

The role of research laboratories in embodying the third mission of the university– Bordj Bou Arerridj University case study -

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Abstract: Through a descriptive analytical approach, this research aims to highlight the role of research laboratories in embodying the third function of the university through its three dimensions: continuing education, innovation, technological transfer and community contribution, at the University of Bordj Bou Arerridj, using the periodic ministerial evaluation of research laboratories.

The study reaches a set of results, including:

- ✓ The limited role of research laboratories in embodying the third function of the university, especially with regard to its second and third dimensions.
- ✓ The ministerial assessment includes many indicators to measure this role, but it remains far from modern indicators.

The study gives a set of recommendations, such as the necessity of adding a community service division in the organizational structure of the university in order to support the embodiment of research laboratories for the third function of the university.

Key words:The third mission of the university; ;continuing education, innovation, technological transfer , community contribution, research laboratories.

Jel Classification Codes: I23,A22

المخلص: يهدف هذا البحث إلى إبراز دور مخابر البحث في تجسيد الوظيفة الثالثة للجامعة من خلال أبعادها الثلاث: التعليم المستمر، والابتكار النقل التكنولوجي والمساهمة المجتمعية، بجامعة برج بوعريريج، باستخدام التقييم الوزاري الدوري لمخابر البحث. تم استخدام المنهج الوصفي التحليلي وتوصلت الدراسة إلى مجموعة من النتائج، منها: محدودية دور مخابر البحث في تجسيد الوظيفة الثالثة للجامعة لاسيما بالنسبة لبعدها الثاني والثالث. التقييم الوزاري يتضمن الكثير من مؤشرات قياس هذا الدور لكن يبقى بعيدا عن المؤشرات الحديثة. وقدمت مجموعة من التوصيات كضرورة إضافة مصلحة خدمة المجتمع في الهيكل التنظيمي للجامعة من أجل دعم تجسيد مخابر البحث للوظيفة الثالثة للجامعة.

الكلمات المفتاحية: الوظيفة الثالثة للجامعات، التعليم المستمر، والابتكار النقل التكنولوجي والمساهمة المجتمعية، مخابر البحث.

تصنيف JEL: I23,A22

1. Introduction:

The University, as a producer of knowledge, is today undertaking new tasks and functions in the light of changes and transformations in all fields; economic, social, cognitive, educational and political. The university tasks are no longer limited to traditional roles (the first teaching, and the second scientific research); they also evolve to include new tasks related to all aspects of life, which has produced the new concept of the university's third mission, reflecting the new university role; through three key dimensions: "Continuing Education", "Innovation and Technology Transfer", "Community Contribution. (Louelhi & Choutri, 2018)

The university's commitment toward its society is a crucial process for responding to its needs; An effective university engagement toward its society can have an explained impact on its growth, and on its educational, health, social, and economic development (Farish, 2014, pp. 49-56). Scientific knowledge is often an endless complex process and a subject that is always debatable, making communication about science very important, so research laboratories have become more important as one of the central components of the University, Where has science become an integral part of society by influencing the personal life of the individual and of society as a whole, by applying widely to scientific knowledge and its role in embodying policies in all fields and recognizing the importance of scientific results (Report, n.d.)

In fact, the role of the research laboratory is not the creation of the moment, the laboratory is given a central and prominent role in all science, specifically in experimental science. By examining issues related to laboratory research findings as a means of education, many studies discusses views on these issues by

reviewing the history, goals, and results of laboratory research as a particular learning tool in the pre-science, These studies culminated in a series of suggestions made by researchers to clarify the role of the laboratory in science. (Hofstein & Lunetta, 1982, pp. 201-217)

There are very important studies that discusses the role of research institutions and laboratories of various kinds, including the study (Intarakumnerd & Goto, 2018), which attempted to investigate the roles of five public research institutes prominent; namely: Fraunhofer, NIST, CSIRO, AIST, and ITRI. Its mission is to support industry development technology in its national innovation systems as one of the important actors in many national innovation systems and the role of PRIS is often described as the actor that helps technology bridge the gap between basic research and development; This study discussed critical aspects of strategies and management of public research institutes in industrialized countries, the development of the research and funding agenda, the management of researchers, the intermediate roles and performance evaluation, and also the policy implications of other public research institute indicators in industrialized countries. The study of (Tetila & Batoush, 2019),on websites and research laboratories gave a descriptive evaluation study of the subject of websites in the Algerian university research laboratories as a model, By adopting a questionnaire form. This study showed a big deficit and a clear weakness in these sites, especially in the objective sense, as the presence of most of these laboratories in the virtual center is still limited, requiring officials to be aware of the importance of these sites in order to be interested on them in all aspects of form and objectivity.

The study (Falouh, 2018), highlights The reality of the university scientific research laboratories and the proposals for their development (according to a sample of social science professors),

aimed to identify the reality of the scientific research laboratories at the university and proposals for their development from the perspective of a sample of the human and social sciences professors at the university center of Glezan. This study found that scientific research laboratories are in an unsatisfactory state, their role and contribution in development are weak, there are serious consequences for the researcher, university and society due to weak research laboratories. the study offers a range of suggestions to develop scientific research laboratories, particularly through a review of the general scientific research policy and research laboratories policy, in the current crisis, a scientific, administrative and financial assessment of the laboratories and their feasibility should be developed, and in particular, the various studies have demonstrated the poor situation of the research laboratories are far from contributing to social and economic development.

Finally, a study of European Commission under the lifelong Learning Program, 2008 (the General Administration of Planning Saudi Arab, 2012, p. 17) suggested a set of indicators to measure the three dimensions of the new role of universities or the third function of the university (continuous education, innovation, technology transfer, and community contribution); These indicators are still controversial, as they are not agreed on because of the specificity of each country, but remain important references, and they are to be adopted in our studies.

1.1 Problematic: The University's role has exceeded the traditional functions of both education and scientific research to a third function, which is the study of the university relationship with its non-academic society (economic enterprises, civil society and government), By the embodiment of the three dimensions of new role of universities or the third function of universities: Continuing education; innovation and technology transfer; and community contribution. The most important mechanism for the university to reflect this new role is the research

laboratory established in Algerian universities. The Ministry of higher Education and Scientific Research has therefore been submitting these laboratories to periodic evaluation in accordance with an evaluation model of these laboratories, through a set of approved standards. This paper is therefore aims to answer the following questions:

- Does the ministerial evaluation keep pace with the new international indicators for measuring the dimensions of the new role of universities (continuing education; innovation and technology transfer; and community contribution)?
- What is the role of research laboratories in **embodying the third mission of the university** through ministerial evaluation of research laboratories based on the standards adopted by a sample of the Borj Bou Arreridj University Laboratories?

1.2 Study hypotheses: The study is based on two hypotheses:

- There is a limited keeping up with the international indicators in the ministerial evaluation of the indicators for measuring the dimensions of the new role of universities (continuing education; innovation and technology transfer; and community contribution).
- Limited role of research laboratories in the service of society through ministerial evaluation of these laboratories.

1.3 Research objective: This paper aims to achieve a range of objectives, including:

- Provide an objective reading of the role of research laboratories in serving society by studying a sample of these laboratories at Borj Bou Arreridj University
- Discussion of the criteria adopted in the ministerial evaluation model in terms of their adaptation to the three dimensions international indicators of the University's new role of serving the community.

1.4 The limits of study:

- Given the presence of many indicators to measure the dimensions of the new role of the university, we will use a set of indicators proposed by the European Commission within the framework of the Lifelong Learning Program).
- The study is an exploratory one that was limited to two laboratories only, due to the inability to obtain the ministerial evaluation of the rest of the research laboratories of the University of Bordj Bou Arreridj.
- The evaluation is for the year 2019 only, because the ministry does not send the details of the laboratory evaluation, and it is prepared based on the main points found in the ministerial evaluation.

1.5 Research methodology: The analytical descriptive approach in this study was used to highlight the new role of the university in serving its community through a sample of research laboratories located at Borj Bou Arreridj University, based on a reading of the periodic ministerial evaluation of these laboratories.

1.6 Terms of study:

- **The new role of universities** (third mission of universities): All the activities and services the university carries out primarily for its non-affiliates members (members of society, organizations and institutions..), as a tool for applying knowledge in various fields and translating it into reality. The new role of the University concerns the University's relationship with the non-academic outside world: Industry, public authorities and society. It is also strongly linked to both the first (education) and second (research) functions; and to how university capabilities are integrated into the economy and society (community service).
- **Continuing education:** A system of education or training that begins after or during the formal education phase and is not limited to a specific age group; it ensures that the knowledge and

skills of the student are updated in line with scientific development, to include all stages of formal and non-formal education to alleviate poverty and achieve sustainable development and to gain employment, income and stability through formal or informal means.

- **Innovation:** Generating innovative ideas and developing new products, services and processes that are better at life quality. The importance of innovation lies in increasing economic growth, enhancing competitiveness and creating new jobs.
- **Community participation:** Community participation in education is defined as the efforts of the educational institution and its administrators to collaborate and collaborate with the community and surrounding environment, This is to build bridges of interrelationships, cultures, and concepts that are common and mutually reinforcing, and that promote education as an institution, as well as as coherent processes and procedures, in order to enhance the role of the educational institution in society.
- **European Indicators and Ranking Methodology for University Third Mission** (DelphiE3M-project) Proposed by the European Commission under the lifelong Learning Program.

2- Analyze Data and results:

The located research laboratories in Algerian universities are among the most important mechanisms that help the university in embodying the third mission of university . Therefore, the ministry has been subjecting these laboratories to a periodic evaluation according to an evaluation model for these laboratories, through a set of approved criteria as shown in Appendix No (1). The European Commission also, presented (according to Annexes 3, 4 and 5) a set of indicators related to the dimensions of the third function of the university (innovation continuing education, and community contribution). The comparison between the ministerial evaluation of research laboratories , and the indicators adopted by the European Commission, shows the limited compatibility of the indicators adopted by the ministerial evaluation, especially Regarding modern concepts of innovation; Where it was observed

the absence of many indicators (from indicator 10 to indicator 20) such as: the number of laboratories and buildings established (co-financed); the number of employees of the universities who have temporary jobs outside the academic sector; and the number of faculty members participating in Professional enterprises, networks, organizations and councils.

The comparison illustrates a limited keeping up with the international indicators in the ministerial evaluation of the indicators for measuring the dimensions of third mission of universities (continuing education; innovation and technology transfer; and community contribution), with the absence of some modern indicators. **This proves the validity of the first hypothesis.**

To highlight knowThe role of research laboratories in embodying the third mission of the university in Bordj Bou Arreridj University, two laboratories was chosen from the University of Bordj Bou Arreridj : Economic Studies of the Industrial Zones in light of the New Role of the University laboratory (LEZINRU), and the Characterization and Development of Natural Resources laboratory. The results were as shown in the following tables through the initial ministerial evaluation of research laboratories at Mohamed Bachir Brahimi University, Bordj Bou Arreridj in 2019 :

Table No 1: The initial ministerial evaluation of research laboratories at Mohamed Bachir Brahimi University, Bordj Bou Arreridj 2019.(Part1)
Points

Themes of the ministerial evaluation research laboratories	Scientific production	Visibility, Readability and University Polarization	Adaptation and interaction with the economic, social and cultural environment
Economic Studies of the Industrial Zones in light of the New Role of the University	158	413	53

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Laboratory(LEZINRU)			
Characterization and Development of Natural Resources laboratory	1012	595	0

Source: Prepared by the researcher with the approval of the initial evaluation of the research laboratories of Bordj Bou Arreridj according to the ministerial model: Vice Presidency of the University of Bordj Bou Arreridj for Scientific Research, 2019.

The results of the table 1 reveal poor performance in the axis of the university's interaction with its social, economic and cultural environment compared to the rest of the evaluation axes (the axis of scientific production and the axis of visibility, readability and university polarization) set by the ministry, where only 53 points were recorded for the : Economic Studies of the Industrial Zones in light of the New Role of the University laboratory, while the Characterization and Development of Natural Resources laboratory did not score any points.

As for the other axes, good results were recorded compared to the dimension of interaction with the economic, social and cultural environment, 1012 and 158 points were recorded in the production dimension, and 595 and 413 points were recorded for the two laboratory. These results greatly support what was previously suggested that the Algerian University remains far from the process of interacting with its social, economic and cultural environment.

The results of the table 2 shows a clear weakness concerning the rest of the indicators that reflect the most important indicators of social participation, especially for the Characterization and Development of Natural Resources laboratory/

Table 02: The initial ministerial evaluation of research laboratories at Mohamed Bachir Brahimi University, Bordj Bou Arreridj 2019.(Part2)

Themes of the ministerial evaluation research laboratories	Organizing scientific convoys, exhibitions and other activities with the aim of spreading science and technology and spreading scientific culture	Partnership with the social and economic sector	Post graduate specialized studies	Visibility on the Internet
Economic Studies of the Industrial Zones in light of the New Role of the University Laboratory(L EZINRU)	129	21	8	0
Characterization and Development of Natural Resources laboratory	0	0	0	0

Source: Prepared by the researcher with the approval of the initial evaluation of the research laboratories of Bordj Bou Arreridj according to the ministerial model: Vice Presidency of the University of Bordj Bou Arreridj for Scientific Research, 2019.

The biggest scores were recorded in the evaluation of scientific production, specifically scientific articles and interventions, with weak in patents and the rest of the indicators. Some indicators are overlapping in the ministerial evaluation

according to the three dimensions of the new role of universities, such as the patent index set up within the scientific production indicators and falling within the innovation indicators.

The new role of the research laboratories in the third mission of the university exists through many indicators related to continuing education, innovation, and community contribution. However, there is a limited role of research laboratories in the third mission of the University through the ministerial evaluation of these laboratories, given the evaluation of the study sample. regard to the indicator of continuing education, innovation, and societal contribution, which proves the validity of the second hypothesis.

4. CONCLUSION

The study provides a set of recommendations, including:

- The necessity to keep up with the international indicators in the ministerial evaluation of the research laboratories, taking into account the Algerian specificity (objective evaluation).
- The moral and material valorization of the role of the research laboratories in Algeria through real awareness of their importance, because their weak role in community service is linked to the weakness of the adopted policies.
- review its conduct and provide substantive conditions for the embodiment of its objectives as the rehabilitation of its human component.
- Add the Community Service Department in the University's organizational structure to coordinate with the Research laboratories in order to serve the Community. Definition and presentation of the detective

5- Footnotes and references:

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6. Appendices

Appendix No 1: Research Laboratories at the University of Bordj Bou Arreridj

كلية الإلحاق	تاريخ الإنشاء	اسم المخبر
كلية علوم الطبيعة والحياة	2012	مخبر توصيف وتنمية الموارد الطبيعية Laboratoire Caractérisation et Valorisation Des Ressources Naturelles
كلية العلوم والتكنولوجيا	2015	مخبر الإلكترونيك والاتصالات المتقدمة Laboratoire d'électronique et des télécommunications avancées LETA
كلية العلوم والتكنولوجيا	2014	مخبر فيزياء المواد والبنية النانومترية Laboratoire de physique des Matériaux Rayonnement et nanostructures LPMRN
	2007	مخبر المواد والأنظمة الإلكترونية Laboratoire Matériaux et systèmes electroniques LMSE
كلية العلوم الاقتصادية والتجارية وعلوم التسيير	2014	مخبر دراسات الاقتصادية حول المناطق الصناعية في ظل الدور الجديد للجامعة - حالة برج بوعريريج - Laboratoire d'études économiques sur les zones industrielles et le nouveau rôle de l'université, -le cas de Bourdj Bou Arreridj- LEZINRU
كلية العلوم الاقتصادية والتجارية وعلوم التسيير	2012	مخبر الدراسات والبحوث في التنمية الريفية laboratoire d'Etudes et de Recherches en Développement Rural
كلية الحقوق والعلوم السياسية	2018	مخبر العدالة السيبرانية Laboratoire la cyber justice

Appendix No 1: Indicators for measuring the dimensions of the new role of universities

Continuing Education

The following list of indicators was selected for the CE dimension:

CE Indicators

- CE0-11: PRESENCE OF CE IN THE MISSION OF THE HEI
- CE0-12: PRESENCE OF CE IN THE POLICY AND/OR THE STRATEGY OF THE HEI
- CE0-13: EXISTENCE OF AN INSTITUTIONAL PLAN FOR CE IN THE HEI
- CE0-14: EXISTENCE OF QUALITY ASSURANCE PROCEDURE FOR CE ACTIVITIES
- CE1-11: CE PROGRAMMES ACTIVE FOR IMPLEMENTATION
- CE1-12: CE PROGRAMMES DELIVERED WHICH HAVE A MAJOR AWARD UNDER HIGHER EDUCATION SYSTEM
- CE1-13: PARTNERSHIP WITH PUBLIC AND PRIVATE BUSINESS CE PROGRAMMES DELIVERED IN THAT YEAR
- CE1-14: INTERNATIONAL CE PROGRAMMES DELIVERED
- CE1-15: FUNDED CE TRAINING PROJECTS DELIVERED
- CE1-16: CREDITS OF THE DELIVERED CE PROGRAMMES
- CE4-11: CREDITS ENROLLED
- CE4-12: REGISTRATIONS IN CE PROGRAMMES
- CE4-14: CE CREDITS ENROLLED REFERRED TO THE TOTAL CREDITS ENROLLED
- CE6-11: QUALIFICATIONS ISSUED REFERRED TO TOTAL CE REGISTRATIONS
- CE7-11: STUDENTS SATISFACTION
- CE7-12: KEY STAKEHOLDER SATISFACTION
- CE7-13: COMPLETION RATE FOR ALL PROGRAMMES
- CE8-11: CE PROGRAMMES WITH EXTERNAL ACCREDITATIONS

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Technology Transfer & Innovation

The following list of indicators was selected for the TTI dimension:

TTI Indicators

- TT10-i1: PRESENCE OF TTI IN THE MISSION OF THE HEI**
- TT10-i2: PRESENCE OF TTI IN THE POLICY AND/OR STRATEGY OF THE HEI**
- TT10-i3: EXISTENCE OF AN INSTITUTIONAL ACTION PLAN FOR TTI IN THE HEI**
- TT11-i1: LICENSES, OPTIONS AND ASSIGNMENTS (ACTIVE AND EXECUTED, EXCLUSIVE AND NON-EXCLUSIVE) TO START-UPS OR SPIN-OFFS AND EXISTING COMPANIES**
- TT11-i2: BUDGET COMING FROM REVENUES FROM COMMERCIALISATION OF HEI KNOWLEDGE**
- TT12-i1: START-UPS AND SPIN-OFFS ESTABLISHED**
- TT13-i1: CREATIVE COMMONS AND SOCIAL INNOVATION PROJECTS THAT HEI EMPLOYEES ARE INVOLVED IN**
- TT14-i2: R&D SPONSORED AGREEMENTS, CONTRACTS AND COLLABORATIVE PROJECTS WITH NON-ACADEMIC PARTNERS**
- TT14-i3: BUDGET COMING FROM INCOME OF R&D SPONSORED CONTRACTS AND COLLABORATIVE PROJECTS WITH NON-ACADEMIC PARTNERS**
- TT14-i4: CONSULTANCY CONTRACTS**
- TT14-i5: POSTGRADUATE STUDENTS AND POSTDOCTORAL RESEARCHERS DIRECTLY FUNDED OR CO-FUNDED BY PUBLIC AND PRIVATE BUSINESSES**
- TT15-i1: CREATED (CO-FUNDED) OR SHARED LABORATORIES AND BUILDINGS**
- TT16-i2: COMPANIES PARTICIPATING IN CONTINUOUS PROFESSIONAL DEVELOPMENT COURSES (CPD)**
- TT16-i3: HEI EMPLOYEES WITH TEMPORARY POSITIONS OUTSIDE OF ACADEMIA**
- TT16-i4: NON-ACADEMIC EMPLOYEES WITH TEMPORARY POSITIONS AT HEIS**
- TT16-i5: POSTGRADUATE THESES OR PROJECTS WITH NON-ACADEMIC CO-SUPERVISORS**
- TT16-i7: JOINT PUBLICATIONS WITH NON-ACADEMIC AUTHORS**
- TT16-i8: ACADEMIC STAFF PARTICIPATING IN PROFESSIONAL BODIES, NETWORKS, ORGANIZATIONS AND BOARDS**
- TT16-i9: EXTERNAL ORGANIZATIONS OR INDIVIDUALS PARTICIPATING AT ADVISORY, STEERING, VALIDATION, REVIEW BOARDS TO HEIS, INSTITUTES, CENTRES OR TAUGHT PROGRAMMES**
- TT16-i10: PRESTIGIOUS INNOVATION PRIZES AWARDED BY BUSINESS AND PUBLIC SECTOR ASSOCIATIONS OR FUNDING AGENCIES (NATIONAL AND INTERNATIONAL)**

Social Engagement

The following list of indicators was the selected for the SE dimension:

SE Indicators

- SE0-i1: PRESENCE OF SE IN THE MISSION OF THE HEI
- SE0-i2: PRESENCE OF SE IN THE POLICY AND/OR STRATEGY OF THE HEI
- SE0-i3: EXISTENCE OF AN INSTITUTIONAL ACTION PLAN FOR SE IN THE HEI
- SE0-i4: BUDGETARY ASSIGNMENT TO SE
- SE2-i1: ACADEMICS INVOLVED IN VOLUNTEERING ADVISORY
- SE3-i1: EVENTS OPEN TO COMMUNITY/PUBLIC
- SE3-i2: RESEARCH INITIATIVES WITH DIRECT IMPACT ON THE COMMUNITY
- SE3-i4: COST OF STAFF/STUDENT HOURS MADE AVAILABLE TO DELIVER SERVICES AND FACILITIES TO COMMUNITY
- SE3-i5: PEOPLE ATTENDING/USING FACILITIES
- SE4-i1: PROJECTS RELATED TO EDUCATIONAL OUTREACH
- SE4-i2: ACADEMIC STAFF AND STUDENTS INVOLVED IN EDUCATIONAL OUTREACH ACTIVITY
- SE4-i4: BUDGET USED FOR EDUCATIONAL OUTREACH
- SE4-i5: COMMUNITY PARTICIPANTS IN EDUCATIONAL OUTREACH ACTIVITY
- SE4-i7: ACTIVITIES SPECIFICALLY TARGETING DISADVANTAGED STUDENTS /COMMUNITY GROUPS
- SE4-i9: COMMUNITY REPRESENTATIVE ON HE BOARDS OR COMMITTEES
- SE4-i11: GRANTS/DONATIONS/CONTRACTS ARISING FROM ENGAGED PARTNERSHIPS

Source: Final Report of Delphi Study E3M Project - European Indicators and Ranking Methodology for University Third Mission, issued by the European Commission and Ranking Methodology for University Third Mission, , Education and culture DG lifelong learning programme, 2008, p 13,19,27.

Appendix No 3:Summary of the ministerialevaluation model for a researchlaboratory in Algeria

Definition and presentation of the laboratory	معايير التقييم	تعريف وتقديم المخبر
	1/ التعريف بالمخبر Introducing the laboratory	
	2/ التعريف بالفرقة Introducing the squad	
	3/ التصنيف بالموضوعات بالفرقة Thematic classification of the squad	
	4/ القائمة المفصلة لأعضاء الفرقة (طلبة الدكتوراه، نظام LMD، الخ)	
	Detailed list of the squad members (PhD students, LMD system,etc) 5/ وصف لعمليته بالبرنامج بالفرقة (100 - 300 كلمة)	
	A scientific description of the band's research program (100 - 300 words)	
	6/ التطابق بين البرنامج الأول للفرقة وإنجازه (50 - 100 كلمة) Congruence between the squad's initial program and its achievement (50 - 100 words)	
	7/ محيط وصعوبات (50 - 200 كلمة) Surroundings and difficulties (50 - 200 words)	
	8/ أعمال قيد الانجاز (<100 كلمة) Work in Progress (>100 words)	
	9/ بعض المؤشرات: المكان المخصص للباحث، الزمن الذي يقضيه الباحث بالمخبر، الأدوات المخصصة للبحث الحالي. Some indicators: the place allocated to the researcher, the time the researcher spends in the laboratory, the tools designated for the current research.	
	10/ معلومات إضافية Additional information	
	11/ ملاحظات Notes	
Scientific production	1/ النشر في المجلات المصنفة وغير المصنفة، الدولية والوطنية	الإنتاج العلمي

Publishing in classified and unclassified journals, international and national journals

2/ المؤلفات: كتب، مطبوعات، فصول من كتب

Publications: books, polycols, chapters of books

3/ ناشر أو عضوية نشر

Publisher or publishing membership

4/ براءة اختراع

Patents

Visibility, Readability and University Polarization

1/ حصة علمية أو أعمال موجهة في محاضرة علمية أو

درس في ورشة عمل

Directed works in a scientific lecture or a lesson in a workshop

الإشعاع،

المقروئية

والاستقطاب الجامعي

1/ مداخلة ضمن محاضرة علمية

Intervention in a scientific lecture

3/ المشاركة في المدارس الموضوعاتية للبحث

Participation in thematic schools of research

4/ مشاريع وبرامج البحث الحالية

Current research projects and programs

5/ رئيس أو عضو اللجنة العلمية و/أو لجنة تنظيم

محاضرة أو ورشة عمل

Chairman or member of the scientific committee and/or the organizing committee of a lecture or workshop

6/ مذكرات أو أطروحات موجهة وتمت مناقشتها

Reports or theses directed and discussed

7/ الشهادات والجوائز

Certificates and Awards

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	<p>8/عضو لجنة التحكيم لمناقشة الدكتوراه أو التاهيل</p> <p>Member of the jury to discuss a doctorate or habilitation</p>	
<p>Adaptation and interaction with the economic, social and cultural environment</p>	<p>1/تنظيم قوافل علمية ومعارض ونشاطات أخرى بهدف نشر العلوم والتكنولوجيا ونشر الثقافة العلمية</p> <p>Organizing scientific convoys, exhibitions and other activities with the aim of spreading science and technology and spreading scientific culture</p> <p>2/الشراكة مع القطاع الاجتماعي والاقتصادي</p> <p>Partnership with the social and economic sector</p> <p>3/الدراسات المتخصصة في ما بعد التدرج</p> <p>Post graduate Specialized Studies</p>	<p>التلاؤم والتفاعل مع المحيط الاقتصادي الاجتماعي والثقافي</p>
<p>Visibility on the Internet</p>	<p>1/مرجعية موقع الانترنت ضمن محركات البحث العلمية المتخصصة</p> <p>Website referenc ewithin the specialized scientific searchmotors</p> <p>2/عدد صفحات موقع الفرقة على شبكة الانترنت</p> <p>3/عدد الوثائق في شكل pdf, ps, doc, docs, ppt, tex التي أشير إليها في محركات البحث العلمية المتخصصة</p> <p>Number of documents in the form of</p>	<p>الوضوح على شبكة الإنترنت</p>

pdf, ps, doc, docs, ppt, tex that were referred to in specialized scientific searchmotors