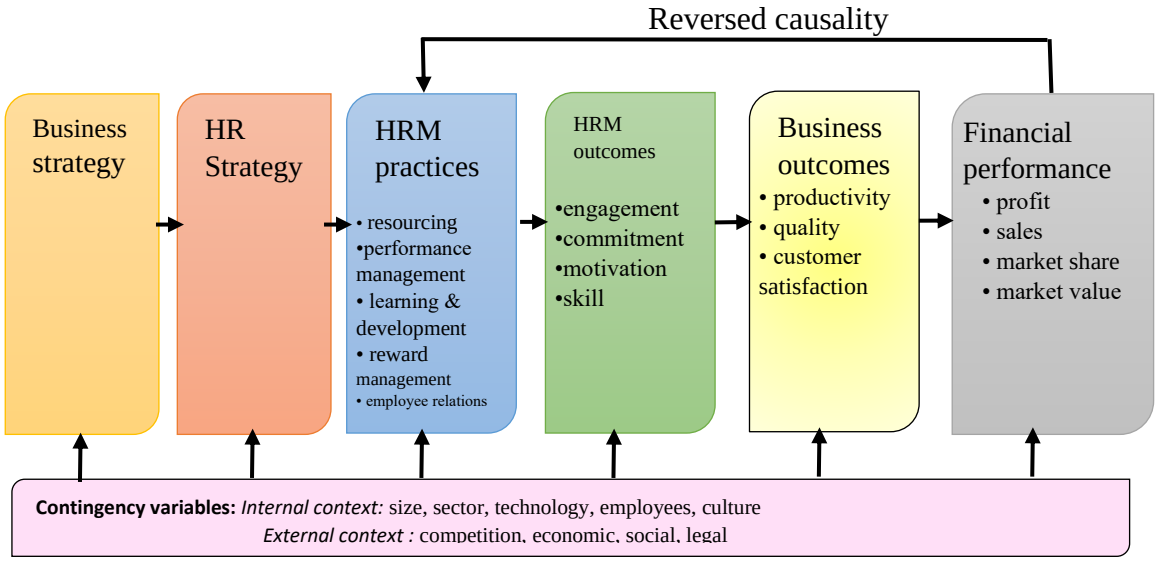
2.2. HRM and organisational performance

It may be possible to detect an association between HRM practices and the economic performance of firms. But because of all the other factors involved, it may be difficult if not impossible to demonstrate that the HR practices caused the high performance. As contingency theory tells us, what happens in organisations will be influenced, even governed, by their internal and external environment. There is also the problem of **reversed causality** – HR practices may have influenced the raise in performance but high performance on the other hand may have encouraged the use of sophisticated HR practices. Any theory about the impact of HRM on organisational performance must be based on three propositions:

1. That HR practices can make a direct impact on employee characteristics such as engagement, commitment, motivation and skill.
2. If employees have these characteristics, it is probable that organisational performance in terms of productivity, quality and the delivery of high levels of customer service will improve.
3. If such aspects of organisational performance improve, the financial results achieved by the organisation will improve.

Note, however, that are two intermediate factors between HRM and financial performance (employee characteristics affected by HRM and the impact of those characteristics on non-financial performance). According to these propositions, HRM does not make a direct impact. The relationship is further complicated by the other two factors mentioned above: the contingency variables and the possibility of **reversed causality**. The following model was proposed by Michael Armstrong where he took all these considerations into account and demonstrated the impact of HRM taking into account the reversed causality and contingency variables as shown in Figure 35.

Figure 35. Impact of HRM on organisational performance



Source: the author based on Armstrong (2009a)

Section 3. The concept of the "black box"

The most crucial part of issues relating to the HRM Performance debate is the linkage between the two (Paauwe, Boselie, 2005). Empirical research investigating the relationship between HR practices and organizational performance confirm the importance of human resources, their management and their influence on organizational value. However, two different approaches exist (Chand, Katou, 2007): some authors state that there is a "direct" relationship between HR practices and organizational performance (Schuler, Jackson, 1999), others stress an "indirect" relationship between HRM practices and organizational performance (Ferris et al., 1998; Edwards, Wright, 2001). In relation to the first research path, three major perspectives emerge from the existing literature: universalistic, contingency and configuration (Katou, Budhwar, 2007). In relation to the second research path, the general consensus developed among researchers is that HR practices do not lead directly to business performance (Katou, Budhwar, 2007) and it has long been recognised that mechanisms of HRM-Performance link and intermediate outcomes are central to a more complete understanding of how HRM drives firm performance (Becker, Gerhart, 1996). Based on the second approach different authors describe existing issues using very similar statements (see Table 10).

Table 10. Propositions to the "black box" concept

Author	Statements
Becker, Gerhart, 1996	There is a lack of understanding about the process (how and why) through which HRM creates organisational value and increases performance
Huselid, Becker, 1996	Properly designed and deployed HRM represents a significant economic asset for an organization. It does not, however, provide direct evidence of how such a system creates that value. To date there is very little research that "peels back the onion" and describes the processes through which HRM influence the principal intermediate variables that ultimately affect organization performance
Delery, 1998	There is a little understanding of the mechanisms through which HRM practices influence effectiveness
Purcell et al., 2003	Many previous studies have examined the link between HRM practices and performance and shown there to be a positive relationship, but none has

	explained the nature of this connection – how and why HRM practices impact on performance
Wright et al., 2003	Much of the research has demonstrated statistically significant relationships between HR practices and firm profitability. While these studies have been useful for demonstrating the potential value created through HR practices, they have revealed very little regarding the processes through which this value is created
Boselie et al., 2005	Between the input (i.e. some form of HRM intervention) and output (i.e. some indicator of performance) – moderated possibly by intervening variables – lies what HRM does to improve performance, how and why, but scant attention is paid to examining the "linking mechanisms" and the "mediating effects of key variables" in this relationship
Lytras, Ordonez de Pablos (2008)	There is a gap explaining how HRM contributes to the creation of a sustained competitive advantage
Theriuo, Chatzoglou (2009	Despite the quantity and variety of empirical studies, examining the impact of different HRM practices on organizational performance, little attention has focused on the concept or understanding of the mechanisms through which HRM practices influence performance. There appears to be only a limited amount of research attempting to explore how HRM practices essentially work and, hence, to pinpoint the processes through which these practices can lead to competitive advantage

Source: Savaneviciene and Stankeviciute (2010)

According to Purcell et al. (2003), the "black box" refers to the often unclear processes that occur when inputs are converted into useful output. The "black box" is also described as "gap" (Lytras, Ordonez de Pablos, 2008), "largely unexplained facet" (Edgar, Geare, 2009) or "remaining void" (Harney, Jordan, 2008) in terms of explaining the processes and mechanisms by which the HRM-Performance impact operates. It is noteworthy that the concept the "black box" is not accidental: we know little of what happens at this stage and hence it contains remain somewhat mysterious (Boselie et a.l, 2005). According to Fleetwood and Hesketh (2008), in the "black box" inputs are translated into outputs, with no explanation of what goes on in between. Due to this reason Becker and Huselid (2006) maintain that complexities and nuances highlight the requirement to consider in more depth the relationship and exact mechanisms shaping the link between HRM and performance. In the scientific literature quite big number of theoretical models, explaining the mechanisms through which HRM-Performance relationship works, is presented. All these models are designed for opening the "black box" and reflect the order of Becker et al. (2001) that "Ultimately, you must have a persuasive story about what's in the black box. You must be able to throw back the cover of that box and reveal a plausible process of value creation from HRM to firm performance". However, there is an ongoing debate over the mediating variables and its number. This means that till now there exists no answer to the Wright and Gardner (2003) question – how many boxes should be taken into account when studing the HRM-Performance linkage. The answer to this question is important as, according to Becker and Huselid (2006), "a clearer articulation of the 'black box" between HRM and firm performance" is the most pressing theoretical and empirical challenge in the Strategic HRM literature.

Section 4. Chapter conclusion

As stated before, prior research substantiates the belief that there is a positive relationship between HRM practices and organisational performance. Kolibáčová (2015) suggest that when the competency rate of one employee is a unit higher than the competency rate of another employee, it can be assumed that his performance rate is 7 to 12.5% higher.

However, there is little or no convincing empirical evidence that coherent and consistent systems or bundles automatically lead to higher performance (Gerhart, 2004). Unfortunately, the relationships are often (statistically) weak and the results ambiguous. That's why several research took care of studying the intermediate factors that link HRM with performance. And yet this intermediate box seems to still ambiguous so far. They still call it the black box.

It is obvious that progress in understanding the relationship between HRM and performance can be achieved by taking into account all the points made so far. Nevertheless, that kind of progress will be piece-meal. Consequently, real progress can only be made by looking at the broader picture of developments in the field of strategic management, the speed of change within companies and what this implies for managing people and stakeholders (Paawe & Boselie, 2005). We need to look beyond practices such as staffing and the management of human resource flows. These are the kinds of hygiene factors, which if not delivered cost-effectively will lead to underperformance of the organisation.

CHAPTER FIVE

Case study

CHAPTER FIVE: Case study

Introduction

The university of Tlemcen (UoT) has been chosen as a representative society for our study to analyse its performance, its staff competencies, and the way they are managed. The reason is that UoT is one of the best public universities in Algeria. It was ranked 2nd place among Algerian HEIs in 2022 according to QS ranking (Quacquarelli Symonds, 2022). In addition, since I am a staff member at this university, I have more access to information.

This chapter will be organised into five sections, the first one will be consecrated to the Algeria's higher education system, the second will be about the university of Tlemcen and the main structures supporting academic staff competencies. the third and fourth part will be about performance of the university of Tlemcen and its researchers according to different online resources, ranking websites, scientometric databases, and documents of the university to see how the UoT is managed and where it is situated comparing with other institutions.

The final section will be an analysis of a questionnaire that was conceptualised and distributed among academic staff of the university of Tlemcen. The aim of this questionnaire was to explore the academic staff competencies, notably: Pedagogy, digital skills and research performance. On another hand, we asked participants on different issues about the management of their careers and competencies besides finance and rewards. The results will be discussed further and recommendations will be given at the end.

Section 1. An overview of Algeria's Higher Education:

The Algerian University is considered the second university after the University of Alexandria, which was founded in 1908 AD, in the Arab world.

The creation of the Ministry of Higher Education and Scientific Research, which corresponds to the date of July 24, 1970, headed by the late Mr. Muhammad Al-Siddiq bin Yahya.

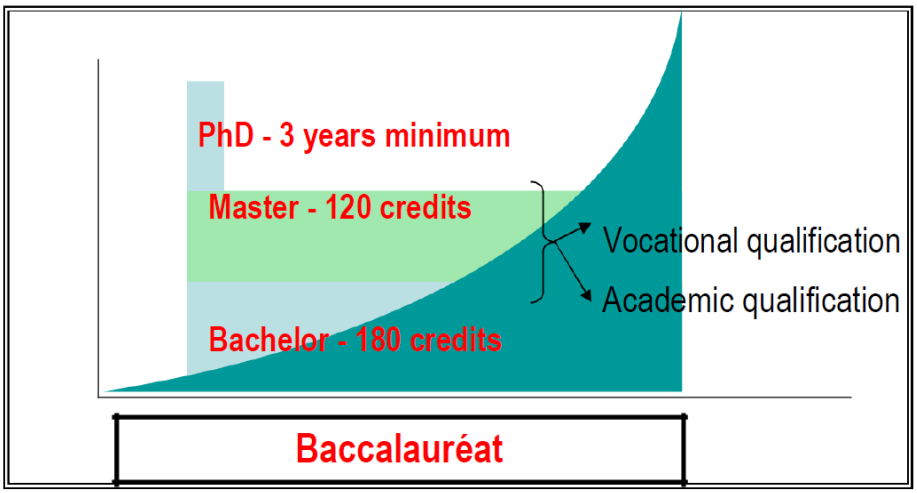
Algeria was before the colonial feast, possess one university, the University of Algiers. It was founded on 1877, as the most ancient university in the Arab world, and it was considered as a copy version of the traditional colonial universities, as it was at that time franchised in all aspects: program, methodology, management and goals, since it was founded specifically for the colonial students located in Algeria. After independence, the Algerian state embarked on implementing comprehensive educational reforms that also affected the university and it was in keeping with the development of the social and the current economic and political transformation.

Towards the end of the second decade of the 21st century, the Algerian higher education system is a binary one. Algeria has some universities more than 100 years old. It turns out that in 1962, Algeria had one main university: the University of Algiers (the capital) founded in 1910, with two dependent universities in Constantine (East) and Oran (West). It also had some Grandes Écoles such as l'École Nationale Supérieure de Commerce (1900), l'École Nationale Supérieure d'Agronomie (1909), and l'École Nationale Polytechnique (1925) (World bank, 2012). Today, Algeria has a network of 54 University, 9 University Centers, 35 Higher National Schools and 11 Higher Normal school (which makes 109 HE institutions) spread over the 48 Wilayas (first major administrative divisions in the country) (Ministry of Higher Education and Scientific Research, 2021).

The Algerian higher education sector has been marked by two major forms of policy since its independence: the classic system and the most recent - the adoption of a higher education framework in three cycles, called the LMD system (License- Master- Doctorate), in place since 2004/2005.

Algerian universities have carried out a reform aimed at integrating the standards of the Bologna process: 3 years of study for the Bachelor and 2 years for the Master. Since the introduction of the three-cycle degree system in 2004, universities have issued a Bachelor, for obtaining 180 credits (first cycle), a Master, for obtaining 120 additional credits (second cycle) and, following a course of study, a Doctorate (third cycle). A License or Master can take two different forms: "academic" education or "applied" education, that is to say specialized or technical. In parallel with the system following the Bologna process, there are other qualification classification scales in Algeria, in particular with regard to so-called "single cycle" or "long" diplomas of 5 to 7 years, as in the case of medical studies.

Figure 36. Educational system diagram



Source: (MERIC-NET Project, 2019)

1.1. Professional (vocational) training

In Algeria, there are two types of professional diplomas:

• Professional diplomas in higher education, the professional master's degree, are issued by HEIs;

• Professional diploma supervised by the Ministry of vocational Training. Their diplomas are considered as professional training and not as academic, as they are recognized by their ministry.

There are two types of HEIs in Algeria: Public and private.

Public higher education is provided in universities, academic centres and schools. There are also Institutes of Sciences and Applied Techniques, created within the universities and whose exclusive mandate is to train middle managers holding a professional degree, for an explicit requirement.

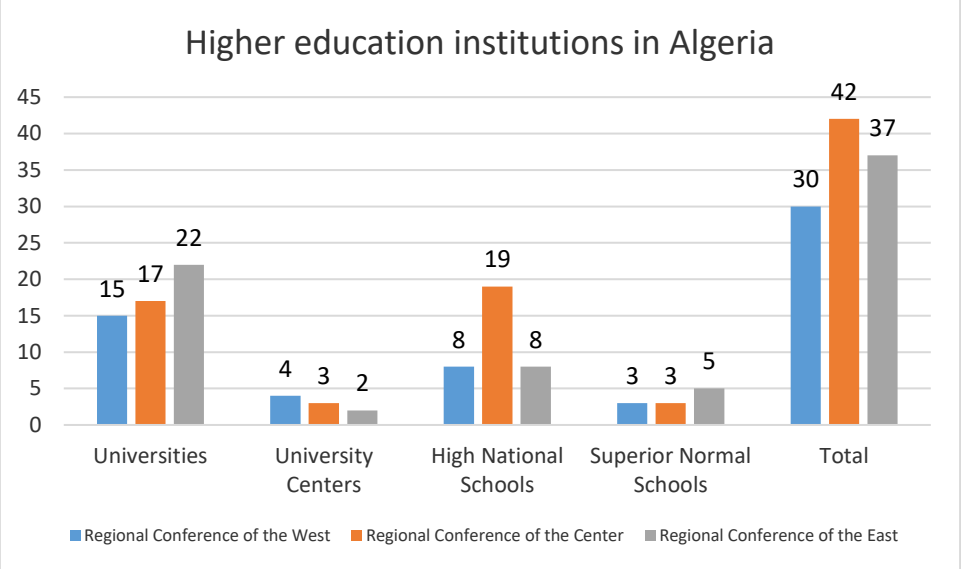
Private higher education, recently created (2014), currently has eleven (11) private higher education institutions:

- Ecole Supérieure d'Hôtellerie et de Restauration d'Alger (ESHRA)
- Management Development Institute (MDI)
- Institute Ennour
- Institut de Management d'Alger (IMA)

- Institut de Formation d'Assurances et de Gestion
- Institut de Management (INSIM-SUP)
- Ecole de Management (EM)
- Institut d'Electronique et de Mécanique (IEM)
- Ecole de Formation en Techniques de Gestion (EFTG)
- Institut d'Optométrie
- Ecole de Management d'Alger (Business School)

The Algerian university network consists of one hundred and seven (109) higher education institutions spread over forty-eight (48) Algerian administrative areas, covering the entire national territory. This network is composed of 17 universities in the Central Region; 22 Universities in the Eastern Region and 15 Universities in the Western Region. There are also 9 academic centers, 11 higher normal schools and 35 higher national schools.

Figure 37. HE institution's Net in Algeria



Source: The author based on (MESRS, 2020)

1.2. Governing Bodies of Higher Education

State policy in the field of higher education is implemented by the Minister of Higher Education and Scientific Research. He develops the national curriculum for higher education and scientific research, in accordance with the laws and regulations in force, and schedules, coordinates and evaluates higher education. In addition, the pedagogic supervision of the Ministry of Higher Education and Scientific Research is granted to both higher education institutions in other ministries and private higher education institutions.

To carry out its mission, the Minister of Higher Education relies on a number of advisory bodies.

Placed under the authority of the minister responsible for higher education, several bodies or institutions play an important role in the implementation of the training policy of the parent ministry and in the implementation of the strategy underlying this policy:

i. The CNU (National Conference of Universities) is under the direct authority of the Minister of Higher Education. It brings together all heads of higher education institutions and is the supreme educational authority.

ii. The CRUs (Regional Conferences of Universities) are regional subdivisions of the CNU and bring together the heads of higher education institutions in each of the three regions that make up the university map: CRU West, CRU Centre, CRU East.

iii. A university ethics and morality council, responsible for ensuring the promotion of university moral values, to propose any measure relating to the rules of ethics and professional morality.

iv. The CNH (National Commission for Empowerment) and its regional subdivisions which are the CRE (Regional Assessment Commissions); these are bodies that came about with teaching reforms. Their mission is to evaluate training offers from academic institutions and to authorise them to issue the corresponding diplomas. It should be noted that each ministerial department is represented by a member of the CNH which constitutes the last advisory body before the authorisation of a training offer for bachelor, master or doctorate.

v. The CUN (National University Commission) promotes teachers to the rank of professors of higher education.

vi. The CNE (National Evaluation Committee) is an autonomous body responsible for promoting the internal and external evaluation of higher education institutions with the aim of improving their performance in terms of training, research and governance.

vii. The Scientific Council (CS) is an advisory body within academic institutions (university, faculty and department).

viii. The CNER (National Council for the Evaluation of Scientific Research and Technological Development), an autonomous body responsible for evaluating research activities and the fulfilment of national research programmes in the higher education sector and in other socio-economic sectors involved in research activities. Other educational and scientific evaluation bodies exist such as the National Pedagogical Sector Committees (CPND).

1.3. Some overall indicators:

The ex-minister of higher education declare that “From the first post-independence years, Algeria emphasised the importance of education and higher education to support its development projects " (Pr. Tahar Hadjar, 2021). A challenge, "for a country which was characterised by a predominantly rural population, with a high rate of illiteracy, a very low enrollment rate in primary and secondary education, resulting in a very reduced population of high school graduates.". From a university and two schools in Algiers in 1962, Algeria grew to 106 universities in 2018, with 2,375 students in 1962 and 1,730,000 students respectively. "We thus went from 3 students per 10,000 inhabitants to nearly 400 students per 10,000 inhabitants in 2017/2018", he said, indicating that these numbers will increase "drastically" to reach 2 million in 2019 -2020 and 3.5 million by 2030. "This evolution of the workforce is the result of the policy of democratisation and free higher education and of its mission, consecrated, of public service", affirmed the minister, stressing that since 1999, the higher education sector has experienced "full expansion" both in terms of the development of new infrastructure, and in terms of increased supervision and student numbers through a strategy of development driven by 4 five-year programs. To this end, during the period 1999-2018, the 270% increase in the number of students (407,995 students enrolled including 208,523 girls (51.1%) in 1999-2000, and 1,730,000 enrolled students including 1,081,250 girls (62.5%) in 2018), also indicating that the number of teaching staff increased by 340%, from 17,460 teachers in 1999/2000 to 60,000 teachers in 2017/2018.

In terms of the evolution of the Algerian university network, the sector has grown from 53 establishments including 18 universities in 1999/2000 to 106 university establishments

including (50 universities, 13 university centers and 43 higher schools) in 2017/2018, he added, highlighting the new reform of the architecture of Algerian higher education inspired by the European LMD system, accompanied by an updating and upgrading of the various educational programs as well as the reorganisation of educational management and governance.

Addressing the issue of gender in Algerian higher education, supporting figures, Mr. Hadjar indicated that in 1962/1963, only 21.2% of girls were enrolled in university, in 2017 they represented 62, 5% of registrants and 65.6% of graduates.

"At the level of doctoral studies, they represent 52.5% of the workforce," he added, adding that out of nearly 60,000 university teachers of all grades, nearly 47% are women.

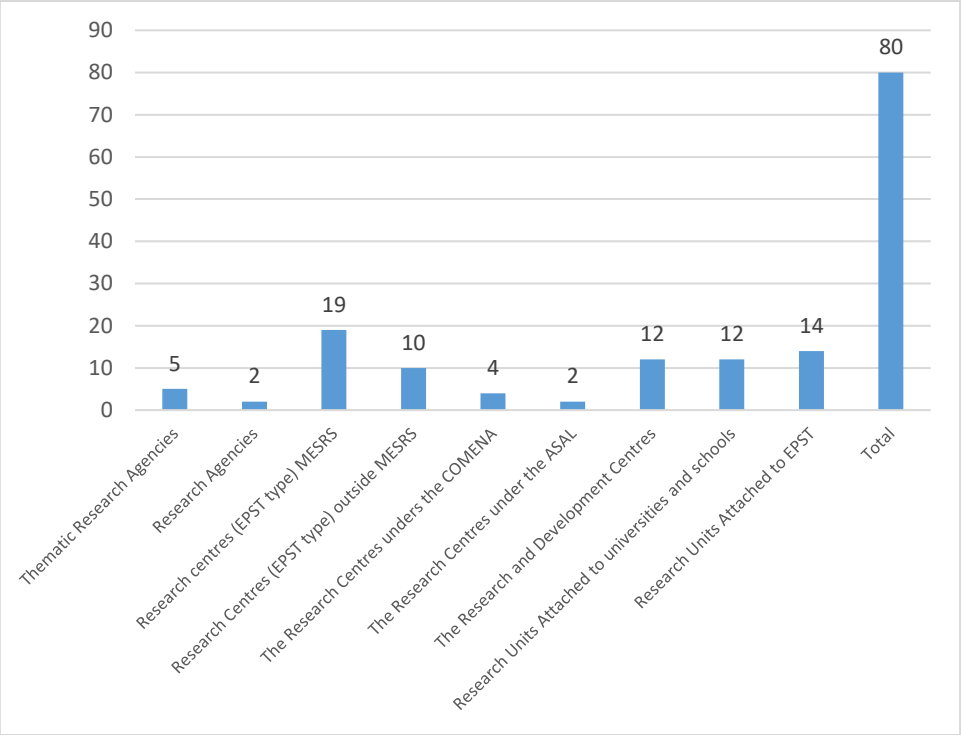
"Regarding gender question, the starting point of this evolution and especially the obstacles that had to be overcome and the characteristics of Algerian society where Female labor force constitutes only 20.6% of the total labour force, "."fair and transparent" access to the university for new baccalaureate holders, informing, moreover, that this year, Algeria is offering 2,500 cooperation scholarships to foreign students, the number of which is is increased to 12,000 from 70 countries.

The minister concluded "Beyond our values of welcome and hospitality and our contribution to the human resources development policy of these brotherly and friendly countries, Algeria considers any foreign graduate of Algerian universities as an additional bond of friendship, understanding and cooperation "

1.4. Scientific research structures in Algeria

There are around 80 research structures in Algeria. These structures are categorised under the form of agencies, centers, development centers and units.

Figure 38. Research structures in Algeria



Source: the author based on (DGRSDT, 2021)

Section 2. Administrative management of a teacher researcher in Algeria

As part of the administrative career management of the teacher-researcher, the legislative aspect is largely dominated by the general statute of the public service (order n° 06-03 of 15/07/2006) and the particular statute of the teacher-researcher (executive decree n° 08-130 of 03/05/2008) (BOUGHAZI & Amrani, 2018).

2.1. general status of the public service

Order n° 06-03 of July 15, 2006 related to the general statute of the public service was implemented as soon as regulatory texts were published, notably the presidential decree

n ° 07-304 of September 29, 2007 fixing the salary scale and the compensation plan for civil servants, and executive decree n°. 08-130 of May 3, 2008 aforementioned, relating to the special status of the teacher-researcher. The general status of the public service applies to all civil servants in the public service sector including the teacher-researcher.

The Algerian legislator has well defined the concept of the civil servant, he quotes in article 04 of the aforementioned order 06-03: "An official is the agent who, appointed to a public post, was established in a grade in the administrative hierarchy."

It follows from this article, the concept of the civil servant. He defines himself as the public official meeting the following three criteria:

- nomination,
- tenure,
- occupation of a rank in the administrative hierarchy.

The teacher-researcher is recruited as assistant teacher class b trainee when holding the diploma “magistère” under the executive decree 98-254 of August 17, 1998 relating to doctoral training, the post of specialized graduation and university accreditation6, or the LMD doctorate, provided for by the executive decree 08-265 of August 19, 2008, and after this internship period with satisfaction he will be tenured in his grade and then he will have the possibility of systematic promotion within the framework of the university accreditation provided for by the aforementioned executive decree 98-254.

Executive Decree No. 08-130 on the special status of the teacher-researcher presented the following features:

- an expanded number of categories ranging from subdivision 1 to subdivision 7;
- a special status within and except only for the teacher-researcher
- An index grid according to the grade classification of the teacher-researcher.
- An index bonus of (50%) for unclassified emeritus professor at the categorical scale, because this title is higher than the grade of professor classified at the most top of the categorical scale (subdivision7), and also the teachers occupying the managerial positions of a functional nature benefit from this advantage.

2.2. the special status of the research teacher

The framework of the teacher-researcher is determined by Executive Decree No. 08-130 of January 19th, 2008 concerning the special status of the teacher-researcher, it stipulates in its article 28 that:

The nomenclature of the research teaching staff is set as follows:

- Body of assistants,
- Body of assistant lecturer,
- Body of conference’ lecturer,
- Body of professors.

1) body of assistants: This body is kept in the process of extinction, and the assistants manage by the ex special statute (89-122 above) are integrated into the grade of assistant and can be promoted on title as a teacher' assistant class B after their recruitment if they obtain the diploma of magister or a recognized equivalent title.

2) the body of assistant lecturers,:

This body has two (2) ranks:

- The grade of assistant lecturer class B
- The grade of assistant lecturer class A

a- The grade of master assistant class B

He is recruited by decision of the head of the establishment:

- On qualifications, holders of a state doctorate or a doctorate in science diploma or of a diploma recognised as equivalent:

- By way of competitive examination, holders of a magister's diploma or a title recognized as equivalent.

The magistère diploma obtained within the framework of decree 98-254 of August 17, 1998, modified and completed, or the diploma recognised as equivalent must have been issued at least with the mention "good enough".

b- the grade of master assistant class A: This grade is reserved only for internal promotion, are promoted, by decision of the head of the establishment, as class A master assistants, class B assistants with proof of three (3) consecutive registrations for a doctorate, on the proposal of the dean of the faculty, the director of the institute or the head of the school's department, after advice:

- The scientific committee of the department for the faculty and the school,
- The scientific council of the institute, as regards the institute within the university and the institute of the university center.

3) The body of conference' lecturers: This body is reserved only for internal promotion, and comprises two (2) ranks:

- The grade of lecturer class B
- The grade of lecturer class A

a- The grade of lecturer class B

The following are promoted by decision of the head of the establishment, as class B lecturers:

- assistant lecturer class B, justifying a doctorate degree in science or a recognised equivalent diploma,
- assistant lecturer class A who have obtained a doctorate degree in science or a recognised equivalent diploma.

b- The grade of lecturer class A

The following are promoted, by decision of the head of the establishment, as class A lecturers:

- Full class B lecturers, justifying university accreditation or a recognised equivalent title,
- assistant lecturer class A who have obtained the state doctorate or a recognized equivalent diploma,
- assistant lecturer class B, justifying a state doctorate or a recognised equivalent diploma.

4) The body of professors this body compotes the rank of professor. Article 48 of the aforementioned Executive Decree 08-130: "A national university commission is hereby established (C.U.N) responsible for evaluating the activities and scientific and educational publications of class A lecturers who are candidates for promotion to the rank of professor. The CUN establishes the evaluation criteria and the related scoring grid and submits them for

approval to the ministry responsible for higher education. The CUN members are appointed by decree of the minister in charge of higher education from among the research professors and proving at least three (3) years of seniority in this quality. The organisation and functioning of the commission are set by order of the minister responsible for higher education.

5) The grade of professor emeritus the special status of the teacher-researcher established the title of professor emeritus by article 52 of the aforementioned Executive Decree 08-130, this title is reserved for professors who are candidates for appointment as professor emeritus. A national emeritus commission is established to assess the activities and scientific and educational publications of candidate professors. The members of the committee are appointed by order of the minister responsible for higher education from among research professors justifying the title of professor emeritus. The organisation and functioning of the commission are set by order of the minister responsible for higher education. Once the candidates are admitted by the national emeritus commission, they will be appointed by presidential decree, on the proposal of the minister responsible for higher education and scientific research.

2.3. Technical Framework:

In this part we will explore the different administrative structures involved in the teacher-researcher management and their operations.

2.3.1. Administrative and functional organisation

The aforementioned executive decree n ° 03-279, cite in its article n ° 02 that "the university is a public establishment of a scientific, cultural and professional nature with a moral (legal) personality and financial autonomy ". And in its 3rd article "the university is created by executive decree based on the proposal of the minister responsible for higher education and is placed under his supervision". According to these two articles, we distinguish that the university has an autonomous management, and the director of the university is invested with the power of appointment and administrative management, following the executive decree n ° 90-99 of March 27, 1990 relating to the power of appointment and administrative management with regard to civil servants and agents of central administrations, wilayas and municipalities as well as public establishments of an administrative nature. The staff management of the teacher-researcher is assigned to the general secretariat at the level of the Rectorate. The general secretariat is responsible for ensuring the career management of university staff in accordance with the powers of the faculty and the institute in this area.

2.3.2. The career evolution of a teacher-researcher

The professional career of the teacher-researcher like any civil servant begins with recruitment and ends with the end of the functional relationship as provided for by article 216 of order n ° 06-03, either by the forfeiture of civic rights, either by duly accepted resignation, or by revocation, or by dismissal, or by admission to retirement, or by death, which will be pronounced by decision in the same forms as the appointment. During his career, the teacher-researcher enjoys certain rights and guarantees conferred on him by the general status of the public service and the special status of teacher-researchers.

2.3.2.1. the rights of the research teacher

After his recruitment, he is placed at the disposal of the personnel services and will be assigned to the educational structure. The teacher-researcher is recruited either by title or by competitive examination following article 34 paragraph 2 and 3 of the aforementioned decree 08-130. Article 34:

- The following are recruited as class B assistant teachers, by decision of the head of the establishment: - on title, holders of state doctorates or a doctorate in science diploma or a recognised equivalent qualification.

- By way of competitive examination on qualifications, holders of a magister or a recognized equivalent qualification. The magister's diploma obtained within the framework of executive decree n ° 98-254 of August 17, 1998, modified and completed, referred to above, or the diploma recognized as equivalent must have been issued at least with the mention “fairly good”.

This recruitment is the only way that allows graduates in this context to access higher education as a research professor (master-assistant class B). After appointment, class B assistant masters are recruited as trainees and are required to complete a probationary period lasting one year. At the end of the probationary period, the trainees are either tenured or required to extend their probationary period for the same duration, or dismissed without notice or compensation.

1/ Individual rights: Individual rights are essentially composed of physical freedoms and freedoms of opinion.

- physical freedoms: The teacher-researcher, as a citizen, enjoys, on the same basis as everyone else, the rights considered essential for the activities of the human person living in society and who are therefore recognised, defined and legally protected.
- Thus, the teacher-researcher has the free choice of residence and freedom of circulation. But the enjoyment of these freedoms is limited by the obligation to join and occupy the duty station on a permanent basis. He therefore enjoys marital freedom.
- Freedom of opinion: These are essentially the freedom of consciousness and expression. Freedom of consciousness is the right of each individual to have a personal opinion: political, religious, philosophical conviction, to avoid any kind of discrimination. As for the freedom of expression, it relates to the manifestation, to the exteriorisation of the opinions and deep convictions of the individual. This freedom is recognized by the constitution following article 36 of the constitution of 1996, and article 26 of the general public service statute (Order 06-03). However, it knows its limits, namely: the obligation to reservation/confidentiality out of service.

2/ collective rights:

- *Freedom of association*: Freedom of association is recognised by the general statute of the public service in its article 35 within the framework of the current legislation in particular the law 90-14 of June 06, 1990 which stipulates in its article 02:

"Salaried workers on one hand, and employers on the other hand, in the same profession, branches or sectors of activity have the right to form a trade union organisation, in order to defend their material and moral interests".

In this sense, there are two (02) trade union organisations in Algeria within the framework of higher education:

- National Council of Higher Teachers (CNES[1])
- General Union of Algerian Workers (UGTA[2])

- *The right to strike:* A strike is the concerted and collective cessation of work with a view to satisfying professional demands. The right to strike is analysed, then, as a prerogative recognized to workers and by virtue of which they can voluntarily and collectively cease their service provision in order to obtain the satisfaction and improvement of their living and working

[1] CNES in french stands for Conseil National des Enseignants Supérieur
2 UGTA in French stands for Union General des Travailleurs Algeriens

conditions. This right is provided for by the general public service statute referred to above in article 36, worded as follows: "The civil servant exercises the right to strike, within the framework of the current legislation".

3/ Material advantages

They are made up of remuneration, social security and pensions.

- **Remuneration**:

remuneration is a right for the civil servant after service is done. It includes two elements: - The salary - The bonuses and indemnities

The civil servant also benefits from family benefits provided for by the regulations in force. The salary is determined on the basis of the minimum index of the grade to which is added the index corresponding to the step occupied.

Civil servants belonging to the teacher-researchers body are beneficiaries of bonuses and following allowances:

- Bonus for improving educational and scientific performance,
- Pedagogical experience allowance,
- Documentation allowance,
- pedagogical supervision and follow-up (encadrement) allowance,
- Scientific qualification allowance.

These allowances are governed by executive decree n°. 10-252 of October 20, 2010 establishing the teacher-researcher indemnity scheme.

1. The documentation allowance is paid, monthly, to officials belonging to the body of the teacher-researcher for the grades and amounts shown in the table below:

Table 11. Documentation allowance in teachers salary system

BODY	GRADES	AMOUNTS IN DA
Assistant	Assistant	3000
Assistant teacher	Assistant teacher class B	6000
	Assistant teacher class A	8000
Conferences lecturer	Conferences lecturer class B	12000
	Conferences lecturer class A	14000
Professor	Professor	16000

Source: article 5 of the ED 10-256

2. Pedagogical supervision and follow-up allowance

Table 12. Suprvision allowance in teachers salary system

BODY	GRADES	% of gross salary
Assistant	Assistant	20%
Assistant teacher	Assistant teacher class B	25%
	Assistant teacher class A	30%
Conferences lecturer	Conferences lecturer class B	45%
	Conferences lecturer class A	50%
Professor	Professor	60%

3. Scientific qualification allowance.

Table 13. Scientific qualification allowance

BODY	GRADES	% of gross salary
Assistant teacher	Assistant teacher class B	10%
	Assistant teacher class A	15%
Conferences lecturer	Conferences lecturer class B	25%
	Conferences lecturer class A	30%
Professor	Professor	40%

➢ **The pension:**

This is the "remuneration" of the civil servant after the final cease of the functional relationship. He can benefit from the retirement pension when he meet the following two conditions:

- be at least sixty years old for men and 55 for women.
- have worked for at least fifteen (15) years.

The teacher-researcher can voluntarily opt to continue his activity beyond the regulatory age within the limit of five (5) years, during which cannot pronounce its retirement[1].

➢ **social security:**

The Algerian social security system is characterised by:

- The unification of regimes based on the principles of solidarity and reparation;
- The compulsory affiliation of all workers, employees, non-employees, assimilated to employees; and other special categories;
- The unification of the rules relating to the rights and obligations of beneficiaries;
- The uniqueness of the funding;

The system includes all the branches of social security provided for by international conventions, namely health insurance, maternity insurance, invalidity insurance, death insurance, work accident and occupational disease branch, retirement and unemployment insurance and family benefits. The monthly personal contribution of the teacher-researcher is 9% distributed as follows:

Table 14. distribution of the 9% personal contribution in social insurance

Social insurance	retirement	unemployment Insurance	early retirement	Total
01.5%	6.75%	0.50%	0.25%	09%

Additionally, the protection is granted to the insured' related, namely:

- The spouse;
- Dependent children;
- Dependent ascendants.

4/ The non-material advantages:

They can be summed up on one hand on the rights to training, advancement, promotion, mobility, secondment, lay-off and senior management and on the other hand to the right to protection against threats, contempt, insults, defamation or attacks of any kind.

[1] Article 02/06, Law 16-15 of December 31, 2016, amending and supplementing Law 83-12 of July 2, 1983 relating to retirement.

➢ ***Training***: training in general is a right reserved to the teacher-researcher during his professional career, to ensure the improvement of his qualifications, his professional promotion and his preparation for new assignments.

In this sense there are three types of training[1]:

1- Specialised training:

- the initial occupation of public employment;
- access to a higher body or grade for active officials;
- preparation for competitions and exams.

2- Development: improving, enriching, deepening and updating the knowledge or basic skills of the civil servant in general and in particular the teacher-researcher;

3- Recycling:

- adaptation to a job, taking into account either the evaluation of methods and techniques, or major changes in the organization, or the operation or missions of the service.

➢ ***Advancement***: Advancement consists of moving from one step to the next higher step and

is carried out continuously according to the rhythms and procedures which are set by regulation. The seniority required for advancement in each step is set at three advancement periods at most, minimum, average and maximum.

The special status of the teacher-researcher provides in Article 19 for three rates of progress are set as follows:

- according to the minimum duration for teachers,
- according to the minimum and average duration for lecturers,
- according to the minimum, average and maximum duration for master assistants,

➢ ***the promotion***

Promotion consists of the civil servant's progression during his career by moving from one grade to an immediately higher grade in the same body or in the immediately higher bodies, in accordance with the procedures set by the general public service statute and the special teacher-researcher' statute.

advancement is reserved only for the active teacher-researcher, and the only way that exists in his promotion is promotion based on the title provided for in the general provisions and the special status of the teacher-researcher.

We have already noted previously the modes of access to the different teaching and research staff, including promotion based on the particular status of the teaching researcher, and we will detail in this phase the university accreditation procedures provided for by order n ° 521 of 05 September 2013 setting the modalities for the implementation of the provisions relating to the university authorisation cited in article 126 of executive decree 98-254 of August 17, 1998 40.

University accreditation(habilitation)

University accreditation allows its holder to or supervise a doctoral thesis, a Magister's thesis, one or more research projects or a research team; it allows its holder to join the body of class A lecturers following article 45 of the aforementioned executive decree 08-130.

Article 02 of order n° 521 of 05 September 2013 referred to above sets the regulatory conditions that the candidate for accreditation should meet:

[1] Article n° 02 of D.E 96-92 of 03 March 1996, relating to the training, improvement and recycling of public servants.

1. Be a teacher-researcher or permanent researcher, in a position of permanent activity in his institution of practice,

2. Be tenured in the occupied grade.

These two conditions mentioned above allow the teacher-researcher to have the quality of civil servant and to be in a regulatory position (position of activity) following articles 04 and 128 of order n ° 06-03.

The teacher-researcher candidate for accreditation must provide an application file within the time limits set by Order No. 521 of september 5, 201. Two sessions are open for the reception of applications. The application to be provided following article 04 of the aforementioned decree 521 of 05 September consists of:

1 a handwritten request;

2 a copy of the decision of tenured nomination in the grade;

3 a recent certificate of function;

4 a copy of the university degrees obtained;

5 a copy of the doctoral thesis;

6 a curriculum vitae, outlining the different stages of the applicant's career;

7 documents relating to all the work of the applicant for university accreditation, in particular:

- a scientific article and / or publication published in a recognised scientific journal with a reading committee, produced after the doctoral defence;
- the pedagogical production (books, handouts, online courses, etc.) and justify at least one handout;
- other scientific papers, if applicable, published in recognised peer-reviewed scientific journals;
- scientific communications in scientific conferences and symposia, if applicable, accompanied by a certificate of participation;
- scientific works, if applicable;
- patents for inventions where applicable;
- a summary of five (5) to ten (10) pages highlighting all the scientific and pedagogical work.

The teacher-researcher must submit his application, in eight (08) copies, to the structure in charge of the university accreditation of his institution of practice which issues him, on the spot, a deposit receipt after verification of application regulatory compliance.

The candidates' applications are submitted to the rapporteurs within a period which does not exceed eight (8) days from the date of signature of the decision of their designation by the head of the university establishment. The receipt of the application by the rapporteur is considered as a commitment to present an evaluation report within a period which does not exceed thirty (30) days from the date of its receipt, and sends it in a confidential envelope after the scientific evaluation and appreciation of their level of scientific and educational competence. Each jury member rapporteur must draw up an individual report and send it to the head of the teaching and research unit.

The head of the teaching and research unit convenes the scientific body concerned to examine the evaluation reports of the candidates within eight (8) days. When the candidate's application is the subject of three favorable reports, the scientific body proceeds, forthwith, to the proposal of an accreditation jury. The proposal is communicated to the head of the institution who establishes, within a period not exceeding eight (8) days from the date of the meeting of the scientific body, a decision designating the members of the jury and authorising

the applicant to present its work. The presentation of the work in front of an accreditation jury must be organised within a period not exceeding thirty (30) days from the date of signature of the decision authorising the presentation of the work.

2.3.3. Statutory positions

The teacher-researcher is placed in one of the following status:

1. *in activity* is the position of the teacher-researcher who effectively exercises, in the university to which he belongs, the tasks related to his grade;

2. *in secondment (détachement)* is the position of the teacher-researcher who, nominated outside his body and / or his administration of origin, continues to benefit in his body within the institution or public administration of origin, of his rights to seniority, promotion and retirement;

3. *out-of-frame* (hors cadre) is one in which the teacher-researcher can be placed, at his request, after exhausting his rights to secondment reserved at the request of the interested party, in a job not governed by the general statute of the public service;

4. *Lay-off* (mise en disponibilité) consists of the temporary termination of the employment relationship, this position entails the suspension of the civil servant's remuneration as well as his rights to seniority, promotion and retirement, and he retains acquired rights. in his original grade on the date of his release;

5. *National service* is the position in which the teacher-researcher is called to perform his military national service. In this position, he retains the rights to promotion and retirement.

The maximum proportions of research professors likely to be placed, at their request, are set, by institution, as follows:

- Secondment: 10%
- out-of-frame: 5%
- Lay-off: 5%

These proportions are calculated by reference to the actual numbers in each grade.

- **Mobility**

The mobility of the teacher-researcher must be of a limited and ad hoc nature so as not to disrupt the academic year; it occurs within the limits of the requirements of the service. The wishes of the concerned, their family situation, their seniority and their professional value are also taken into account. The transfer (mutation) of the teacher-researcher can only be pronounced on his request, without forgetting the provisions of Article 158 of order No. 06-03.

2.3.4. the obligations and guarantees of the academic staff

The teacher-researcher, like any other civil servant, is subject to general and specific obligations, he must be a reference in society in terms of competence, morality, integrity and tolerance, he must give a dignified image to the university.

1- obligations the general statute of the Algerian public service as well as the particular statute of the teacher-researcher imposes many obligations on the latter, the non-respect of these leads to an administrative prosecution against the violator, this administrative proceedings can go as far as the sanction of the 4th degree (dismissal). Its main mission is to provide quality and up-to-date education, linked to assessments of science and knowledge, technology and pedagogical and didactic methods, in accordance with ethical and professional standards. To this end he is required to:

- perform his duties with complete loyalty and impartiality;
- refrain from any act incompatible with the nature of his duties, even outside the service;
- He is required to have, in all circumstances, a dignified and respectable conduct;

- Participate in the development of knowledge and ensure the transmission of knowledge as part of initial and continuing training;
- Carry out research-training activities to develop their aptitudes and their capacities to exercise the function of teacher-researcher;
- They are required to ensure a teaching load for which the annual reference hourly volume is set at 192 hours of lessons, this hourly volume translates into 288 hours of directed/tutored work (TD) or 384 hours of practical work (TP) in accordance with the following equalisation : 1h of courses =1,5 h of tutorials = 2 h of practical work

2- The guarantees

Guarantees have been reserved for teacher-researcher so that he is free to carry out his mission properly. In this case, the Algerian legislator intervened, and reserved guarantees for the civil servant in general of which the teacher-researcher is part, to protect him against threats, insults, outrages, defamation or attacks of any kind whatsoever, to which he may be the object during the performance of his duties or to repair the damage resulting therefrom. Under these conditions, the State is subrogated to the rights of the civil servant to obtain compensation from the perpetrator, and it has direct action that he can exercise, if necessary, by filing a civil party before the competent court. The State also acts in the place of the civil servant in the event of legal proceedings by a third party for fault of service which appears to be detachable from the exercise of his functions.

Section 3. the University of Tlemcen

3.1. Synopsis

Historically, the university of Tlemcen (UoT)was creates in September 1974. Aboubekr Belkaid University in Tlemcen (UoT) is the result of a long evolution. Education there started with 2 fiels of study and gradually expanded to cover 11 areas of training. Today, UoT has 8 faculties and one institute, and is the host for to the Pan African Institute for Water and Energy Sciences (PAUWES) the African Union institute.

Geographically it is divided into five (05) university poles:

- The new university pole in Mansourah, which includes four (04) faculties with a total of 19,542 students; They are: Humanities and Social Sciences faculty, literature and Languages faculty, Sciences faculty, Natural and Life Sciences, and Earth and Universe Sciences faculty.
- Bouhanak Imamah pole: includes two (02) colleges with a total of 9560 students; They are: the Faculty of Law and Political Sciences, and the Faculty of Economic, Commercial and Management Sciences.
- The city center pole and includes the Faculty of Medicine with a total of 3,682 students.
- Chetouane pole, which includes the faculty of Technology with a total of 4195 students.
- Hay al-Zaytoun pole: includes the Institute of Science and Applied Technologies ISTA with a total of 195 students (University of Tlemcen, 2017)

The administrative/pedagogical structure of the university is organized into thirty-eight (38) departments at the eight faculties and one institute. The total number of students is 37,174 in the first and second cycles, 3903 PhD students (LMD and Science) and 533 PhD students in medical sciences, i.e. a total of 41,610 students.

The university includes studies offer in twelve (12) fields in the LMD, in addition to the medical sciences, distributed over fifty-two (52) speciality, subdivided into sixty-four (64) majors in the bachelor's and one hundred and twenty-five (125) majors in the master’s.

3.1.1. Name of the university

The UoT takes its name from the great man that was Abou Bekr BELKAID who devoted 45 years of his life to the service of the liberation of the Fatherland, economic and social development, the promotion of science, the arts and Culture for the benefit of all, to the irreversible anchoring of democracy and modernity in one's country.

Born March 19, 1934 in Tlemcen, married and father of three children.

Figure 39. The picture of Mr. Aboubekr Belkaid

Source: Wikipedia (2022)

Professional itinerary

After his liberation in 1964, his patriotism silencing all the rest of the national context of the time, he decided to reconvert his "state" militancy and set out, like many of his generation, in the building of an Algerian state. modern, at the service of the people.

For 30 years, from 1964 to 1994, he devoted his time and energy to serving his country, which led him to successively occupy increasingly important responsibilities.

1964: Chargé de mission then deputy director at the Ministry of Social Affairs
1965: Director of Technical Services for Vocational Training
1967: Director of the National Institute for Vocational Training
1973: Director of the Presidency of the Republic
1977: Secretary General of the Ministry of Housing and
1984: Vice Minister in charge of Construction
1986: Minister of Labor and Vocational Training
1987: Minister of Higher Education and Research
1988: Minister of the Interior and the Environment
1991: Minister responsible for relations with the A.P.N and the
1991-1992: Minister of Communication and Culture

Political itinerary

- Joined M.T.L.D / P.P.A from 1949
- Joined the F.L.N at its creation where he exercised various responsibilities, among others:
- Member of the General Secretariat of the General Association of Algerian Workers - A.G.T.A-
- Coordinator of the group of lawyers responsible for the defence of detainees and internees

- Arrested and detained in the prison of Fresnes de France Released in April 1962, After the ceasefire
- Member of the secretariat, under the direction of Mohamed BOUDIAF of the party of the Socialist Revolution -P.R.S.-
- Founding member of the F.F.S
- Arrested at the end of 1963 and released in 1964.

He was assassinated on September 28, 1995 and died on at the age of 61.

3.2. Organigram

As by the by the inter-ministerial decree of 24 August 2004 fixing the administrative organisation of the Rectorate of Faculty, Institute and University Annex and its common services, the university of Tlemcen is organised into deputy directions, vice-rectorates and faculties.

The missions of the general secretary of the university are extended to all strategic activities of management of the general administration, namely the preparation of management plans, the establishment of various decisions, programs of internal security, planning and forecasting projects of university budgets, as well as the leadership role and coordination of all the directorates under its authority and the steering of innovative actions of improvements and modernization of management.

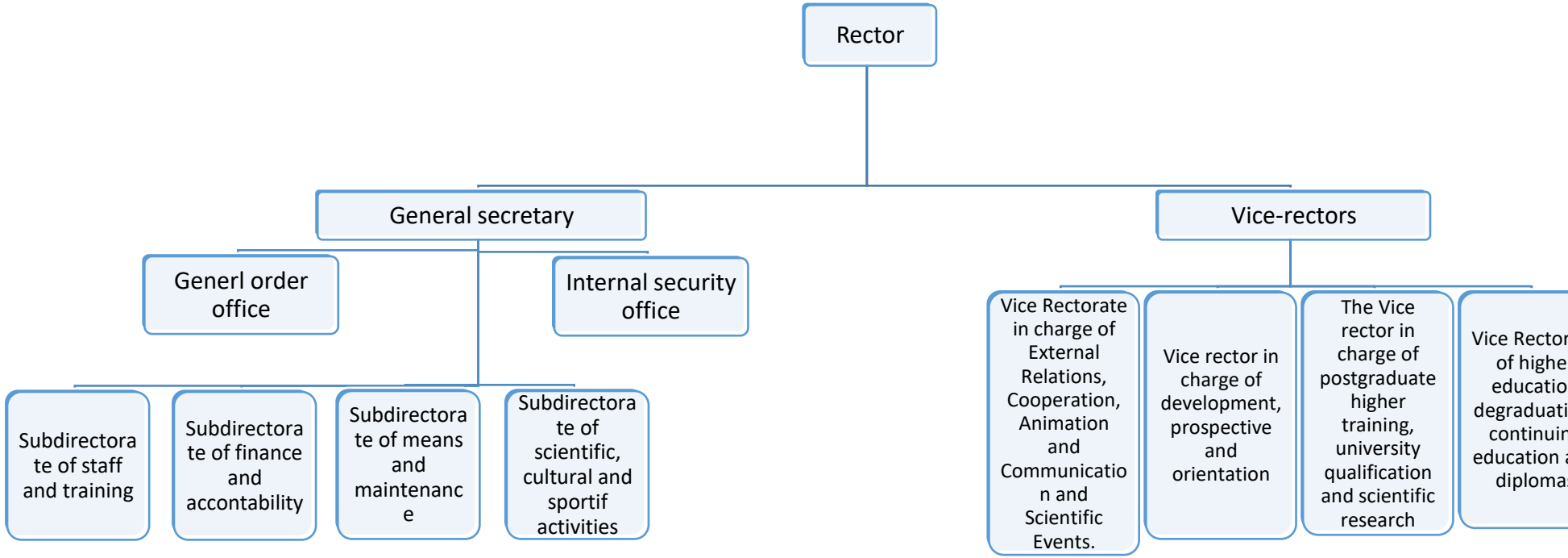
- Prepare the university's budget proposal and monitor its implementation.
- Monitor the funding of activities of laboratories and research units.
- Ensure the proper functioning of the common services of the university.
- Implement the university's cultural and sports programs and promote them.
- Ensure the management and preservation of the rector's archives and documentation.

The Secretary General is in charge of the realization of three essential projects to ensure the management of the personnel and the functioning and the patrimony of the University:

- Annual Human Resources Management Plan
- Draft budget
- Operation of the General Inventory of the University

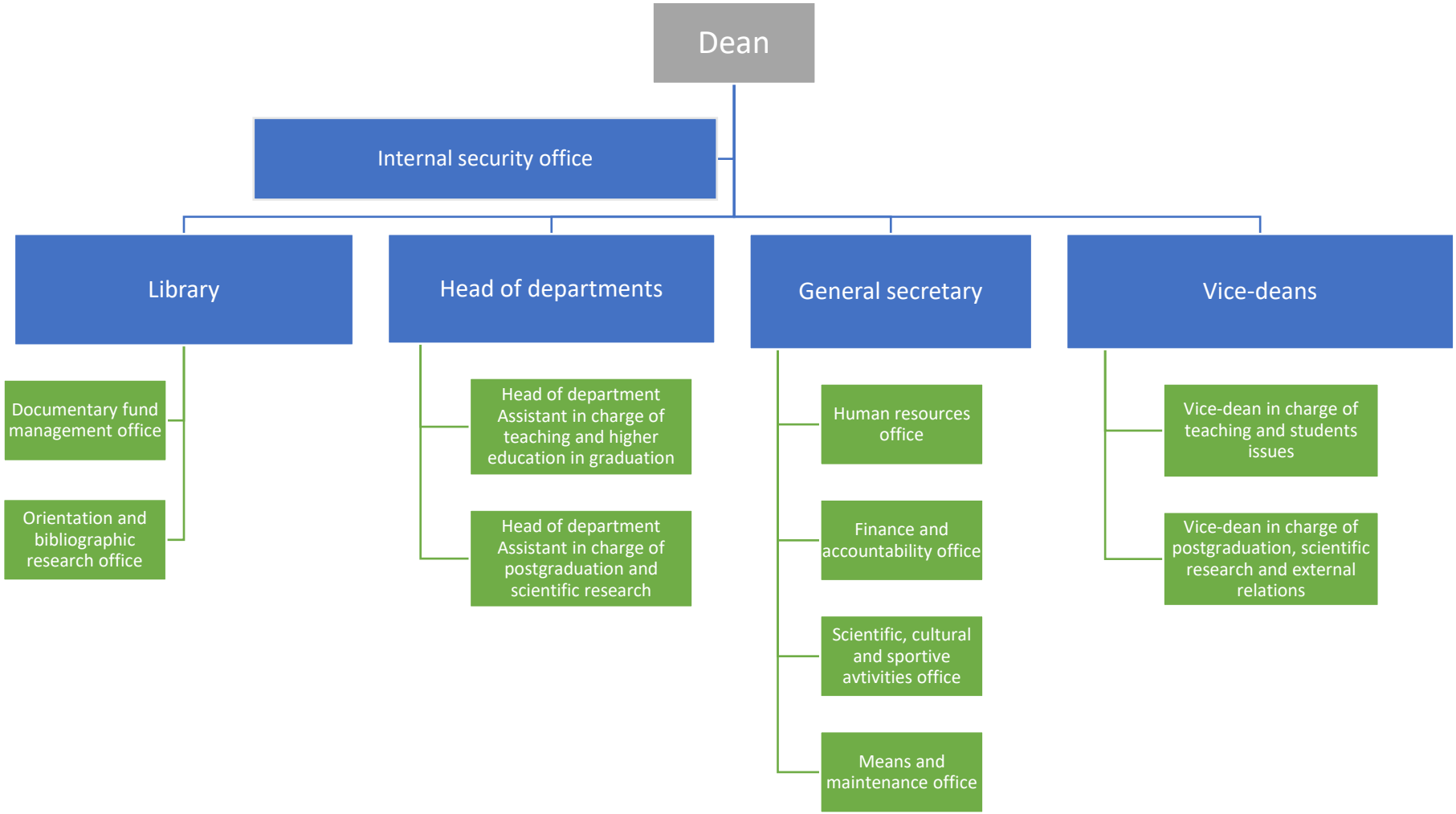
The figure below shows the main organisation units the rectorate and the faculty:

Figure 40. The university of Tlemcen Oganisation chart



Source : The author based on the interministerial decree of 24/08/2004.

Figure 41. The faculty organisation chart



Source : The authors based on the interministerial decree of 24/08/2004.

All the unities in the organisation chart are very important to manage the university's competencies. However, we will focus in this study on the most implemented offices in the competency management process, notably the human resources deputy direction, the exterior relations vice-rectorate, Laboratories…

3.3. Supporting structures for academic staff competencies

3.3.1. Human resources subdirectorate (SDP) :

The main department responsible for managing teachers career is the deputy directorate of staff and training (SDP). The SDP is responsible for:

- manage the career of staff coming under the rectorate and common services and those whose appointment reports to the rector of the university,
- develop and implement training plans, staff development and retraining administrative, technical and service of the university,
- ensure the management of the staff of the university and their harmonious distribution among faculties, institutes and annexes,
- coordinate the development and implementation of university human resource management plans.

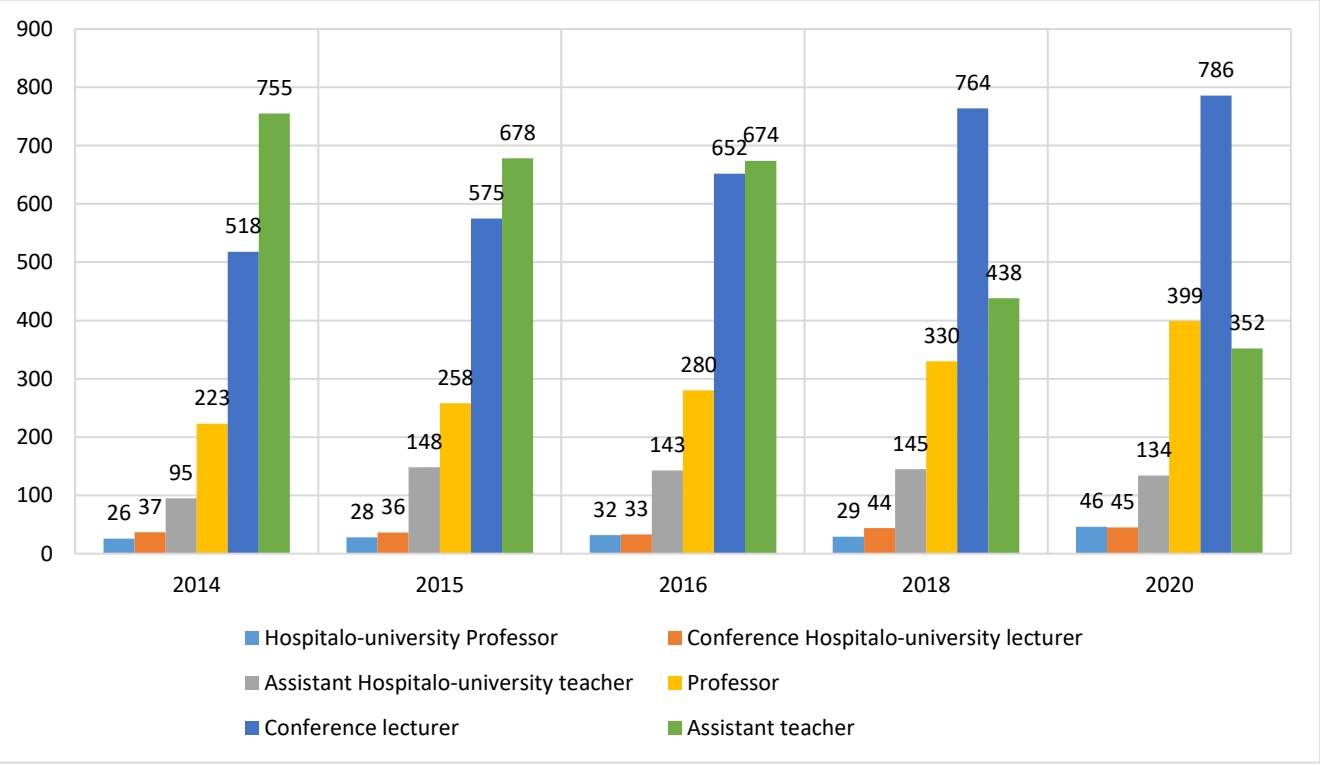
It includes the following offices:

- the teaching staff office,
- the administrative and technical staff, and service agents office
- the training and development service

This department is responsible for one of the most important process in competency management: Recruitment (fulfil the university needs in terms of human resources)

The staff evolution at the university is shown in the figure below:

Figure 42. Teachers evolution at the university of Tlemcen



Source: The authors based on HR department statistics, 2021

The total staff-student supervision ratio for the academic year 2020/2021 is estimated to be one teacher per 23 students.

3.3.1.1. Recruitment

The recruitment process at the university is regulated by ministry decrees and laws. Universities only execute regulation, their leeway is too small. Recruitment process starts by

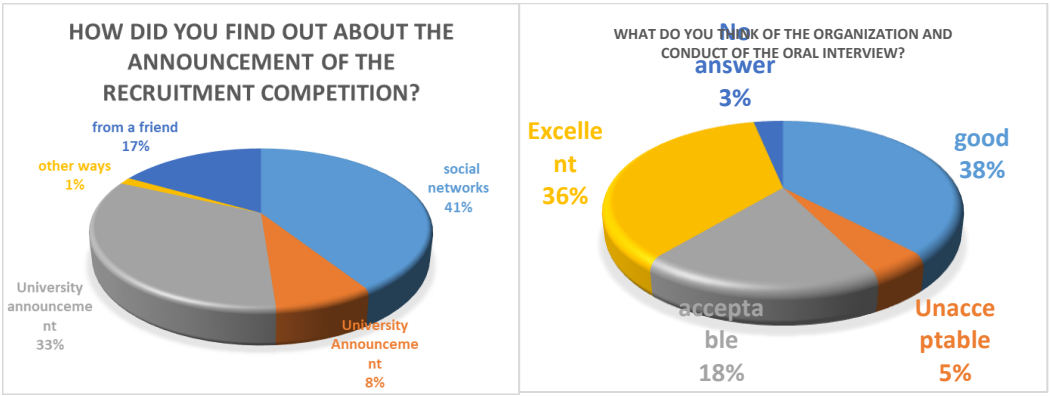
- Ask the ministry for budgetary positions (Etat B)
- Define needs: which field of study has a lack of teachers.
- Launch a call for application via website, national newspapers, social media…
- Receive applications and treat them according ro the current regulation
- Send interview invitation to accepted candidates
- Interview candidates
- Publish results and recruit teachers.

3.3.1.2. Quality & HR staff competency management at the recruitment stage:

On July 30th, 2017, the UoT organise the recruitment process for assistant professors (B class), where the accepted candidates to pass the oral interview -whose list was published on the university's official website - were received, and the process of filing files this year was distinguished by using a digital database through which the candidate uploads his documents digitally, then It approaches the human resources services to confirm the filing and verification process of the documents printed by HR office.

After conducting the interview with the relevant committees, the candidates were submitted a survey to express their opinions on the whole recruitment process, the number of respondents reached 216 candidates, and the results[1] were as follows:

Figure 43Candidates reponses on recruitment process



Source: University of Tlemcen, 2017

The last question was about their propositions to improve the service in the future, and some of the answers were as follows:

- Improved site and add remove options.
- Have direct contact with the university, for example to have an email box and that the manager responds to our emails within the hour so as not to travel to the university, especially for doctors living far away.

[1] Document published on the university website on 10/08/2017

- Good organisation-I find that applying online is an excellent initiative for the UoT remains a deletion mention which should have been added to modify.
- It was within the standards and you just have to be punctual.
- Give a hand to the applicants for the modifications of the file.
- you just have to inform the candidates well before the day of the interviews
- I think you have to think for a 100% internet submission
- I suggest that we must continue like that… .it is good!
- The acoustics of the waiting room are poorly studied with unbearable noise.
- The interview must be done by specialty for more speed.
- But I do not see the usefulness of the online registration since the candidate must come forward to sign his documents
- It would have been a good idea to classify the selected by specialty Also an explanatory PDF of the instructions to register on the platform.
- Conducting the interview in two days or more whenever the number of students is in order to avoid demands and delays because this affects the psyche of the candidate
- If the registration was done electronically, the candidate did not move to the university? Please respect the eight times means the eighth, not the ninth.
- I see that you have met all the conditions for announcing the employment of class B professors
- The use of the electronic signature, especially after the issuance of the regulating legal texts, to spare the candidate from moving to deposit the file
- Adding a delete button during file deposit and that the online deposit is sufficient without the need to move to the university
- I suggest cancelling the stage of confirming the information and signing it, as well as certifying the information form.

3.3.2. Vice Rectorate in charge of External Relations, Cooperation, Animation and Communication and Scientific Events (VREX).

The VREX is responsible for:
- promote the university's relations with its socio-economic environment and initiate partnership programs,
- initiate any action to promote exchanges interuniversity and cooperation in the fields teaching and research,
- carry out animation and communication actions,
- organize and promote scientific events,
- ensure the follow-up of development programs and retraining of teachers and ensure their consistency.

It is made up of the following offices:
- interuniversity exchanges, cooperation and partnership;
- the animation and communication department and scientific events.

The internationalisation of higher education is considered a very important point by university officials. The international development strategy aims at:
• Increasing the number of national students and academic staff studying abroad,
• Increasing the quota of foreign students and academic staff in the establishment.

As a result, the institution's lecturers are asked to improve the quality of teaching.

Other possible measures to encourage internationalisation are related to better international recognition of university programmes, close cooperation with other recognised institutions, and knowledge and research challenges(MERIC-NET Project, 2019).

Algeria participates in international projects in the field of higher education, such as the international mobility of Erasmus+ credits; Erasmus+ Capacity building in higher education; PRIMA Initiative; H2020 research project.

The VREX is the responsible for all international relations including management of scholarships, trainings(stages), scientific leaves (CS), scientific events, valorise teachers, internationalisation strategy, ranking parameters…

Regarding cooperation, the VREX is in charge of bilateral and multilateral agreements management, Incoming and outgoing students and staff :

- some scholarships are offered by the Higher Education Ministry :
  - Residential training (Formation résidentielle),
  - Sabbatical year
  - Trainings (Stages de courte durée)
  - SSHN
  - Scientific events.
  - PNE,
  - PROFAS
  - PHC Maghreb
- some are bilateral: BAF, Hungary, China, New Zeeland…
- the others are from the worldwide countries

The staff got scholarships in order to acquire new knowledge and exchange good practices, participate in scientific events, finalise their thesis, post-doctoral research…

The main budget line dedicated for financing all trainings and events abroad in UoT is 21-19.

On a wider view, the ministry of higher education has 852 agreement all around the world, with Europe, Asia, Arab world, The have 92 research project with Tunisia. Number of mobilities in Algeria reach 3000, between 2015 and 2019. Algeria coordinates 5 European projects, a coordinator is a project chief where he receives funds from the EACEA agency and manage the funds with all partners. In 2018, Algeria has received 6000 teachers from the European countries in the frame of the mobilities. In another program called PNE, 5500 student has benefitted from a fully funded scholarship between 2005 and 2020, the defence rate of the students benefitted from it was around 90% as positive impact of this program (Mr. Saidani Arezki, 2020).

Below a table that shows the different nationalities of international students enrolled at the university. This internationalisation of the curricula and make it affordable for students from other countries is an important factor to increase the rank for any university at the world universities ranking websites.

Table 15. International students enrolled at UoT for 2020/2021

N°	Country	Nombre
1	KENYA	14
2	NIGER	10
3	WESTERN SAHARA	9
4	MAURITANIA	9
5	UGANDA	9
6	NIGERIA	9

7	ZIMBABWE	8
8	PALESTINE	7
9	TOGO	6
10	MALI	5
11	CHAD	2
12	JORDAN	1
13	TANZANIA	1
14	GHANA	1
15	SIERRA LEONE	1
	Total	**92**

Source: UoT Council of Administration, 2021

3.3.3. Support cell for newly recruited teachers:

This cell was established by the Ministerial Decision No. 932 of July 28th, 2016, which specifies the modalities for organising pedagogical accompaniment for the benefit of a newly hired teacher-researcher. It aims to give an educational support for the acquisition by the newly recruited teacher-researcher during the trial period of knowledge and skills in university teaching profession. In each higher education institution, a unit is created in charge of setting up and monitoring an educational support program for the benefit of teacher-researchers in accordance with the principles of educational monitoring.

The unit is responsible in particular:

- to propose educational strategies for higher education and training,
- the implementation of the national educational support program and notify it to the teachers concerned,
- to select the teachers involved in the training,
- assess the participation of teachers concerned by the training.

The educational support program includes the organisation of training courses and sessions, in particular, on:

- teaching the principles of university legislation,
- introduction to didactics and pedagogy,
- psychology and psychology of the educational relationship,
- the methods for evaluating students,
- distance education,
- the use of information and communication technologies for teaching

There are 12 key competencies defined by the ministerial decision 921:

C1. The teacher has mastery of classical and innovative teaching tools (ICT)

C2. The teacher ensures a cognitive climate in the teaching process

C3. Becoming aware of the pedagogical dialogue (dialogues “in which someone who knows the truth instructs someone who is in error” Skidmore (2006))

C4. Conduct a dynamic techniques of developing the student’s skills (motivation to self-study)

C5. Using group animation techniques in an educational situation (tutorials, labs, internships)

C6. Learning about collaborative work in pedagogical committees and training teams

C7. Initiation to the practice of tutoring and accompanying students (in internship)

C8. Mastery of oral and written expression in teaching and research settings

9. Develop initiatives and innovation in knowledge and know-how

C10. Identifying the potential of pedagogical action

C11. To evaluate collectively and individually the progress in the acquisition of knowledge, know-how and soft skills

C12. Use of the evaluation grid in relation to the objectives of the institution's training plan

Table 16. 12 competencies set by HE ministry

Competency	TICE: The Information and Communication Technologies in Teaching	Regulation	LMD	Pedagogy	Didactics	Eval
C1. The teacher has mastery of classical and innovative teaching tools (ICT)	X				x	
C2. The teacher ensures a cognitive climate in the teaching process				x		
C3. Becoming aware of the pedagogical dialogue (dialogues "in which someone who knows the truth instructs someone who is in error" Skidmore (2006))				x		
C4. Conduct a dynamic techniques of developing the student's skills (motivation to self-study)				x		
C5. Using group animation techniques in an educational situation (tutorials, labs, internships)				x		
C6. Learning about collaborative work in pedagogical committees and training teams		x	x	x		
C7. Initiation to the practice of tutoring and accompanying students (in internship)		x	x			
C8. Mastery of oral and written expression in teaching and research settings					x	
9. Develop initiatives and innovation in knowledge and know-how			x	x	x	
C10. Identifying the potential of pedagogical action				x		

C11. To evaluate collectively and individually the progress in the acquisition of knowledge, know-how and soft skills				x		x
C12. Use of the evaluation grid in relation to the objectives of the institution's training plan				x		x

Source: The author from Arrêté 932, 2008

The accompaniment cell in UoT is headed by Prof SAIDI Mohammed ex-dean of faculty.

The cell has organised several sessions in order to realise the objective of the cell, the following courses were given in 2016/2017 academic year[1].

Table 17. Accompaniement cell courses during 2016 session

N°	The theme	Teacher	Date
1	1_ Educational support: concept, practice and procedures	Pr.Saidi Mohamed	10_11_2016
2	2_Communication and pedagogy	Pr.Allal Mohamed Amine Pr.Saidi Mohamed	17_11_2016
3	3_Educational dialogue	Pr.Saidi Mohamed	23_11_2016
4	4_Questionnaire and educational debate	Pr.Abou-bekr Nabil	29_11_2016
5	5_Administrative management and regulatory aspects of pedagogy	Pr.Sebbagh Djamal	19_01_2017
6	6_Ethics and professional conduct in university education	,Pr.Saidi Mohamed, Pr.Allal Mohamed Amine, Pr.Abou-bekr Nabil	26_01_2017
7	7_University training between LMD system and the classic system, LMD education and training: pedagogical and didactic specificities	Pr.Marok Abbas, Pr.Sebbagh Djamal	02_02_2017
8	8_Pedagogy and psychopedagogy in student apprenticeship training	Pr.Allal Mohamed Amine	09_02_2017

his table was retrieved from information included in the Annual report of the University Administration Council of 2017

9	9_The teacher: Education, training and human relations	Pr.Saidi Mohamed ; Pr.Allal Mohamed Amine	16_02_2017
10	10_Teaching methods and tools	Pr.Abou-bekr Nabil,	23_02_2017
11	11- ICT and digital tools, c2i level 1 certificate training	Mme Kara Terki Hajira	02_03_2017
	_Tic and digital tools, training for the c2 level 1 certificate	Mme Kara Terki Hajira,Pr. Allal Mohamed Amine	09_03_2017
12	12_External relations	Pr. Ben ghabrit Tewfik	06_04_2017
13	13_Intensive language teaching center	Mme Guellil Nahida	13_04_2017
14	14_Evaluation	Pr.Saidi Mohamed Pr.Allal Mohamed Amine,Abou bakr Nabil	21_04_2017
15	15__Quality assurance and control in higher education	Pr.Saidi Mohamed Pr.Allal Mohamed Amine Pr.Aboubekr Nabil	27_04_2017
16	16_Quality assurance, culture and philosophy.	Pr.Saidi Mohamed Pr. Aboubekr Nabil	04_05_2017
17	17_bibliographic research techniques, development of corpora adapted to the training course	Pr. Saidi Mohamed Pr. Abou Bekr Nabil	11_05_2017
18	18_ role and mission of research	Pr. Abou Bekr Nabil	11_05_2017
19	19_Purpose of university training	Pr.Saidi Mohamed	18_05_2017
20	20_Establishment of training, teaching and environment program	Pr.Saidi Mohamed	01_06_2017

Source: The author from University of Tlemcen (2017)

After each session, the cell distributes a survey to evaluate the satisfaction of the newly recruited teachers and the quality of the courses.

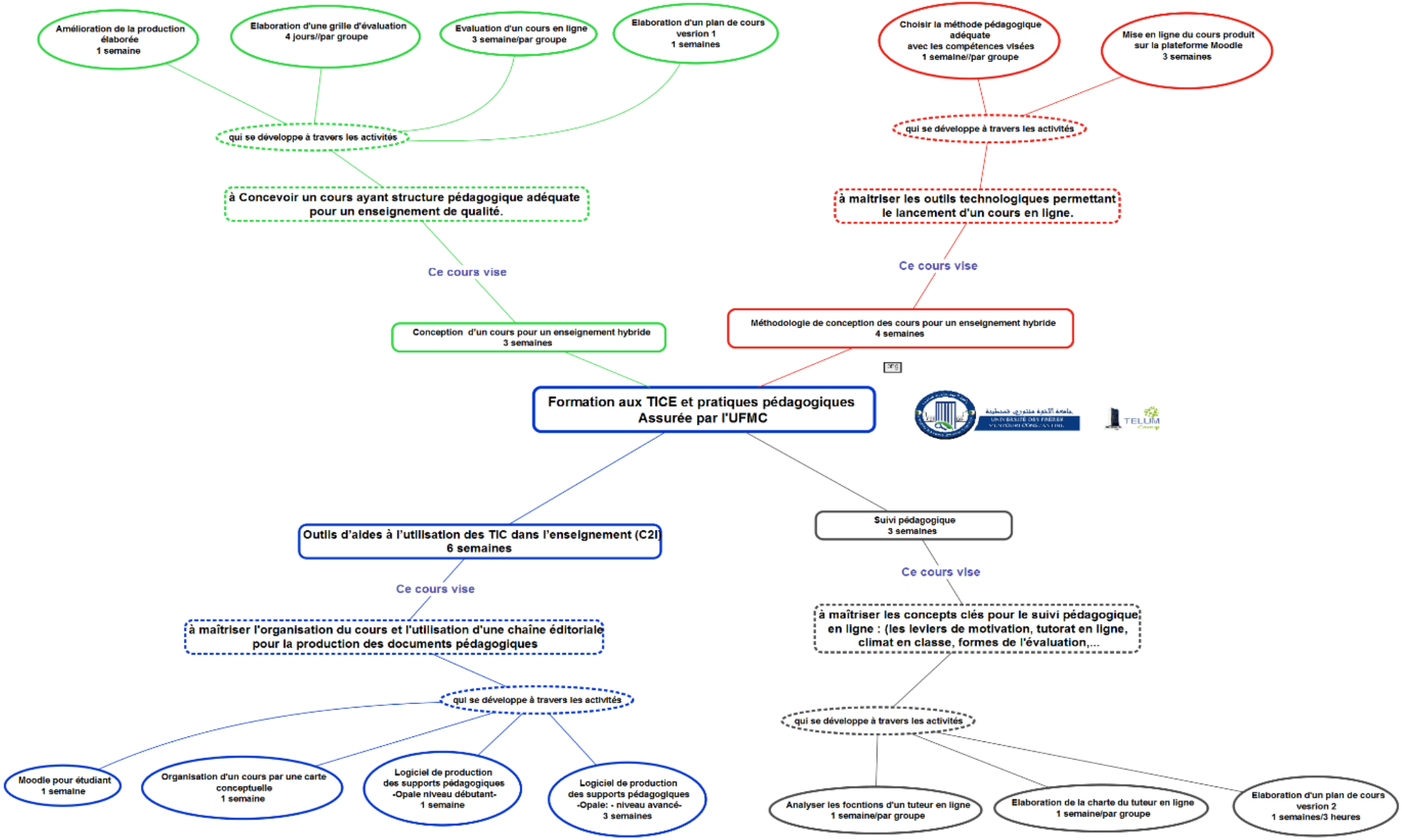
In 2021, a big part of these courses is given by the university Constantine1, remotely. Since 2012, the Mentouri brothers Constantine 1 (UFMC1) university has implemented an ICT training strategy and teaching practices for newly recruited teachers in order to ensure quality education that meets the requirements of training offers. This techno-pedagogical innovation aims to develop in teachers skills in the field of educational technologies in order to improve

their pedagogical practices, as well as to initiate them to the different mechanisms of university pedagogy in distance education as well as face-to-face teaching. Such training ensures quality hybrid education that meets the demands of society in the digital age.

Today and in order to respond to the support program launched by the supervisory authority (decree N 932 of July 28, 2016), the UFMC1 shares its knowledge with the country's universities under the supervision of a team of specialists in matter.

The members of the training team of the UFMC1 distance learning center come from different training courses, namely: the ICT training provided by the UFMC and which has made it possible to train nearly 400 teachers since 2012, the program PAPS-ESRS, the master's training in educational technologies (ACREDITE) provided by the University of Cergy Pontoise with the support of the AUF and finally the Algerian-Swiss cooperation program "COSELEARN" for the training of specialists in e-learning. The figure below demonstrates the components of the training on ICTE and pedagogical practices.

Figure x. Training on ICTE and pedagogical practices



Sources : https://telum.umc.edu.dz/pluginfile.php/19730/coursecat/description/foramtioncarte-copy.png

3.3.4. Vice-Rectorate of higher education post-graduation, university accreditation and scientific research VRPGRS:

The vice-rectorate of higher education post-graduation, university accreditation and scientific research is responsible for:

- follow questions related to the progress of post-graduation and post-graduation training specialist and university accreditation and ensure the application of the regulations in force in
- matter,
- follow the research activities of the units and research laboratories and draw up the results, in coordination with faculties and institutes,
- carry out any action to promote the results of the research,
- monitor the functioning of the board university scientist and keep the archives,
- collect and disseminate information on activities of research conducted by the university.

It contains the following offices:

- the office of post-graduation training and specialised post graduation,
- the university accreditation office,
- the office for monitoring research activities and promotion of its results. This vice rectorate aim is to provide all support to laboratories in order to enhance their research competencies and management. Besides, it manage the postgraduate level

3.3.5. Research laboratories

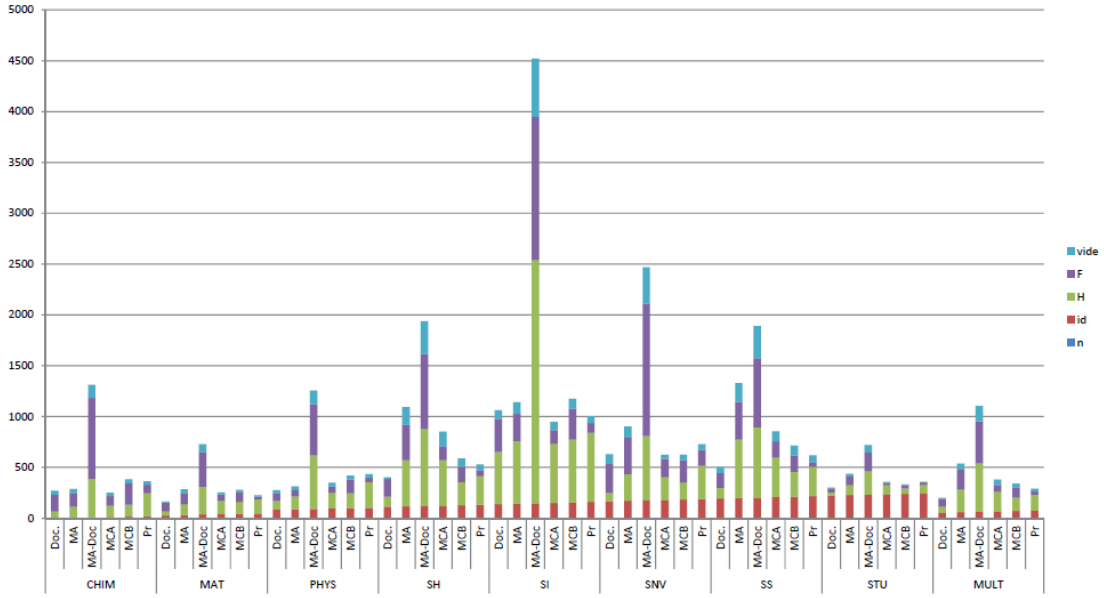
The mission of the research laboratory is to achieve research and development objectives, carry out studies and research work and contribute to the acquisition of knowledge and its improvement, training for and through research and to the dissemination of scientific information and the results obtained. Led by an elected Director, it must be made up of at least four research teams, each led by a qualified researcher and made up of at least three researchers.

The research laboratory has a laboratory council responsible for developing programs and establishing estimates of income and expenditure presented by the laboratory director. It has management autonomy and is subject to a posteriori financial control. It is funded by grants from the FNRSDT. The research laboratory can find its own sources of funding, in compliance with the regulations, in connection with its research activities by concluding service contracts with third parties.

The UoT participate effectively to the promotion of scientific research by launching several research projects and in particular the creation of twenty research laboratories (created during the year 2000 by Order No. 88 of 07/25/2000 - appendix1) and seven others (created during 2001 by decree n ° 42 of 05/02/2001-appendix2) and this in various scientific research themes as set by national programs research (PNR). There are 76 (University of Tlemcen, 2017) research laboratory distributed in all faculties of the university

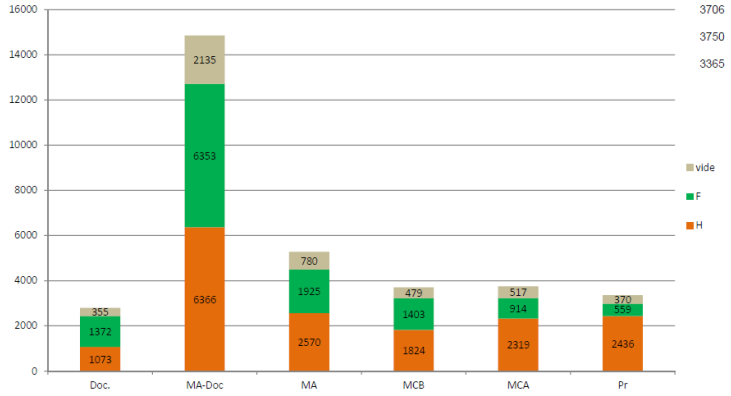
In Algeria there are 1379 laboratories. The next 3 figures gives a macro-vision on research laboratories in Algeria.

Figure 44. Laboratories staff per domain per grade:



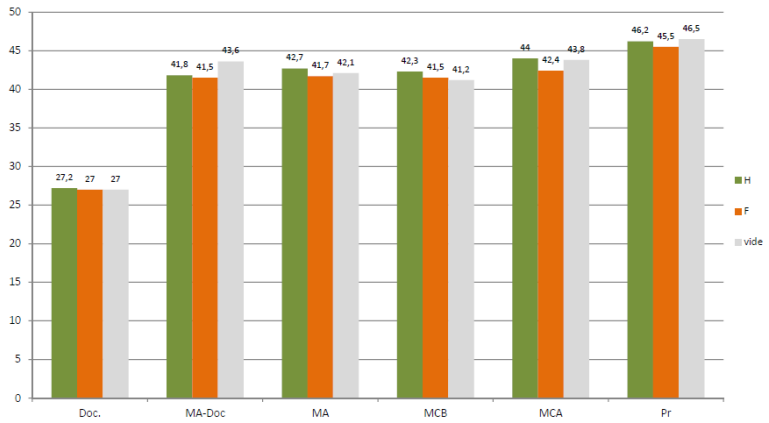
Source: (BELBACHIR, 2020)

Figure 45. Laboratories staff per grade



Source: (BELBACHIR, 2020)

Figure 46. Average age by grade



Source: (BELBACHIR, 2020)

Intensive teaching center of languages (CEIL): CEIL is a language center aimed to enhance students, academic and administrative staff language skills. It offers language courses for any other person or institution from outside the university. There were sessions for international student, as PAUWES students for instance, Turkish and Chinese delegations…

The CEIL is responsible for:

- provide technical support to the courses learning, development and retraining in languages, organized by faculties and institutes,
- Ensure the operation and maintenance of specialized language teaching equipment. It has the following sections:
- programming section,
- upkeep and maintenance section.

It offer different language courses:

- French
- English
- German
- Spanish
- Turkish
- Chinese
- Arabic

The CEIL has now 28 years old. It opened in 1994 with the initial name IGLAEIL: Institute for the Generalization of the Arabic Language and Intensive Language Teaching. In March 2008 the new name "CEIL" appeared, thus becoming a language center with the main mission of supporting, in the linguistic and cultural field, students but also teachers of the University of Abu Bekr Belkaïd., by offering them training plans in foreign languages, according to their specific needs. The main field of activity of the center is the teaching of languages and the transmission of cultures (local and international). Teaching strategies, but also evaluation strategies, are imbued with the Common European Framework of Reference for Languages (CEFR) which remains the only reference support which the center uses during the various training courses it offers.

The CEIL offers its learners a wide range of language courses (French, English, Spanish, Turkish, German…). In addition, for several years now, it has been welcoming students of

different nationalities (Chinese, Italians, Germans, French) who have come to follow training in the Arabic language. Today, its main mission is to meet the challenge of developing the teaching of the Arabic language to non-natives within its premises. As such, it is one of the first centers in Algeria to have organised a summer language study trip. In fact, during the summer of 2016, the center's team hosted 20 Turkish students from Istanbul University.

The CEIL provides courses intended for a diverse and varied audience, from students in initial training to extramural learners, as well as to students from countries in sub-Saharan Africa who, for their part, do not benefit only from fifty hours per session. but about 120 hours. The CEIL training program is divided into two ordinary sessions of 50 hours each (Autumn / Spring), adjusted according to the Algerian university calendar, except for the training of the Turkish language. In fact, in addition to the two sessions held at the center, a third session (summer language course) has been organized for three years in a language school at Istanbul University (Turkey).

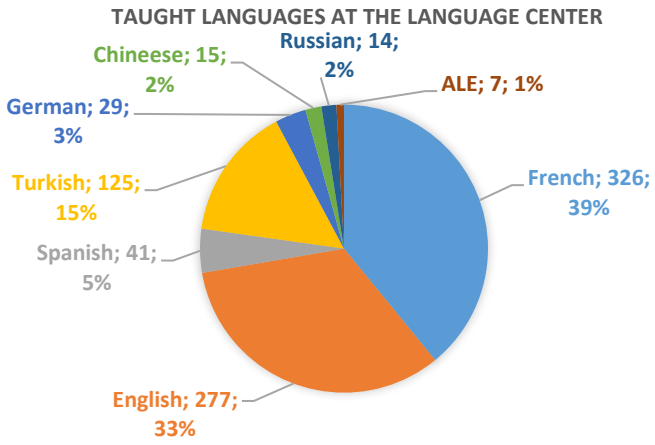
Table 18. CEIL students of foreign nationalities

Year	Nationality	Number of students
2007/2008	Green Cap	40
2008/2009	Namibia	37
2009/2010	Guinea Bissau	55
2010/2011	Tanzania	54
2011/2012	Zambia	60
2012/2013	Tanzania	54
2013/2014	Tanzania	60
2014/2015	* PAUWES students * German students *Chineese students	27 4 16
2015-2016	* PAUWES students * Italian students * Chineese students * French students * Malien students * Jordanian students	49 2 15 1 10 10
2016-2017	* PAUWES students * Chinese students *Turkish students *Tanzanian students *Nigerian students *Guinean students	85 13 5 5 12 5

Source: (University of Tlemcen, 2017)

Taught languages:

Figure 47 Taught languages at CEIL, UoT



Source: University of Tlemcen (2017)

3.3.6. CAQ: Quality Insurance Cell

During recent years, the Algerian Ministry of Higher Education and Scientific Research (MESRS) has figured out that there is an acute need for the introduction of Quality Assurance in the entire Algerian Higher Education sector. A national committee was formed to plan for this and prepare a national QA framework to be customised by the various universities and "Grandes Ecoles" in the country according to their own characteristics.

The change in Algerian higher education and the establishment of a national and international quality assurance process are driven by:

- Increasing attendance at higher education;
- The increase of educational institutions
- Concern for improving employment standards at local and national level and international recognition;
- The need to adapt to an increasingly strong national and regional competitive environment;
- The provisions of national legislation. (Benstaali, Berkane, & CIAQES, 2015)

The Algerian Ministry of Higher Education and Scientific Research became aware of the importance of QA in HEIs a number of years ago. This was translated in 2010 into the creation of two bodies responsible for Quality Assurance in Algeria:

- The National Commission for Implementing Quality Assurance (CIAQES)
- The National Assessment Committee (CNE)

The National Commission for Implementing Quality Assurance (CIAQES) is in charge of implementing quality assurance in higher education and scientific research; it will follow a road map based on the set objectives which are:

- Promoting the development of quality assurance practices in academic institutions;
- Monitoring and invigorating them by prioritising internal assessment to improve the governance;
- Designing or commissioning the design of a quality assurance reference framework;
- Promoting the establishment of quality assurance teams in academic institutions;
- Establishing a core team with participation from international experts;

- Establishing a quality assurance Agency.
- The Quality Assurance implementation process will concern all higher education institutions, with five priority segments:
- Pedagogical management;
- Information system;
- Employability;
- Students' living environment;
- Resource centres (libraries, online spaces, multimedia).
- The responsibilities of the National Assessment Committee (CNE) are as follows:
- Assessing HEIs' activities and actions;
- Establishing a reference system and a system of standards;
- Analysing the performance of institutions and making recommendations;
- Examining institutions' internal assessment reports;
- Promoting the development of self-assessment;
- Supervising the teams responsible for internal assessment;
- Promoting relations with assessment and quality assurance bodies throughout the world (EACEA, 2017).

The launching of these committees was followed by the creation in each Algerian HEI of a central Quality Assurance Unit, the organisation of various trainings for the staff in charge of the implementation and follow up of QA at HEIs. Though the project has seen some delays in moving forward to more concrete steps, the Ministry of Higher Education gave a strong signal by deciding that the academic year 2016–2017 would be the year of QA in HEIs. Each HEI have nominated a Quality Assurance Unit chaired by a RAQ (Responsable Assurance Qualité). The duty of the latter is to organise and oversee the introduction and deployment of QA in his/her HEI. The various HEI RAQs also contributed with the CIAQES in the development in 2014 of the National QA Framework (RNAQES[1]). Various trainings were then programmed for the members of the various HEI QA units. Thus, in January 2017, a national wide process was officially launched pushing the various HEIs to establish their own self-assessments. This amounted to take in charge two main tasks: (1) the appropriation of the National QA Framework for HEI (RNAQES defined by the CIAQES) and (2) the self-evaluation per se (Guessoum, 2019).

The quality approach is based on Quality Assurance Units, made up of teachers, administrative staff and students, and headed by a Quality Assurance Manager, whose role is to coordinate the units. Each higher education institution has a Quality Assurance Unit (EACEA, 2017).

The National QA Framework (RNAQES) is hierarchically structured into Domains, then Fields, then References, Criteria, and Evidence. It covers all aspects of QA at the institutional level as defined by the CIAQES. These are expressed in terms of seven domains for Institutional QA:

- Teaching (F)
- Research (R)

[1] RNAQES is a French acronym stands for: Référentiel National d'Assurance Qualité dans l'Enseignement Supérieur.

- Governance (G)
- Life on Campus (V)
- Infrastructures (I)
- International Cooperation (C)
- Relations with the Socio-Economic Environment (S)

To check the quality of the coverage of each domain in a given HEI, each domain of the National QA Framework is subdivided into Fields which are evaluated according to a number of defined references (indicators). The evaluation of each reference depends on a number of facets called criteria each of which has to be justified by means of one or more evidences. Table 19 below gives the numbers of fields, references, criteria and required evidence for each domain. The total number of references of the National QA Framework is 123.

Table 19. Number of fields, references, criteria and required evidences for each domain of the Algerian National QA Framework (RNAQES)

Domains		Fields (champs)	References	Criteria	Evidences (preuves)
1	Teaching (F)	07	23	49	108
2	Research (R)	03	17	32	55
3	Governance (G)	05	27	53	181
4	Life on campus (V)	04	14	25	71
5	Infrastructures (I)	05	17	19	38
6	Intern. cooperation (C)	03	11	19	40
7	Relations with env. (S)	04	14	22	70
Total		31	123	219	563

Source: Guessoum (2019, p. 339)

3.3.7. CRSIC

Network Center, Information and Communication System, Distance Learning and Distance Education (in French Centre Réseau, Système d'Information et de Communication, Télé-Enseignement et l'Enseignement à Distance CRSIC) is responsible for:

- the operation, administration and management of network infrastructures;
- the operation and development of computer applications for educational management;
- monitoring and execution of distance education and distance education projects;
- provide technical support for the design and production of online courses;
- training and supervision of those working in distance education.

It has the following sections:

- systems section;
- networks section;
- section of distance education and distance teaching.

There was a lot of projects at the CRSIC of the university of Tlemcen, notably:

Infrastructures, Wired networks and Wi-Fi network

Significant work has been initiated to optimise network, server, backup and storage infrastructures. At the network level, two major projects were carried out, one to improve the network at the CHETOUANE cluster level by renewing active network equipment and upgrading copper and fiber cabling, the second focused on connecting the KIFFANE pole at the main node of the network. A major operation to extend, monitor and maintain the Wi-Fi

and wired network was carried out by CRSIC engineers. In addition, and in order to rationalise and stabilise the technical base, a project to deploy a single fleet management directory architecture based on "Active Directory" has been initiated. First, a study was carried out to acquire a tool to optimize workstation management. The choice fell on the Microsoft solution and its deployment is scheduled for the current year, with nearly 3,700 workstations to administer.

The information system and its evolution

The University of Tlemcen relies on acquired solutions and pooled solutions at the national level. The main building blocks of its information system:

• GBudget for financial and accounting management which allows the following functionalities: Order form, Nomenclature, Budget injections, Transfers, Commitments & Amendments, Liquidation & Mandate, Mission expenses, Payments & payments, Management of student internship, Management of consultations and Call for tenders: Posting, opening of folds, establishment of the agreement.

• Gpaie - Payroll management,
• HRM for human resources management,
• SEES and PROGRES for the management of schooling,
• ESUP as a digital working environment,
• Zimbra for messaging replaced by Microsoft messaging and software
• Moodle educational platform
• PMb: library management system
• Alfresco - Document management

It should be noted that other solutions, developed in-house, complement the needs and are still in production today, such as:

• GOFFOR - Presentation of the training offer,
• Gtransfert - Management of student transfers,
• GEMP - Time use management,
• GRECRU- Automated Management of Teacher Recruitment,
• Gmarché - Administrative management of contracts,
• Gstage- Management of teacher internship requests,
• PStage - Management of requests for ATS internships
• GPark- Fleet management,
• Greserv- reservations of common rooms

A centralized application access policy with the deployment of an application server and a data server.

ENT (Digital Work Environment)

The new ENT has been deployed for all users (students, teacher-researchers and administrative staff). After a single sign-on (via the LDAP directory and application cassification), the user accesses, according to his profile, the information and applications he needs.

Figure 48. ENT web interface

Source: (University of Tlemcen, 2020)

Anti-plagiarism system

As part of its process of implementing tools for the prevention and detection of plagiarism, the University of Tlemcen has acquired URKUND similarity detection software.

Moodle as a unique educational platform

Access to the platform is done directly via its URL or via the ENT, the person who connects has direct access to the resources that concern them (courses in which the student is registered or for which the teacher is responsible). While the first uses of the platform mainly consisted of depositing documents or resources, new uses are developing and diversifying:

- Number of users: 2036
- Number of lessons: 255
- Size of educational resources: 450 Gb
- Number of forums: 36
- Number of connections: 140,000
- Continuous improvements are made to Moodle with the regular addition of new features.

3.3.8. COMPERE cell,

COMPERE is an Erasmus Mundus project with the European Union under the framework of Erasmus Mundus program**.** *The COMPERE* consortium starts by establishing a state of the art : identify needed competences in managing European projects➔ National survey, Report, Training conceptualisation. They organized several trainings for selected staff in order to make them experts in setting up and manage European projects (mainly EACEA projects: Erasmus + KA2 Capacity building & H2020)

Partners conducted surveys before & after each training to manage Quality of te project outputs. There were Virtual platform to stock all documents of different trainings: UVT of the virtual university of Tunis. There was certification of both experts and university cells by mean of self-assessment, and international auditor/expert.

Dissemination of project results was mandatory. Each partner has organized workshops in his country to teach other universities on managing European projects.

After the certification of the cell at UoT, there were several projects submission. The university has been successfully selected for 2 projects: ACADEMY from Intra-Africa program and EL@N from Erasmus+ program.

3.3.9. Student center I2E: Innovation, Entrepreneurship & Employment

The student center is a structure which is not in the official organisation chart, but the UoT creates it in order to support students and teachers in Innovation, Entrepreneurship & Employment. It organizes trainings and seminars for the university's community. It contains:

3.3.9.1. BLEU

Raising students' awareness of the culture of entrepreneurship and innovation during their studies is one of the key issues in higher education today. UoT has understood that it must develop strategic approaches adapted to the specificities of its local, regional and national entrepreneurial context. It must know and integrate the micro-foundations of the innovation and entrepreneurial dynamic and the cultural and social factors in their three dimensions:

Material dimension: human resources, services, equipment, infrastructure, policies, governance, markets

Social dimension: creation of links between the actors of the system

Cultural dimension: cultural and historical attitude to innovation and entrepreneurship (success stories)

UoT Tried to consolidate and strengthen the territorial anchoring of its ecosystem of innovation and entrepreneurship through:

Adapted strategies in harmony with the governance and the establishment plan of the university: importance of the vision of the management team.

Creation of a local innovation and entrepreneurial ecosystem based on the consideration of ever larger concentric stakeholders. That's the BLEU was created.

B.L.E.U, Bureau de Liaison Enterprises Université: University Business Liaison Office was created by an internal decision of Professor GHOUALI Noureddine, When he was the Rector of UoT, at the end of November 2010, to be a real bridge between the university and the business world. BLEU was one of the deliverables of the first Tempus project in which the UoT participated: DEFI Averroès Developing Employability in Engineering Sectors, another deliverable of this Tempus was the establishment of a pilot professionalizing bachelor at UoT. Another contemporary Tempus of DEFI Averroès and which had a deep imprint on the genesis of BLEU is: OSMOSE Structured Opening of the World Socio-Economic University, the University of Tlemcen had to put in place a communication plan which aimed to build relationships of trust between the university and companies in order to bring together all the conditions likely to lead to genuine structured and lasting partnerships.

These two Tempus projects, the very first Tempus of the University of Tlemcen, helped shape the birth of BLEU at the University of Tlemcen. Both were aimed at improving the university-business relationship; cooperation with the world of work, and more generally with civil society, was seen as a necessity.

The team in charge of BLEU at the end of 2010, the beginning of 2011 quickly adopted the objectives and the methodology of the two Tempus projects and was able to put in place over the events in which it participated and organized and the expertise it has acquired in terms of educational engineering, setting up professional training, communication etc. not only a solid network of national socio-economic partners and national and international university partners but also a strategy based mainly on three major axes: 1- Strengthening and relevance of the

dynamics of university-business relations, 2- Professionalization of L M D and Employability training, 3- Innovation and Entrepreneurship

This BLEU strategy materialized in the creation of several new structures within the University of Tlemcen, by assigning to each specific missions, each of them contributing to the establishment of an Innovation Ecosystem and Global Entrepreneurship at the University of Tlemcen according to a well-defined scheme.

It should be noted that BLEU has just set up an IOC Information and Orientation Committee which has an advisory role:

It defines the strategic axes, actions, means and tools of the B.L.E.U., It validates the project and the activity report of the B.L.E.U.

It also has a forward-looking role: it ensures the match between training and employment, the skills framework and the updating of the knowledge and know-how covered in the training courses, and the adaptation of training according to new trends and business recommendations, all to ensure the future of the cohorts of outgoing students.

It will also propose University / World Socio-economic projects which will be useful to both partners and which will contribute to the socio-economic development of the region.

3.3.9.2. CATI[1] : Centre d'Appui à la Technologie et l'Innovation = TISC Technology and Innovation Support Center

Created by BLEU in 2012 in partnership with INAPI (Algerian National Institute of Intellectual Property), the CATI Technology and Innovation Support Center of the UoT responds to the will of the university to be an actor in the economic and societal development of its region, by allowing and facilitating access to the skills and inventions of public researchers in their territory, and by trying to detect and evaluate these inventions and support them until transfer to a company.

Intellectual property resulting from public research, and in particular the questions of its management and its valuation, constitute a subject of particular sensitivity at a time when the production of knowledge has become one of the main engines of economic growth.

Universities, as essential players in public research, have a fundamental mission of valorisation of the results of scientific and technological research without omitting the social or societal aspect. This promotion of research within public establishments remains embryonic.

The UoT considers the transfer of knowledge as a strategic mission and supports the CATI to establish and disseminate policies and procedures for the management of intellectual property within it and to have a dual role of both prospector of creation of knowledge and responsive to the production of knowledge.

The CATI of the University of Tlemcen aims to allow innovators whether they are students, doctoral students, researchers and also socio-economic actors to have access to local services of technological information services of quality and other related services, in order to help them exploit their innovative potential and to create, protect and manage their intellectual property rights.

The CATI of the University of Tlemcen offers the following services:

- Access to online patent and non-patent (scientific and technical) resources and intellectual property publications;

[1] CATI website: https://cati.univ-tlemcen.dz

- Help in finding information on technology;
- Database search training;
- On-demand research (novelties, state of the art and infringements of rights);
- Monitoring of technological advances and competitors;
- Basic information on laws, management and strategies in the field of industrial property, as well as on the commercialization of technology.

The CATI relies on a solid network that it has been able to build and coordinate composed of already existing public bodies, first of all internally: the Vice Rectorate in charge of the third cycle of university accreditation , scientific research, post-Graduation higher education at Tlemcen University and externally: INAPI (Algerian National Institute of Intellectual Property), DGRSDT (General Directorate of Scientific Research and Technological Development), ANVREDET (National Agency to Valorise Research and Technological Development Results), but also an international network made up of WIPO ('World Intellectual Property Organisation) and the various players in the protection and promotion of research among partner universities.

The CATI of the University of Tlemcen offers potential project leaders the most transparent framework that one can find, in terms of support and protection of inventive activity within the University and can even offer its services to non-university partners.

3.3.9.3. ME[1]: Maison de l'entrepreneuriat = EH Entrepreneurship House

Created by the BLEU in 2013 in partnership with ANSEJ (National Agency for the Support of Youth Employment), the ME is a flagship structure that responds to the same desire of UoT to be a player in economic and societal development of its region with a particular focus on students.

The ME at the UoT's mission is to develop an entrepreneurial culture among students and ensure the emergence of new entrepreneurial vocations through three major axes:

Raise awareness and disseminate *entrepreneurial culture* in higher education

Amplify and pool *training actions*

Welcome, guide and *support students and entrepreneurs* in their action to create economic activity.

The Entrepreneurship House of the UoT is a key element in the establishment of the innovation and entrepreneurship ecosystem, it has been able to broaden its scope by:

Stimulation of creativity and entrepreneurship, through:

- An entrepreneurial training cycle in partnership with ANSEJ throughout the year on registration for the benefit of student and doctoral entrepreneur students
- Organize conferences given by internal and external experts on the process of creating a business and / or the job of a business leader
- Testimonials from talented entrepreneurs who have created businesses in Algeria and / or around the world
- Networking of students and graduates with the business community at the local and or national level through their involvement / encouragement in the organisation of events initiated by the university in order to consolidate their relations with companies and main economic

[1] ME website: https://me.univ-tlemcen.dz

players. These events are organized on a regular or occasional basis (trade fair, forum / business meeting)

3.3.9.4. Career center & Job Search Club 1

The employability of Algerian students and the University of Tlemcen has been a major concern of BLEU since its creation, a concern shared by the top managers of the university and the Ministry of Higher Education and Scientific Research. The BLEU has long reflected on the mechanisms to be put in place to develop and optimize even more the employability of the UoT students, also to answer the questions of the students and their family circle, to support them in building their personal and professional project.

UoT was chosen to be part of the Algerian universities piloting two programs related to employability:

Strategic Employability Management in three pilot higher education institutions in Algeria: a partnership with the United Kingdom and Algeria | British Council

The first coordinated by the British Council on Strategic Management for Employability in three pilot higher education institutions in Algeria: a partnership with the United Kingdom and Algeria.

The British Council pilot project builds on the activities already developed within UoT related to the employability of its students to strategically integrate good practices into employability management.

The proposed research in English language and employability responds directly to the Department's request to develop English language capacity in universities.

This project will build a solid foundation for long-term employability solutions such as that of the ILO. This will take place by supporting institution-wide methodology and strategy and working closely with leaders, policy makers, teaching staff and BLEU.

The project will draw on the expertise of a UK partner university with extensive experience in the MENA region to support the strategic management processes required to produce ready-to-use graduates.

The objective of this project is to improve the employment of graduates, the project will help develop the management and strategy setting skills of employability initiatives of the university. The project will build a solid foundation for the development of employability skills of university students in Algeria. It will benefit from best practices in the UK using a fully academic strategic approach.

The project will harness the support, understanding and insights of key leaders while integrating what already exists as a comprehensive employability strategy. This offers several advantages. It will identify gaps and suggest how to fill them, build skills and capacity through training, mentoring and support, and help ensure a more coordinated and institutionalized approach to graduate employment at participating universities. This holistic approach is therefore more likely to lead to successful long-term results.

The strong link with universities in the United Kingdom will also provide the UoT with:

- Different examples of best practice in the UK in terms of employability.
- Access to expertise in the development of strategic capacity and institutional management.

[1] Website: https://cdc.univ-tlemcen.dz

- Collaboration and institutional learning.

From university to the world of work | International Labor Organisation, ILO Office in Algiers for Maghreb countries

This second project coordinated by the International Labor Organisation through its office in Algiers for the Maghreb countries will, among other deliverables, train ANEM (National agency for Employment) advisers and dedicated academic staff from three pilot institutions of higher education in Algeria including UoT on how to facilitate group counselling sessions on job search. The ILO manual "Surfing the Labor Market: Job Search Techniques for Young People" will be adapted to the Algerian context for this purpose.

It includes modules on self-assessment and career exploration, job discovery, job search planning, job interview preparation, and job evaluation and job management. on-the-job period. At universities, students in their later years will be encouraged to actively participate and act as facilitators for group counselling sessions.

Another objective of the project is the establishment within the UoT of a Job Search Clubs which will run intensive job search support activities. Facilitators will coach a group of job seekers to enter or re-enter the labor market. The Club's objective is to activate job seekers and empower them in their job search. The club is based on the mutual support of all members, networking, and professionalisation of those seeking employment through the practice of phone calls, interviews, writing cover letters and CVs.

3.3.9.5. Career Center & Job Search Club

Supported and accompanied by the above two projects, the BLEU of the UoTis working for the establishment of a Career Center and a Job Search Club within the UoT, which will have as final objectives the improvement of the employability of its students and for missions of:

• Inform the student about his choice of training course on opportunities, trades, functions, sectors of activity

• Provide personalised advice

• Allow students to orient themselves and reorient themselves, such an approach for it to be successful requires the student to reflect on his personal and professional project, through several services:

• personalised support for the realization of a personal assessment centered in particular on acquired skills (assessment of acquired skills) and which will allow to define a professional horizon and to co-build with the student a course adapted to his objectives

• workshops, seminars led by academics but also by professionals and representatives of public administrations and employers' associations on internship and job search

• conferences on professions, job fairs, university business forum

• a facebook specially dedicated to employment news and professional advice

• a free access documentary space with a specialised documentary catalog that can be consulted online at:

- the job market
- business sectors and their businesses
- internship and job search techniques
- press reviews

• preparation for professional integration through training for:

- enhance the skills of students,
- understand the job market,

- write CVs and cover letters
- prepare recruitment interviews through interview simulations
- how to participate and attend trade fairs and shows

• It also has a forward-looking role: it ensures the training / employment match, the skills framework and the updating of the knowledge and know-how covered in the training courses, and the adaptation of training according to new trends and business recommendations, all to ensure the future of the cohorts of outgoing students.

Alumni Network

The BLEU through the Career Center envisages the creation of a network of former students of the UoT by setting up a virtual space to bring together the diaspora of all UoT former students in Algeria and residing abroad.

This living force must be harnessed for the improvement of student life and for better integration of university students and to develop the influence and reputation of the University of Tlemcen in Algeria and in the world.

3.3.9.6. FABLAB[1]

Thinking of creating a Fablab, the BLEU looked into the question at the end of 2014, second year of participation in the entrepreneurial competition Injaz El Djazair, the brilliant achievements of the students in their projects of end of Bachelors/Masters studies of, we will quote those of the Industrial Engineering sector for example, pushed us towards the idea of setting up this very concept at the UoT. The funding problem was the major brake on this initiative, we had contacted some of our national and international partners to try to show a more modest and less expensive version that we would have called Techlab.

A call from the DGRSDT (General Directorate for Scientific Research and Technological Development) on its site reported by a colleague from the Faculty of Technology enabled us to make this project a reality.

A Fablab stands for " **Fab**rication **Lab**oratory = Manufacturing Laboratory", is a space open to students and doctoral students to experiment with any form of idea, but also to enrich their practical knowledge in electronics or prototyping.

The "FabLabs" that the General Directorate of Scientific Research and Technological Development intends to set up will be equipped with equipment for 3D design, as well as the production of objects of all kinds, up to the imagination of carriers of ideas.

In addition to 3D printers, and networked computer equipment, the FabLabs will be equipped with equipment enabling various materials to be encapsulated to manufacture electronic circuits that can be used to repair a device or create innovative objects (mini robot, servitude).

The software aspect and the development of computer codes for professional use will naturally find its place in this space, as well as the programming associated with microcontrollers. Universities wishing to host manufacturing laboratories must provide an adequate and secure space, accessible and open to students at all times with the designation of a steering body for this structure (faculty, scientific club, learned association, etc.).

The objective is to quickly ensure the support necessary for the realization of projects of all kinds emanating from the students, whether they are related to the design / manufacture

[1] Website: https://fablab.univ-tlemcen.dz

of an object, to the appropriation of new technologies, or that they are simply part of a process of learning and sharing knowledge and know-how.

The Fablab is another essential element in the innovation and entrepreneurship ecosystem of the university.

3.3.9.7. The INCUBATOR[1]

A key element in UoT's innovation and entrepreneurship ecosystem, INCUT is the UoT's incubator. BLEU wanted to create a university incubator in 2013 but was only able to meet the conditions necessary for setting up a viable incubator in mid-2016.

INCUT was set up to support innovative project leaders wishing to materialize their business creation project.

With the expertise and support of a dedicated team of research professors from UoT as well as the support and involvement of a dense network of local, national and also international socio-economic partners, INCUT is located at the center of the ring road at the level of the house of 30 laboratories next to the Fablab, it offers the following services to the holders of selected projects:

- Accommodation in open space with a coworking space
- Personalised advice via university and extra-university experts
- Training and Coaching via interviews and workshops
- Training and assistance in the protection of industrial property
- Personalized mentoring via a network of experienced entrepreneurs
- Fundraising

Its missions are:

- Personalized support and effective launch of incubated business projects
- The training of incubated project leaders
- Boosting local economic activity and job creation

The INCUT eligibility criteria are exercised at two levels:

Pre-incubation: dedicated to PhD students at the UoT, with a project to create an economic activity, INCUT pre-incubates innovative projects.

Four main criteria have been put in place for the evaluation of projects before their integration:

1. Innovative character
2. Technical feasibility
3. Quality of the Team
4. Economic potential

If the project is selected by the INCUT selection committee, the project leaders will benefit from training and support from the incubator for a maximum period of 18 months.

Incubation: The services and network of INCUT partners are made available to:

• Freshly graduated student (under 03 years old) from the University of Tlemcen, who already have a business creation project

• A project already pre-incubated

INCUT offers project leaders the opportunity to create and host their business within its premises, for a maximum period of 02 years after a preliminary assessment of the project by a jury of academics and professionals.

[1] Website: https://incut.univ-tlemcen.dz

Call for projects :

Calls for projects are launched cyclically, a first selection will be made by the INCUT team, which subsequently, subject to selection, will propose the project to the selection jury. The latter will be made up of economic actors, public institutions intended for the promotion of entrepreneurship and research professors from the UoT who will examine the incubation file for project leaders made up of the application file and a business plan for the project.

3.3.9.8. I|C|Z Industry Collaboration Zone[1]

ICZ was an addition to the innovation and entrepreneurship ecosystem of UoT, I | C | Z -stands for Industry Collaboration Zone - is conceived by BLEU as a virtual and physical interface, tool and place of birth and development of cooperation with the socio-economic sector.

Its mission will be to offer a wide range of services to businesses and the public sector:

• Establishment and management of a portfolio of training offers co-constructed in partnership with ISTA

• Establishment and management of a portfolio of tailor-made continuing education offers

• Drafting of framework and specific agreements

• Organisation of Labinsight

• Organisation, participation in Forums, Trade Shows, Professional Fairs

• Writing and distribution of "Expertise Sheet"

• Writing and distribution of "Service Provision Sheet"

• R&D (Research and Development) project proposal and management

• Establishment of "TIP Team Innovation Project Project Sheet" which constitute a platform for university-business-territory call for projects.

Section 4. Performance indicators of the university of Tlemcen :

In this study, the performance of academic teachers is measured mainly through their scientific activities. We will present in this part some indicators to show the performance of the university regarding the scientific research.

4.1. Scientometric indicators

An indicator is a statistical measure helping decision-making that allows the assessment of the state of a given system. A scientometric indicator is a statistical measure which makes it possible to appreciate the national policy of scientific research and to contribute to decision-making aid which allows the evaluation of the state of a given system.

Some indicators:

- The total number of publications (P): This is the number of articles published by researchers, it indicates the level of their productivity, this number says nothing about the quality of these articles.
- The total number of citations (C): It indicates the total number of times that an entity (article, researcher, laboratory, institution, country, etc.) has been cited by all the other entities. It highlights the impact of research prior to current research.

[1] Website: https://icz.univ-tlemcen.dz

❖ **h Index**: Proposed in 2005 by J.E. Hirsch of UC San Diego. • Greater value of h for which the researcher has published h articles which have received at least h citations, • Combines counting of publications and distribution of citations, • Depends on discipline, • Created for an author, but will be applied to a group of authors or a journal.

❖ **Index g:** Proposed in 2006 by LEO EGGHE de Univ. Hasselt. • Highest value of h for which the researcher published h articles which together received at least h^2 citations, • Combines counting of publications and distribution of citations, • Depends on discipline, • Created for an author, but will be applied to a group of authors or to a journal.

❖ **Impact factor:** The impact factor is the ratio between the number of citations to this review in a given year and the number of articles published by this review in the previous two years.

$$\text{Facteur d'Impact} = \frac{\text{\# Citations en 2009 aux articles publiés en 2007 ou 2008}}{\text{\# Articles publiés en 2007 ou 2008}}$$

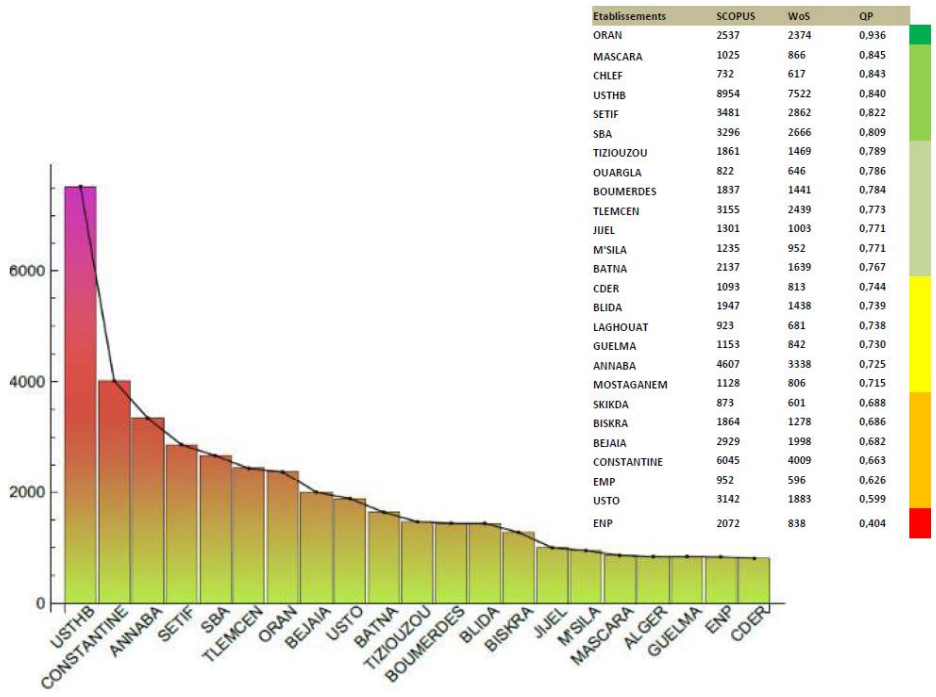
Journal Impact Factor

Cites in 2009 to items published in:	2008 = 124		Number of items published in:	2008 = 55	
	2007 = 654			2007 = 65	
	Sum: 778			Sum: 120	
Calculation:	Cites to recent items	778	= 6.483		
	Number of recent items	120			

4.1.1. *Tlemcen compared with other Algerian universities:*

This figure shows that according to Web of Science (WoS) and Scopus statistics, the UoT is classified 6th in terms of scientific production with 3155 documents in Scopus and 2439 in WoS. The first place belongs to the university of technology and science USTHB in Algiers.

Figure 49. Global Algerian scientific production per institution

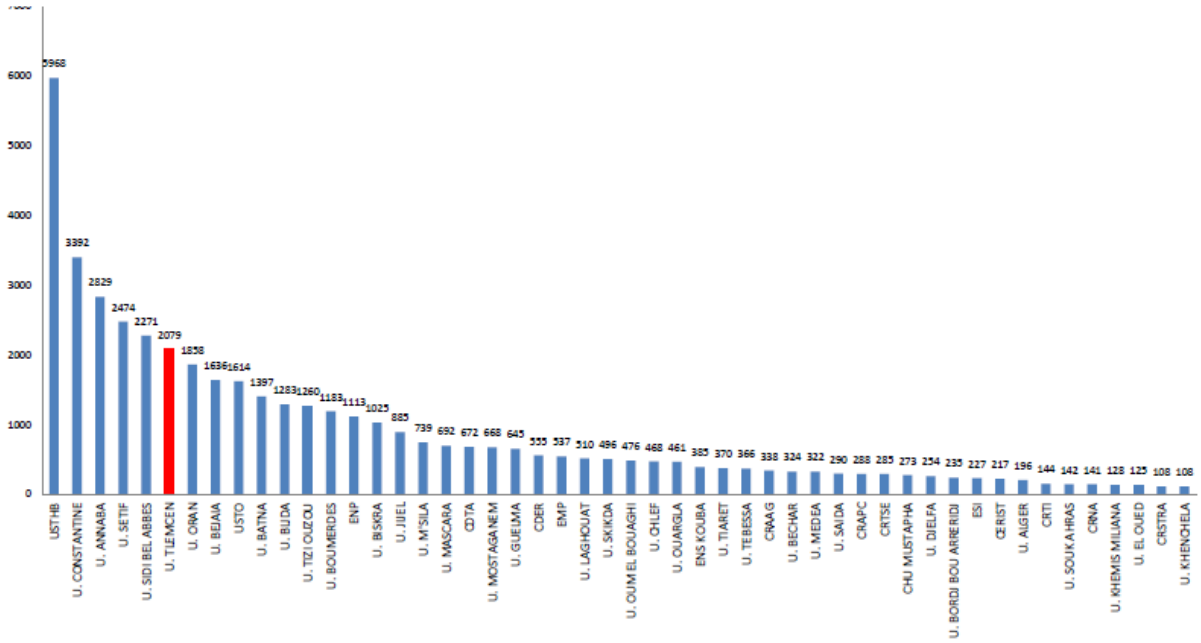


Etablissements	SCOPUS	WoS	QP
ORAN	2537	2374	0,936
MASCARA	1025	866	0,845
CHLEF	732	617	0,843
USTHB	8954	7522	0,840
SETIF	3481	2862	0,822
SBA	3296	2666	0,809
TIZIOUZOU	1861	1469	0,789
OUARGLA	822	646	0,786
BOUMERDES	1837	1441	0,784
TLEMCEN	3155	2439	0,773
JIJEL	1301	1003	0,771
M'SILA	1235	952	0,771
BATNA	2137	1639	0,767
CDER	1093	813	0,744
BLIDA	1947	1438	0,739
LAGHOUAT	923	681	0,738
GUELMA	1153	842	0,730
ANNABA	4607	3338	0,725
MOSTAGANEM	1128	806	0,715
SKIKDA	873	601	0,688
BISKRA	1864	1278	0,686
BEJAIA	2929	1998	0,682
CONSTANTINE	6045	4009	0,663
EMP	952	596	0,626
USTO	3142	1883	0,599
ENP	2072	838	0,404

Source: BELBACHIR (2020)

The number of published documents, is one of the famous indicators to calculate a lot of performanceindicators. The next figure shows that UoT has produced 2079 document between 1970 and 2016. The figure gives a comparison with other Algerian universities.

Figure 50. Scientific production of Algerian HEIs (1970-2016)



Source: BELBACHIR (2020)

4.1.2. Tlemcen Among other Algerian universities in SHS

Humanities and Social Sciences (HSS), are a big question mark. Visible publications in these fields are very few. We can see that UoT has only 26 documents published in WOS since 1996. Specialists refer this issue to the language obstacle, since Algerian researchers in these fields have pursued their curricla in Arabic and French.

On another hand, HSS students are the highest certified number in comparison with other domains. In 2021, 21% of the total certified students with a licence wrer from HSS -dispached on 8 tracks-, while technical sciences students -who has 13 tracks- represent 10% only. This domain should be given more attention since it is responsible for more than 20 M of diplomed population which mean it has a big share in the culture of the society.

Table 20. Certified students at the university of Tlemcen by domain

N°	Domains	Nbre Licence tracks	Nber of Licence certified students
1	ST	13	554
2	SM	2	203
3	MI	2	150
4	SNV	10	760
5	STU	2	48
6	SEGC	13	973
7	DSP	4	498
8	LLE	3	589
9	SHS	8	1 190
10	ARTS	2	131
11	LLA	4	416

12	AUMV	2	71
	Total	**65**	**5 583**

Source:(Council of Administration, 2021)

The next figure shows the number of published documents in some Algerian HEIs. The issue of language should be studied and analysed by the ministry, and solutions should be applied as soon as possible.

Figure 51. Algerian production per institution

Source: BELBACHIR (2020)

4.1.3. Tlemcen university affiliation names

Another issue in calculating the number of documents is that affiliation name varies from a researcher to another. The same institution is described in different names, and this will give a less exact statistics. We recommend that affiliation names should be merged.

Figure 52. Different Uot affiliation names

A BELKAID UNIV	INST NAT ENSEIGNEMENT SUPER
UNIVERSITE ABOU BEKR BELKAID	INST NATL ENSEIGNEMENT
A BELKAID UNIV TLEMCEN	INST NATL ENSEIGNEMENT SCI EXACTES
AB BELDAID UNIV	INST NATL ENSEIGNEMENT SUPER
AB BELKAID UNIV	INST NATL ENSEIGNEMENT SUPER BIOL
ABOU BAKER BELKAID UNIV	INST NATL ENSEIGNEMENT SUPER HYDRAUL
ABOU BAKR BELKAID UNIV	INST NATL ENSEIGNEMENT SUPER HYDROL
ABOU BAKR BELKAID UNIV TLEMCEN	INST NATL ENSEIGNEMENT SUPER TLEMCEN
ABOU BEKER BELKAID UNIV TLEMCEN	INST NATL LENSEIGNEMENT SUPER
ABOU BEKR BELAKAID UNIV	INST SCI
ABOU BEKR BELKAID UNIV	INST SCI EXACTES
ABOU BEKR BELKAID UNIV TLEMCEN	INST SCI EXACTES TLEMCEN
ABOU BELO BELKAID UNIV TLEMCEN	LAB APPL MOL BIOL IMMUNOL
ABOUBAKR BELKAID UNIV	LAB ETUD PREDICT MAT
ABOUBAKR BELKAID UNIV HOSP	LAB MAT ENERGIES RENOUVELABLES
ABOUBEKR BELKAID UNIV	LAB PHYSIOL PHYSIOPATHOL BIOCHEM NUTR PPBIONUT
ABOUBEKR BELKAID UNIV TLEMCEN	LAB PROD NAT
ABU BAKR BELKAID UNIV	LAB PRODUITS NAT
ALGERIA UNIV	LAB PRODUITS NATURELS
BAKR BELKAID TLEMCEN UNIV	LAB SUBST NAT BIOACT LASNABIO
CTR UNIV TLEMCEN	LMER
DEPT TLEMCEN MED CTR UNIV	MED CTR UNIV TLEMCEN
FAC SCI UNIV ABOU BAKR BELKAID	MELT
FSI UABB	NEW POLE TLEMCEN UNIV
FSI UNIV ABOUBEKR BELKAID TLEMCEN ALGERIA	STIC LAB UNIV TLEMCEN ALGERIA
INES BIOL	STIC UNIV TLEMCEN
INES HYDRAUL	TLEMCEN ABOU BEKR BELKAID UNIV
INES SCI EXACTES	TLEMCEN UNIV

Source: BELBACHIR (2020)

In the same context, the next figure show that Uot has many identification number. This is a serious issue for the UoT scientometric indicators measurement. With these different IDs for the same institution, the statistics about UoT will be mistaken and the counted numbers could be less than the real ones It should be a unique ID for a university in order to increase numbers of documents and citation for a same university. This issue will affect the ranking of the university too.

Figure 53. Different Uot IDs

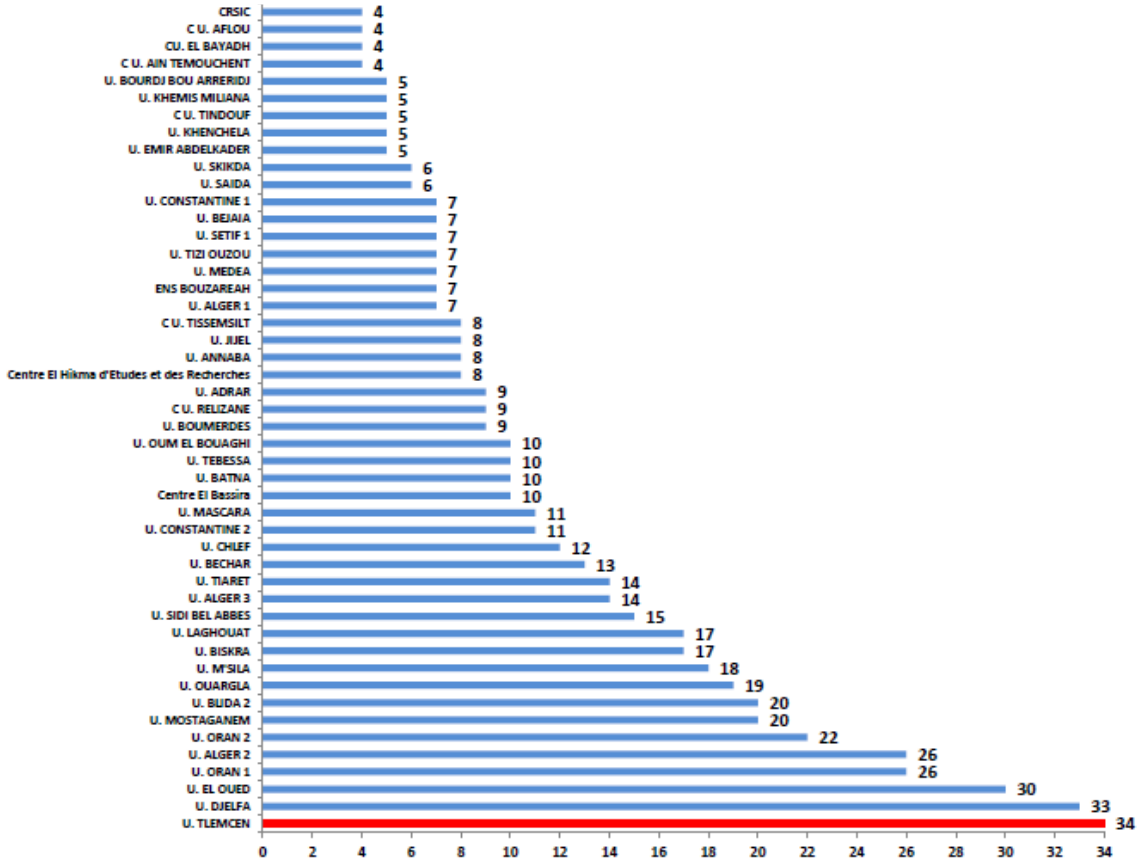
Etablissement	ID	Etablissement	ID
University of Tlemcen	60068756	Université Abou Bakr Belkad	109849495
Unité de Recherche Matériaux et Energies Renouvelables	101138502	Unité de Recherche Matériaux et Energies Renouvelables URMER	114573147
University Abu Bekr-Belkaid	116206695	Unité de Recherche Matériaux et Energies Renouvelables URMER	116020751
University AbouBekr Belkaid of Tlemcen	105942737	LTT Laboratory of Telecommunication Tlemcen	112956267
Département de Mathématiques	115753625	Institut d'Hydraulique Centre Universitaire de Tlemcen	105884406
University Abou Bekr Belkaid	106560216	Faculty of Science University of Tlemce	106304478
Tlemcen Abou-Bekr Belkaïd University	108125109	Université Abu Bakr Belkaid de Tlemcen	106398524
University Abou Bekr Belkaid	112656175	University Aboubekr Belkdïd	106984082
Université A. Belkaïd	101825924	Université Aboubekr Belkaid of Tlemcen	107382668
Abou Baker Belkaid University	106348689	University Abou Baker Balkaid	107893059
A Belkaid University	112373309	Abou Bekr Belkaid University po 230 Chetouane	107937404
Laboratory of Ecology and Management of the Natural Ecosystems	105814376	Inst. National d'Enseignement Supárieur d'Hydraulique	118862994
Laboratory of Natural Products	110269102	University Abou Bakar Belkaid de Tlemcen	107949002
Université Abou Bekr	109478728	Science. University of Abou-bekr BELKAID. 13000 Tlemcen	108159893

Source: BELBACHIR (2020)

4.1.4. UoT Journals among national universities

The UoT has the biggest number of journals in comparison with other Algerian Universities. This is explained by the various disciplines that UoT offer for students in the different cycles: Licence, Master, Doctorate and its laboratories are active and create their own journals It has 34 till February 2020.

Figure 54. Scientific journals per university :



Source: BELBACHIR (2020)

However, this big number of journals doesn't reflect their quality. The indicator for quality in Algerian journals can be seen through their classification by the DGRSDT and in the Algerian Scientific Journals Platform (ASJP) developed by CERIST. There are 748 Algerian journals classified in the ASJP (CERIST, 2022). The scientific research departments has made a call for all HEIs in order to build the national database "Fichier national des revues scientifiques" and to support national scientific journals to be indexed in selective databases. Two National journals are indexed in WoS:

- Journal of New Materials and Technology (U. Oum El Bouaghi),
- Journal of Materials and Engineering Structures (U. Tizi Ouzou).

Annex II contains the database for the indexed journals in ASJP by may 2022 with their links. The scientific research department of the ministry has established several conditions to classify journals into 4 main categories: C, B, A & A+[1]. In what follows, we will present the criteria established by the scientific research department in order to get a C category:

• The journal must be at least two years old and must be free (authors do not pay to publish), with a minimum of 5 articles per issue.

• The journal must have an ISSN and an E-ISSN which must be visible on the journal's website and legal deposit with the national library.

[1] To get the latest list of classified journals, please visit http://www.dgrsdt.dz/v1/index.php?fc=News_A&id=333

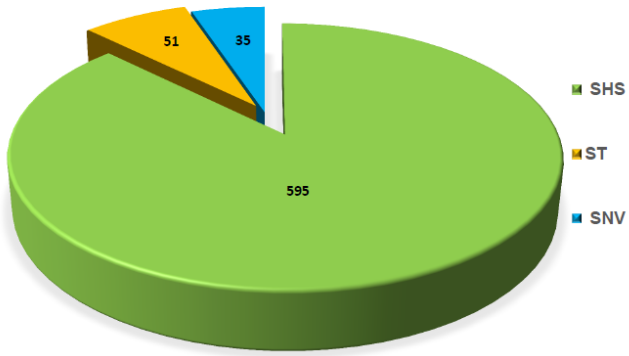
• The journal must be in Open Access, by publishing the full text of the articles.
• Declare the periodicity of publication of the journal and ensure compliance with the regularity of publication.
• Present the scientific fields covered by the journal in the presentation pages.
• Present the objective of the scientific journal in the journal description.
• Have an editor-in-chief and an editorial board from various national institutions and other international members.
• The scientific editor (institute to which the journal belongs) and the place of publication must appear in the presentation pages of the journal.
• The names and institutional affiliations of the editor-in-chief and members of the editorial board must appear in the journal presentation
• The editor-in-chief and members of the editorial board must be of magistrate rank or equivalent or hold a doctorate.
• Have the postal and electronic addresses of the secretariat and mention them in the presentation pages.
• The full title, volume, number, and date must appear on the journal page
• Have a style sheet (Template) (in DOC and / or LATEX format) which must present instructions to the authors.
• Indicate the submission procedure. (Guide to authors).
• Have a table of contents for each issue edited indicating the titles of the articles, the authors and the initial pages where all the full articles can be downloaded separately
• Each journal article must include the institutional affiliation of the authors, the date of receipt, the date of possible revision, the date of acceptance and the corresponding author
• Each journal article should include the title, abstract and keywords in English.
• At least two referees are required for the expertise of each article.
• The journal must mention and solicit the originality of the work in the presentation of the instructions to the authors.
• The journal's liabilities (archives) must be taken care of.
• The journal must ensure compliance with the code of ethics and professional conduct.
• The journal must specify and declare the copyright.

The UoT journals could be found on ASJP. We can recognise that only one journal has a good level (B class) in the field of Natural sciences called Genetics and Biodiversity Journal with an EISSN: 2588-185X

4.1.4.1. National journals per domain:

In order to have a wider look, the journals of Algerian institutions are mainly in humanities and social sciences (HSS) with more than 87% of the global number. This could be explained by the existence of numerous science journals in the international databases, more than it is in HSS. The other reason is that it is mandatory for science and technology students to publish in B and above categories, but for HSS students national journal form C class are acceptable to defend a PhD thesis or get a habilitation.

Figure 55. Algerian Journals per domain



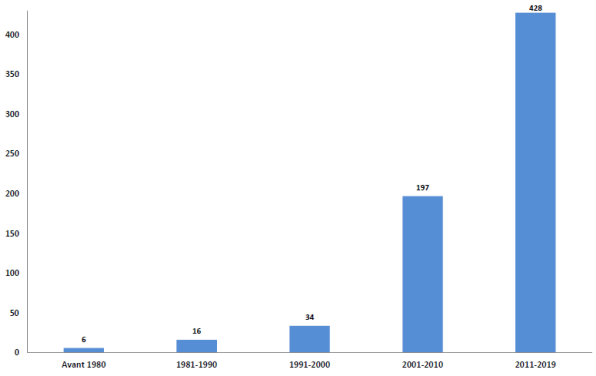
Source: The Author based on Cerist (2020)

4.1.4.2. Visibility of national scientific journals by date of creation

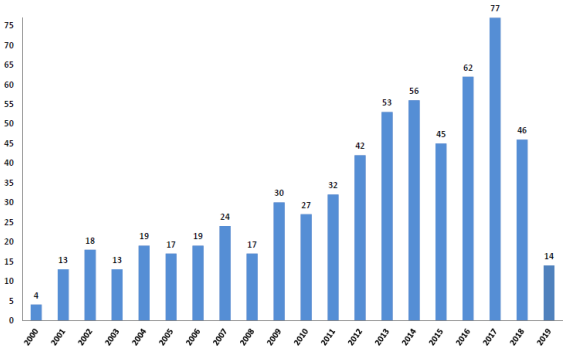
It is obvious that in the last decade, number of Algerian journals has been doubled. There are considerable efforts and reforms in the ministry of higher education and its directorate of scientific research in order to enhance research in Algeria.

Figure 56. Algerian journals visibility

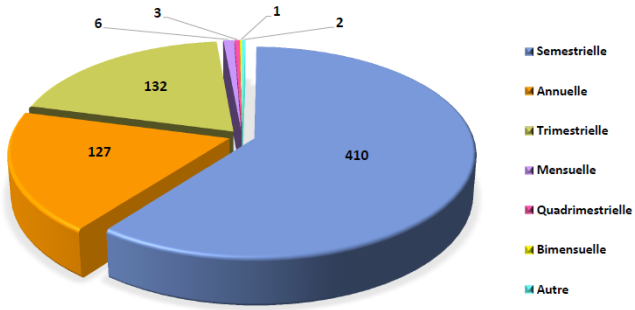
Evolution of Algerian journals (>1980-2019)



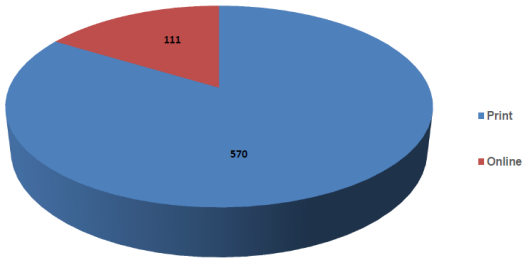
Visibility of national scientific journals through the creation date (2000-2019)



Visibility of national scientific journals through periodicity



Visibility of national scientific journals through website



Source: Belbachir, 2020

4.1.5. Web of Science (WoS) of Clarivate Analytics

4.1.5.1. Overview:

Web of Science, previously known as Web of Knowledge, is a database of bibliographic citations of multidisciplinary areas that covers the various journals of medical, scientific, and social sciences including humanities (Ramlal, Ahmad, Kumar, Khan, & Chongtham, 2021). WOS is a subscription-based access provider to multiple databases that provide comprehensive citation data for many different academic disciplines. It was originally produced by the Institute for Scientific Information (ISI) and is currently property of Clarivate Analytics (previously the Intellectual Property and Science business of Thomson Reuters) (WIKIPEDIA, 2020).

4.1.5.2. *Indexation*:

Total indexing of journals written in more than 42 different languages.

- Over 9200 journals in science and technology,
- More than 3400 social science journals,
- More than 1,800 journals in the humanities and arts.
- The Web of Science is the source of the Impact Factor (JCR)

WoS consists of five bibliographic databases

- Science Citation Index Expanded (IF)
- Social Sciences Citation Index (IF)
- Arts & Humanities Citation Index
- Conf. Proceedings Citation Index- Science,
- Conf. Proceedings Citation Index- Social Science & Humanities.

Emerging Sources Citation Index (ESCI) --2015-present

- Book Citation Index– Science
- Book Citation Index - Social Sciences & Humanities

4.1.5.3. Evaluation Institutions

•UNESCO science report
•US: NSF: biennial Science & Engineering Indicators report (depuis 1974)
•UK: Office of Science & Technology; Higher Education Funding Council
•European Union: EC's DGXII(Research Directorate)
•Canada: NSERC, FRSQ (Quebec), Alberta Research Council
•France: Min. de la Recherche, OST - Paris, CNRS
•Germany: Max Planck Society, several gov't labs, DKFZ, MDC
•Human Sciences Research Council (Afrique du Sud)
•People's Republic of China: Chinese Academy of Science
•IMIST (Maroc) et CNUDST (Tunisie)

The total number of documents published in WoS by Algerian researchers till February 2020 was 45389.

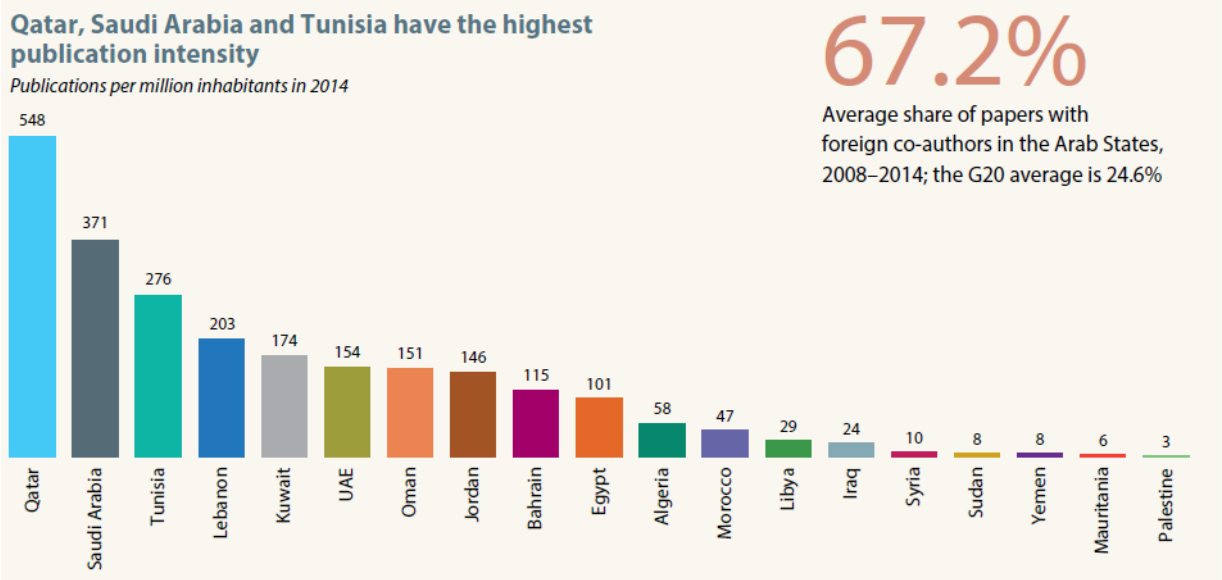
4.1.5.4. Journals distribution by Country in WoS

When exploring the WoS database, we can see a very good indicator about the quality of journals by country. USA comes in the first place with 4929 journals in WoS, then comes England with 3268. Algeria doesn't exist in the table. The whole country couldn't provide a unique journal with WoS conditions. We can see that Egypt has already 5 journals, India 11, Kuwait 4 journals.(BELBACHIR, 2020)

4.1.5.5. Scientific publications per million population in the Arab world

In the UNESCO science report, towards 2030, it is displayed by the next figure, number of publications per million population in the Arab countries where Algeria comes in the 11th position with 58 documents per 1 million Algerian. Tunisia as a neighbor country is far from us with 276 documents per 1M population in the third place after Quatar (548) and Saudi Arabia. Tunisia could be a model for us to learn how they publish in such a way (research competencies) and get their good practices.

Figure 57. Publication intensity



Source : (Baskaran, 2016)

4.1.6. SCOPUS

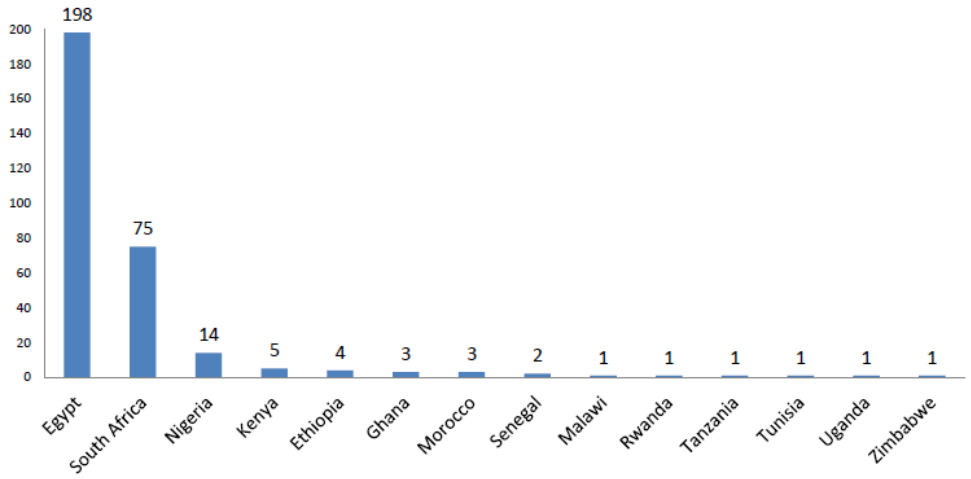
Scopus is an abstract and citation database owned by Elsevier. It was launched in 2004. and covers nearly 36,377 titles (22,794 active titles) from approximately 11,678 publishers, of which 34,346 are peer-reviewed journals in top-level subject fields: social sciences, physical sciences, health sciences and life sciences. It covers three types of sources: journals, book series, and trade journals. All journals covered in the Scopus database are reviewed for sufficiently high quality each year according to four types of numerical quality measure for each title; those are h-Index, CiteScore, SJR (SCImago Journal Rank) and SNIP (Source Normalized Impact per Paper). Besides, Scopus incorporate patent databases searches (Wikipedia, 2021)

The number of documents published in SCOPUS by Algerian researchers till February 2020 was 77768 (BELBACHIR, 2020).

4.1.6.1. African journals in Scopus:

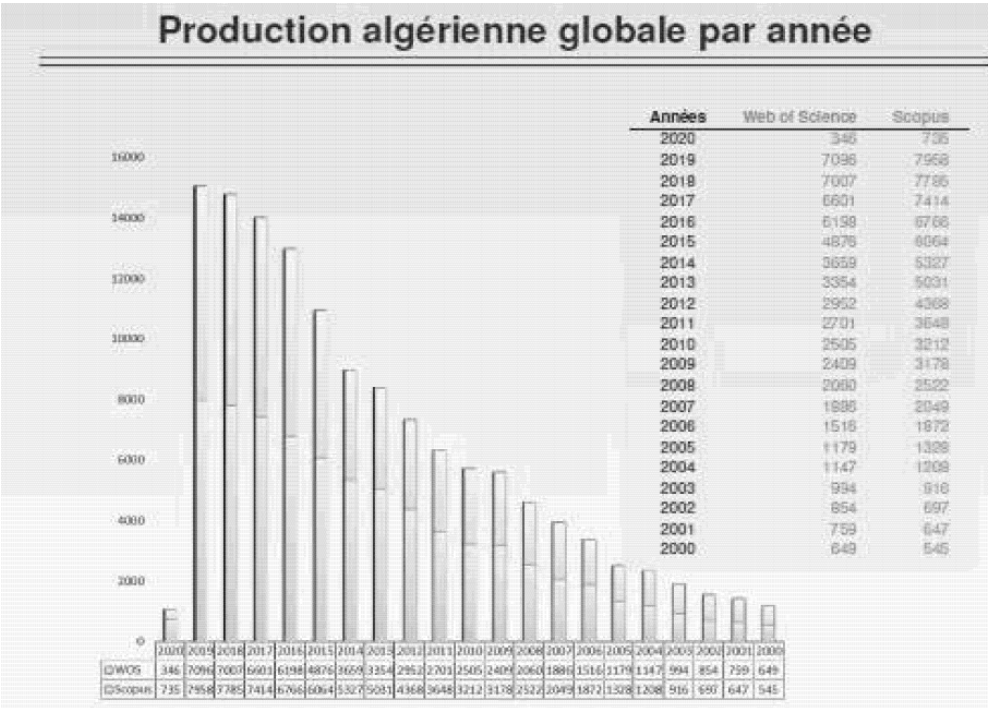
When we see the next figure, we ask the question: Why not Algeria is among SCOPUS journals database??

Figure 58. African scientific journals indexed in SCOPUS



Source: (BELBACHIR, 2020)

Figure 59. Global Algerian production per year

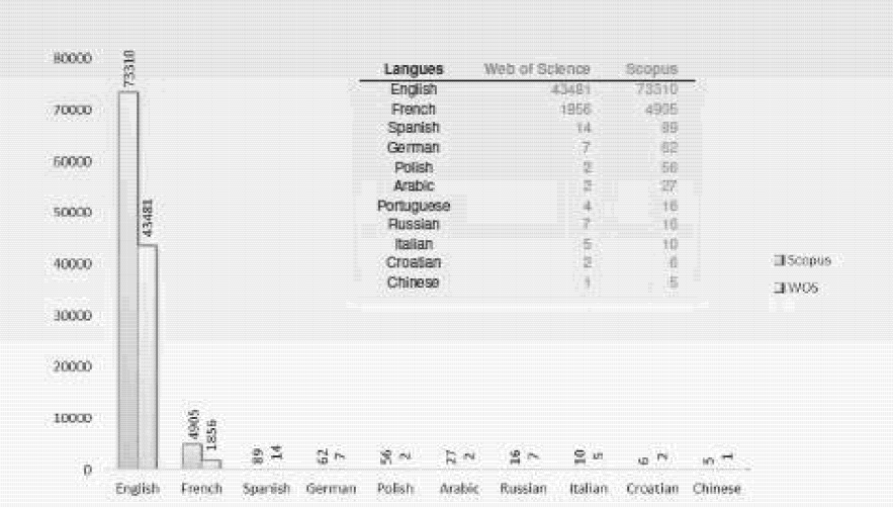


Source : BELBACHIR (2020)

4.1.6.2. Algerian publications per language:

The language is the elementary component of visibility. English is the commonly used language in the scientific field. Algeria has 73318 English paper in Scopus and 43481 English paper in WoS. However, Arabic is also here, there are 2 in Wos and 27 in Scopus. This is a message or those who said that we can't publish in these databases because we didn't master English. Even papers in Arabic could be published internationally, the only condition is quality.

Figure 60. Global Algerian production per language

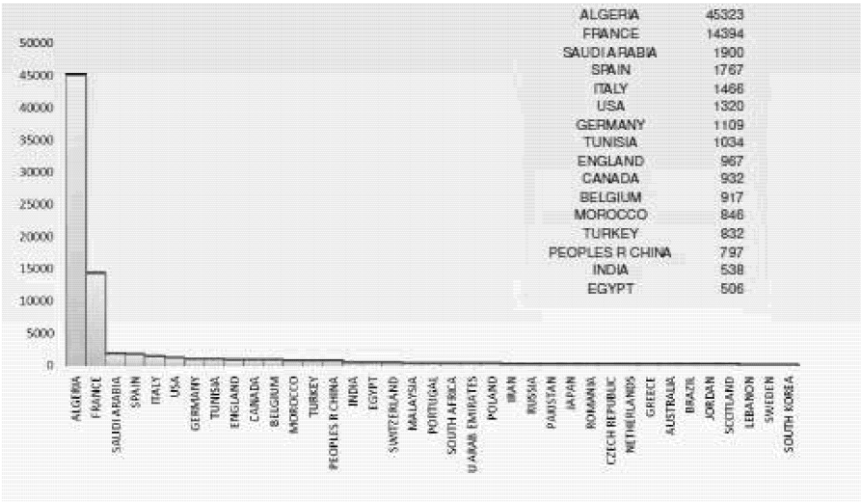


BELBACHIR (2020)

4.1.6.3. Global Algerian production per co-Affiliation

Teamwork is a very important soft skill in the field of research. Algerians collaborate with their home compatriots with 45423 papers published. The second place goes to French researchers with 14394 documents. Saudi Arabia comes far from this number at the third place with 1900 document. This gives us an overview about the collective performance and preferences of the researchers in their scientific production.

Figure 61. Global Algerian production per co-Affiliation

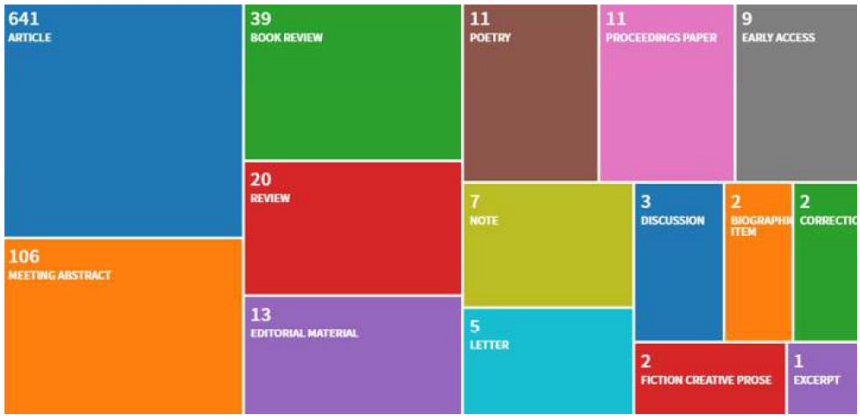


BELBACHIR (2020)

4.1.6.4. Algeria's production in human and social sciences

As stated before, Published papers in international database for human and social sciences still in an embryonic stage. It is very poor in comparison with other countries, even with other fields of research in Algeria. There are in WoS 852 document published whose 153 in Open Access. In SCOPUS we found 589 documents.

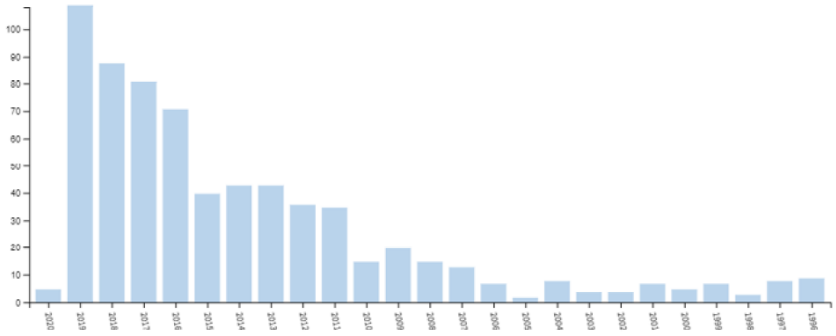
Figure 62. Algeria's production in human and social sciences per document type:



Source: BELBACHIR (2020)

4.1.6.5. Algeria's production in human and social sciences per year:

From the figure below, we can see clearly that the trend to publish in visible database is increasing form yea to another in humanities and social sciences. This was the case for all fields of research. Algeria is moving forward to gain a respectful place among its neighbours.



Source: BELBACHIR (2020)

4.1.6.6. Algeria's scientific production in the eyes of UNESCO

UNESCO Science Report Toward 2030

The UNESCO Science Report is a global monitoring report published regularly by the United Nations Educational, Scientific and Cultural Organisation. Every five years, this report maps the latest trends and developments in national and regional policy landscapes, against the backdrop of shifting socio-economic, geopolitical and environmental realities. Each edition is released on 10 November, which is World Science Day for Peace and Development.

Algeria's graduates students

Table 17.3: **Arab tertiary graduates in science, engineering and agriculture, 2012 or closest year**

	Year	Total (all fields)	Science, engineering and agriculture		Science			Engineering, manufacturing and construction			Agriculture		
			Number	Share of total (%)	Number	Share of science, engineering and agriculture (%)	Share of total (%)	Number	Share of science, engineering and agriculture (%)	Share of total (%)	Number	Share of science, engineering and agriculture (%)	Share of total (%)
Algeria	2013	255 435	62 356	24.4	25 581	41.0	10.0	32 861	52.7	12.9	3 914	6.3	1.5
Egypt	2013	510 363	71 753	14.1	21 446	29.9	4.2	38 730	54.0	7.6	11 577	16.1	2.3
Jordan	2011	60 686	7 225	11.9	3 258	45.1	5.4	2 145	29.7	3.5	1 822	25.2	3.0
Lebanon	2011	34 007	8 108	23.8	3 739	46.1	11.0	4 201	51.8	12.4	168	2.1	0.5
Morocco	2010	75 744	27 524	36.3	17 046	61.9	22.5	9 393	34.1	12.4	1 085	3.9	1.4
Palestine	2013	35 279	5 568	15.8	2 832	50.9	8.0	2 566	46.1	7.3	170	3.1	0.5
Qatar	2013	2 284	671	29.4	119	17.7	5.2	552	82.3	24.2	0	0.0	0.0
Saudi Arabia	2013	141 196	39 312	27.8	25 672	65.3	18.2	13 187	33.5	9.3	453	1.2	0.3
Sudan	2013	124 494	23 287	18.7	12 353	53.0	9.9	7 891	33.9	6.3	3 043	13.1	2.4
Syria	2013	58 694	12 239	20.9	4 430	36.2	7.5	6 064	49.5	10.3	1 745	14.3	3.0
Tunisia	2013	65 421	29 272	44.7	17 225	58.8	26.3	11 141	38.1	17.0	906	3.1	1.4
UAE	2013	25 682	5 866	22.8	2 087	35.6	8.1	3 742	63.8	14.6	37	0.6	0.1

Source: UNESCO Institute for Statistics, July 2015

Source : Baskaran (2016)

Number of social science publications per country

The table below shows the number of papers (full and fractional counts), share of output in the database (based on fractional counts), ratio of output shares between Scopus and WOS (based on fractional counts). Algeria is classified 8th

Figure 63 Number of social science publications per country, Scopus and Web of Science, 2008–13

Country	2008–2013				2008–2013	
	No. of publications (full counting)		No. of publications (fractional counting)		% of world total (fractional counting)	
	Scopus	WOS	Scopus	WOS	Scopus	WOS
Costa Rica	242	155	150	95	0.0%	0.0%
Trinidad and Tobago	238	103	188	74	0.0%	0.0%
Oman	232	74	180	54	0.0%	0.0%
Jamaica	221	63	172	43	0.0%	0.0%
Zimbabwe	213	106	155	67	0.0%	0.0%
Malta	205	103	152	69	0.0%	0.0%
Fiji	192	115	131	77	0.0%	0.0%
Algeria	190	47	141	29	0.0%	0.0%
Cameroon	178	84	132	53	0.0%	0.0%
Palestinian Territory	166	0	113	0	0.0%	0.0%
Malawi	155	97	99	57	0.0%	0.0%
Georgia	154	61	94	36	0.0%	0.0%
Mauritius	152	66	125	49	0.0%	0.0%
Nepal	150	70	89	36	0.0%	0.0%
Ecuador	141	71	77	34	0.0%	0.0%
Bahrain	127	33	92	21	0.0%	0.0%
Senegal	122	71	77	39	0.0%	0.0%
Barbados	108	47	88	37	0.0%	0.0%
Panama	96	76	39	32	0.0%	0.0%

Source : Baskaran (2016)

Figure 64. Algerian Pattents compared with other Arab countries

Table 17.5: **Patent applications in Arab states, 2010–2012**

	Patent applications residents			Patent applications non-residents			Total patent applications		
	2010	2011	2012	2010	2011	2012	2010	2011	2012
Egypt	605	618	683	1 625	1 591	1 528	2 230	2 209	2 211
Morocco	152	169	197	882	880	843	1034	1 049	1 040
Saudi Arabia	288	347		643	643		931	990	
Algeria	76	94	119	730	803	781	806	897	900
Tunisia	113	137	150	508	543	476	621	680	626
Jordan	45	40	48	429	360	346	474	400	394
Yemen	20	7	36	55	37	49	75	44	85
Lebanon	0	0	0	13	2	2	13	2	2
Sudan	0	0	0	0	1	0	0	0	0
Syria	0	0	0	1	0	0	1	0	0

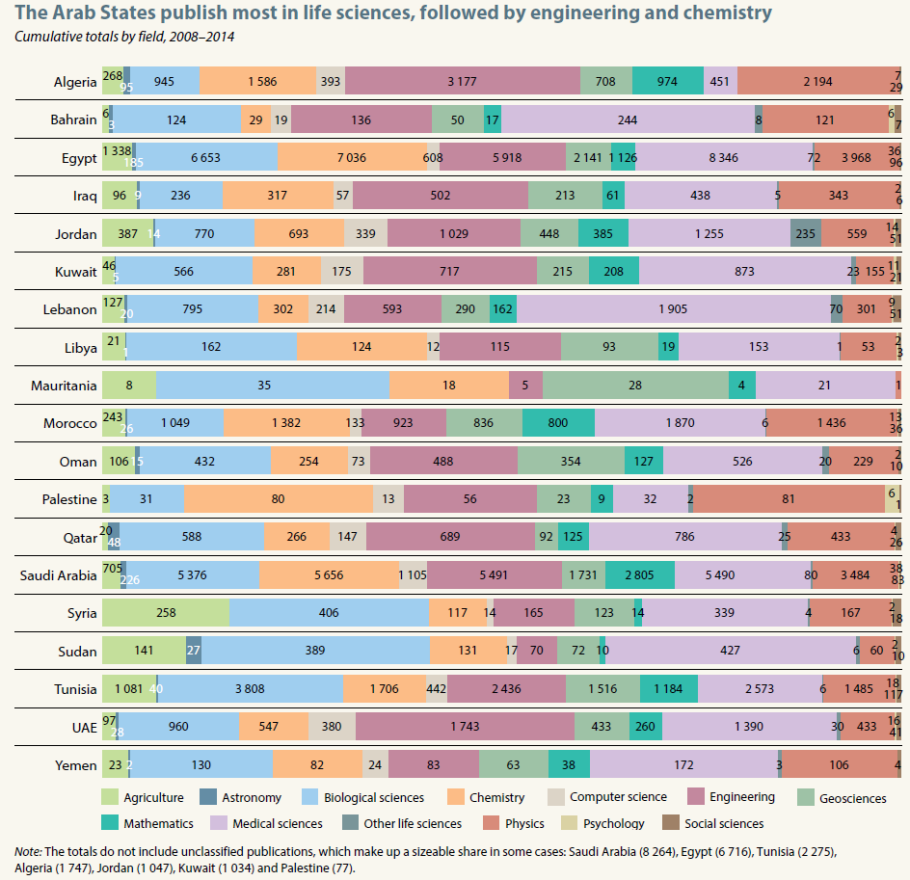
Source: WIPO statistics database, December 2014; Thomson Reuters' Web of Science, data treatment by Science-Metrix

Source : Baskaran (2016)

Publication per field:

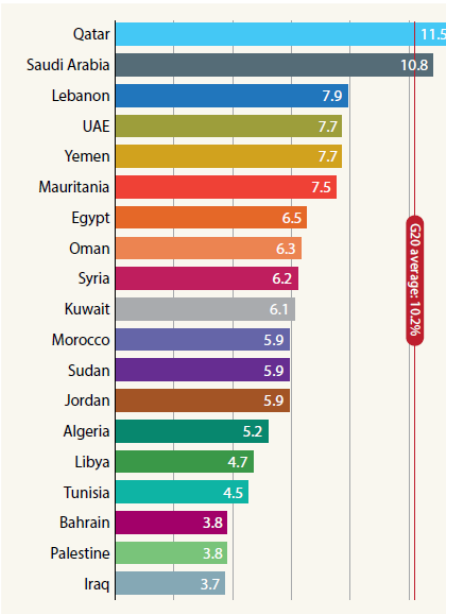
To have an overview about the fields of interests to scientists in Algeria, the next figure demonstrate 13 fields to class contries in their scientific publications. We can deduct that the Algerian researchers preferences are: Engineering (searchers preferences are: Engineering (177), Physics (2194) and chemistry (1586).

Figure 65. Publication per field in Arab world

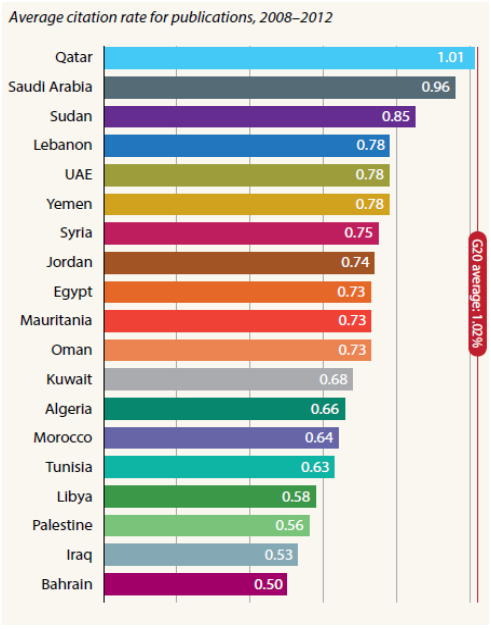


Source : Baskaran (2016)

Share of paper among 10% most cited, 2008-2012



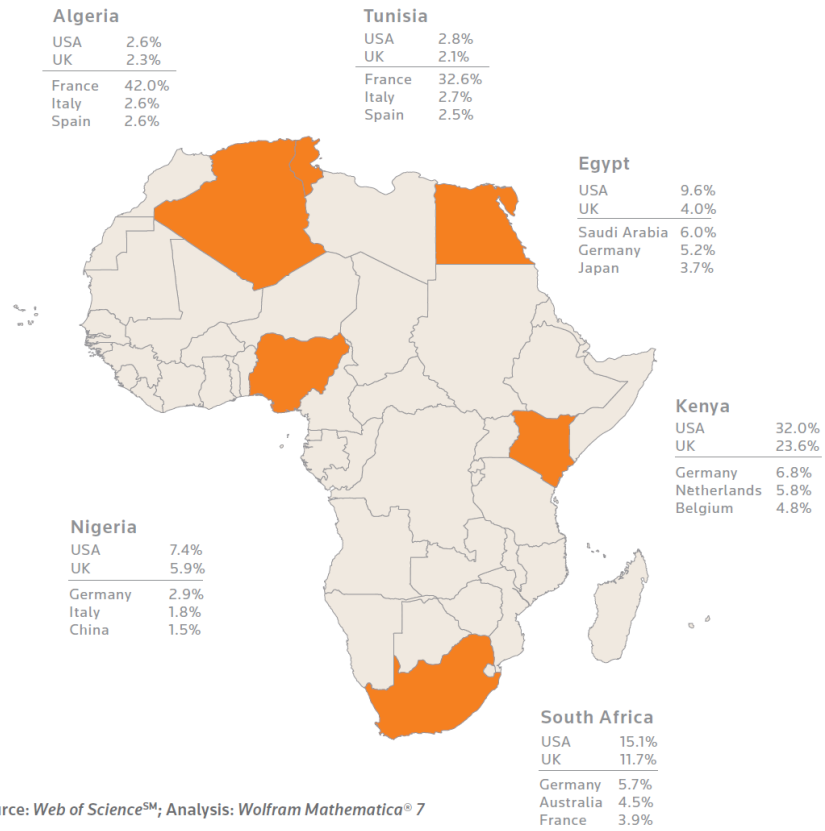
Citations rate for publication, 2008-2012



Source : UNESCO Science report toward 2030

Algerian researcher collaboration preferences:

Figure 66 Collaboration preferences to African researchers



Source: Research global report-Africa (Adams, King, & Ma, 2010)

4.1.6.7. Research global report-Africa:

This report provides an introduction to patterns of research activity in Africa. Its overall finding is that, whilst the volume of research activity on the continent as a whole remains small, individual countries are making notable and effective contributions of a high standard.

The challenges that Africa faces are enormous and indigenous research could help provide both effective and focused responses. This research finds little correlation between the amount and range of resources a country has at its disposal and the standard and volume of its research contributions. For example, Malawi, with one-tenth the annual research output of Nigeria, produces research of a quality that exceeds the world average benchmark while Nigeria hovers around half that impact level.

Other findings include:

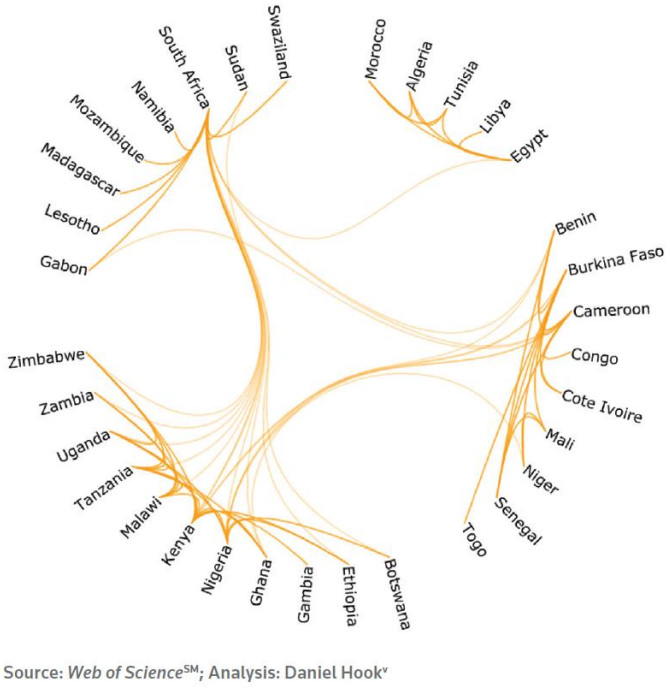
the North Africa network of collaboration is strong both in the activity of individual countries, notably Egypt, and the close collaboration between them that will help to address larger challenges - strong historical ties to France, Germany, Italy, Spain and the UK, ensure a high level of external input and links to European programs while new links to Saudi Arabia and Japan provide the opportunity for participation in emerging networks elsewhere

the historical legacy of past ties is reflected in the collaborative networks associated with Francophone and Anglophone groups of nations - the Francophone group has the benefit of proximity in West Africa, the Anglophone group has good links to the USA and UK, and its common language base means that it already accesses and is exposed to the international community that uses English for research publication

the translation of the SADC regional economic grouping into a research network has not yet happened - South Africa is the outstanding research leader in the region, has by far the greatest research output of any country, and is thought to have the highest impact

there is a potential transformational role for specific countries - the report identifies a pair of axes, running between Egypt and South Africa and between Nigeria and Kenya, which engage a high proportion of Africa's research and which link the rest of the continent in collaborative networks - the future of the African research enterprise depends to some significant extent on the ability of these countries to help facilitate further growth, through leadership, strong local investment and the creation and support of key facilities and centres to draw in and assist currently less well-resourced partners.

Figure 67. Network of collaboration

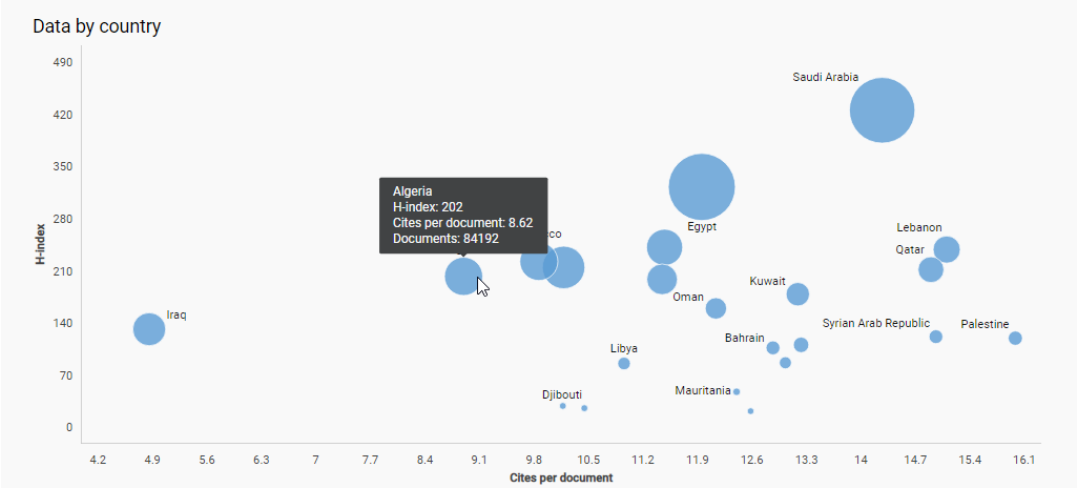


Source: Research global report-Africa

4.1.7. SJR Scientometrics

Scimago Graphica was developed by Scimago Lab, it is a visualization tool which combines great versatility with the ease of use. It has an intuitive interface, and users can easily explore, filter and visualize a dataset by drag-and-drop, and no coding is required. In addition to simple visualization like bar chart, SCImago Graphica also allows to create complex and interactive visualization such as bubble plot, cartogram network diagram, dot map …

Figure 68. Scientometric data per contry in Arab world



Source: Scimago Lab (2022)

Metrics for Algeria:

- H-index 202
- Cites per document 8.62
- Documents: 74192

Morocco:

- H-index 222
- Cites per document 9.53
- Documents: 83349

Tunisia:

- H-index 214
- Cites per document 9.83
- Documents: 104541

Saudi Arabia : (the top at the list)

- H-index 425
- Cites per document 13.68
- Documents: 252832

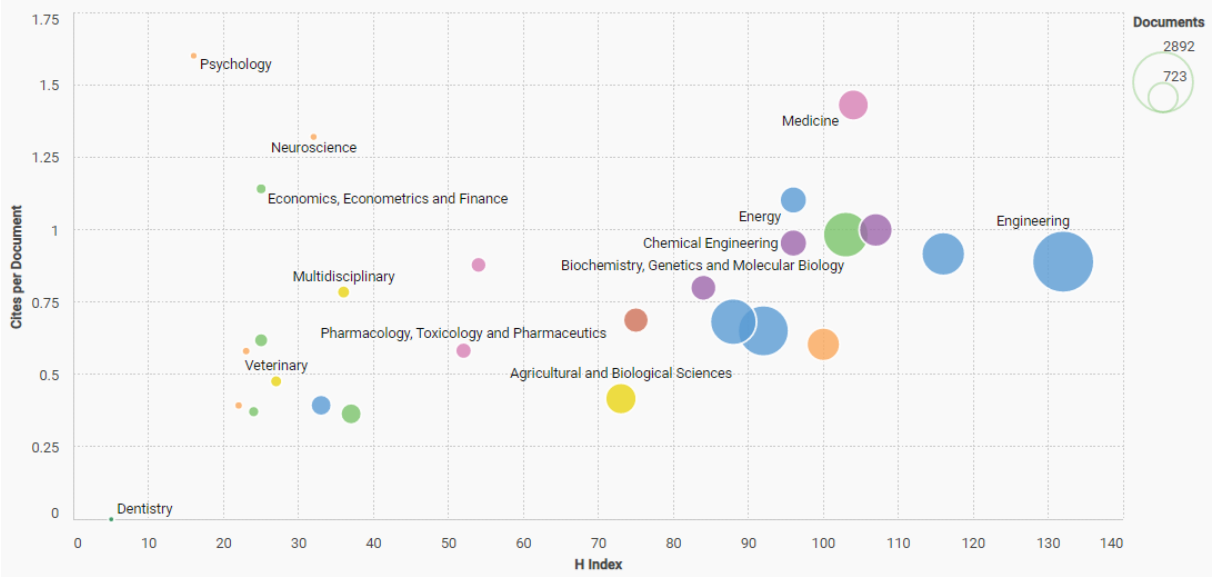
By comparing the above metrics we can see that Algeria is near to its neughbours, but still inferior in all indicators. Saudi Arabia comes at the first place with almost doubled numbers.

4.1.7.1. Subject buble chart

In the next figure we will see the Algerian publication in Scopus per field for 2020/2021. The lion's share goes to engineering (2892 document), then comes Computer science (1942), Mathematics (1610) Physics and astronomy (1550), Materials science (1406)...the very last places are attributed to Dentistry (5 docs), Psychology (20), Neuro science (25).

Regarding the H-Index, the first places goes to Engineering, Material science, Chemistry, Medicine and Physics and astronomy.

Figure 69. Subject bubble chart for Algerian publications 2020/2021



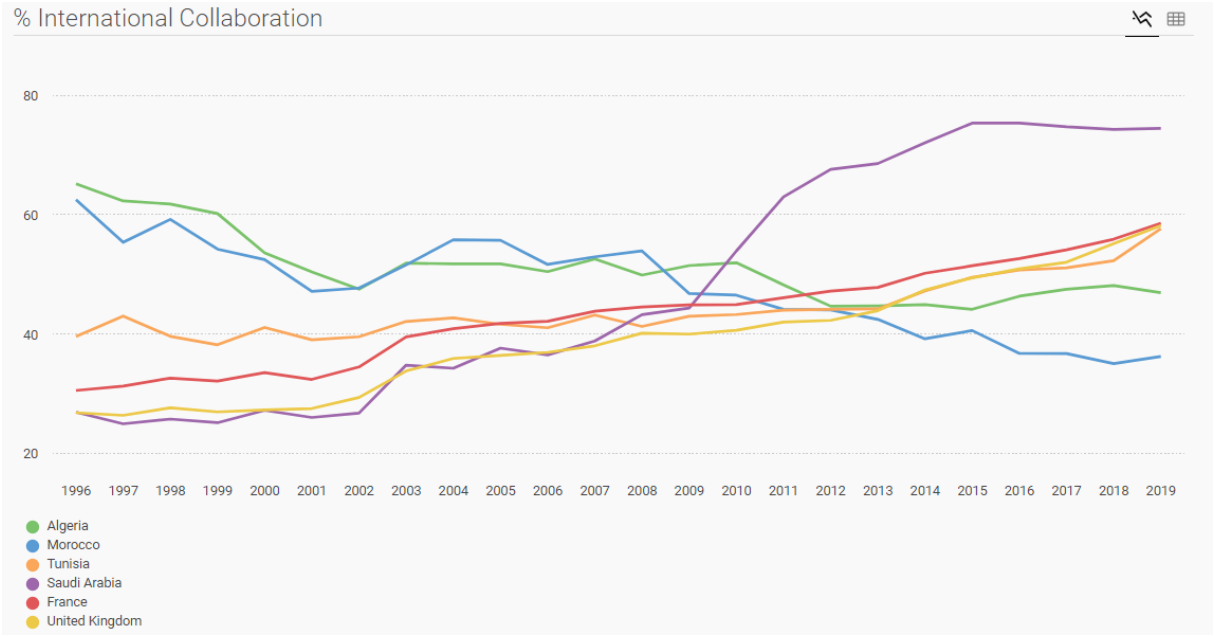
Source : Scimago (2022c)

Figure 70. Country comparison between Algeria and other Arab countries by published documents in Scopus

Year	Algeria	Morocco	Tunisia	Saudi Arabia	France	United Kingdom
2015	6 104	4 937	7 447	19 997	123 085	204 508
2016	6 798	6 245	8 251	21 365	125 012	213 034
2017	7 559	6 953	8 826	22 366	137 424	235 086
2018	7 982	7 840	8 785	24 371	138 460	237 652
2019	8 886	9 040	8 418	28 741	136 312	234 637
2020	8 534	10 403	8 890	38 718	139 661	249 408

Source: Source: Scimago (2022a)

Figure 71. Percentage of collaboration between Algerian researchers with other international ones since 1996



Source: Scimago, 2020

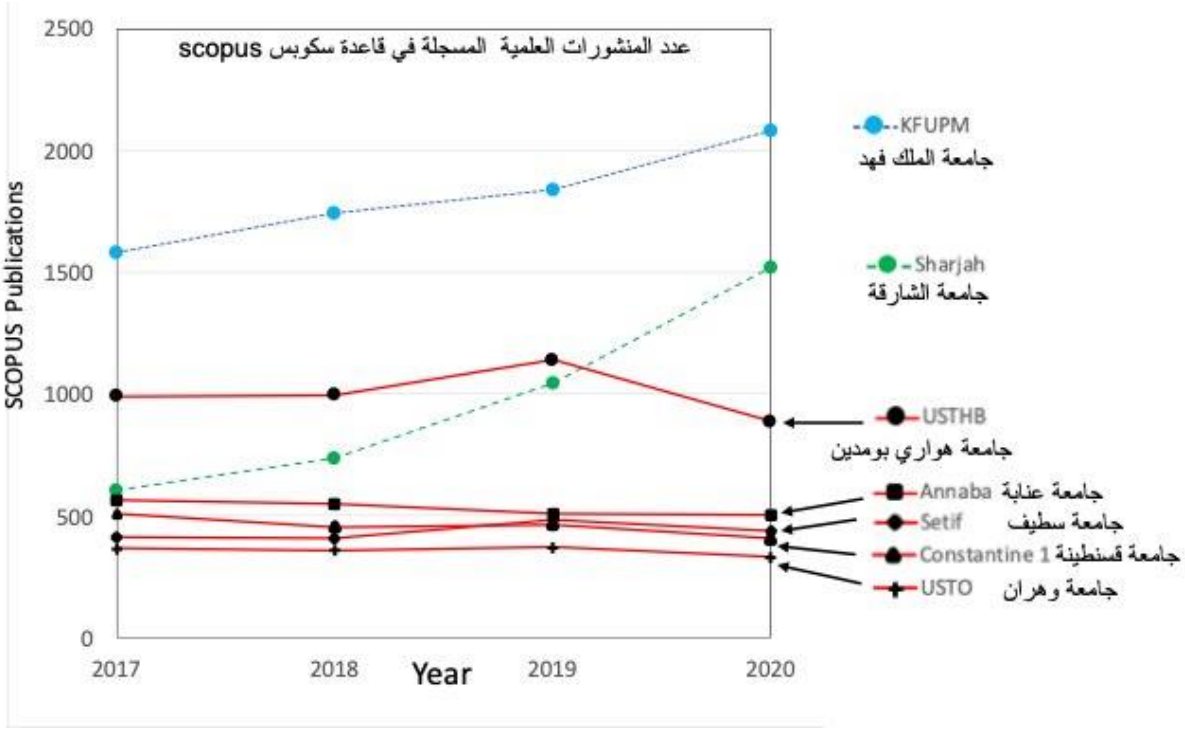
4.1.7.2. Analysis

By looking at the above figures and at SJR database, which records what has been published in scientific research since 1996.... By exploring scimago data about the Arab world, we conclude that it is in an uncomfortable situation.... It has produced approximately 3.7 scientific publications for every thousands of its population, while Europeans have produced more than 50 publications. ...to the top is Switzerland with 90 publications, and we find France, Portugal, Spain and Italy at the bottom, with an average of 30 publications. The Gulf countries are ahead of others in the Arab world with an average of six publications. The rear occupies Morocco, Algeria, Iraq, Libya, Sudan and Yemen. It is sad to find Arabs among countries destroyed by civil wars... They are painful facts that can be explained and not justified... There is no surprise by the progress of the Gulf countries... They have taken care of developing education in all its stages, from school to university, and have built an infrastructure for research that may not found in other countries. Sometimes in some Western countries and attracted distinguished professors and researchers from all over the world... Once, a well-known laboratory director in Europe was asked about the resignation of the head of the solar cell program in his laboratory, and he said, "He received an offer from an Arab university that he could not refuse."

By looking at the Scopus database in order to compare the performance of Arab universities with others in the field of scientific research... Two Arab universities are taken as example: King Fahd University of Petroleum in Dhahran and the University of Sharjah. And we avoided comparison with Western universities so that we would not be blamed for comparing the incomparable...!

The results of comparison are summarized in the figure below:

Figure 72. Publications regitered in SCOPUS database 2017-2020



Source: Nour Tabet, 2020

The Universities of Bab Ezzouar (USTHB), Oran (USTO), Constantine 1, Setif and Annaba each produced between 300 and 500 scientific papers during the year 2020, while King Fahd University of Petroleum and Minerals in Dhahran produced more than 2,000 research papers in the same year and the University of Sharjah 1,500 research papers.

For more accuracy in the comparison, w calculated the average published by each professor in these universities, and found that it does not exceed 0.3

One publication per year for each professor in the mentioned Algerian universities... while the average of the University of Sharjah is 2.1 and the rate of King Fahd University is 1.7 publications per professor.

This means that the professor in the two Gulf universities produces more than six times what the professor in the mentioned Algerian universities

These are numbers that those who have been in charge of higher education and scientific research in the country for decades do not want to read... but they reflect the catastrophic situation of the Algerian University. Of course, here we are talking about the general picture, and the ruling does not apply to all professors...

The most important reasons behind the delay of our universities are the lack of a research environment that encourages the professor to work in the laboratory after working hours and enables him to complete research of the required international quality...

Researchers and graduate students in our country are still traveling to the East and West in order to conduct simple laboratory experiments that were impossible for them to do in Algeria.

It is one of the results of a policy that preferred to appease many by sending them shopping and hiking in the capitals of the West instead of spending on developing the local infrastructure that frees us from dependence that every authentic Algerian detests.[1].

Section 5. World ranking of the University of Tlemcen

In this section, we will explore some indicators used by the 2 famous ranking systems: Times higher education and QS ranking.

5.1. Times Higher Education Ranking

5.1.1. university of Tlemcen in THE World ranking 2020

The Times Higher Education University Rankings, founded in 2004, provide the definitive list of the world's best universities.

Its carefully balanced and comprehensive methodology was developed after more than a decade of working in consultation with the world's leading universities.

The current Algerian universities classification for 2021 is as follows:

Figure 73. Algerian universities ranking 2022

Rank	Name Country/Region	No. of FTE Students	No. of students per staff	International Students	Female:Male Ratio
501–600	Ferhat Abbas Sétif University 1 Algeria	34,622	22.5	1%	63 : 37
601–800	Oran 1 University Algeria	26,452	19.6	1%	72 : 28
1201+	University of Abou Bekr Belkaïd Tlemcen Algeria	42,261	21.2	1%	67 : 33
1201+	Badji Mokhtar University – Annaba Algeria	46,884	16.1	1%	51 : 49
1201+	University of Béjaïa Algeria	41,728	24.3	1%	61 : 39
1201+	University of Biskra Algeria	33,639	23.8	1%	64 : 36
1201+	Blida 1 University Algeria	32,458	22.4	1%	62 : 38
1201+	Université Frères Mentouri Constantine 1 Algeria	34,861	20.9	1%	58 : 42
1201+	M'Hamed Bougara University of Boumerdès Algeria	32,159	21.8	1%	60 : 40
1201+	University of Mohamed Boudiaf at M'Sila Algeria	35,290	23.9	0%	58 : 42
1201+	University of Science and Technology of Oran Mohamed-Boudiaf Algeria	20,966	12.5	1%	49 : 51
Reporter	Université 8 Mai 1945 Guelma Algeria	16,105	18.4	1%	69 : 31
Reporter	University Abdelhamid Ibn Badis Mostaganem Algeria	24,635	19.3	1%	66 : 34
Reporter	University of Jijel Algeria	25,634	24.7	0%	72 : 28
Reporter	Université d'Oran 2 Mohamed Ben Ahmed Algeria	26,883	28.5	1%	47 : 53

Source : THE, 2022

[1] Nouar Tabet, Dean of the College of Sciences,University of Sharjah, Professor, à Qatar Foundation, Hamad Bin Khalifa University, Chief Scientist, à Qatar Foundation, Qatar Environment and Energy Research Institute has made an analysis of the current situation of scientific research in Algeria.

By focusing on the Uot, we can see that it is in the 3rd place which is a good position (+1201 in the world), but still far from the 1st university by the double. Uot has the position +401 according to "Young University Rankings 2022" and 91–100th in the "Arab University Rankings 2021". The last 2 rankings have less rigorous criteria comparing with the world ranking.

By looking to the previous versions of THE ranking we can see that the curve is going down since 2017 which not a good indicator (figure 73). This could be explained by an institutional instability causes by the changes of the top managers of the university by the nomination of 4 rectors since 2017.

Figure 74. Ranking position 2017 to 2022

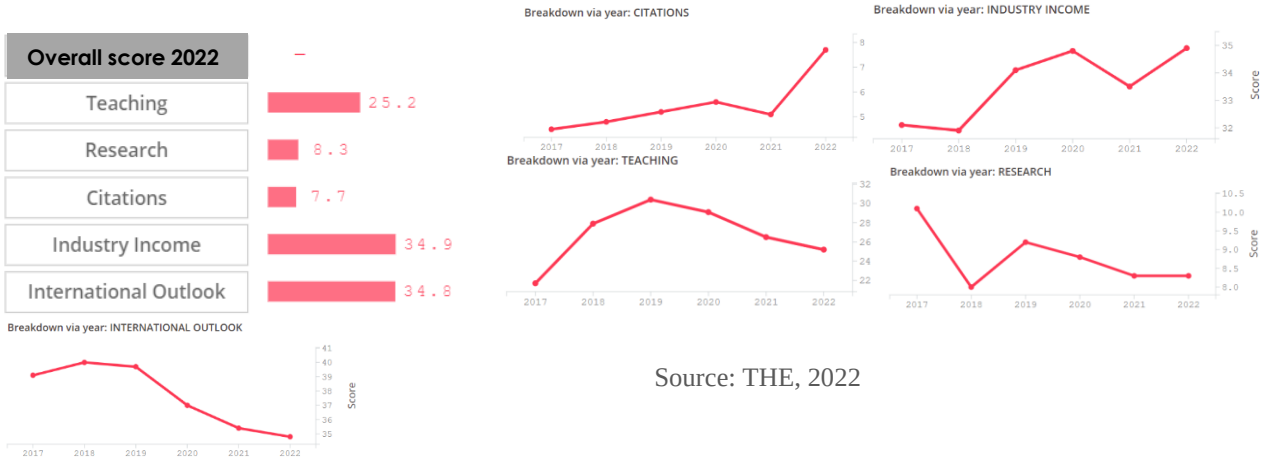
2017	2018	2019	2020	2021	2022
801+	801–1000	1001+	1001+	1001+	1201+

Source: THE, 2022

5.1.2. UoT indicators by THE:

The indicator's score for UoT in 2022 were as follows

Figure 75. score of the 5 used indicators with a yearly breakdown



Source: THE, 2022

As presented in section 4 of the 3rd chapter, UoT has used 13 indicators to rank universities.

The score of teaching is 25.2. It makes a curve from 2017 to 2022 and reach a peak in 2019.

Citations are rising up from year to year which is a healthy symptom and Uot is making an effort to increase its industrial income. International outlook is a black point when we see that from the peak of 2018 it is going less and less rapidly which means that UoT is losing its

visibility by getting less international students in addition to the fact that it is collaborating less with international institutions.

5.2. Webometrics Ranking:

As seen previously in chapter four, Webometrics Ranking of World Universities is an initiative of the Cybermetrics Lab, a public research group in Spain.

We have seen in figure 31 that Out is the 3rd university in Algeria after USTHB and Constantine1. It is on the 2394 place in the world and 5196th on impact rank. In Africa UoT is ranked 63rd. It is 2462nd in the excellence rank. The last shows how many academic papers are published in high impact international journals. Since webometrics consider that using the total number of papers could be misleading, they are restricting the indicator to only excellent publications that refers to the university scientific output being part of the 10% most cited papers in their respective scientific fields.

5.2.1. Highly Cited Researchers

There are a webometrics ranking that shows the Highly Cited Researchers (h-index>100) according to their Google Scholar Citations public profiles. The last edition (15) contains 5882 researchers starting with Ronald C Kessler from Harvard university with an h-index = 316 and 466308 citations, ending with Michael V L Bennett from Albert Einstein College of Medicine with an h-index=100 and 31980 citation.

It is sad to say that no Algerian researcher is ranked at this ranking.

Figure 76. Top 20 cited researchers per h-index

RANK	NAME	ORGANIZATION	H INDEX	CITATIONS
1	Ronald C Kessler	Harvard University	316	466308
2	JoAnn E Manson	Brigham and Women's Hospital; Harvard Medical School	300	383680
3	Robert Langer	Massachusetts Institute of Technology MIT	297	359953
4	Graham Colditz	Washington University in Saint Louis	295	349617
5	Shizuo Akira	Osaka University	291	409348
7	Frank B Hu	Harvard University	285	400594
8	Michael Graetzel	Ecole Polytechnique Fédérale de Lausanne	283	419520
9	Bert Vogelstein	Johns Hopkins University	277	459791
10	Zhong Lin Wang	Georgia Institute of Technology	273	319505
11	Gordon Guyatt	McMaster University	272	338204
12	Michael Karin	University of California at San Diego	269	306810
13	Salim Yusuf	McMaster University	267	417306
14	Xiaoping Zhang	Icahn School of Medicine at Mount Sinai	262	309384
15	Richard A Flavell	Yale University; Howard Hughes Medical Institute	260	255499
16	Guido Kroemer	Université de Paris; Hôpital Européen George Pompidou AP-HP; Gustave Roussy Cancer Campus	258	306728
17	Paul M Ridker	Harvard Medical School	254	372431
18	Karl Friston	University College London	253	290709
19	Steven A Rosenberg	National Institutes of Health NIH	250	268854
20	T W Robbins	University of Cambridge	250	203125

Source : Webometrics, 2022

5.2.2. Research centers ranking :

Another available ranking system in Webometrics is about research centers. There are 11 research centers ranked by the 2020 version. They are ranked according to four indicators:

Size : number of pages recovered from four engines: Google, Yahoo, Live Search and Exalead.

Visibility : The total number of unique external links received (inlinks) by a site can be only confidently obtained from Yahoo Search, Live Search and Exalead.

Rich files : After evaluation of their relevance to academic and publication activities and considering the volume of the different file formats, the following were selected: Adobe Acrobat (.pdf), Adobe PostScript (.ps), Microsoft Word (.doc) and Microsoft Powerpoint (.ppt). These data were extracted using Google, Yahoo Search, Live Search and Exalead.

Scholar : (Sc). Google Scholar provides the number of papers and citations for each academic domain. These results from the Scholar database represent papers, reports and other academic items.

Figure 77. Algerian research centers ranking 2022

ranking	World Rank	Institute	Size	Visibility	Rich Files	scholar
1	1544	Centre de Recherche sur l'Information Scientifique et Technique	102	1788	1791	2919
2	2344	Centre de Développement des Energies Renouvelables	1110	1974	1153	3660
3	2855	Centre de Developpement des Technologies Avancees	5206	3748	1184	3410
4	3753	Centre de Recherche en Astronomie Astrophysique et Geophysique	6571	4652	1818	3509
5	3815	Centre de Recherche Scientifique et Technique sur les Régions Arides	2231	3012	2234	3879
6	4389	Centre National de Recherche en Anthropologie Sociale et Culturelle	762	4251	2195	3879
7	5063	Research Center in Industrial Technologies CRTI	1553	5636	1839	3879
8	5655	Centre de Recherche en Economie Appliquee pour le Developpement	2397	5343	2453	3879
9	5753	Centre de Recherche en Biotechnologie Algerie	4870	5738	2246	3879
10	5968	Centre National de Recherche Appliquée en Génie Parasismique	8011	5765	1919	3879
11	6581	Centre de Recherche Scientifique et Technique en Analyses Physico Chimiques	7837	6441	2235	3879

Source : Webometrics, 2022

Section 6. Survey

6.1. Introduction

After the analysis of data regarding performance indicators of the UoT in the previous sections, the current section will be devoted to a survey that was shared with UoT teachers researchers. The current study explored both the mediator and moderator variables linking competency management to Organisational performance. Since the study's theoretical model includes multiple observed and latent variables, in addition to multiple path relationships, SPSS is a powerful statistical software through which observed, latent and multiple path analysis could be tested at the same time.

The main aim of this section is to address the procedures followed to assess construct validity and reliability.

The question of who should evaluate the HRM system is one of the oldest debates in the field of HRM – Performance relationship studies. Two different perspectives were found in previous literature namely, single respondents (usually, HR managers) and multiple respondents, such as employees (J. B. Barney & Wright, 1998). Huselid and Becker (2000) contended that the most reliable source of the HRM system information is the HR manager or any expert that may have the necessary information about the HRM system. Relying on HR managers' perspective, however, was criticised by many scholars and researchers. For example, Gerhart et al. (2000), argued that HR managers' assessments are not enough to understand accurately the relationship between HRM and performance.

The HRM system is best evaluated by employees for the following reasons. First, Gerhart, Wright and MacMahan (2000) and P. M. Wright, Dunford, and Snell (2001) indicated that the reliability of the instruments that relied on single respondents (e.g., HR managers) is almost zero, which poses a large question regarding the results obtained from such instruments. Second, relying on HR managers' perspectives implicitly assumes that all employees within the organisation perceive the HRM system similarly and receive the same HRM practices (Lisa Hisae Nishii & Wright, 2007). However, previous studies indicated that employees hold different perspectives regarding HRM practices (Bowen & Ostroff, 2004). Thus, relying on managers' ratings is theoretically problematic. Third, since the actual or implemented HRM practices are considered the factor that mostly affects employees' attitudes and behaviors (Huselid & Becker 2000), it is more logical to ask employees about how they perceive HRM practices (Jeffrey B Arthur & Boyles, 2007; Edgar & Geare, 2009).

Based on the above-mentioned arguments, this study focused on the HE employees as the source of information (data) regarding the HRM system, and their performance perception.

6.2. Respondents' nature

Since we are focusing on HEIs performance, it was relevant to study a society of university members. Interaction and access to information by virtue of ma status as a university staff, I chosed Uot as Institution of study. At the beginning, I intended to study 3 categories at the university: Academic staff, administrative staff and students. This seemed to be impossible in both work and time frame of this study. Consequently, I focused on academic staff and the survey was distributed within teacher-researchers of the university.

After cleaning, screening and meeting the statistical assumptions, the data is ready to be analysed, and the first step usually followed in data analysis is to shed light on the demographic characteristics of the data. The current study included a questionnaire directed to a group, namely, academic staff of higher education institution. We know already that performance of universities is not only a result of academic staff efforts, but there are also administrative staff and socio-economic environment that contribute a lot in the indicators to rank a university among others. We will limit the studied society on academic staff only and see how they contribute to its performance.

Thus, this section intends to draw a brief introduction about the general make-up of the study sample.

6.3. Research Instrument

After defining the population and sample, a researcher intends to approach the sample in order to collect the necessary data to draw meaningful conclusions. A research instrument is considered the tool that a researcher relies on in approaching the respondents. Since the current study followed the post-positivism philosophy, it relied on a questionnaire. A questionnaire is considered the primary means of gathering numerical data in a 'standardised way' that enables us to obtain consistent and coherent data ready for analysis (Malhorta 2006).

According to Churchill Jr (1979), in order to develop a good research instrument, a researcher should follow several steps. These steps include a definition of all the variables included in the conceptual framework, generation of items that are intended to measure each variable, pre-testing the generated items and, finally, conducting a pilot study to ensure the reliability and validity of the whole measurement or instrument.

In our case study, a questionnaire was developed and distributed on teachers researchers of the university of Tlemcen.

6.4. Questionnaire resources

Regarding the resources from where the questionnaire was inspired, the table below shows the different sources that we have based on to conceptualise the study survey

Table 21 Different sources for the study survey.

Sources of the survey:
Articles
Reports
wers survey 2018
FEVS USA 2019
2020 Tennessee Educator Survey
edTPA assessment
Algerian Competency framework for newly recruited teachers
Questionnaire evaluating teaching competencies, Juan Antonio Moreno-Murcia, 2015

Source: The author.

6.5. Research model

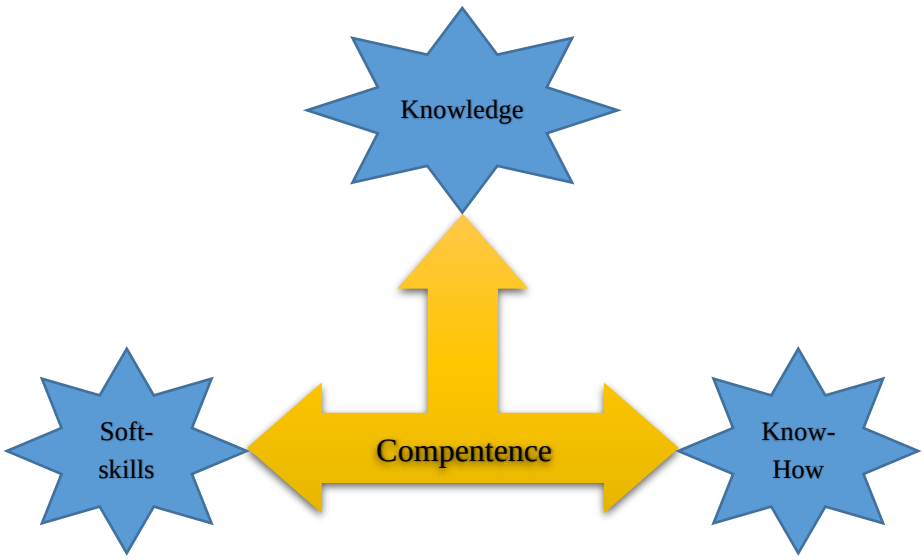
In our case study, the choosed basic model is the one of Armstrong (2009a) explained in chapter 4, in Figure 35 where there are contingency variables who interact to impact the other

P. Zarifian : « Competence is the taking of initiative and responsibility by the individual in professional situations with which he is confronted» (Zarifian P., 2001)

To understand the notion of competence is irremediably through the definition of the triptych composing the notion of competence (knowledge, know-how, soft skills). Many approaches have broken competence down into three skills: knowledge (know), know-how (professional practice, experience) and being (soft skills: behaviours, attitudes, adaptability). On this point, a broad consensus prevails in the literature (Aubret, Gilbert, & Pigeyre, 1993; Donnadieu & Denimal, 1995; Piolle, 2001).

Then comes the approach of Le Boterf when he added a key element in the definition of competence: the environment and its multiple resources (Boterf, 1999a, 1999b). The author defines competence in terms of "combinatorial" and places the subject at the center of the mobilization process. The individual carries out activities with competence by combining a double set of resources: embodied resources (knowledge, know-how, personal qualities, experience, physiological and emotional resources, culture, values, etc.) and resources linked to the environment. (Installations, machines, means of work, information, relational and professional networks, documentary networks, data banks, networks of expertise, professional culture of the work collective, etc.). The environment, in this approach, is no longer only constituted by the company. The individual "draws" on a multitude of resources to act competently.

Figure 78. Figure x. Le Boterf model of competencies components



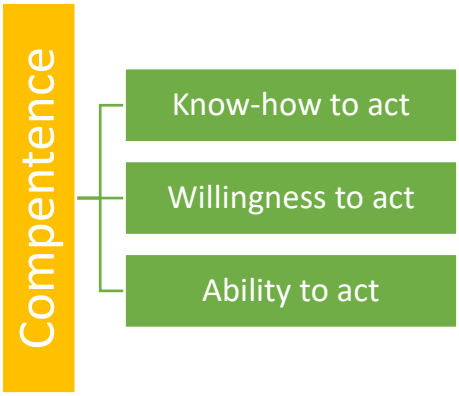
Source: The author based on Le Boterf (2000)

3C =>Limiting competence to these three areas of knowledge would be a mistake. Indeed Guy le Boterf completes the competence component with these three elements:

- Know how to act: people's resources
- Willing to act: the motivations towards the goal
- Ability to act: the resources of the situation

In this context, there is a quote of Gustave le bon (1841 - 1931) who said « Competence without authority is as powerless as authority without competence». If an individual know and want to act but he has no authority, will be the same as the one who has the authority and is incompetent.

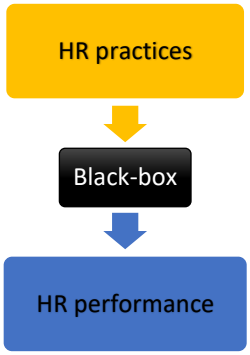
Figure 79. Competency scheme



Source: The author based on Le Boterf (2000)

As stated before, the actual transformation process that occurs in the HRM-performance relationship remains a somewhat indefinable phenomenon (Marchington & Grugulis, 2000). Often referred to as the 'black box', the intervening or intermediary linkages that exist between the input of best practice HRM and the subsequent output of good firm performance have, to date, not been clearly established(Ferris, Hall, Royle, & Martocchio, 2004; Ferris, Hochwarter, Buckley, Harrell-Cook, & Frink, 1999; Hailey, Farndale, & Truss, 2005; P. M. Wright & Haggerty, 2005).

Figure 80. The black box in relating HRM to performance

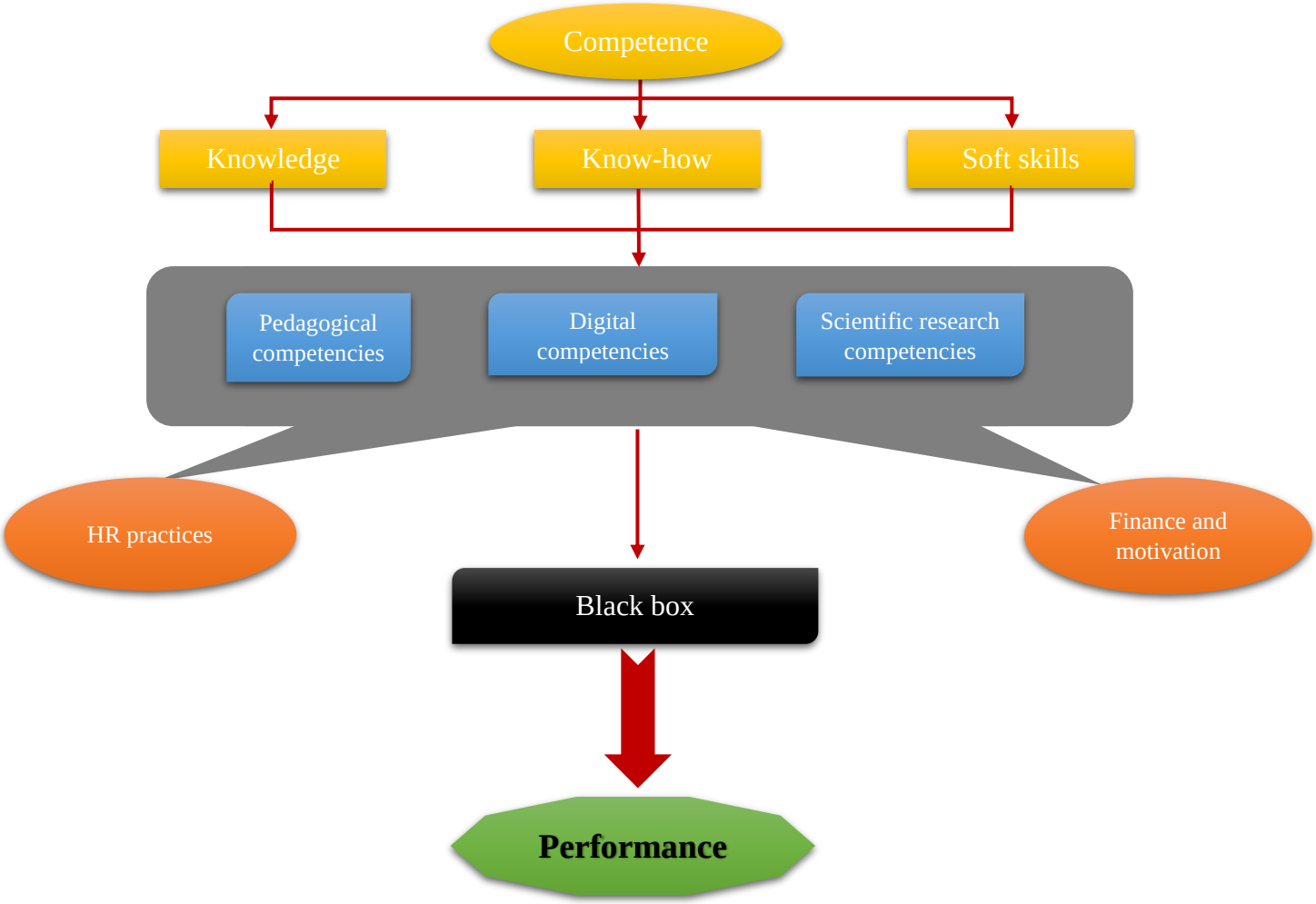


Source: The author based on the literature.

At last, we combined in the conception of the study the 3 models of Armstrong, Le Boterf & Zarifian and Guest. As well, we adapt the context of the previous models on the

specific of higher education institutions context. The proposed model for our case study is as follows:

Figure 81.Conceptual model of the case study



Source: the author, 2020

6.6. Research Variables Definitions

The first step in developing any research instrument is to define the variables that are intended to be measured (Churchill Jr, 1979). According to the literature, a construct or variable can be defined in different ways (Sekaran, 2003). By returning to the philosophy adopted by this study, one of the distinguishing features of the post-positivism paradigm is that it follows the reductionist philosophy. Thus, to define the research variables operationally, a reduction of the abstract level of the variables will be followed. According to Sekaran (2003 p. 176), one of the techniques used in defining research constructs is 'to reduce the abstract notions, or concepts such as motivation, involvement, satisfaction … to observable behavior and characteristics. Accordingly, Table 22 provides each variable and the appropriate definition.

- Several authors define research competence as the set of specific skills for research, according to the logic of the scientific method (Chu et al. 2008; Ain et al. 2019; Basilio and Bueno 2019).

Table 22. Operational definition of the variables

Abstract Variable	Observed Variable	Definition
Competencies management system (Independent Variable)	Recruitment	Refers to the 'process of developing a pool of qualified applicants who are interested in working for the organisation and from which the organisation might reasonably select the best individual … to hire for employment'.
	Training	Refers to the 'planned attempt by HEIs to facilitate teachers learning of job-related knowledge, skills, and behaviors'. In terms of teaching and scientific research
	Performance appraisal	Refers to the 'specific and formal evaluation of HEIs teachers conducted to determine the degree to which the employee is performing his or her job effectively'.
	Compensation and reward	Refers to the 'set of rewards that HEIs provide to individuals in return for their willingness to perform various jobs and tasks …'
Organisational Performance (Dependent Variables)	Pedagogical performance	Ability of a teacher in a learning environment, for to demonstrate their instructional effectiveness to: Design instruction based on their teaching context and students' strengths and needs • Implement lessons with well-articulated learning goals • Engage students in deep subject-specific instruction effectively • Analyze student learning
	Digital performance	Refers to the ability of a teacher to confidently and creatively use the ICTs that resonate with their students.
	Research performance	Refers to the scientific research abilities in order to produce papers and make accurate scientific studies

6.7. Steps followed:

All faculties of the UoT were contacted via email and were asked to participate in the current study. the questionnaire was distributed in both languages Arabic and French. All the results shown in English in the current study were translated by the author.

First, data was collected from a sample of 20 respondents that were academic colleagues in order to test the reliability. After receiving the test sample responses, and according to their comments, the survey was adapted and readjusted. So, I proceed to delete some unnecessary questions and make some statements simpler.

At the end of the collection process, 210 responses were collected. After cleaning the validated responses, 201 were deemed appropriate for data analysis. Such a response rate was considered consistent compared with previous studies conducted in the same sector. Moreover, the gathered sample did meet the required sample size under the precision of ± 5%, it was considered a good and representative sample under the precision rate of ± 7% and, hence, was considered a representative sample with a confidence of 95%. Respondents were introduced to the questionnaire by six items asking about their characteristics pertaining to gender, age, grade, highest degree, experience, and administrative position.

After the organisation of the gathered responses, they were uploaded to the SPSS 26 software who is been chosen for data analysis.

6.8. Analysis tool

In order to analyse the gathered data statistically, we choose SPSS as a software to do so.

SPSS stands for "Statistical Package for the Social Sciences". It is an IBM tool. This tool first launched in 1968. This is one software package. This package is mainly used for statistical analysis of the data. SPSS is mainly used in the following areas like healthcare, marketing, and educational research, market researchers, health researchers, survey companies, education researchers, government, marketing organizations, data miners, and many others.

It provides data analysis for descriptive statistics, numeral outcome predictions, and identifying groups. This software also gives data transformation, graphing and direct marketing features to manage data smoothly.

6.9. Reliability test of the study

Chrobach's alpha (α) was used to test the reliability of the survey.

Cronbach's alpha is a statistic commonly quoted by authors to demonstrate that tests and scales that have been constructed or adopted for research projects are fit for purpose.

A Cronbach alpha estimate should be interpreted just like other internal consistency estimates, that is, it estimates the proportion of variance in the test scores that can be attributed to true score variance. Put more simply, Cronbach alpha is used to estimate the proportion of variance that is systematic or consistent in a set of test scores. It can range from 00.0 (if no variance is consistent) to 1.00 (if all variance is consistent) with all values between 00.0 and 1.00 also being possible. For example, if the Cronbach alpha for a set of scores turns out to be .90, you can interpret that as meaning that the test is 90% reliable, and by extension that it is 10% unreliable (100% - 90% = 10%) (Brown, 2002).

When testing the reliability of the first test sample (Figure 82), the result was 84.6% which is good according to George and Mallery (2019) who provided the following rules of thumb:

"_ > .9 – Excellent, _ > .8 – Good, _ > .7 – Acceptable, _ > .6 – Questionable, _ > .5 – Poor, and _ < .5 – Unacceptable".

Figure 82. Chrobach's alpha reliability test for test sample

Reliability Statistics

Cronbach's Alpha	N of Items
,846	65

Source: The author, from SPSS

After gathering all analysed data, a retest of reliability with Chrobach's alpha and the result was 87.3 % which is still good.

Figure 83. Chrobach's alpha reliability test

Reliability Statistics

Cronbach's Alpha	N of Items
,873	65

Source: The author, from SPSS

And that's mean that the questionnaire has a high reliability and can be used in the case study according to Nunnaly's scale, where he took a percentage of 70% as a minimum for reliability (Nunnally, 1994).

6.10. Personal information of respondents

6.10.1. Gender

The majority of the sample was male with 52%. Figure 84 presents the gender distribution in the study sample.

Figure 84. Respondents' gender distribution

Sexe

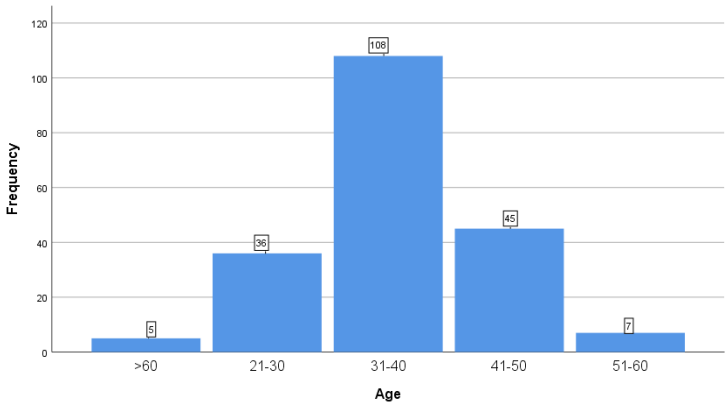
		Frequency	Percent
Missing	Male	102	50,7
	Female	99	49,3
	Total	201	100,0

Source: The author, from SPSS

6.10.2. Age

Respondents were asked to indicate their age according to five age groups. The majority of respondents were found in the group age of 31-40 with 56% which means that younger people are willing to respond to surveys comparing with other age groups. They are followed by group age 41-50 with 42%. The results were found to be consistent with the HR statistics where the biggest percentage of teachers are younger and under 40 years old. Figure 85 demonstrates the frequencies and distributions of age among the respondents.

Figure 85. Respondents Age

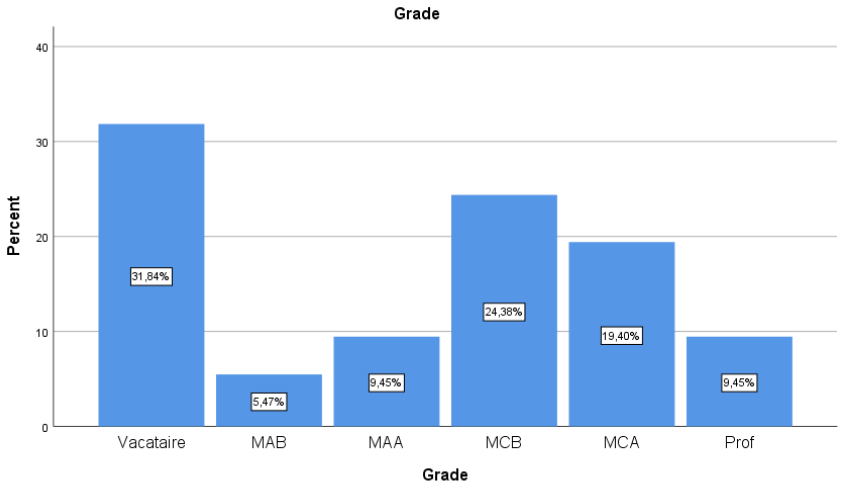


Source: The author, from SPSS

6.10.3. Grade

The grade is an elementary variable in the current study. Performance is measured according to the evolution of an employee.

Figure 86. Respondents' grade

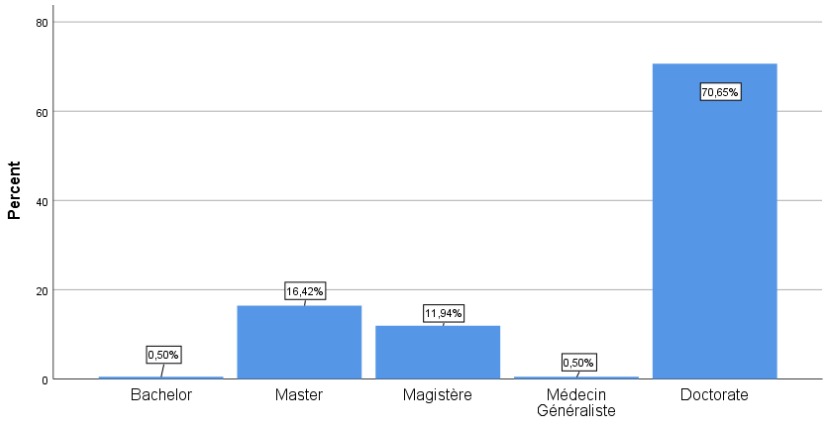


Source: The author, from SPSS

6.10.4. Highest degree

University teachers' society is a well-educated society. It is mandatory that a permanent teacher has at least a Magister Degree. The results showed that the majority had obtained a Doctoral degree, with 71%, followed by both master and magistère degrees, with 16 and 12% respectively. However, only 0.6% of the respondents had obtained a bachelor degree. See Figure 87 for more details.

Figure 87. Respondents' highest degree level

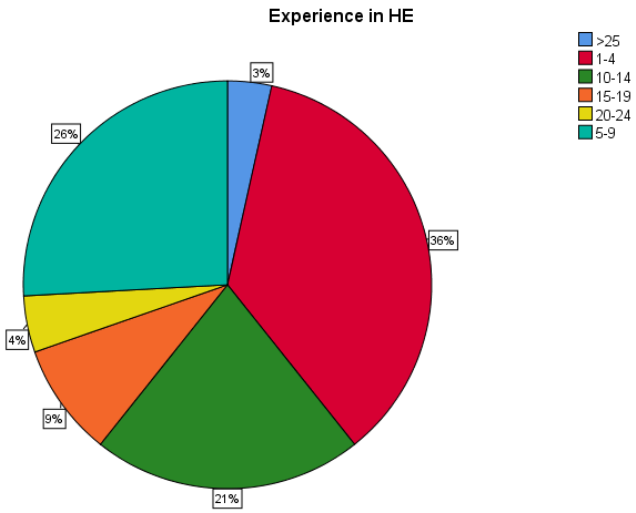


Source: The author, from SPSS

6.10.5. HE experience

In order to measure the relevance between performance and experience, Respondents were asked to indicate their experience in the higher education sector. Most of respondents were newly recruited with 36%, followed by 21% of teachers with 5 to 9 years' experience in HE.

Figure 88. Respondents experience in higher education.



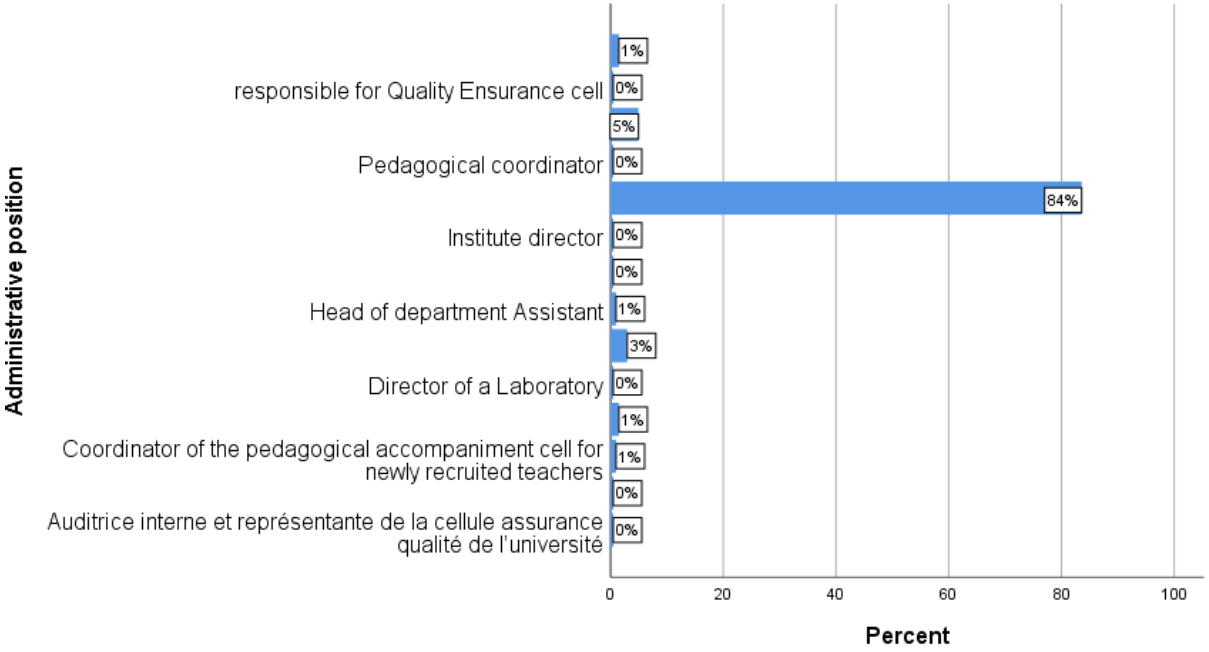
Source: The author, from SPSS

6.10.6. Administrative position

One of the nominal qualitative variables used in the questionnaire is the managerial position that a respondent occupy. This question indicates if a respondent is currently appointed in a higher position. If it is the case, the respondent is managing a team and consequently implemented some HR practices in his daily work.

This variable will allow us to analyse better the HR and performance perception of employees as managers.

Figure 89. Respondents' administrative positions



Source: The author, from SPSS

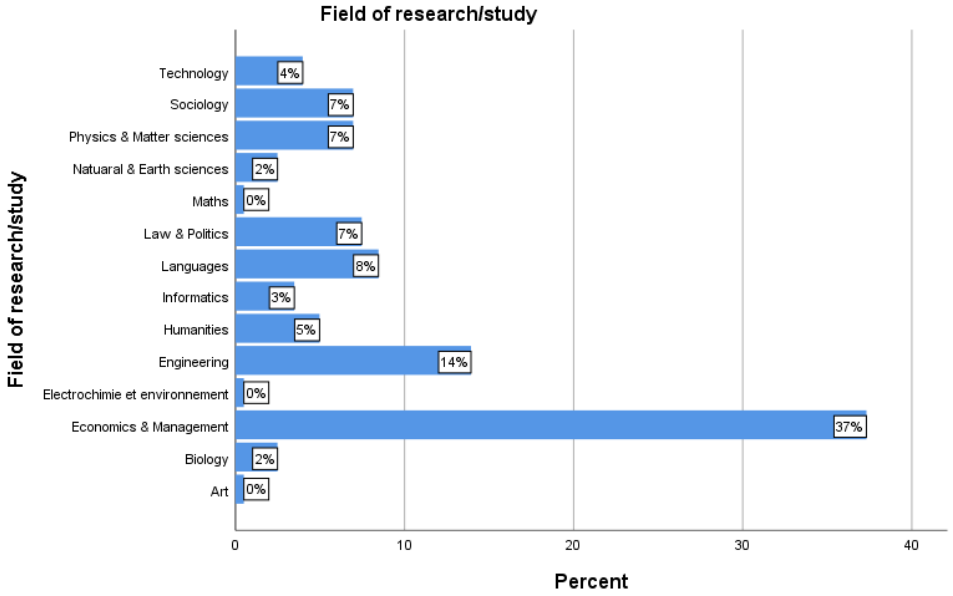
From the responses, we observe that the majority of the respondents has no administrative position. Nevertheless, 5% are responsibles of field and .3% are head of department.

This data means that perception of HR practices and performance of the respondents are self-oriented, i.e their own evaluation on HR practices practiced by managers on them.

6.10.7. Field of study/research

In order to test the sample relevance and representation, we ask the respondents to indicate their fields of research. This variable will allow us to identify the faculty they are working at, and consequently the HR practices in this faculty.

Figure 90. Respondents' fields of study



Source: The author, from SPSS

By observing the figure above, we notice that 64% are from humanities and social sciences. 28% are from Technology faculty. That is another limitation of the study where the results are mainly oriented to humanities and social sciences domain.

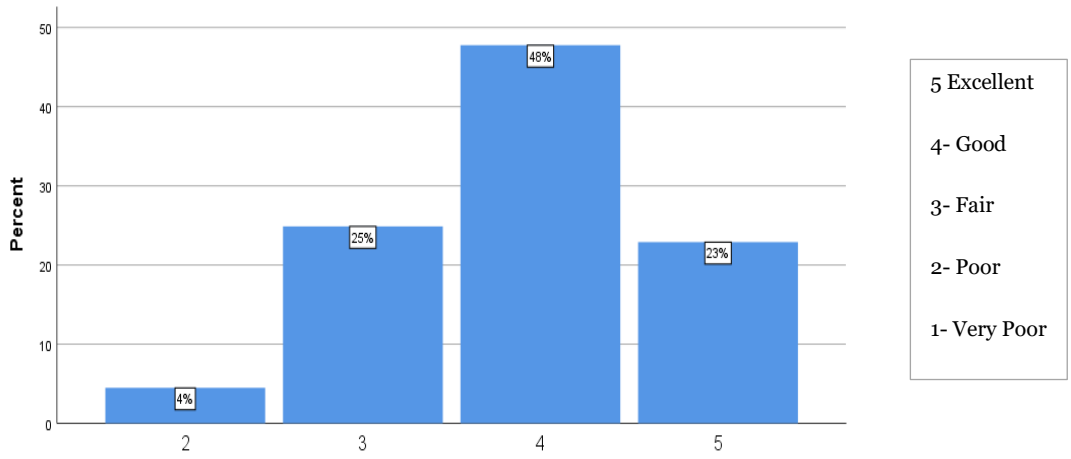
6.11. Testing Variables:

To measure the competency of the academic staff, the questionnaire was devided into 3 sections: Pedagogy skills, digital skills and research skills.

6.11.1. Pedagogical skills:

We ask the question: Do you master the teaching mechanisms to teach and learn your speciality through appropriate theories and practices, taking into account the contribution of scientific research? The majority are confident about their ability to teach and learn their search field.

Figure 91. Respondents mastery of teaching mechanisms

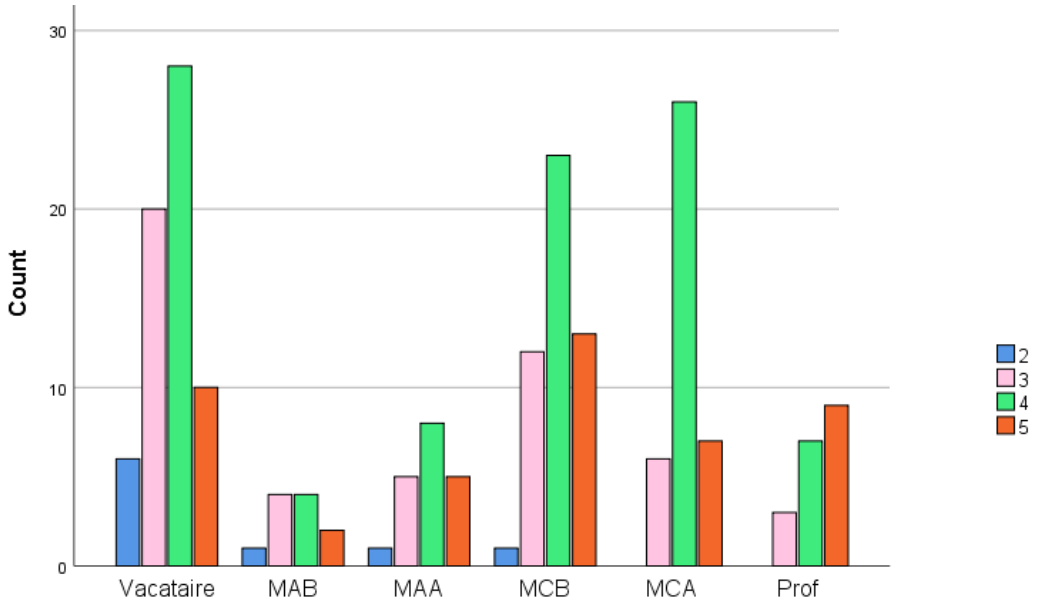


Source: The author, from SPSS

From the figure above, we consider that most of teachers are confident about their teaching abilities (71%). Nevertheless, 30% are not sure of their teaching skills.

If we go analyse the grade of those who are not confident, we find that most of them have few experience in teaching (Vacataire, MA). MCA and prof are the most likely to master their teaching mechanisms.

Figure 92. Respondents' mastery of teaching mechanisms per grade



Source: The author, from SPSS

When asking about the contribution to their students 'acquisition of the following competencies:

- critical / analytical thinking
- better communication
- Enabling students to apply the acquired skills and knowledge
- enrichment of vocabulary / concepts
- teamwork
- use of information and communication technology
- behavioral/Soft skills

The responses were almost the same in each competence. The majority were between average and above average when rating their contribution to students' skills.

Table 23. Contribution to students' competencies Frequencies

		Responses		
		N	Percent	Percent of Cases
Contribution to students competencies	1	65	4,6%	32,3%
	2	192	13,6%	95,5%
	3	433	30,8%	215,4%
	4	491	34,9%	244,3%
	5	226	16,1%	112,4%
Total		1407	100,0%	700,0%

Source: The author, from SPSS

6.11.1.1. Readiness of students

Table 24. impact of tudents willingness to learn

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	4,5	4,5	4,5
	2	3	1,5	1,5	6,0
	3	13	6,5	6,5	12,4
	4	42	20,9	20,9	33,3
	5	134	66,7	66,7	100,0
	Total	201	100,0	100,0	

Source: The author, from SPSS

We ask teacher about a very important parameter; it is about the readiness and willingness of students to learn. Answers shows that more than 85% of respondents are supporting the hypothesis that the quality of education rely very much on the willingness and motivation of students to learn.

If we take a look to First semester assessment details, during the academic year 2019-2020 at UoT, by field of study, we can see that the success rate in the first cycle (Licence) is at half and don't exceed 62 % In L3. While in the second cycle the success rate is 73% & 89% for M1 & M2 respectively. The raised question is why the rate is low in the first cycle? Probably because the shift to the remote education instead of the presential one caused by covid-19 pandemic. The other probability is that teacher do not have the adequate competencies to teach online. Many of them experience for the first time the online teaching method and tools. Another possibility is that students themselves do not take the online teaching seriously. The attendance rate is very low and don't exceed in the best case 50% according to teachers in the faculty of economics. I asked many students for the reason why they don't use online learning properly. Their responses were oriented to the lack of laptops, internet flow speed is very low, open social media account while studying is a cause of distraction...

Students who re-took the exams were high in the Licence level. 55 %, 48%, 36 % in L1, L2, & L3 respectively. The university should revise procedures of taking care the first cycle (License) especially regarding the pedagogy of teaching the first time students are onboarding the university in addition to the necessary skills to teach online.

Table 25. First semester assessment details, during the academic year 2019-2020

	Areas of training	ST	SM	MI	SNV	STU	SEGC	DSP	LLE	SHS	ARTS	LLA	AUMV	TOTAL
L1	Number of registrants in S1	1315	216	453	1415	162	1752	1705	993	1421	111	398	146	**10087**
	Number of assessed	950	192	360	1114	120	1418	1150	785	1095	98	275	97	**7654**

	Areas of training	ST	SM	MI	SNV	STU	SEGC	DSP	LLE	SHS	ARTS	LLA	AUMV	TOTAL
	Rate of participation (%)	72,24	88,89	79,47	78,73	74,07	80,94	67,45	79,05	77,06	88,29	69,10	66,44	**76,81**
	Number of S1 admissions	328	108	80	616	26	426	261	582	662	87	231	59	**3466**
	Success rate (%)	34,53	56,25	22,22	55,30	21,67	30,04	22,70	74,14	60,46	88,78	84,00	60,82	**50,91**
	Number of people affected by the re-take exams	622	84	280	498	94	992	889	203	433	11	44	38	**4188**
L2	Number of registrants in S3	812	312	200	1224	65	1557	807	886	1497	78	397	88	**7923**
	Number of assessed	748	306	194	1011	60	1153	661	641	1098	65	298	80	**6315**
	Rate of participation (%)	92,12	98,08	97,00	82,60	92,31	74,05	81,91	72,35	73,35	83,33	75,06	90,91	**84,42**
	Number of S3 Admissions	361	102	61	543	31	518	303	555	461	61	254	45	**3295**
	Success rate (%)	48,26	33,33	31,44	53,71	51,67	44,93	45,84	86,58	41,99	93,85	85,23	56,25	**56,09**
	Number of people affected by the re-take exams	387	204	133	468	29	635	358	86	637	4	44	35	**3020**
L3	Number of registrants in S5	637	229	201	929	51	1050	571	638	1210	101	398	56	**6071**
	Number of assessed	615	228	178	858	51	990	497	596	1142	88	292	48	**5583**
	Rate of participation (%)	96,55	99,56	88,56	92,36	100	94,29	87,04	93,42	94,38	87,13	73,37	85,71	**91,03**
	Number of S5 Admissions	357	76	68	473	18	675	339	494	711	69	245	38	**3563**
	Success rate (%)	58,05	33,33	38,20	55,13	35,29	68,18	68,21	82,89	62,26	78,41	83,90	79,17	**61,92**
	Number of people affected by the re-take exams	258	152	110	385	33	315	158	102	431	19	47	10	**2020**
M1	Areas of training	ST	SM	MI	SNV	STU	SEGC	DSP	LLE	SHS	ARTS	LLA	AUMV	**TOTAL**
	Number of registrants in S1	871	231	228	723	41	1067	707	751	1128	78	358	78	**6261**

	Areas of training	ST	SM	MI	SNV	STU	SEGC	DSP	LLE	SHS	ARTS	LLA	AUMV	TOTAL
	Number of assessed	772	196	169	584	34	841	533	601	957	69	231	75	**5062**
	Rate of participation (%)	88,63	84,85	74,12	80,77	82,93	78,82	75,39	80,03	84,84	88,46	64,53	96,15	**81,63**
	Number of S1 admissions	402	185	99	508	25	706	352	327	670	61	202	53	**3590**
	Success rate (%)	52,07	94,39	58,58	86,99	73,53	83,95	66,04	54,41	70,01	88,41	87,45	70,67	**73,87**
	Number of people affected by the re-take exams	370	11	70	76	9	135	181	274	287	8	29	22	**1472**
M2	Number of registrants in S3	712	163	189	759	46	903	499	547	1092	75	312	112	**5409**
	Number of assessed	701	160	168	692	44	787	475	495	1022	70	201	109	**4924**
	Rate of participation (%)	98,46	98,16	88,89	91,17	95,65	87,15	95,19	90,49	93,59	93,33	64,42	97,32	**91,15**
	Number of S3 Admissions	619	152	129	661	41	700	438	455	941	56	175	107	**4474**
	Success rate (%)	88,30	95,00	76,79	95,52	93,18	88,95	92,21	91,92	92,07	80,00	87,06	98,17	**89,93**
	Number of people affected by the re-take exams	82	8	39	31	3	87	37	40	81	14	26	2	**450**

Source: Council of Administration, 2021

6.11.1.2. Managing skills

We asked respondents if their departments take the ability of a teacher when the distribute activities and courses at the beginning of the semester. More than half said that they don't or sometimes do. 35% said that they do it every time. Analysing these results shows that the speciality and ability of a teacher is not always taken into consideration when giving them courses to teach and this is a very important result that HEIs should consider.

Table 26. Considering the teachers capabilities when distributing activities

	N	Minimum	Maximum	Mean	Std. Deviation
The faculty takes into account the choices and capabilities of the teachers during the distribution of activities / modules: 0= Idon't Know, 1=No, 2= Sometimes, 3=Yes	201	0	3	2,11	,763
Valid N (listwise)	201				

Source: The author, from SPSS

6.11.1.3. Accompaniement cell

As mentionned above, an accompaniement cell for newly recruited teachers was created at every university. We asked respondents if they took part of its courses and trainings. 21% only said yes. It means that the majority of respondents were employed before the creation of this cell in 2016.

6.11.1.4. Usefulness of these courses

In order to measure the quality of courses provided by this accompaniement cell, we ask respondents if the courses were useful for them as teachers/researchers. 79% did not answer because they didn't participate in the training of this cell. The rest were totally satisfied (38%) or satisfied to some extent (53%). This means that the cell needs to develop and upgrade its curricula in order to get better results.

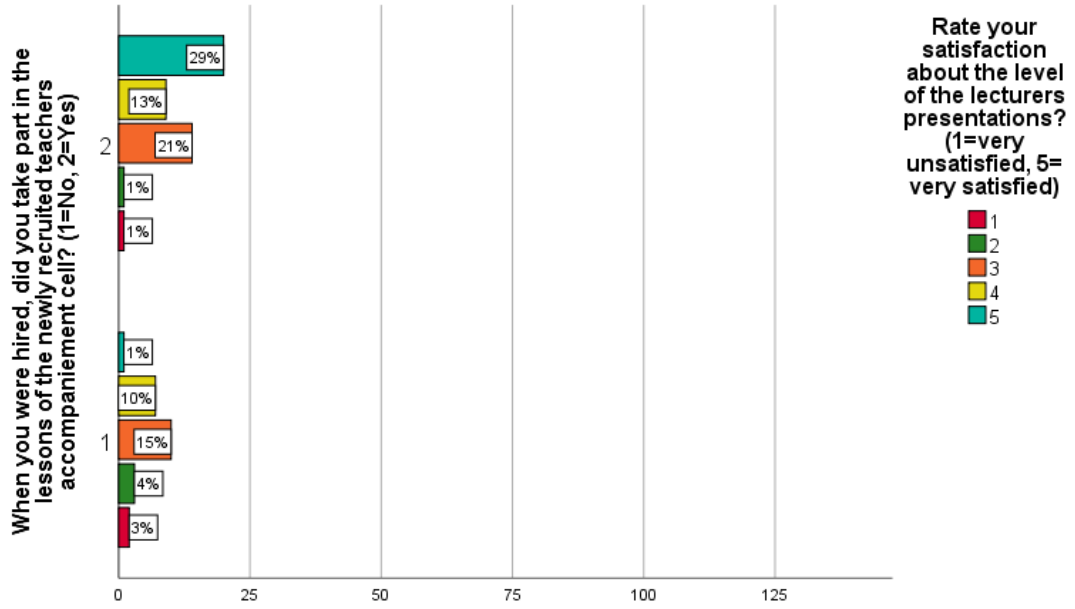
We ask them about the topic they like the most in these courses, the majority liked pedagogy and online learning (70%). The other responses vary between communication, how LMD system works, prepare its own syllabus, preparing and evaluating the competency network, scientific research, pedagogy of dealing with a student and no one.

6.11.1.5. General satisfaction about the cell

At the end, we wanted to know how the respondents rate their overall satisfaction about the cell training. 63% of the teachers who attend the courses were satisfied (from 3rd to 5th scale)

We can conclude that there are considerable efforts made by the cell, and they need improvement for better effect.

Figure 93. Satisfaction rate about accompaniment cell fro newly recruited teachers



Source: The author, from SPSS

6.11.1.6. Statistics of the whole unit:

Table 27 Descriptive Statistics for the whole unit of the pedagogical skills

	N	Mean	Std. Deviation

Do you master the teaching mechanisms to teach and learn your speciality through appropriate theories and practices, taking into account the contribution of scientific research?	201	3,89	,805
Can you explain any idea (in your field of research) to your students?	201	4,21	,816
How would you rate your contribution to your students 'acquisition of the following competencies: [critical / analytical thinking]	201	3,26	1,032
How do you rate your contribution to your students 'acquisition of the following competencies: [better communication]	201	3,57	,998
How would you rate your contribution to your students 'acquisition of the following competencies: [Enabling students to apply the acquired skills and knowledge]	201	3,53	,965
How would you rate your contribution to your students 'acquisition of the following competencies: [enrichment of vocabulary / concepts]	201	3,58	1,042
How would you rate the extent of your contribution to your students 'acquisition of the following competencies: [teamwork]	201	3,46	1,113
How would you rate your contribution to your students 'acquisition of the following competencies: [use of information and communication technology]	201	3,42	1,107
How would you rate your contribution to your students 'acquisition of the following competencies: [behavioural/Soft skills]	201	3,26	1,102
Do you think that students' willingness/readiness to learn (in general) affects pedagogical work? (5-Extremely,4-Very,3-Moderately,2-Slightly,1-Not at all)	201	4,44	1,004
The faculty takes into account the choices and capabilities of the teachers during the distribution of activities / modules: 0= I don't Know, 1=No, 2= Sometimes, 3=Yes	201	2,11	,763
When you were hired, did you take part in the lessons of the newly recruited teachers accompaniment cell? (1=No, 2=Yes)	201	1,23	,424
Do you think that the content of these lessons is appropriate and useful for fieldwork/practice as a teacher-researcher? (0=no answer, 1=no, 2=to some extent 3= Yes)	201	,83	1,168
Rate your satisfaction about the level of the lecturers presentations? (1=very unsatisfied, 5= very satisfied)	201	1,25	1,871
Valid N (listwise)	201		

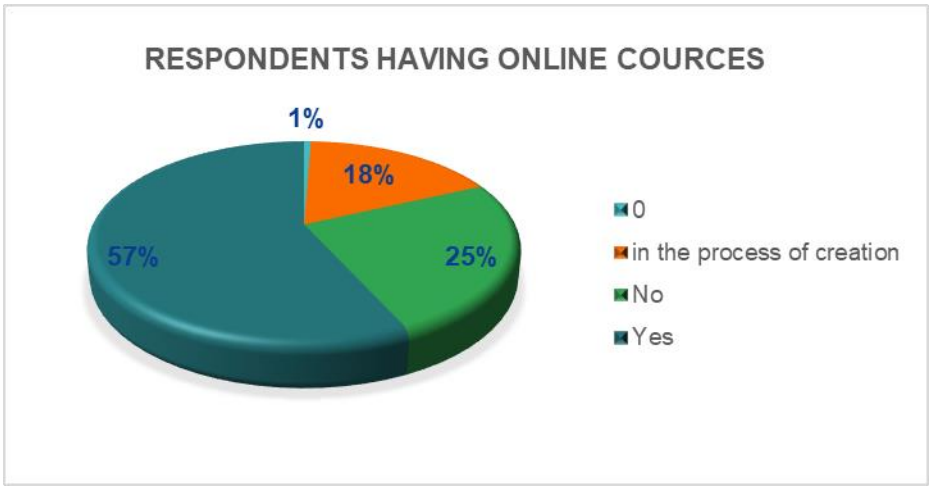
Source: The author, from SPSS

6.11.2. Digital competencies

6.11.2.1. Online courses

We asked teachers if they have online courses, 57% do. ¼ do not have any. The others are preparing one. That's means the process of creating online courses is ongoing in a good way, but efforts should be pushed forward in order to motivate and facilitate online teaching.

Figure 94. Online courses



Source: The author based on SPSS outcomes

The platform used to create an online course were mainly (a teacher can use more than one)

Table 28. used platforms to teach online

Percentage	Patform used
21%	Social media
24%	Zoom
26%	Moodle
29%	Microsoft teams
19%	Google Meet
22%	Others: Google classrooms, email, univrersity's website

Source: The author based on SPSS outcomes

We can see that a big number of teachers uses Microsoft teams. This platform is purchased by the university of Tlemcen and widely used in it's online education. Each student has an account and email like: name.familyname@univ-tlemcen.dz. This email is managed by Microsoft and has a lot of features.

On another hand and according to the UoT statistics, face-to-face teaching was limited for health security reasons: online teaching took over. Two types of teaching were provided: (1) asynchronous teaching using the MOODLE platform and emails and (2) synchronous teaching using MSTEAMS and ZOOM. Table x gives some indicators as of 04/28/2020 on the use of open source Moodle and MSTEAMS, for which the University of Tlemcen has the access rights.

Table 29. MOODLE and MSTeams usage indicators until the date of 04/28/2020

Indicators	MSTeams	MOODLE
Number of teacher accounts created	1 039	1 800
Number of student accounts created	13 644	43 000
Number of Platform Connections	NA	52 051
Number of courses consulted	NA	11 504
Number of forums	159	3 550
Number of messages exchanged on the forums	13 325	29 603
Number of active users	620	NA
Number of online meetings	143	NA
Number of online meeting participants	461	NA
Number of activities	NA	673 188

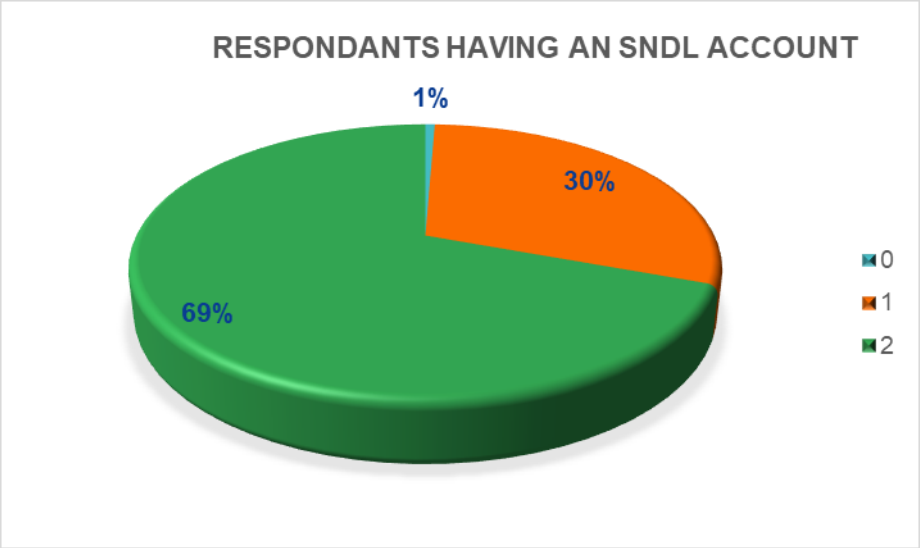
Source: Council of Administration, 2021

At the same date, 100% of the courses of the programmed subjects were visible on the digital supports. However, the percentage of evaluations on submitted courses remains very low (<1%).

6.11.2.2. Possession of an SNDL account

Since database for research are very important to any researcher, we ask participants if they have an SNDL account which is the national system for online documentation "Systeme National de Documentation en Ligne" set by the research department at the HE ministry. 69% do have an account, the rest either use google for their research or use hacker website to get papers online.

Figure 95. Respondents having an SNDL account



Source: The author based on SPSS outcomes

6.11.2.3. Manage references

The references management is an important digital competency thet a teacher should have. So we ask participants about the way they manage their references and the answers were as shown in the table below:

Percentage	Method
49%	Word references
14%	Endnote
11%	Mendeley
9%	Zotero
29%	Write them manually

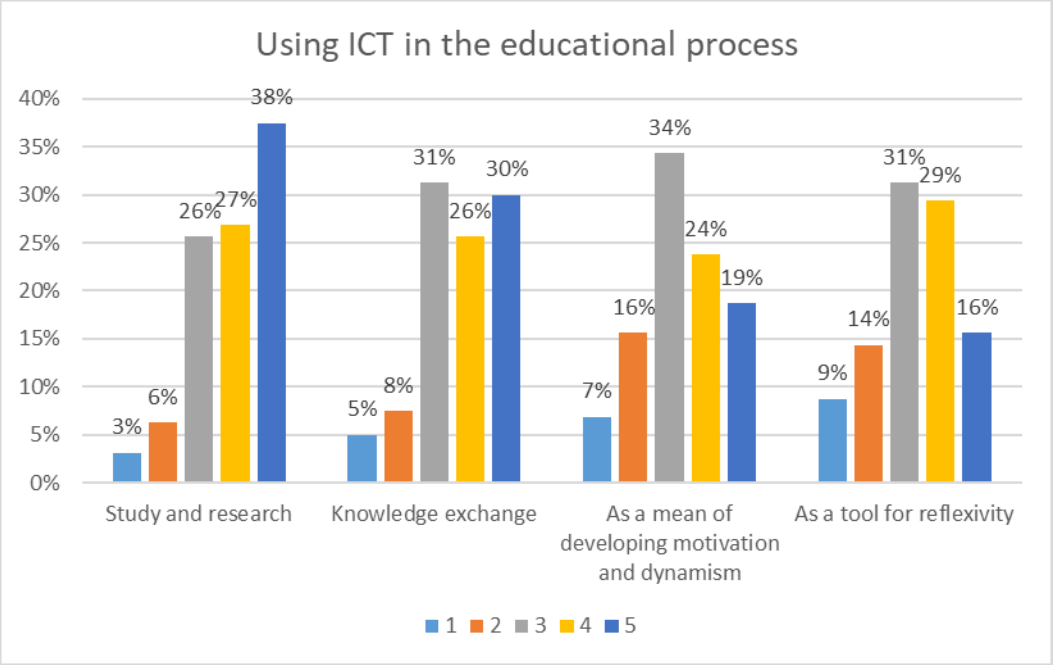
Source: The author based on SPSS outcomes

When reading the results, almost the 1/3 do not manage references automatically. This is a bit wondering since it is not allowed in the 21st century to manage references manually. Half of respondents still use reference manager integrated in word, which is time and effort consuming process. We recommend that all researchers get a training to move into using endnote or Mendeley in their papers.

We can notice that 61% have a good mastery (4&5), the other half needs more training and care from their laboratories and faculties in order to enhance their competency in managing references automatically.

6.11.2.4. Using ICT

Figure 96. ICT usefullness



Source: The author based on SPSS outcomes

In general, Information and communication technology is widely used in any field of work, notably in higher education. We ask participants to indicate the level they use ICT for:

Topic	1	2	3	4	5
Study and research	3%	6%	27%	27%	38%
Knowledge exchange	5%	8%	32%	26%	30%

As a mean of developing motivation and dynamism	7%	16%	35%	24%	19%
As a tool for reflexivity	9%	14%	32%	29%	16%

Source: The author based on SPSS outcomes

We can see that the majority is using ICT for studying, researching, exchange with others. These are the classic use of ICT. Few of them are using ICT to develop their courses and the way they perform a teaching process in the classroom or even virtually.

6.11.2.5. statistics of the whole unit:

	N	Mean	Std. Deviation
Do you have online courses? (no, in progress,yes)	201	2,30	,872
What do you use for online teaching? [Power]	201	,85	,362
What do you use for online teaching? [Prezy]	201	,07	,255
What do you use for online teaching? [Focusky]	201	,02	,156
What do you use for online teaching? [Pdf]	201	,34	,474
What do you use for online teaching? [audio file]	201	,03	,184
What do you use for online teaching? [Other]	151	,01	,081
What do you use to manage references in your papers / communications? [WORD references]	201	,52	,501
What do you use to manage references in your papers / communications? [EndNote]	201	,14	,352
What do you use to manage references in your papers / communications? [Mendeley]	201	,10	,300
What do you use to manage references in your papers / communications? [Zotero]	201	,08	,279
What do you use to manage references in your papers / communications? [QiQQA]	201	,00	,000
What do you use to manage references in your papers / communications? [Write them manually]	201	,37	,485
What do you use to manage references in your papers / communications? [Other]	155	,00	,000
Do you have an SNDL account? No,Yes	201	1,69	,465
To what extent do you use ICT for: [Study and research] (1= very poor, 5= very strong)	201	3,86	1,123
To what extent are you using ICT for: [Knowledge exchange]	201	3,64	1,167
To what extent do you use ICT for: [As a means of developing motivation and dynamism of teaching among students]	201	3,30	1,183
To what extent do you use ICT for: [As a tool for reflexivity, ie self-assessment and self career development]	201	3,25	1,188

Valid N (listwise)	149		

Source: The author from SPSS, 2021

6.11.3. Research competencies

The research competencies are mandatory for a teacher-researcher at a university who are recruited in the framework of the executive decree n° 08-130 of 03/05/2008. A teacher at the university has both teaching and research tasks.

6.11.3.1. Scientific production

As a key question to measure the performance of the repondants, they were asked to give their scientific production number regarding publishing papers and presenting conference dommunications. The mean was between 1.03 and 1.58 which is considered as weak production among repondants.

Table 30. Scientific production

	N	Minimum	Maximum	Mean	Std. Deviation
Please, what is your total scientific production? [National conference papers]: 0=0, 1=1, 2=2, 3=3, 4=4, 5=5	201	0	5	1,58	1,271
Please, what is your total scientific production? [International conference papers]: 0=0, 1=1, 2=2, 3=3, 4=4, 5=5	201	0	5	1,41	1,189
Please, what is your total scientific production? [Articles in national journals]: 0=0, 1=1, 2=2, 3=3, 4=4, 5=5	201	0	5	1,07	1,183
Please, what is your total scientific production? [Articles in international journals]: 0=0, 1=1, 2=2, 3=3, 4=4, 5=5	201	0	5	1,03	1,137
Valid N (listwise)	201				

Source: the author based on SPSS

6.11.3.2. h-Index

Another indicator for a researcher performance is the h-index. The latter is an author-level metric that measures both the productivity and citation impact of the publications, initially used for an individual scientist or scholar. H-index is based on the set of the scientist's most cited papers and the number of citations that they have received in other publications. J.E. Hirsch, a physicist at the University of California San Diego, is the one who developed the Hirsch, or h-index, in 2005.

If we take for example a researcher with the numbers shown in Table 31, he has 6papers cited more than 6 times, so his h-index = 6

Table 31. Example for h-index calculation

Paper	Number of Citations
1	100
2	78
3	62
4	43
5	32
6	18
7	3
8	2
9	1
10	1

h-index = 6

Source: University of Chicago, 2022

We start by asking participants about their h-Index. The results were surprising! 74% don't know about their h-index. 6% of them admit that their h-index is 0.

Table 32. Respondent's h-index

What is your h-index?: -1=Don't know, 0=0, 1=1, 2=2, 3=3, 4=4, 5=5-9, 6=10-20, 7=5,

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-1	148	73,6	73,6	73,6
	0	14	7,0	7,0	80,6
	1	10	5,0	5,0	85,6
	2	10	5,0	5,0	90,5
	3	3	1,5	1,5	92,0
	4	4	2,0	2,0	94,0
	5	9	4,5	4,5	98,5
	6	3	1,5	1,5	100,0
	Total	201	100,0	100,0	

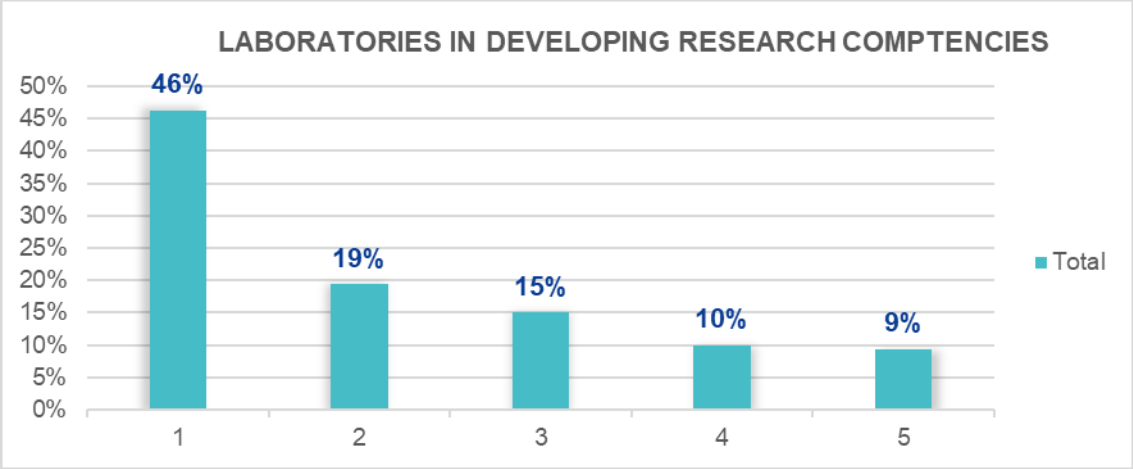
Source : The author based on SPSS

We can explain this low h-index or even the ignorance of its existance by the HE system where there no need for this index in career development or bonuses and rewards. When something has no impact, teachers will not bothering themselves with it.

6.11.3.3. Laboratories and research

Theoretically, laboratory is the natural environment where a researcher can flourish and grow. We asked participants if the laboratory they belong to was indispensable to develop their research competencies. Half of them do not agree at all with this statement. 20% said that the role is very limited. This is a bit scary. It means that laboratories roles and management should be revised by the ministry.

Figure 97. research competencies and laboratories



Source: The author based on SPSS outcomes

6.11.3.4. Statistics of the whole unit:

Research competencies and performance

	N	Mean	Std. Deviation
Please, what is your total scientific production? [National conference papers]: 0=0, 1=1, 2=2, 3=3, 4=4, 5=5	201	1,58	1,271
Please, what is your total scientific production? [International conference papers]: 0=0, 1=1, 2=2, 3=3, 4=4, 5=5	201	1,41	1,189
Please, what is your total scientific production? [Articles in national journals]: 0=0, 1=1, 2=2, 3=3, 4=4, 5=5	201	1,07	1,183
Please, what is your total scientific production? [Articles in international journals]: 0=0, 1=1, 2=2, 3=3, 4=4, 5=5	201	1,03	1,137
What is your h-index?: -1=Don't know, 0=0, 1=1, 2=2, 3=3, 4=4, 5=5-9, 6=10-20, 7=5,	201	-,15	1,757
To what extent do you agree with the following statements related to research laboratories:(1-Strongly Disagree, 2-Disagree, 3-Undecided, 4-Agree, 5-Strongly Agree) [the research laboratory to which I belong is indispensable to develop my competence in the field of research]	201	2,29	1,395

To what extent you agree with the following phrases related to the research laboratories: (1: strongly disagree - 5: strongly agree) [I always produce useful papers with members of the laboratory]	201	2,16	1,288
To what extent you agree with the following statements related to research laboratories: (1: completely disagree - 5: strongly agree) [I participate in all scientific forums organised by my laboratory]	200	2,58	1,451
Valid N (listwise)	200		

Source: The author from SPSS, 2021

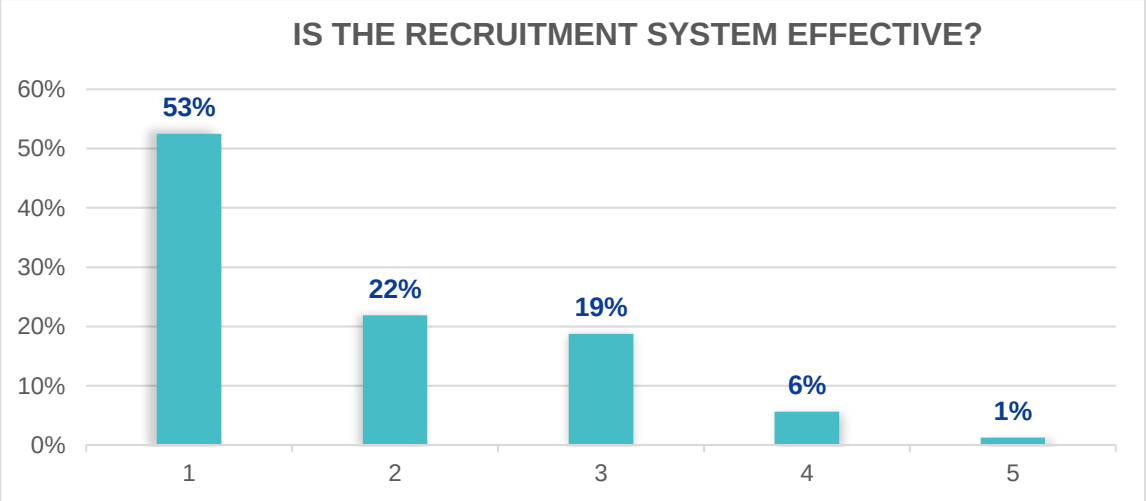
6.11.4. Competency management

6.11.4.1. HR recruitment

Recruitment is a very important phase to hunt the best competencies. Universities should attract and hire competent and skilful people at the first place.

We asked participants if the recruitment system helps to attract skilful teachers/researchers. More than half are not satisfied with the current hiring system and said that it is not getting the right person for the right job. So, we think that the recruitment regulation should be updated in a way that a B class paper is not evaluated as equal as an A class one, include h-Index in the grid, assess the teacher's pedagogy by evaluating him in a real situation with students...

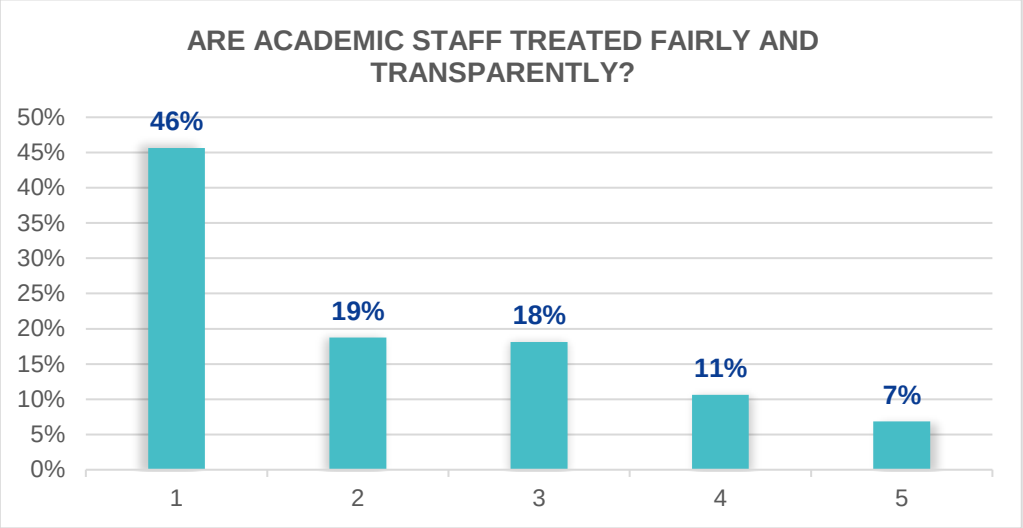
Figure 98. Effectiveness of recruitment system



6.11.4.2. Justice in treating employees

Participants were asked if they are treated transparently and fairly from their universities. 65% do not see that. This is a big issue because we cannot talk about raising employees performance without transparent and fair procedures where all staff are treated equally and equitably.

Figure 99. Fairness in treating academic staff



6.11.4.3. the evaluation of respondents to 4 elements

Table 33. Satisfaction rating

	N	Mean	Std. Deviation
Taking everything into consideration, what is your evaluation of the following statements: (1 = completely dissatisfied, 5 = very satisfied)			
[I am satisfied with my performance in my work as a teacher]	201	3,65	,999
[I am satisfied with my performance in my work as a scientific researcher]	201	3,13	1,169
[I am satisfied with the e-learning process and the online education platform at my university]	201	2,37	1,168
[I am satisfied with my university]	201	2,70	1,241
Valid N (listwise)	201		

Source: The author from SPSS, 2021

In the table above we can see that the general satisfaction of respondents about themselves as teachers and researchers is moderate. This is a surprising result; it shows that the respondents are aware of their performance and are not totally satisfied. We can say that the university' environment in this case play a crucial role in their pedagogical and research performance. A long way is waiting for decision makers to be undertaken with academic staff in order to improve the higher education environment.

6.11.5. Finance & rewards

6.11.5.1. Salary satisfaction

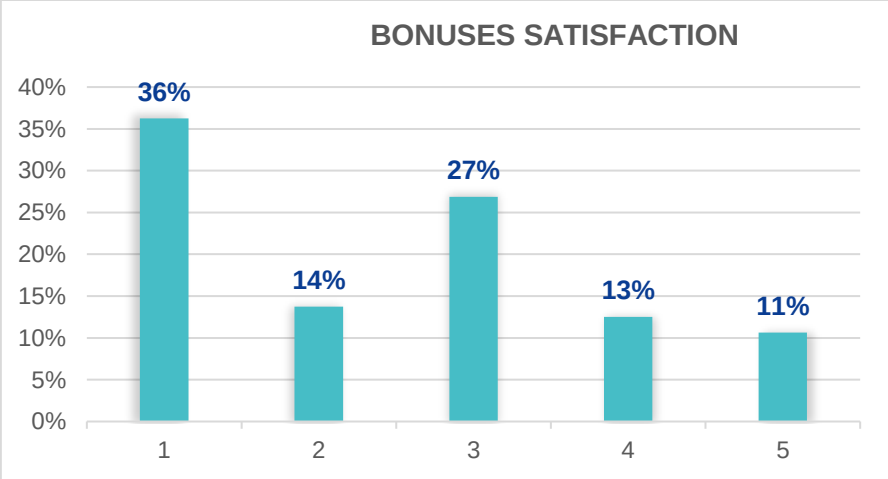
Participants were asked if the current salary scale is satisfied. 63% are not satisfied at all. Especially with the low purchasing power in the last years. The salary system should be revised urgently if we want a high staff performance.

Figure 100. Salary satisfaction

Source: The author based on SPSS outcomes

Even when we ask about bonuses, half of them were not satisfied at all.

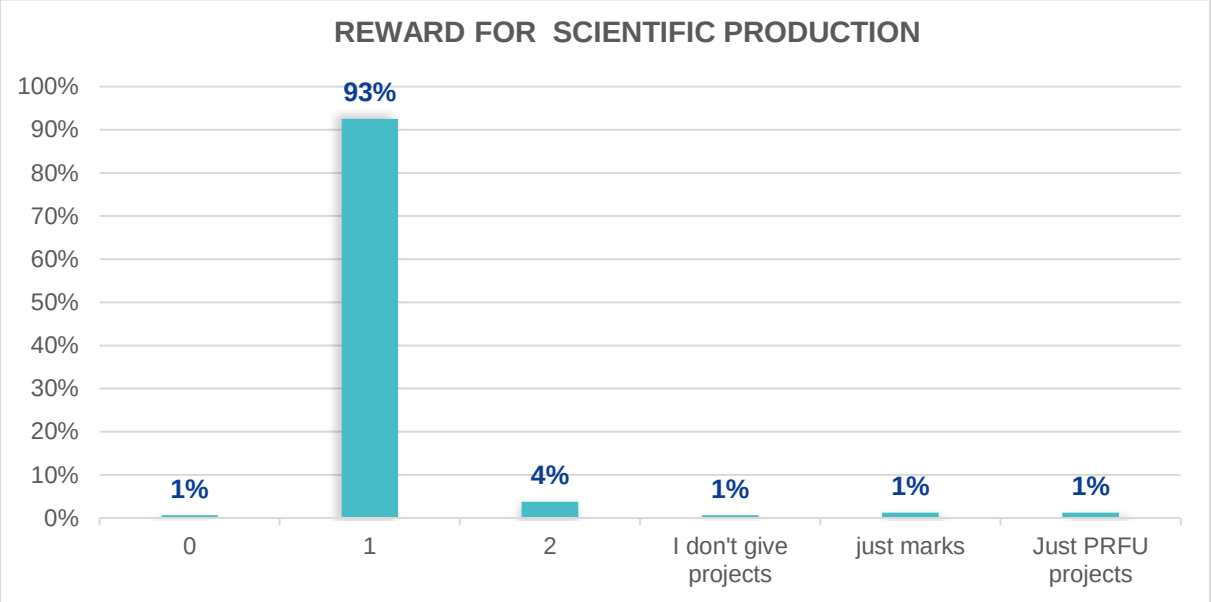
Figure 101. Bonuses satisfaction



Source: The author based on SPSS outcomes

They don't even get any reward from their papers they produce. 93% do not agree with the statement that they have been rewarded for every scientific project or paper they produce. Recently, there was an instruction from the research department indicate that the laboratory in which a researcher is affiliated can get budget from every classified paper he produces. This step is good but not enough. The researcher should get a direct reward in order to make him motivated to produce more and more.

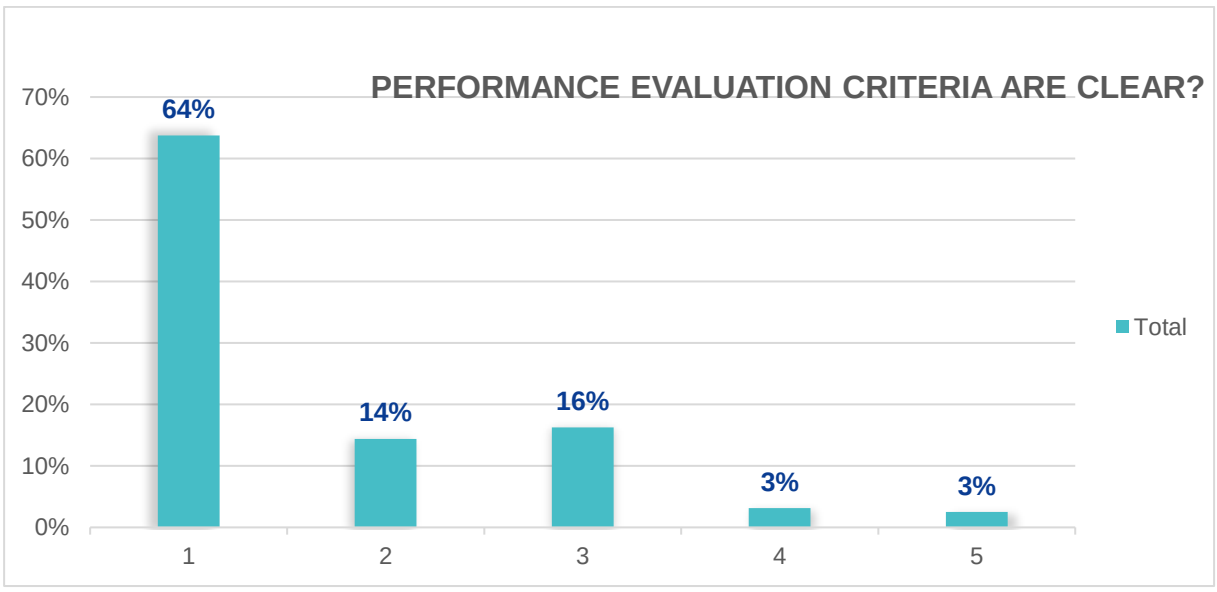
Figure 102. Scientific production reward



6.11.5.2. Evaluation criteria

64% of respondents do not see that their universities set clear criteria to evaluate a teacher's performance. The lack of evaluation grid makes competency management useless. An organisation couldn't push its staff to perform better if they are not rewarded according to their results. The results couldn't be fairly rewarded without clear indicators. Measurement of performance is mandatory in the management of competencies. Otherwise, there will be race to the bottom.

Figure 103. Clearness of performance evaluation criteria



Source: The author from SPSS, 2021

6.11.5.3. Analysis of the whole Unit: finance and incentives

Descriptive Statistics

	N	Mean	Std. Deviation
Are you satisfied with your salary?	201	2,02	1,218
Do you think your performance bonus (prime de rendement) rewards your performance? (1: completely unsatisfied - 5: very satisfied)	201	2,49	1,390
Are you rewarded for every scientific project or article you produce?0=Don't know, 1= No, 2= Yes, 3=Other	201	1,04	,220
Do your superiors recognise your performance by offering prizes, special thanks, moral value …(1= Not at all, 5= Yes a lot)	201	2,00	1,210
Does your university use key performance indicators (KPI) in the teacher performance appraisal process? (0=Don't know what is a KPI, 1=No, 2=Yes)	201	,45	,564
Valid N (listwise)	201		

Source: The author from SPSS, 2021

6.11.6. Agreement with some propositions

We asked respondent's if they agree with some proposed solutions that we qualified relevant for the development of the HE system. The results were as follows:

Question	N	Mean	Std. Deviation
In the context of developing the management of competencies in Algeria, what is the extent of your agreement with the following suggestions: (1 = completely disagree, 5 = strongly agree)			
[What if the university changed the tuition fees system into significant one and you benefitted financially	200	2,50	1,480
[What if the recruitment procedures are prepared by the university and not by rigid regulations from the ministry?]	201	3,26	1,366
[Do you agree if the performance of the professor becomes evaluated periodically (once a semester) and be rewarded accordingly?]	200	3,92	1,118
[What do you think if the grade promotion at the university is linked to the teacher performance, and he could be downgraded if his performance is decreased?]	200	3,59	1,375
[What do you think if teachers recruitment becomes a contract basis system (CDD) but the wage is very motivating?]	201	3,39	1,403
[Do you think that the criteria for selecting students to be registered at the university should be revised? besides criteria for master and PhD enrollement?]	200	4,22	,998

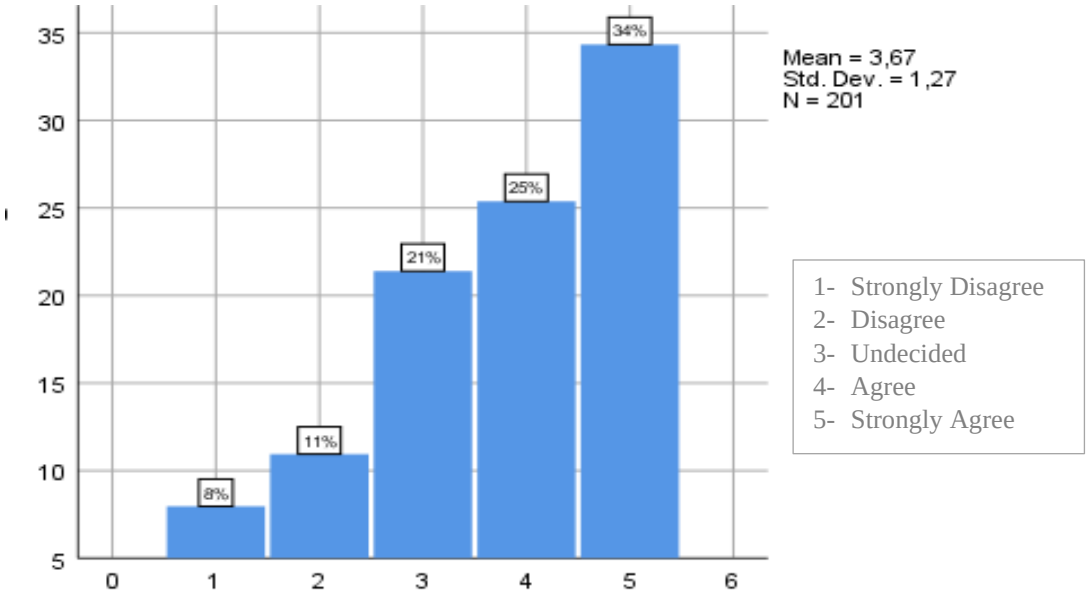
[Do you think that the researcher should be rewarded with a direct honorarium when he publishes a paper in well known databases like Scopus/Web of Science?]	200	4,10	1,114
[Do you agree that the position of university Rector becomes subject to election not nomination?]	201	3,98	1,311
Valid N (listwise)	200		

Source: The author from SPSS, 2021

Black box: Influence of competency management on performance

We tried to unlock the black box of the relationship between HR policies and organisational performance, participants were asked the following question: Regardless of all the above, do you think that even with a good system of competency management for the teacher, performance will not improve due to the presence of other influences (the economic, social and political environment, the lack of jobs for graduated students (unemployment), decision-makers do not value the results of university , the lack of English language mastery which allows visibility on a global scale ...).

Figure 104. degree of agreement with the other parameters influencing performance



Source: The author from SPSS, 2021

As it is shown, the mean is 3.67, and the deviation is 1.2; and almost 60% which means that there is a high agreement with the statement (4th and 5th scale) which means that even with a good HR processes and procedures, it might not lead to a better organisational performance. This will result confirm the presence of the black box in the relationship between HR practices and OP, especially in the higher education sector and in Algeria as general percetion.

6.11.7. Testing the competency management procedures on performance.

In order to test statistically the influence of the independent variables (HR procedures) on the dependent variable (Performance), the multiple linear regression method was used to see the dependence between the variables.

6.11.7.1. Impact of HR procedures on pedagogical performance

Table 34. Anova test

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2,739	1	2,739	6,050	,015[b]
	Residual	90,110	199	,453		
	Total	92,850	200			

a. Dependent Variable: PadagogySkills

b. Predictors: (Constant), ManagementHR

Source: The author from SPSS, 2021

We see that the anova test is 0.015 wich is under 0.05, that means that it exists at least one independent variable that influence the pedagogical performance.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	3,198	,161		19,829	,000		
	ManagementHR	,190	,077	,172	2,460	,015	1,000	1,000

a. Dependent Variable: Padagogical Skills

Source: The author from SPSS, 2021

We see that the coefficient is less than 0.05 and B is positive, which means that HR procedures influence positively the pedagogical performance.

Collinearity Diagnostics[a]

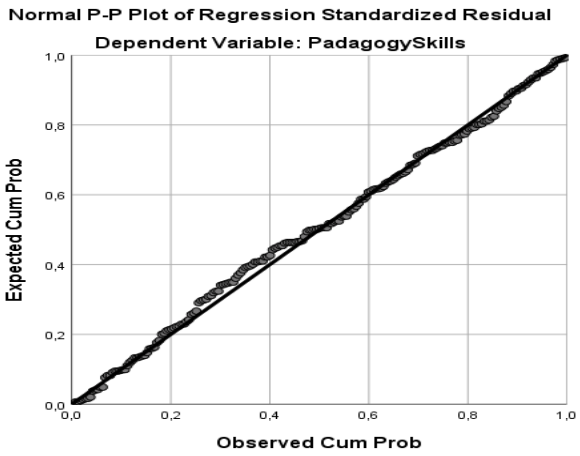
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	ManagementHR
1	1	1,956	1,000	,02	,02
	2	,044	6,644	,98	,98

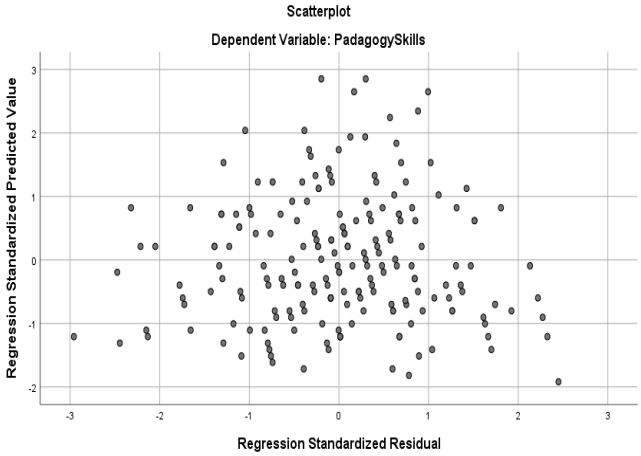
a. Dependent Variable: PadagogySkills

Source: The author from SPSS, 2021

The collinearity diagnostics shows that there is no interaction between the independent variables which a positive indicator to the regression test.

Graphics





Source: The author from SPSS, 2021

It is clearly presented in the graph that the points are randomly distributed in the cloud and the linear distribution is almost a straight line. The linear regression is confirmed, and the influence exists.

6.11.7.2. Impact of HR procedures on digital performance

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,305	1	1,305	2,507	,115[b]
	Residual	103,575	199	,520		
	Total	104,880	200			

a. Dependent Variable: DigitalSkills

b. Predictors: (Constant), ManagementHR

Source: The author from SPSS, 2021

We see that the anova test is 0.115 which is above 0.05, that means that there is no influence of HR procedures on digital performance. This result could be partially explained by the personal effort that should be provided by each staff to acquire digital skills regardless the way he is managed by the HR department.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2,745	,173		15,878	,000		
	ManagementHR	,131	,083	,112	1,583	,115	1,000	1,000

a. Dependent Variable: DigitalSkills

Source: The author from SPSS, 2021

We see that the coefficient is above 0.05 and B is positive.

Collinearity Diagnostics[a]

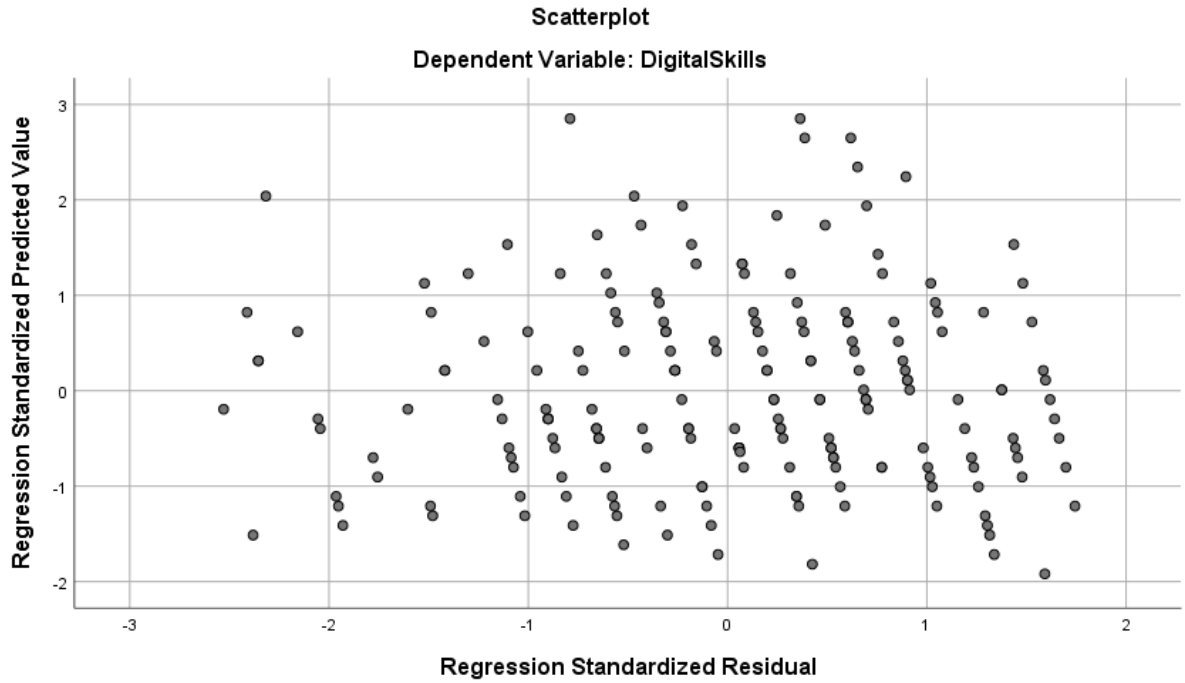
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions ManagementHR
1	1	1,956	1,000	,02	,02
	2	,044	6,644	,98	,98

a. Dependent Variable: DigitalSkills

Source: The author from SPSS, 2021

The collinearity diagnostics shows that there is no interaction between the independent variables which a positif indicator to the regression test.

Graphics



Source: The author from SPSS, 2021

It is clearly presented in the graph that the points are randomly distributed in the cloud.

6.11.7.3. Impact of HR procedures on research performance

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10,252	1	10,252	11,453	,001[b]
	Residual	178,124	199	,895		
	Total	188,376	200			

a. Dependent Variable: total scientific production

b. Predictors: (Constant), ManagementHR

Source: The author from SPSS, 2021

We see that the anova test is 0.01 which is under 0.05, that means that it exists at least one independent variable that influence the research performance.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	,542	,227		2,389	,018		
	ManagementHR	,368	,109	,233	3,384	,001	1,000	1,000

a. Dependent Variable: total scientific production

Source: The author from SPSS, 2021

We see that the coefficient is less than 0.05 and B is positive, which means that HR procedures influence positively the research performance.

Collinearity Diagnostics[a]

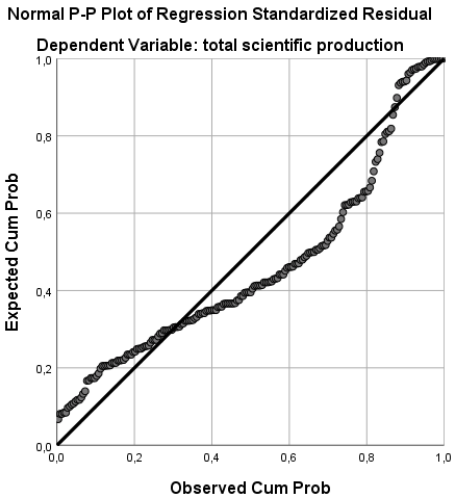
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	ManagementHR
1	1	1,956	1,000	,02	,02
	2	,044	6,644	,98	,98

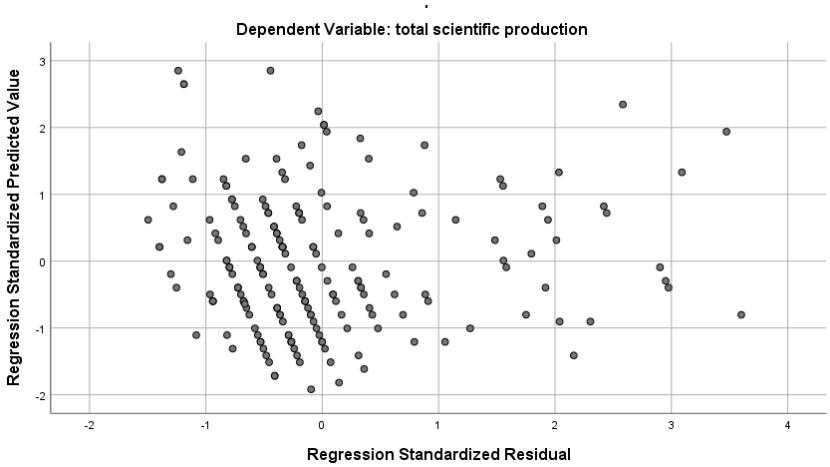
a. Dependent Variable: total scientific production

Source: The author from SPSS, 2021

The collinearity diagnostics shows that there is no interaction between the independent variables which a positif indicator to the regression test.

Graphics





Source: The author from SPSS, 2021

It is clearly presented in the graph that the points are randomly distributed in the cloud and the linear distribution is almost a straight line. The linear regression is confirmed and the influence exists.

6.11.7.1. Impact of HR procedures on general performance of the academic staff

In order to get the general performance, we have created a new variable combining the 3 parts of performance and test the influence of competencies management procedures on performance.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,237[a]	,056	,052	,58019	,056	11,880	1	199	,001

a. Predictors: (Constant), ManagementHR

b. Dependent Variable: GeneralPerformance

Source: The author from SPSS, 2021

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3,999	1	3,999	11,880	,001[b]
	Residual	66,987	199	,337		
	Total	70,986	200			

a. Dependent Variable: GeneralPerformance

b. Predictors: (Constant), ManagementHR

Source: The author from SPSS, 2021

We see that the anova test is 0.01 which is under 0.05, that means that it exists at least one independent variable that influence the performance of a teacher researcher.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2,161	,139		15,546	,000		
	ManagementHR	,230	,067	,237	3,447	,001	1,000	1,000

a. Dependent Variable: GeneralPerformance

Source: The author from SPSS, 2021

We see that the coefficient is less than 0.05 and B is positive, which means that HR procedures influence positively the performance of a teacher researcher.

Collinearity Diagnostics[a]

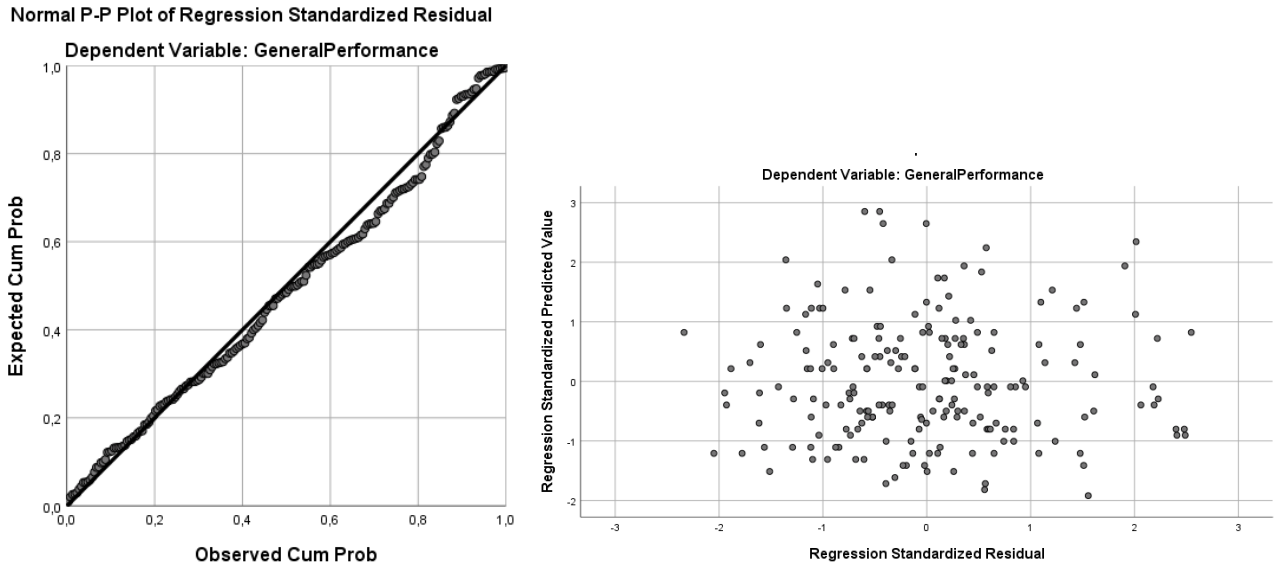
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions ManagementHR
1	1	1,956	1,000	,02	,02
	2	,044	6,644	,98	,98

a. Dependent Variable: GeneralPerformance

Source: The author from SPSS, 2021

The collinearity diagnostics shows that there is no interaction between the independent variables which a positive indicator to the regression test.

Graphics



Source: The author from SPSS, 2021

It is clearly presented in the graph that the points are randomly distributed in the cloud and the linear distribution is almost a straight line. The linear regression is confirmed and the influence exists.

We can say that there is an impact of the competencies manafement procedures and the performance of the academic staff. The impact is statically not too strong. It means that a performance is influenced by other variables which are not included in the study.

6.11.8. Respondents' general comments and suggestions

At the end of the questionnaire, we ask participants if they have any propositions to enhance higher education system. They contribute with some very interesting comments. The comments are listed below[1]:

Table 35. Respondents' suggestions

N°	Suggestions
1	Very in-depth studies of everything that's going on behind the scenes. More transparency.
2	Give more importance to skills and ensure that there is more transparency in the hierarchy.
3	we need transparency
4	The teacher-researcher must be permanently focused on his work and on improving his intellectual and scientific level and not on these social problems and his standard of living. The entire remuneration policy for teacher-researcher should be reviewed. It is also necessary to promote the skills and the administrative path in the progression of the career.
5	We must review all the points mentioned above, motivate teachers / researchers morally and materially and above all make excellence, honesty and work for the goals to be achieved. The university must be a flagship for knowledge, it must keep its role of training citizens but must above all rise.
6	Introduce the concept of teacher-project (teacher who brings projects and therefore a source of income to the university), introduce the concept of teacher-entrepreneur (teacher and business manager), the establishment of a strategic plan and an operational plan with SMART and KPI objectives and territorial impact. Election of university officials on the basis of a project and a team.
7	I propose a statute which reinforces scientific values and enshrines the independence of the educational act.
8	the development of real research laboratories
9	Mandatory training because
10	a teacher with the rank of professor must train new recruits, provide teaching and not require doctoral students to provide courses. once a professor, in my university, the grade of professor is synonymous of monarchy, no training, no supervision, anything except research
11	Transparency in operation at all levels
12	Transparency and reward
13	Promotion of scientific research

[1] The list is translated from Arabic and French into English by the author.

14	Recruitment is done on merit (psychotechnical test), the UoT quality unit making visits every 3 months in progress to check the quality of teaching, propose meetings to talk about the visions of the department, make committees scientists who deal only with quality-related subjects, do student assessment of their teachers and that the premium be based on the assessment
15	The teacher-researcher needs functional laboratories with products and reagents that allow him to coat himself with research and find the motivation to transmit to students both information and motivation
16	Reward scientific progress
17	The teacher must get what he really deserves
18	The paying university
19	Put the right people in the right jobs. University education is not given to everyone. The choice must be made on the basis of competence. Each course must be given by the specialist teacher.
20	Motivate based on effort and skills
21	Open part of the university's capital to the private sector to develop competitiveness between teachers_ researchers and make university registration fee-paying and per semester as is the case in Jordan with a very small number of students and which does not exceed 25 students per group.
22	Partnership
23	More research
24	University privatisation
25	Scientific production
26	That we evaluate the pedagogical as much if it is only the scientist, and that we no longer control the scientific productions, who produced what, for example, transparency in all the procedures, the continuing training of the teacher-researcher.
27	Let us resume our role in society and in national politics and economy.
28	Responsibility, commitment and involvement of the teacher-researcher and promotion of the partnership governance of the university and involve all stakeholders in decisions
29	There are still gaps to be filled
30	Review the (utopian) appointment policy
31	Review the salary,
32	Review the special status. Appoint leaders of integrity. Punish cheaters and stop the social. Upgrade teachers (internal retraining). Respect our students and trust.
33	Review all the policy that manages the sector.
34	Its consultation and involvement in the development of national policies
35	sensitise and train all staff
36	A teacher must always be able to convey information or knowledge
37	Better wages, better accommodation ...
38	A special status dissociated from the public service, review the rules and laws governing educational and scientific bodies, invest in human resources ...
39	A special status
40	a good education makes a good student. a good student will shine first on the university than on society
41	a radical reform of the entire education system, from the primary

42	Reform the educational system first, then reform the higher education system as a whole.
43	Rethink the entire system
44	Reconsider the professor's path
45	Reconsidering the LMD system, in terms of employment standards, and in the university system as a whole.
46	Rehabilitation of teacher evaluation programs
47	Reworking the recruitment system
48	Adopting efficiency and neutralizing the university from political manipulations. It should be for information and for information only
49	Giving science its true value
50	Give to each its value that it is worth as you previously suggested
51	respect
52	Respect, appreciation and financial motivation
53	Independence from public office
54	Rely on competencies
55	Opening up to international universities and exchanging experiences
56	Attention to the professor
57	Paying attention to the social status of the professor and applying the principle of transparency in all administrative matters in general
58	Paying attention to the stadium in terms of income, housing, social status, and facilitating everything that can raise its pure level, and that is by pampering obstacles
59	Attention to motivating the researcher professor by giving him a greater social value that pushes him to produce more
60	More attention to it is the provision of the professors' hall and the Internet, especially job housing
61	Planning, organisation, transparency in decision-making, justice in distributing opportunities among professors, seriousness in work ... etc.
62	Conscientious teaching
63	Development
64	Dealing with the university as a factory of knowledge and not the home of a family or heirs.
65	evaluation and motivation
66	Good pedagogical training-Continuous monitoring and follow-up-Scientific production-Good pedagogical performance-Respectable salary
67	Continuous training, material incentives, moral incentives, evaluation and compensation of scientific production
68	The wound is deep, so the reform must be deeper. The proposal, in my opinion, is the university's independence.
69	The right man in the right place
70	Advancement is linked to reviewing the environment in which the professor works, which does not help him to perform his role with a special quality in light of the political influence on the university, whose goal is to bring the university to the bottom.

71	There is no intention to develop and improve this sector, due to its sensitivity, in addition to the fact that scientific production is very weak due to the lack of an appropriate atmosphere for the professor to reconcile between teaching and research.
72	Conscience above all
73	Work on a lot and then a lot, and God willing, we will reach the level of a university professor that this study aspires to
74	Abolishing nepotism and adopting a scoring system for professors and researchers
75	Efficiency
76	Efficiency and a desire for scientific research is the only way
77	Serious follow-up, guidance and rewarding the best performance
78	Accounting for all faculty, administration and staff members
79	Integrity at work
80	Integrity, scientific and practical rigor
81	Integrity, transparency and continuous training
82	Consider improving all conditions surrounding the professor to achieve the desired satisfaction. And work to improve the quality of higher education
83	To give up the free circulation
84	That the Ministry concerned with higher education support the position of the university professor in its various classifications and motivate him, as he has been in study and education for a long time, so this must be taken into account
85	To respect the science, not the professor
86	To establish periodic activities and forums at least twice a year to educate teachers and students and give an idea about the good exploitation of technology and digitization, especially during this period. Thank you.
87	That the professor rises with his knowledge, efficiency, love for work and mastery.
88	To update the whole system
89	The first thing is the English language. If there are researchers who master the English language, they can then acquire the knowledge and qualifications that allow them to raise their level and raise the level of the university.
90	Second: frankly, the method of distance learning, or what is also known as extra-curricular education, is difficult to implement in our country due to the lack of internet flow and the presence of some disadvantaged students who do not have the internet. Personally, I tried it again and again with students, in order to implement the flipped classroom strategy, but the problem always exists. .
91	The problem of the university is not only in the laws that govern it, but in the people who control it. If the law changes without changing the people, that will not work.
92	First, improving the salary and opening the field of scientific research by setting difficult conditions for promotion, establishing an objective evaluation system, and finally changing the curriculum followed in the Algerian university completely and focusing on the quality of education
93	As for advancing the professor, I suggest overcoming the difficulties that the researcher encounters in obtaining valuable and international research that would raise the professor’s performance and provide more incentives.

94	Sending contracts with the industrial field... and setting strict and well-schooled criteria for appointing university officials
95	Valuing scientific research
96	Linking promotions to scientific production and pedagogical performance
97	Employing high-level professionals, not just those with certificates.
98	Improving the standard of living for the professor and establishing material and moral incentives
99	Improving the standard of living for the professor and providing all the possibilities to help him devote himself to research and education
100	Improving working conditions in all respects to raise the level of education and provide a decent life for university professors that encourage them to work and be creative

Source: The author, based on data from survey.

These suggestions are valuable. They all stress on renewing and revising the whole system: Recruitment, evaluation, career development and promotions, upgrade teacher environment, transparency and justice in dealing with staff, make scientific production more valuable, raise salary scale and material rewards, separate university from political influence, a teacher should love his profession and students good treatment, better communication, participative management, stop social policy, develop language skills, implement sanction procedure for non-productive teachers, the best man in the best place, privatisation...

Section 7. Chapter Conclusion

As stated above in the case of the university of Tlemcen, it is clear that the facilities and services made available for academic staff are numerous and important. Regulations regarding the management of a teacher or a researcher and his competence are plenty. But not enough. Consequently, when we analyse the performance of this institution and of its teachers, we can conclude that UoT is one of the best universities in Algeria. Nevertheless, it is much far from being an internationally recognised university. The reasons are various, and almost all universities in the country are suffering from these effects. There is a lack of incentives and motivation, poor salary scale, producing good papers has no impact on the career, no use of indexes in measuring researcher's performance, no one evaluate teaching pedagogy of teachers, no position vacancy is announced transparently, Staff is not treated fairly…

As a conclusion to data analysis gathered via the questionnaire, we observed a lot of points. An overview of the various characteristics of UoT management and performance could be resumed as follows:

- There is a lot of structures dedicated to the improvement of teachers-researchers competencies like: Entrepreuneurship House, CATI, CEIL, Accompaniment cell, abroad trainings...
- UoT remains one the best HEIs in Algeria, according to international famous ranking systems
- Scientific production of the researchers of UoT is valuable according to Scopus and WOS.
- Teacher-researcher are not totally satisfied with their career management, incentives and rewarding system. Lot of reforms were proposed.
- International publishing in humanities is very weak comparing with other fields like science and technology. Lack of English language mastery is one of the reasons
- Teaching competencies and performance have less attention comparing with research performance. There is a lack of teaching indicators since there is no evaluation of a teacher and how he performs in class. They get the same 'prime de rendement' regardless their performance.

A set of recommendations are proposed in the general conclusion of this study in order to deal with the above observations. Besides, many topics in the higher education sector should be revised and improved starting by giving everyone his right and providing a healthy atmosphere to enhance scientific production and develop teachers' competencies to perform high level courses, because science is the key for any nation success.

Hypothesis testing :

From the findings of the case study analysis, and as stated in chapter one, we will test the research hypotheses as follows:

The null hypothesis:

H_0: The competency management practices has no impact on HEIs performance.

This assumption is false. From the findings, there is a relationship between competency management and performance even if it is statistically weak. For the university of Tlemcen, we have seen that it a good ranking among Algerian HEIs which means that its performance is good and its HR management is relatively good.

The alternate hypothesis:

H_1: there is a relationship between competency management and performance at the university.

This hypothesis is true. This result is supported by either literature and data collected from the case study. In order to support validity this result of this hypothesis, we will test the sub-hypothesis below:

The sub–hypothesis:

1. *Competencies management contribute positively to the performance of a university.*

We support this hypothesis. The literature has proved that Hr good practices leads to a better performance. The case study findings showed that all respondents expressed their desire for a better work environment and it will lead to perform well.

2. *Success in a scientific endeavour depends significantly on good systems of competencies management*

This hypothesis is supported as well. Research outcomes depends on management system and motivation. Researchers when are asked to produce papers in order to get promoted, they do it on a large scale. But when the motivation disappears (like when reaching the top of the grades scale), the willingness to produce more paper is weakened. The same thing for research laboratories environment, we have seen in our case study that researchers are not satisfied regarding the general atmosphere of laboratories an consider that it is not very useful to develop their research competencies.

3. *Even with a good competencies management system, the impact on performance will be very limited since higher education institutions are public institutions managed by rigid regulation and consequently cannot decide for their own procedures (recruitment criteria, incomes and expenditures, tuition fees, salaries…)*

This assumption is partially true. As we saw, it remains true that little is known about the mechanisms by which HR practices translate into competitive success. Due to the lack of understanding on mediating variables and their effect on HRM-Performance linkage the existing gap in explaining this link is referred to the "black box"(Boselie, Dietz, Boon, 2005). The data from the case study supports this theory as well. Universities are public institutions and have limited autonomy regarding HR management. The corp of teachers researchers have public services status, consequently, all regulation regarding this status applied on researchers except for some exceptions related to the specification of this corp. Nevertheless, we cannot deny the positive effect of fair treatment and good incentives on employees' performance. In addition, UoT has made available to staff a lot of structures to enhance teachers competencies related to their specific needs.

4. *The performance of a teacher is affected by his gender, age and grade.*

This assumption has 3 parts:

Gender: the assumption is false when relating performance with gender. Statistically from data analysis there is no correlation between the 2 variables.

Age: There is a relationship between age and performance. Older generally means have more experience and higher grade which leads to acquiring mere competences and consequently perform better.

Grade: The hypothesis is true in this part. Performance is related with the grade. Data analysis shows that quantitatively, conference teachers produce more comparing with all other grades. Hence, qualitatively, Professors has less quantity comparing with conference teachers but better quality of scientific production.

GENERAL CONCLUSION

General conclusion

Managing the career of the teacher-researcher is a delicate task in HEIs, given the importance of its mission in society. We are convinced that progress in understanding the relationship between competencies management and performance can be achieved by looking at the broader picture of developments in the field of higher education, public services, the speed of change within universities and what this implies for managing academic staff as teachers, researchers and managers.

In summary, the findings of the study indicate that higher education institutions do not use relevant and effective HR models. The HRM curricula requires review to ensure that HR practitioners are appropriately qualified. HR practitioners do not possess the competencies required to provide relevant and effective HR delivery in HE. In this respect, a new competency framework is recommended for HR Practitioners. Transformative leadership has a significant impact on the delivery of HR in HE. Institutionally, transformative leadership must be championed by executive managers. However, the HR function is at the forefront of leading transformative change initiatives. The findings indicate that social justice is a key theme in HR service delivery in HE. Current HR models do not focus on employee needs.

A recurring theme was that of the role that academics played in undermining HR competencies and institutional requirements, which participants felt contributed to dysfunctionality. An effective policy framework emerged as an important aspect for proper institutional functioning, as it was felt that managers and employees would be aware of the requirements and expectations from the universities. Participants raised issues regarding policy adherence, HR capability, ethics and conduct. The need for a compliance-based HR approach was unanimously agreed upon. It was noted that in order to uphold a compliance-based approach in HR, the commensurate skills in interpreting legislation were required.

We need to look beyond practices such as staffing and the management of human resource flows. These are the kinds of hygiene factors, which if not delivered cost-effectively will lead to underperformance of the HEIs. A real contribution to performance will only happen once we approach HRM from a more holistic and balanced perspective, including part of the organizational climate and culture, aimed at bringing about the alignment between individual values, corporate values and societal values. This will be a unique blending for each HEI, and thus contributes to sustained development of the country.

Suggestions and recommendations

In order to create value and deliver results, the HR department must begin not by focusing on the activities or work of HR but by defining the deliverables of that work. The organisation can also outsource their routine administrative tasks to third party vendors and consultants. Many organisations have started outsourcing their HR tasks to cut cost and improve the quality of their HR services. Many administrative functions such as recruitment and selection, reference checking, payroll processing, training, legal compliance, transport, canteen etc. can be outsourced, thereby relieving the HR department and HR professionals from the day to day administrative burden and helping them to focus on long term strategic activities (SHAIKH, 2012). Labour is not rare, but still expensive, almost the highest cost of a company ➔ for that reason, organisations have to recruit the right competency in the right place. To forecast/plan needed competencies, we need a strategic plan of the Institution, a road map that needs to be followed.

A set of suggestions and recommendations are presented below as a conclusion of the study results:

- A competency management tool should be implemented at each HEIs and relate them to a server at the ministry of higher education. That will facilitate the detection of adequate needed individuals (with specific qualifications) to participate in the sector projects and events.
- An article should be added at the employment contract of teachers stipulate a minimum requirement expected from a teacher per year: 2 research paper/year, pattern, communication…
- Grant for abroad seminars/Trainings should be on a result-oriented basis ➔ define result after coming back
- Describe jobs using competencies as well as duties and responsibilities.
- Select and recruit employees based on behavioral as well as technical competencies.
- Transition from the current performance appraisal process into a performance management process, including multi-source assessment, planning and goal setting, continual coaching to ensure results, and a year-end feedback summary meeting.
- Align training and development programs with HEIs goals and make them accessible to all employees.
- Effect new capabilities to support organisational development through Performance Consulting.
- Provide employees with proper orientation to the Institute, their departments, and their jobs.
- The way a rector is nominated should be changed. Respondents of the survey agree that the rector should be elected and not appointed by the ministry in order to give him more sense of responsibility and autonomy to take more bold and adequate decisions.
- Use classification and compensation programs to reinforce UoT's pay-for-performance philosophy and also position UoT favorably in the employment market.
- Implement a comprehensive recognition and rewards system. All efforts should be rewarded in a comprehensive and fair manner.
- Salary scale should be revised urgently. The Algerian academic has a salary level that is half that of his Tunisian and Moroccan counterparts, and slightly lower than Burkinabè, Ivorians, and Cameroonians. While in most of these countries salaries will experience

substantial increases, MESRS has just declared that the government is ruling out any increase in academic salaries(Khelfaoui, 2001)[1].

- Implement succession planning as the first step in human resources planning at UoT.
- Implement career development services to support both UoT's goals and employee interests.
- Measure impacts of HR practices at the Institute level.
- 12 Support HR practices with an integrated human resources information system (HRIS).
- Implement an employee communications program.[2]
- Describe jobs using competencies as well as duties and responsibilities.
- Select and recruit employees based on behavioral as well as technical competencies.
- Transition from the current performance appraisal process into performance management.
- Align training and development programs with HEIs goals and make them accessible to all employees.
- Effect new capabilities to support organisational development through Performance Consulting.
- Provide employees with proper orientation to the Institute, their departments, and their jobs.
- Use classification and compensation programs to reinforce HEI’s pay-for-performance philosophy and also position HEIS favorably in the employment market.
- Implement a comprehensive recognition and rewards program.
- Implement succession planning as the first step in human resources planning at HEIs.
- Implement career development services to support both HEI’s goals and employee interests.
- Measure impacts of HR practices at the Institute level.
- Support HR practices with an integrated human resources information system (HRIS).
- Implement an employee communications program[3].
- Although more numerous than in the past, universities are still crumbling under the weight of overstaffing and cheap education, provided by poorly trained teachers and without substantial teaching resources. Scientific research, to which the state allocates a miserable budget (barely 0.28% of GDP, of which 92% of the budget is for salaries and allowances), continues to be the poor relation of higher education. This is the lowest budget in Africa, with an average per country of 0.60% of GDP(Grim, 2021).
- Make more incentives to universities in order to improve their positions in the best world ranking websites like : Shanghaî, QS, THE. We suggest for example to add a line in the university budget, incomes section, related with rankings and papers published in SCOPUS & WoS.
- Motivate researchers to publish visible papers and conference communications by giving a budget to each laboratory with relation to number and quality of its publication.
- Like in some south African universities, an account can be opened to every academic staff held and managed by the university. This account is related directly to the scientific production of the researcher and will be used to finance his research. For instance, each time a

[1] Retrieved on 06/06/2021 from https://books.openedition.org/iremam/419?lang=en
[2] http://web.mit.edu/personnel/irt/compquick/compppractices.htm
[3] 13 propositions from http://web.mit.edu/reeng/www/hrpd/reports/Core/core-report.htm#Recommend

researcher publishes a paper, he get a reward in accordance with its quality. If he want for a training abroad, the university will finance his trip from that account.

- The recruitment system can be improved.
  - Some more objective criteria could be introduced to the evaluation grid. A candidate who has a WoS paper will be given privileges or more points.
  - An English language test could be introduced to the recruitment process.
  - The recruitment process should comprise the pedagogical competency evaluation. We suggest for example that the candidate could submit a video file where he teaches a group of student. This method is very useful to see the communication abilities and teaching skills and even his soft skills.
- Bonuses: The performance bonus 'La prime de rendement' could play an important role if we make it related to performance. The challenge is how this latter could be measured in a comparable way. I suggest that we use 360° feedback assessment. A survey/evaluation grid will be distributed at every end of the semester/course to students, to administration (Department head) and to the teacher itself to evaluate his performance during the session. This survey should be conceptualised in a way that it reflects the real performance of the teacher numerically.
- Think about a national ranking for Algerian universities and research centers. This mission should be done by a committee named by the minister in order to capitalize competencies of ranking to use them in other fields. This ranking should take into consideration the indicator of teaching performance and not research outcomes only – knowing that measuring teaching quality is very difficult. Top ranked institutions should have a reward, kind of increasing their budget and make it visible to others in order to motivate them to get the same rewards by increasing their ranking position.
- The ranking methodology has teached us a lot. We suggest that this experience could be used in establishing a national ranking methodology for many aspects at higher education institutions: abroad trainings ranking, laboratories evaluation, promotion conditions to an upper grade (Habilitation)...
- This mission is supposed to be assigned to the ranking committee described previously.
- Regarding performance measurement, the committee could establish some Key Performance Indicators (KPIs) to measure the outcomes of higher education institutions. It can for example set up a range of criteria for a teacher to get his prime de rendement.
- The ministry should invite all Algerian universities to fill the questionnaire of the ranking institutions to participate and be represented in international rankings.
- The issue of multiple IDs for the same institution should be cleared, in order to increase numbers and get real statistics for better rankings and visibility.
- Financial performance is the ultimate objective of all institutions. Researchers should be implemented in the finance process in both generate incomes and be rewarded to motivate them to be productive.
- Why a PhD should be via competition? A PhD can be open to those who are qualified for it, as the candidate submits his research project, then present it to an honest scientific committee, to whom the task of selection is entrusted. You choose a good number that matches the requirements of the job market. With the need to open university scholarships for those whose scientific level is strong or those whose living conditions do not allow. Also, PhD projects should be of two types: an academic doctorate directed to universities and research

centers and another professional directed to companies and economic institutions, which can be contracted with to finance/sponsor these projects1.

- Why not sending a doctoral funding grant in cash directly in student's account because it is allocated to him in the budget as a research laboratory member, and thus he has the freedom to use it the way it fits him. We eliminate many administrative procedures that exhausted the directors of laboratories and the university administration.
- Research projects: why not enact clear laws that allow the student to benefit from financial compensation like teachers? Thus, we embody the spirit of cooperation in the work team, as everyone benefits and we stay away from everything that increases the division between the class of students and the class of teachers to the extent that teachers are taking advantage of students.
- Give the student the freedom to choose the supervisor according to digital mechanisms, because most of the psychological crises that some students struggle with because of this matter. It is not acceptable that a research work relationship between two people who do not understand each other for a period of three years or more.
- Replace the so-called extra hours with another mechanism, which is the university institution's contract with doctoral students with a decent salary, except for the utmost need in certain fields;[2]
- Activate the rank of emeritus professor created by the lecturer-researcher status n° 08-130 in his article n° 52. This step will encourage professors to increase their activities and their scientific production with high quality. We recommend to not make the promotion to this grade systematic, but after fulfilling several rigorous and hard criteria in order to make the rank distinguished.
- Affiliation names should be merged in on and unique name related with the university of Tlemcen.
- Teachers have a good contribution in common skills like writing, thinking, communication skills. Other skills like emotional intelligence, soft skills, teamwork skills are not having the adequate attention. That can explain the weak soft skills of Algerian employees when they are in professional situations. The university should give more attention to teach this kind of essential competencies that results in synergy and high collective performance.
- The language issue should get more attention. A few numbers of documents were published in English in humanities and social sciences. A strategy to enhance English writing skills of researchers might be implemented. The language is a big factor for good visibility and internationalisation.

[1] Proposition of the professor CHOUCHANI Abidi on his facebook account on 13/01/2021
[2] These 4 proposition are from Prof ADALA LAADJAL published in his facebook account on 08/06/2021

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Annexes

Annex I : Questionnaire

"Competency management and its impact on university's academic staff performance"[1]

This questionnaire is part of a doctoral thesis which aims to obtain information on the impact of the competency management system on the performance of teachers in higher education institutions in Algeria.

We take the confidentiality of your responses very seriously. Your participation in this survey is voluntary and anonymous. If you have any questions, contact: malsi02@hotmail.fr

Thank you very much for your time and contribution

Personal information:
HE Institution:
Gender: ○ M ○ F
Grade: ○ Assistant ○ MAA ○ MAB ○ MCA ○ MCB ○ Prof ○ Vacataire
Administrative position: ○ Dean/director of institute ○ Vice-Dean ○ Institute deputy director ○ branch ○ Coordinator of the pedagogical accompaniment cell for newly recruited teachers ○ Director of a Laboratory ○ Head of Department ○ Head of department Assistant ○ Pedagogical coordinator ○ Responsible for field/specialty/training team ○ responsible for Quality Ensurance cell ○ Internal auditor and representative of the quality assurance unit of the University ○ Coordinator of a synodical structure ○ No administrative position
Age:

[1] The link for the questionnaire on google forms is: https://forms.gle/49uWTNQtEpKACQ616

○ 21-30 ○ 31-40 ○ 41-50 ○ 51-60 ○ >60
Experience in HE: ○ 1-4, ○ 5-9, ○ 10-14, ○ 15-19, ○ 20-24, ○ >25
Highest degree: ○ Bachelor ○ Doctorate ○ Magistère ○ Master ○ General partitionner
Field of research/study: ○ Art ○ Biology ○ Economics & Management ○ Electrochimics et environment ○ Engineering ○ Humanities ○ Informatics ○ Languages ○ Law & Politics ○ Maths ○ Nature & Earth sciences ○ Physics & Matter sciences ○ Sociology ○ Technology
Pedagogical competencies
Do you master the teaching mechanisms to teach and learn your speciality through appropriate theories and practices, taking into account the contribution of scientific research? (5-Excellent,4-Above Average,3-Average,2-Below Average,1-Very Poor)
Can you explain any idea (in your field of research) to your students? (5-Excellent,4-Above Average,3-Average,2-Below Average,1-Very Poor)
How would you rate your contribution to your students 'acquisition of the following competencies: (5-Excellent,4-Above Average,3-Average,2-Below Average,1-Very Poor) [critical / analytical thinking] [better communication] [Enabling students to apply the acquired skills and knowledge] [enrichment of vocabulary / concepts] [teamwork] [use of information and communication technology] [behavioural/Soft skills]

Do you think that students' willingness/readiness to learn (in general) affects pedagogical work? (5-Extremely,4-Very,3-Moderately,2-Slightly,1-Not at all)
The faculty takes into account the choices and capabilities of the teachers during the distribution of activities / modules: 0= I don't Know, 1=No, 2= Sometimes, 3=Yes
When you were hired, did you take part in the lessons of the newly recruited teachers accompaniment cell? (1=No, 2=Yes)
Do you think that the content of these lessons is appropriate and useful for fieldwork/practice as a teacher-researcher? (0=no answer, 1=no, 2=to some extent 3= Yes)
Rate your satisfaction about the level of the lecturers' presentations? (1=very unsatisfied, 5= very satisfied)
Digital competencies
Do you have online courses? (1= ○ No ○ in progress ○ yes
What do you use to your courses/conferences presentation? : □ Power □ Prezy □ Focusky □ Pdf □ audio file □ Other
What do you use to manage references in your papers / communications? WORD references □ EndNote □ Mendeley □ Zotero □ QiQQA □ Write them manually □ Other
Do you have an SNDL account? 1= No, 2=Yes
To what extent do you use ICT for: (1= very poor, 5= very strong) Study and research Knowledge exchange As a means of developing motivation and dynamism of teaching among students As a tool for reflexivity, ie self-assessment and self-career development
Research competencies
Please, what is your total scientific production? []: 0=0, 1=1-5, 2=6-10, 3=11-15, 4=15-20, 5=>20 National conference papers International conference papers Articles in national journals

Articles in international journals
What is your h-index? -1=Don't know, 0=0, 1=1, 2=2, 3=3, 4=4, 5=5-9, 6=10-20, 7=>20,
To what extent do you agree with the following statements related to research laboratories:(1-Strongly Disagree, 2-Disagree, 3-Undecided, 4-Agree, 5-Strongly Agree) [the research laboratory to which I belong is indispensable to develop my competence in the field of research] [I always produce useful papers with members of the laboratory] [I participate in all scientific forums organised by my laboratory]
To what extent do you agree with the following statements related to career management: (1: completely disagree - 5: strongly agree) [the current recruitment system helps to attract qualified researchers-lecturers staff] [the current system of grade promotion is good] [the current system of steps promotion (échelons) is good] [my university treats all academic staff in a transparent and fair manner] [my university announces the vacancy of administrative positions (for Teachers: dean, department head ...) to be able to apply for them]
In your opinion, are the trainings abroad in their current form beneficial to the performance of the teacher and the university?
Financial and management and incentives
Are you satisfied with your salary?
If there is a good teacher and another less good of the same grade and step, they will have the same salary. What is your comment on that?
Do you think your performance bonus (prime de rendement) rewards your performance? (1: completely unsatisfied - 5: very satisfied)
Are you rewarded for every scientific project or article you produce?0=Don't know, 1= No, 2= Yes, 3=Other
Do your superiors recognise your performance by offering prizes, special thanks, moral value …(1= Not at all, 5= Yes a lot)
Does your university use key performance indicators (KPI) in the teacher performance appraisal process? (0=Don't know what is a KPI, 1=No, 2=Yes)
How often has your teaching performance been evaluated?: -1= don't know, 0= Never, 1=1, 2=2-5, 3=Periodically, 4=Often with my students
How often has your performance in scientific research been evaluated?: 0= Never, 1=1, 2=2-5, 3=Periodically, -1= don't know
Regardless of all of the above, do you think that even with a good competency management system for the teacher, the performance will not improve due to the presence of other influences (the economic, social and political environment , the lack of workstations for students, decision makers do not value the results of university research, the lack of mastery of the English language which allows visibility on a global scale ...)
Closing and forward-looking questions
Taking everything into consideration, what is your evaluation of the following statements: (1 = completely dissatisfied, 5 = very satisfied) [I am satisfied with my performance in my work as a teacher]

[I am satisfied with my performance in my work as a scientific researcher] [I am satisfied with the e-learning process and the online education platform at my university] [I am satisfied with my university]
In the context of developing the management of competencies in Algeria, what is the extent of your agreement with the following suggestions: (1 = completely disagree, 5 = strongly agree) [What if the university changed the tuition fees system to into significant one and you benefitted financially] [What if the recruitment procedures are prepared by the university and not by rigid regulations from the ministry?] [Do you agree if the performance of the professor becomes evaluated periodically (once a semester) and be rewarded accordingly?] [What do you think if the grade promotion at the university is linked to the teacher performance, and he could be downgraded if his performance is decreased?] [What do you think if teachers recruitment becomes a contract basis system (CDD) but the wage is very motivating?] [Do you think that the criteria for selecting students to be registered at the university should be revised? besides criteria for master and PhD enrollement?] [Do you think that the researcher should be rewarded with a direct honorarium when he publish a paper in well known databases like Scopus/Web of Science?] [Do you agree that the position of university Rector becomes subject to election not nomination?]
In conclusion, what do you propose to promote the status of university teachers and higher education in general?