Policies and Mechanisms to Promote the Production of Knowledge and its Effects on University Scholars: Comparative Analysis among Public Universities in the Northeastern Region of Mexico

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Abstract: The production of knowledge goes through a dominant moment that according to the typology of Gibbons, Limoges, Nowotny, Schwartzman, Scott & Trow (1997) and other authors is inserted in the production mode 2 called "Emergent mode" where a transdisciplinary, heterogeneous and heterarchical structure is predominant. The production of knowledge is carried out in context of application, configured by a diverse set of intellectual and social demands. The importance of knowledge and the impact that science-oriented policies have had on the forms of knowledge production by the scholars of the tertiary education is now recognized. These policies have somehow influenced the academy by moving from a personal activity to a community-based profession, fostering a trend towards collective work, with objectives linked to specific social and economic demands whose cost can only be absorbed by the State or those competitors of the industrial world; it moves between small science (made by individuals or small groups) to a great science characterized by groups of researchers participating in programs and wider networks, fully institutionalized, highly professionalized and clearly specialized. Thus, this communication aims to show the existing relationship between the policies that the Mexican State has been promoting to public universities about the production of knowledge that university scholars develop as part of their substantive functions. It is evident how these policies are being interpreted and operationalized through mechanisms that favor (or not) the production of knowledge and how the results of this production impact both inside the university study houses as well as the social and productive sectors. In particular, a comparative analysis is carried out among five public university institutions that make up the northeast of Mexico.

Keywords: *Policies; productivity; scholars; public university; academic entities.*

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1. The context

The production of knowledge was not the mission of the universities in their origin. The appearance of universities dates back to the 12th century of the Middle Ages and their main and only mission was about teaching. The incorporation of knowledge production was originated at the beginning of the 19th century promoted by W. Humboldt (1993, as cited in Hohendorf, 1999) for whom science constituted the fundamental principle of the university. It was in the American universities where the dominant model of this type of institutions was created worldwide. At the postgraduate level, they adopted the German university approach and incorporated scientific research, and at the Bachelor level (or undergraduate) they continued the Napoleonic model, that is, professionalizing and with a strong tendency for the teaching function. In Latin America and particularly in Mexico, the universities were structured during the Colony according to the Spanish model, influenced by the Napoleonic model of a professionalizing university and gradually incorporated the new tendencies until becoming an institution that organically linked the generation, dissemination and application of the knowledge.

The production of scientific knowledge employs systematic mechanisms of structural organization and leads to establish a reference framework for its development and strengthening.

The university with an integral vision of its functions represents the best scenario for the collective construction of knowledge. Then comes the knowledge that privileges interactivity over unilateralism and an exchange between those who possess scientific knowledge and those sectors of society that possess and demand other types of knowledge. In this context, the research groups constitute, mainly, the real units in which knowledge is produced, they are the result of the increase of the associability between the scholars and their research objects. Research groups are understood as a group of scholars that share a common interest and research about it through one or more lines of research for production, innovation, transfer and application of knowledge. Particularly, in Mexican public universities these research groups acquire the name of Academic Entities (CAs) which: work on a common theme, regularly develop research activities framed in one or more lines of work, communicate in co-authorship the results obtained and train human resources in research. The dynamic of knowledge generation today is supported by collaborative networks between the same universities and higher education institutions, with non-educational

organizations, with local, regional and international social and productive sectors, reflecting the relationships between academic researchers who can join and work collaboratively through academic and employment links. Working in groups and networks proves to be more productive and effective than when working in isolation or with poor cooperation.

2. The modes of knowledge production

According to Gibbons et al. (1997) there are two ways of producing knowledge: a traditional way to which they give the name of Mode 1, and the new way of production of knowledge as Mode 2; in this way both modes maintain certain characteristics that differentiate them, but both keep a linked relationship. In Mode 1 or traditional knowledge, this is produced according to its norms, methods and values. When talking about Mode 1, it refers to scientists and science, they propose solutions to problems in different contexts which are governed by the interests of a certain community. The important features of knowledge in this mode of production are: discipline, homogeneous and hierarchical.

In Mode 2 of knowledge production, more general terms are used. This is carried out in a context of application. The relevant features of knowledge are: transdisciplinary, heterogeneity, transience and socially responsible and applicable. The production of knowledge in Mode 2 is the result of a process in which the factors of supply and demand operate, where supply sources are increasingly diverse, and demands are differentiated forms of specialized knowledge. The consensus between both is conditioned by the context of application, so that the knowledge produced is really contextualized. In Mode 2, creativity manifests as a group phenomenon, in which the individual contribution makes sense within a collective, and quality control is exercised as a socially extended process that responds to various interests in a given application process. Due to its transdisciplinary condition, dissemination is increased, and there is an advance in new contexts of application and use.

3. National public policies towards scholars and their productivity

The federal policies that revolve around scholars generate great expectations for those who can participate in them. The evolutionary process that the scholars have gone through in recent years has brought about the transformation in their traditional role, from teaching to teaching-research-management and the policies of the last fifteen years have promoted new processes in the generation and application of knowledge and

the recognition of its productivity. The changes in the system of recognition and rewards of academic work have caused a deterioration in the institutional and social commitment of the activities carried out by scholars. The policies of the State, as well as of the universities themselves, related to the design and application of incentive programs have conditioned their granting to the productivity of each scholar, thus replicating a model of American origin called payment for merit. The university institutions have seen these incentive programs as a possibility of recognition for their scholars, which eventually provides them with more financial support. Policies and incentive programs have generated greater internal activity among university scholars, that is, they act as an incentive for individual participation and more demanding, than those diluted in the aspirations of the group. The possibility of entering the Teaching Performance Incentive Program (*ESDEPED*), the Teacher Improvement Program (*PRODEP*) and the National System of Researchers (*SNI*) has served as an incentive for scholars to do it more effectively by virtue of the economic incentive that it represents more than the contribution to the development of research and academy per se. In this scenario, the perspective of incentive policies and programs is located in the context of: a) an "Audit State", which operates monitoring mechanisms remotely focused on the evaluation of results, leaving the processes to be handled by the university institutions, b) the promotion of new forms of financing supported by a clearer connection of the university with the economy and society, to face and dose the economic resources and the rising costs of higher education and science, c) the administrative modernization of university institutions that are increasingly oriented by clear criteria of efficiency, leaving aside the conducting political model used in the past; and d) the operation of extraordinary remuneration programs based on the evaluation of the performance of scholars based on productivity indicators. This scenario has triggered studies on the university that show the organizational context in which the scholar develops, standing out the works of the self-study group of the Mexican public universities led by Cazes and Ibarra (2010).

4. The university scholars and their productivity

Sánchez et al. (2013) point out that there is a large number of studies and theoretical developments on the subjects of knowledge and their forms of production; University studies from sociological and organizational perspectives; and studies about scholars in their role of generating knowledge, whether they are called intellectuals, scientists, researchers.

However, empirical studies that have developed around the group work of scholars in the production of knowledge in the state public universities are still emerging. In the aforementioned context it is then important to refer to the project called "*Collective modes of knowledge production in the scholars of State Public Universities (UPEs)*" that has been developed by the Network of Studies on Educational Institutions (*RESIEDU*) in Mexico. This project arose from the transformations in the ways of knowledge production that are presented in contemporary society, particularly the way in which these transformations impact on a growing trend towards the collective work of scholars. It is therefore, that the members of the *RESIEDU*, composed of six Mexican universities, take the matter of the scholars as object/subject of study, which presents as a constant that induces indignation, the construction of problematic questions and the search for analytical elements that allow to reconstruct ideas and reflexive thoughts on one of the nodal points of academic practices: the production of knowledge. The project in question has a national coverage in which the total population defined by the sampling frame was 16,080 scholars, among them: teachers, researchers and teacher-researcher. As the total sampling frame population is divided into three strata, this led to the calculation of 3 sample sizes, one for each group. The sample size calculation was performed with an error of 4%, highlighting a reliability of 95% and an error of 4% obtaining a total sample size of 620 subjects investigated.

4.1. Academics that participate and follow the guidelines of federal policies.

The following tables present data from the scholars of 5 public *IESs* in Mexico that belong to the Northeast zone defined by the National Association of Universities and Institutions of Higher Education (*ANUIES*): Universidad Autonoma de Coahuila (UAC), University Autonoma de Nuevo León (UANL), Universidad Autonoma de San Luis Potosí (UASLP), Universidad Autonoma de Tamaulipas (UAT) and Universidad Autonoma de Zacatecas (UAZ). Among the general data, the proportion of scholars who have attended the policies related to having an academic profile defined in the *PRODEP* is noted, as well as the proportion of scholars who belong to the SNI and the level they have.

Table 1. Scholars with a PRODEP profile

PRODEP	UAC		UANL		UASLP		UAT		UAZ	
Profile	Frequency %		Frequency %		Frequency %		Frequency %		Frequency %	
No	3	23.1	2	7.4	2	10.5	1	33.3	1	6.3
Yes	10	76.9	25	92.6	17	89.5	2	66.7	15	93.8
Total	13	100.0	27	100.0	19	100.0	3	100.0	16	100.0

In the previous table it is evident that the scholars are attending the policies in a different way. From highest to lowest are the scholars of UANL, UAZ and UASLP, which present the highest proportion of scholars with the Desirable PRODEP Profile.

Table 2. Scholars who belong to the SNI

SNI	UAC		UANL		UASLP		UAT		UAZ	
	Frequency %		Frequency %		Frequency %		Frequency %		Frequency %	
No	10	76.9	9	33.3	9	47.4	2	66.7	8	50.0
Si	3	23.1	18	66.7	10	52.6	1	33.3	8	50.0
Total	13	100.0	27	100.0	19	100.0	3	100.0	16	100.0

Table 3. Level of the scholars in the SNI

SIN	UAC		UANL		UASLP		UAT		UAZ	
Level	Frequency %		Frequency %		Frequency %		Frequency %		Frequency %	
Candidate	1	7.7	2	7.4	4	21.1	0	0	2	12.5
Level 1	1	7.7	11	40.7	4	21.1	1	33.3	4	25.0
Level 2	0	0	3	11.1			0	0	2	12.5
Level 3	1	7.7	2	7.4	2	10.5	0	0	0	0
Total	3	23.1	18	66.7	10	52.6	0	0	8	50.0
Lost System	10	76.9	9	33.3	9	47.4	2	66.7	8	50.0
Total	13	100.0	27	100.0	19	100.0	3	100.0	16	100.0

Regarding the membership of the scholars to the *SNI*, again the scholars of UANL, UAZ and UASLP have the highest proportion of researchers in the National System and most of them are still in Level 1 of the development.

4.2. Collectivity of the university scholars.

The educational policy has played an important role at forming the *CAs*. The academy has gone from a personal activity to a profession with community characteristics; the heterogeneous development of academic production has depended on the conditions of the institutional environment characterized by both material restrictions and the structure of the *UPEs*;

there is a tendency towards collective work, with objectives linked to specific social and economic demands whose cost can only be absorbed by the State or by those competitors of the industrial world; we move from small science (made by individuals or small groups) to a great science characterized by groups of researchers participating in programs and wider networks, fully institutionalized, highly professionalized and clearly specialized.

Integration of scholars in Academic Entities.

In this category it is possible to analyze the origin of the *CAs* in order to know if their constitution is based on federal policies in the country. It describes the role that scholars play within the *CAs* and if over time has improved or decreased in their development.

Table 4. Origin of the integration of the academic entities

Origin of the CA	UAC		UANL		UASLP		UAT		UAZ	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Independent of PROMEP	6	46.2	9	33.3	7	36.8	1	33.3	5	31.3
Originated from PROMEP	3	23.1	14	51.9	11	57.9	2	66.7	10	62.5
Unknown	4	30.8	4	14.8	1	5.3	0	0	1	6.3
Total	13	100.0	27	100.0	19	100.0	3	100.0	16	100.0

Of the 5 IESs in which the behavior of the scholars is reviewed, it is evident that in the UANL, UASLP, UAT and UAZ, the majority of the *CAs* were formed based on the definition of the federal policy and only the scholars of the UAC indicated that its integration occurred independently of the federal policies of PRODEP.

Table 5. Status of the academic entity

Status In the CA	UAC		UANL		UASLP		UAT		UAZ	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Responsible or leader	5	38.5	5	18.5	1	5.3	1	33.3	4	25.0
Member	8	61.5	22	81.5	18	94.7	2	66.7	12	75.0
Total	13	100.0	27	100.0	19	100.0	3	100.0	16	100.0

Most of the scholars surveyed are members of the *CAs*. This is logical in that the *CAs* are made up of a leader and three or more academic members of the collegiate group.

Table 6. Consolidation of the *CAs*

Fell back in Category	UAC		UANL		UASLP		UAT		UAZ	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
No	13	100.0	24	88.9	18	94.7	1	33.3	16	100.0
Yes	0	0	3	11.1	1	5.3	2	66.7	0	0
Total	13	100.0	27	100.0	19	100.0	3	100.0	16	100.0

Since the 1990s, scholars integrated into *CAs* have been evaluated by the federal government, based on their productivity and the level of development of their members. In the results, only one of the HEIs, the UAT indicates that it has suffered setbacks, that is, the level of development of its *CAs* has decreased.

Factors that are considered when forming a CAs

The scholars of the HEIs in the region are forming the working groups, and in this process, they make a selection of the scholars that can be part of the *CAs* so that in the short term they achieve a level of consolidated development, just as it is established in the federal policy of the PRODEP.

Table 7. Importance of the academic degree

Importance of the Academic degree in the conformation of the CA	UAC		UANL		UASLP		UAT		UAZ	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Not important	1	7.7	1	3.7	0	0	0	0	1	6.3
Little important	0	0	3	11.1	3	15.8	0	0	2	12.5
Very important	12	92.3	23	85.2	16	84.2	3	100.0	13	81.3
Total	13	100.0	27	100.0	19	100.0	3	100.0	16	100.0

Table 8. Important of the PRODEP profile

Importance of the PRODEP profile in the conformation of the CA	UAC		UANL		UASLP		UAT		UAZ	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Not important	1	7.7	2	7.4	1	5.3	0	0	1	6.3
Little important	4	30.8	6	22.2	4	21.1	0	0	3	18.8

Very important	8	61.5	19	70.4	14	73.7	3	100.0	12	75.0
Total	13	100.0	27	100.0	19	100.0	3	100.0	16	100.0

Table 9. Affinity of the research lines

Importance of the affinity of the research lines in the conformation of the CA	UAC		UANL		UASLP		UAT		UAZ	
	Frequency %		Frequency %		Frequency %		Frequency %		Frequency %	
Not important	1	7.7	3	11.1	1	5.3	0	0	0	0
Little important	0	0	2	7.4	2	10.5	1	33.3	3	18.8
Very important	12	92.3	22	81.5	16	84.2	2	66.7	13	81.3
Total	13	100.0	27	100.0	19	100.0	3	100.0	16	100.0

Table 10. Disciplinary Affinity

Importance of the Disciplinary affinity in the conformation of the CA	UAC		UANL		UASLP		UAT		UAZ	
	Frequency %		Frequency %		Frequency %		Frequency %		Frequency %	
Not important	1	7.7	2	7.4	0	0	0	0	0	0
Little important	3	23.1	3	11.1	6	31.6	1	33.3	1	6.3
Very important	9	69.2	22	81.5	13	68.4	2	66.7	15	93.8
Total	13	100.0	27	100.0	19	100.0	3	100.0	16	100.0

In the four previous tables it is evident that for the scholars of the UPEs of the northeastern area of Mexico, the academic degree of the scholars, already having the PRODEP profile, the affinity of lines of research and the affinity in the discipline among the Scholars are the most relevant factors at the time of selection to form the *CAs*.

Table 11. Importance of the membership of the SNI

Importance of the membership of the SNI in the conformation of the CA	UAC		UANL		UASLP		UAT		UAZ	
	Frequency %		Frequency %		Frequency %		Frequency %		Frequency %	

Not important	3	23.1	4	14.8	2	10.5	0	0	1	6.3
Little important	4	30.8	7	25.9	9	47.4	1	33.3	5	31.3
Very important	6	46.2	16	59.3	8	42.1	2	66.7	10	62.5
Total	13	100.0	27	100.0	19	100.0	3	100.0	16	100.0

Membership of the SNI is a relevant factor for the scholars of UAC, UANL, UAT and UAZ. This favors the *CAs* because it is a guarantee of academic production among the members of the *CAs*.

Table 12. Importance of the personal relationships

Importance of the personal relationships in the conformation of the CA	UAC		UANL		UASLP		UAT		UAZ	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Not important	4	30.8	9	33.3	8	42.1	0	0	4	25.0
Little important	4	30.8	11	40.7	10	52.6	1	33.3	8	50.0
Very important	5	38.5	7	25.9	1	5.3	2	66.7	4	25.0
Total	13	100.0	27	100.0	19	100.0	3	100.0	16	100.0

One factor that seems irrelevant for the UANL, UASLP and UAZ scholars is having a good personal relationship among the members, an aspect that is considered very important among the UAT and UAT scholars.

Table 13. Importance of the Institutional Policies

Importance of the Institutional policies in the conformation of the CA	UAC		UANL		UASLP		UAT		UAZ	
	y	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Not important	0	0	1	3.7	3	15.8	0	0	3	18.8
Little important	5	38.5	8	29.6	6	31.6	2	66.7	4	25.0
Very important	8	61.5	18	66.7	10	52.6	1	33.3	9	56.3
Total	13	100.0	27	100.0	19	100.0	3	100.0	16	100.0

Finally, the scholars of UAC, UANL, UASLP and UAZ believe that institutional policies should be considered when forming *CAs*.

4.3. Academic Productivity.

Knowledge is produced in situation. It is not so much about the definition of problems within the logic of disciplines in particular but about the solution of concrete problems; It is not about applied basic knowledge but about demanded knowledge that seeks to be useful for someone, be it the educational institutions, the government or specific social groups, which implies for the researchers, a continuous negotiation with other "non-academic" actors. The knowledge produced is different from the basic knowledge applied, because Mode 2 of knowledge seeks to be useful for someone. In this sense, Mode 2 adds additional criteria through the context of application since it incorporates a diverse range of intellectual interests, as well as other economic or political interests.

According to Munevar, Arango, and Agudelo (2006), academic productivity is understood as the intellectual functions performed by men and women in *UPEs*, which is their work scenario; these usually materialize in textbooks, research books, teaching strategies, artistic works or technological resources.

The production of knowledge as a different feature of the academic profession has been understood mostly as a system of prestige about skills and achievements that refer to cognitive practices and constructions, whose differential assessment is carried out in a collegial way, through the judgment of the peers or colleagues. The critical question in relation to the bases or criteria on which production and profession are typified, usually confronts between traditional and modern modalities or orientations, where the former focus on the dimensions of reproduction, transmission or circulation while the latter incorporate in a distinctive way the aspects of creation or original production.

Table 14. Indexed articles

Articles in indexed magazines individually	UAC		UANL		UASLP		UAT		UAZ	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Yes	3	23.1	12	44.4	10	52.6	0	0	3	18.8
No	10	76.9	15	55.6	9	47.4	3	100.0	13	81.3
Total	13	100.0	27	100.0	19	100.0	3	100.0	16	100.0

Table 15. Individual book chapters

Individual book chapters	UAC		UANL		UASLP		UAT		UAZ	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Yes	2	15.4	12	44.4	3	15.8	0	0	7	43.8
No	11	84.6	15	55.6	16	84.2	3	100.0	9	56.3
Total	13	100.0	27	100.0	19	100.0	3	100.0	16	100.0

Table 16. Individual books

Individual books	UAC		UANL		UASLP		UAT		UAZ	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Yes	4	30.8	7	25.9	1	5.3	0	0	4	25.0
No	9	69.2	20	74.1	18	94.7	3	100.0	12	75.0
Total	13	100.0	27	100.0	19	100.0	3	100.0	16	100.0

Table 17. Individual projects.

Individual research projects	UAC		UANL		UASLP		UAT		UAZ	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Yes	3	23.1	14	51.9	12	63.2	1	33.3	11	68.8
No	10	76.9	13	48.1	7	36.8	2	66.7	5	31.3
Total	13	100.0	27	100.0	19	100.0	3	100.0	16	100.0

Table 18. Individual technical reports

Individual technical reports	UAC		UANL		UASLP		UAT		UAZ	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Yes	1	7.7	10	37.0	6	31.6	0	0	4	25.0
No	12	92.3	17	63.0	13	68.4	3	100.0	12	75.0
Total	13	100.0	27	100.0	19	100.0	3	100.0	16	100.0

Table 19. Individual patents

Individual patents	UAC		NL		SLP		UAT		UAZ	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Yes	1	7.7	3	11.1	1	5.3	0	0	0	0
No	12	92.3	24	88.9	18	94.7	3	100.0	16	100.0

Total	13	100.0	27	100.0	19	100.0	3	100.0	16	100.0
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Table 20. Full-text from proceedings

Full-text in proceedings	UAC		UANL		UASLP		UAT		UAZ	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Yes	3	23.1	13	48.1	6	31.6	0	0	5	31.3
No	10	76.9	14	51.9	13	68.4	3	100.0	11	68.8
Total	13	100.0	27	100.0	19	100.0	3	100.0	16	100.0

Table 21. Thesis management

Thesis management	UAC		UANL		UASLP		UAT		UAZ	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Yes	5	38.5	14	51.9	13	68.4	0	0	8	50.0
No	8	61.5	13	48.1	6	31.6	3	100.0	8	50.0
Total	13	100.0	27	100.0	19	100.0	3	100.0	16	100.0

In this section the scholars integrated in *CAs* indicate that there has not been much productivity since the number of scholars who have published in indexed and refereed journals is smaller; there are also few who have chapters of books, books, proceedings, there are also few who have patents and technical reports. There are better results in the development of projects and in the thesis management, especially in UANL, UASLP and UAZ.

5. Convergences and divergences

Scholars like Boyer, Altbach, and Whitelaw (1994), conducted research on the academic staff of higher level institutions trying to build performance scenarios from them, as well as their personal, professional and academic characteristics. Other researchers, such as Gil Anton (1994), Díaz (2005), Galaz, De la Cruz, and Rodríguez (2009), Grediaga (2001), Ibarra (2005), address the processes of knowledge management and evaluation that characterize the scholars of the institutions of Mexican higher education, hoping that based on the knowledge of their profile, their functions and the conditions of academic work, their practices and levels of participation in management processes and institutional participation can be understood, among other aspects. Although the scholars of the *UPEs* have been characterized for improving and transforming their professional performance, not all of them have similar characteristics in terms of their level of recognition, their level of dedication, or their working conditions and knowledge production; this varies from subsystem to subsystem, from institution to institution and from the level of its character, be it national,

decentralized or state. At the level of public universities, it is distinguishable that the processes of production and academic evaluation diverge in forms and mechanisms. There is a typification that identifies four stages - chronologically evolutionary but underlying and juxtaposed to date - in the figure of the Mexican academic: "professor", "teacher", "researcher and scholar" of integral and desirable functions" (Galaz, Padilla, Gil, & Sevilla, 2008). According to this classification, subcommunities are derived from scholars who live with different profiles and react in a different way to a national and regional context where systems of recognition and evaluation of productivity have privileged the investigative function and have neglected the recognition and support of the teaching function.

6. Conclusions and perspectives

The incentive policies have had an incidental effect on the production capacity of Mexican university scholars. The more productivity, the scholars increase their possibility of belonging to the incentive programs and with this income additional to their nominal salary, the predominant type of research is mixed; individually, collectively and in networks the production of scholars is characterized by research projects, indexed articles and training of human resources (thesis management). The policies of incentive to the productivity have made possible in the time to transit - not in an easy way - of the emphasis of the individual investigation to the investigation of collegial type.

The scene

Knowledge management is a strategic resource for university institutions and for society itself, being the basis of its sustenance production, circulation, consumption and application. From this perspective, a higher education institution needs to determine its knowledge management strategies, considering its history, its organizational structure, its operational processes and mainly its tangible and intangible assets, as well as the people involved in the development of the organization.

The management and leadership of knowledge and its productivity in the university sphere has been referenced between the academic profession and the role of scholars with respect to state policies and institutions, however, on occasions, there has not been a formal place since the institutional directivity in its different dimensions from a professional point of view. The production of knowledge by university scholars requires an organizational culture based on the philosophy of knowledge in which

groups, communities, collectives, entities -as they could be called- are converged, and those that define, interpret, guide or implement policies and processes around research and its production. It also requires the presence of sustained leadership oriented towards the achievement of a dynamic institution that learns from the synergistic and proactive process of its members.

The achievement of knowledge productivity in the public university implies not only the existence of policies but also the management for planning, organization and evaluation of the research process that contribute to the recognition and commitment of the entire academic and university community, creating conditions for all those who are dedicated to the investigative function. The above implies for some institutions the transitivity to a new model of knowledge production that goes from the essentially academic, monodisciplinary, hierarchical, individualized context, evaluated by the university's own peers, to another that is characterized by being applicative, transdisciplinary, socialized, heterogeneous, collaborative, organized in networks, with budgets obtained from different public and private organizations and evaluated by different scientific communities, and for others to enable and create the conditions for investigative work in this new model.

Directionality of policies around scholars and their productivity

The policies are oriented to consensual decision making and in function of institutional purposes, therefore, they must be defined, understood and implemented in an explicit way and oriented effectively in the investigative function. This approach is understood as the relational process that must exist between the research policies of the university with respect to its directionality in the production of knowledge.

The design and implementation of policies aimed at the production of basic and applied knowledge must be the product of collaborative work and leadership and commitment on the part of those involved in the research and management of university intellectual work.

Knowledge management as a principle of the knowledge production process

This relationship is understood as the ability of the university to manage the knowledge produced by its scholars. This implies the integration of tacit and explicit knowledge. What it is aimed to be achieved through management work is greater productivity in the substantive function of research and the results of it being extensive towards the different sectors

that make up society. This positioning finds sustenance in the cultural element, in which academic researchers share basic meanings when acquiring new ways to plan, organize, evaluate, finance and disseminate knowledge, elements of knowledge management in the university. This relationship allows us to point out that knowledge management in universities must be interpreted as an integral process that involves acquiring, systematizing, organizing, applying, transferring, disseminating and socializing knowledge. This is imperative and necessary to foster an organizational culture centered on knowledge and an environment of mutual cooperation between researchers and all those who, from directivity and decision-making, know, interpret, operationalize, apply and strengthen policies and mechanisms for scientific productivity.

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