Research, Development and Innovation (R&D&I) – a study with research group leaders at UFF

Francisco José Batista de Sousa[1]
Robson Moreira Cunha[2]

Theme: Universities as interactive partners

RESUMO

Research is one of the most important missions of University, since it helps to differ itself from other education institutions. Innovation is a fundamental element to change reality we live in, as an agent of social and economic development. This article offers an outlook of research, development and innovation actions at Universidade Federal Fluminense – UFF, located in Rio de Janeiro, Brasil, having as its focus the objectives foreseen in the institutional policy in addition to the research group leader's point of view from different areas of scientific knowledge. To obtain data, a documental research was made, followed by form questioning with the 177 research group leaders at UFF. Results revealed the strategic objectives achieved by the University, as well as the next challenges that must be faced in the incoming years. Even more, it was possible to measure the rate of knowledge of the research leaders of R&D&I policies, an evaluation of the institutional policies and the identification of characteristic elements of an entrepreneur university that are most valued by researchers at UFF.
Furthermore, we noticed a high level of lack of knowledge related to some of the sectors, especially in regard of the Knowledge Transfer Office, unknown to more than 60% of research group leaders. Institutional policies, in a general view, were well evaluated. Elements related to research group organization and acting in economic and social development were the best evaluated characteristics of an entrepreneur university.

Research, Development and Innovation (R&D&I)

1. Introduction

Research is one of the most important missions of University, since it helps to differ itself from other education institutions. Innovation is a fundamental element to change reality we live in, as an agent of social and economic development.

A good implement of a research, development and innovation policy, or R&D&I, is fundamental for a university to maintain and strengthen its role in society.

With the creation of the Núcleos de Inovação Tecnológica (NIT, or Center of Technological Innovation), as part of the law Nº 10.973, of December 2nd. 2004, the institutions related to Science and Technology (ICT) now have a center responsible for innovation policies. In some cases, these centers were related to the Research rectory and were named Innovation Agencies. However, there are gaps in which refers to R&D&I policies evaluation implemented by universities.

This research is a case study with research group leaders in Universidade Federal Fluminense (UFF). We tried to identify:

1- The rate of knowledge of research group leaders related to university organism responsible for planning and/or execution of the main research, development and innovation actions;

---

[1] Director of the Company Incubator at Universidade Federal Fluminense – AGIR/Proppi. Professor at STA – Administração –UFF – D.SC. in Production Engineering – COPPE/UFRJ.
[2] Administrator – Universidade Federal Fluminense (2011) e Master in Production Engineering – COPPE — Universidade Federal do Rio de Janeiro.

2 – How the research group leaders evaluate R&D&I policies of the university;

3 – Rate of acceptance related to some of the main roles of an entrepreneur university.

By achieving such goals, we hope to contribute to the understanding of how R&D&I is understood inside UFF and which are the expectations and evaluations in different knowledge areas in the university.

2. University evolution

Since their beginning, universities have been changed in many ways, incorporating new characteristics and activities until they became what they are now, interpreting a central role in Knowledge Society.

As stated by Rezende (2007, p.5):

> in the Middle Age, its mission of teaching and educating was exclusively aimed at the ecclesiastic class. Up until the 11th Century, the cathedral schools, administrated by bishops and priests and annexed to cloisters, were the most important centers of education. Universities were born in these cathedrals, and many of them surged in Europe from the 12th Century and beyond like the medicine one in Salermo and Montpellier, theology, in Paris..

In its roots, the goal is to preserve and transfer culture and remains as this for centuries. Only in the 19th Century, universities were transformed to include other educational functions beyond teaching,

Natividade (2001, p.36) states that in this transition universities stopped caring only about culture preservation and knowledge transfer and starter working on research to create knowledge in specific fields, what can be proved by specific disciplines such as Chemistry and Electricity. Teaching had been integrated to research.

Etzkowitz (2002, p.10) called this event - the inclusion of the research mission in universities – as the first academic revolution, characterized not only by the inclusion of research but also the seminar method between students and teachers instead of regular classes.

According to Guaranys (2006, p.48), this new university model, with research as one of its activities, can be classified as two different types, the classic university and the modern university.

The model of the classic university, centered on teaching based in research and that values broad humanistic structure, had its origins with Berlin University, founded by Wilhelm von Humbolt, in 1810 (OCDE, 1998, p.13)

This transformation in university dynamics was followed by an approaching between research and productive sector. According to Guaranys (2006, p.48) this relation "[...] appeared with the parallel development of Scientific Revolution and Industrial Revolution. Distinction between basic research, applied research and development research was made."

University was centered on basic research, dedicating only part of its efforts in research applied to development. The main worries were related to economy and graduated jobs. There wasn't focus on the practical questions that could benefit society and even industry.

Classical university model existed during several years and up to today it influences the academic ambient. However, in the 20th Century there is the model described by Guaranys (2006, p.48) called Modern University. In opposition to what happened in classical university there is now a bigger worry about society needs. There is a focus on applying knowledge to problem solving, they being social, economical or industrial.

Guaranys (2006, p.48) emphasizes the action of this university in this way:

> Research in modern university is now financed by contract and has bigger relations with industry. Consumer satisfaction, or the efficient production with quality of research products and graduates is the main valor of this kind of university.

During the 20th Century, changes in university dynamics continued, which result in the 'second academic revolution', in which the university assumes the mission of economic and social development by proactive means, trying to find market applications to research made in laboratories. (ETZKOWITZ, 2009, p.41). So, the modern university becomes the entrepreneur university.

According to Guaranys (2006, p.6):

> The changes in universities profile did not emerge from company's demands, but from the diminishing government financial resources destined to research. On the other side, the creation of Sectorial Funds (Brazil), made the alliance between university and companies the only access to the non-refundable new resources, sewed to the companies interests in their respective economic sectors.

According to Etzkowitz (2009, p.37), the entrepreneur university is based on four pillars:

> 1 – Academic leadership able to formulate and implement strategic vision.
>
> 2 – Legal control over academic resources, including physical properties, as the very buildings of the university and the intellectual property that derives from research.
>
> 3 – Organizational capability to transfer technology through patents, licensing and incubation.
>
> 4 – An entrepreneur ethos between administrators, students and teachers.

It is important to highlight the characteristic key elements of an entrepreneur university:

> the organization of a research group; the creation of a research base with commercial potential; the development of organizational mechanisms to lead research outside the university as protected intellectual property; the integration of academic and company-related elements and in new forms, such as the centers of university-industry research; and finally awareness of its participation in regional social and economical development (EZTKOWITZ 2003 apud GUARANYS 2006, p.52).

We notice that the close relationship industry-university contributes to a more proactive posture of research institutions, looking for market applications to studies developed inside and including research with other partners.

However, there are divergences related to the entrepreneur role of university. Most part of the academic community believes that a university fulfills best its mission if limited to teaching and research.

To Guaranys (2006, p.6) there are two organizational subcultures coexisting in the university. A first group sees university, already financed by the state, creates a good, a knowledge, that must also be public. The idea of an entrepreneur university is highly criticized by these researchers/teachers. The main argument to this questioning is that the knowledge production is related to private companies, which characterizes privatization of a public welfare.

The second vision is that the increase in competition is reached by means of innovation made by companies, which does not only depend on its technological capacitating, but also on acquired knowledge.

The arrival of company incubators, technology transfer offices and courses and disciplines dedicated to entrepreneuring has contributed to the academic change.

3. Methodology

This research can be described as exploratory and descriptive. To Vergara (1998, p.45): "Exploratory investigation happens in an area where there is little acquired and systemized knowledge." The descriptive research "exposes characteristics of certain population or determined phenomenon".

In relation to the means, this study can be considered a 'field'. This classification, of field research, is referred to the empirical investigations in the occurrence of determined phenomenon. It can have interviews, form filling, tests and observations. (VERGARA, 1998).

Even more, by considering elements of institutional environment of UFF, research is also in the Field study category, which, according to Yin (2001, p.32) consists in an 'empirical investigation that observes a contemporary phenomenon inside its real life context, especially when limits of the phenomenon and its context are not clearly defined".

The interview with research group leaders in university was made by structured form filling. The process, from naming the leaders to obtaining the contacts to the sending and receiving of formularies happened between the months of May and November of 2011.

For information gathering amongst the research group leaders, we considered only those with update information at least once in the last 12 months. The groups that didn't update for more than 1 year were not considered due to the risk of being inactive.

In the period the research was made, according to the Directory of Research Groups from CNPq and from the rectory of Research, Post-Graduation and Innovation – PROPPi, UFF had 576 active groups. However, there are cases in which the same researcher is a leader of more than one group. Considering only the number of research group leaders, we arrived at the total of 531, divided in eight knowledge areas. Due to the difficulty in reaching all those leaders, contact was established by e-mail.

To obtain a trust level of 90% and an error margin of + 10%, it would be necessary 61 researches. We received a total of 177.

The research formulary had 3 fronts: a) knowledge of the main organizations related to R&D&I; b) institutional perspective, in order to identify the reading of the R&D&I policies from the university; c) evaluation of UFF as an entrepreneur university.

According to Gil (1999, p.124), formulary consists in a investigation technique directed to exposition of written down questions to people, allowing the knowledge of opinions, beliefs, feelings, interests and expectations.

To elaborate the formulary we observed components proposed by Chagas (2000) which involve: identification of the respondent, cooperation solicitation, instructions, solicited information and classification of information from the respondent.

To build and test the formulary, we created a pilot in two distinct times. The first was in attendance, with mostly open questions. The objective was to gather the main thoughts about the theme and indentify patterns in answers, allowing transforming later on the open question in closed questions. In this first stage, we interviewed five researchers, considering different areas of knowledge.

The in attendance stage was fundamental to improve the formulary, because from it we opted to exclude some repetitive questions and made adjustments. The first reach was the lack of common sense of what is an entrepreneur university. Some didn't recognize the term and had difficulties answering questions. In the second version of the formulary, with closed questions only, instead of asking directly about entrepreneur university, we included a list of the six key-elements from this kind of university according to Etzkowitz. The respondents had only to grade them from 0-10 according to their relevance to UFF.

The second stage of the pilot was made in applying the formulary by e-mail, with closed questions, including only a small field for commentary, if the respondent desired to extend in any subject. The sample was random, but trying to reproduce the proportion of research leaders by knowledge area. We sent 29 e-mails at this stage, and 10 respondents didn't answer. The only modification to the formulary was the substitution of the item 'ability to organize companies in the university' to 'ability to incubate companies created by students, teachers or researchers in the university'.

After each pilot stage, formulary was sent to the research leaders and 167 answers were received. Adding to them the number of formularies in the second pilot stage, we got 177 answers, which correspond to 33.3% of the certified and authorized research group leaders.

4. Results

Information related to research group leaders were collected in eight great knowledge areas. According to CNPq criteria, these areas can be divided in sub-areas as follows in Table 1:

Table 1 – Areas of Knowledge

Great Area	Sub-Area
Agrarian Sciences	Agronomy; Food Science and Technology; Agrarian Engineering; Veterinary; Wood Resources e Forest Engineering; Fishing Resources e Fish Engineering; Zootechnics.
Biological Sciences	Biophysics; Biology; Biochemistry; Botanic; Ecology; Pharmacology; Physiology; Genetics; Immunology; Microbiology; Morphology; Parasitology; Zoology.
Health Sciences	Physical Education; Nursing; Pharmacy; Physiotherapy e Occupational Therapy; Phonoaudiology; Medicine; Nutrition; Odontology; Social Health.
Land and Math	Astronomy; Computer Science; Physics; Geosciences; Math; Oceanography; Probability and Statistics; Chemistry.
Human Sciences	Anthropology; Archeology; Political Sciences; Education; Philosophy; Geography; History; Psychology; sociology; theology.
Applied Social Sciences	Administration; Architecture; Information Sciences; Communication; Demography; Industrial Design; Law; Economy; House Economy; Museology; Urban and Regional Planning; Social Services e Tourism.
Engineering	Aerospacial; Biomedical; Civil; Material and Metallurgy; Mines; Production; Transportation; Electric; Mechanic; Naval and Ocean; Nuclear; Chemical.
Linguistics, Literature and Arts	Arts; Literature; Linguistics.

Fonte: Adaptado a partir de dados do CNPq

By means of the Table 2 we can observe the distribution of research group leaders at UFF and the number of respondents by knowledge area.

Table 2 – Respondents by Area of Knowledge

Area of Knowledge	Nº of research leaders	Participation of area in leaders total	Answers obtained	Percentage of answers per area
Agrarian Sciences	28	5,27%	12	42,86%
Biological Sciences	40	7,53%	20	50,00%
Health Sciences	79	14,88%	28	35,44%
Exact and Land Sciences	68	12,81%	24	35,29%
Human Sciences	136	25,61%	33	24,26%
Applied Social Sciences	75	14,12%	25	33,33%
Engineering	64	12,05%	20	31,25%
Linguistics, Literature and Art	41	7,72%	15	36,59%
TOTAL	**531**	**100,00%**	**177**	**-**

Fonte: Elaboração própria

As we can see in Table 2, there is a great concentration of researchers in Human Sciences, and more than a fourth of the total of UFF. Even though it represented in absolute terms the biggest number (33), the percentage answer of the area was the smallest, 24.26%.

Biological Sciences and Agrarian Sciences, considering the proportion of research group leaders, were the most participant, with 50.00% and 42,86%. However, these are the smallest areas in total number of leaders.

Evaluating the knowledge areas as a whole, we can consider the proportion of respondents was high, considering the limitations of e-mail sending and the short time spam the research happened.

Research involved three main fronts. In the first of them the objective was to measure the knowledge of the research group leaders related to the main organisms/structures from UFF related to R&D&I. We created a five level scale (Likert scale) from 'unknown' to 'fully known'.

In the second research front, we measured the efficiency of institutional policies related to fomentation of R&D&I actions according to research group leaders. We also used a five level scale, with the extremes as highly-deficient and very efficient.

In the third front we evaluated some items that correspond to the key-elements in an entrepreneur university. The respondents had to evaluate from 0 to 10 according to importance of these elements to UFF.

Knowledge rating related to R&D&I

We evaluated the rate of knowledge of the research group leaders to the Five organisms/structures: a) Innovation Agency; b) Company Incubator; c) Knowledge Transfer Office; d) Research coordination; e) Rectory of Research, Post-Graduation and Innovation.

The first four structures are related to PROPPI, and the Company Incubator and the Knowledge Transfer Office are related to the Innovation Agency. Separating the organisms allows us to see how each structure is seen, as well noticing inconsistency in answers.

Research revealed that most part of research group leaders has some knowledge related to the Innovation Agency at UFF. The higher concentration of answers was in 'know a little' and 'know', according to Table 3.

Table 3 – Knowledge Rating towards AGIR

Rate of Knowledge	Frequency	Percentage	Percentage of Valid Answers
Unknown	37	20,90%	20,90%
Little Known	58	32,77%	32,77%
Known	57	32,20%	32,20%
Well Known	14	7,91%	7,91%
Fully Known	11	6,21%	6,21%
No Answer	0	0,00%	-
TOTAL	177	100,00%	100,00%

Fonte: Elaboração própria

However, it is important to observe how each area answered to that question. We considered the total amount of valid answers from Picture 1. To summarize, each area as a short; Agrarian Sciences for AGR, Biological Sciences for BIO, Health Sciences for SAU, Exact Sciences and Land Research for CET, Human Sciences for HUM, Applied Social Sciences for CSA, Engineering for ENG, Linguistics, Literature and Arts for LLA.

We can observe that in every area the levels 'know it well' and 'know it fully' are the lowest in comparison. The 'unknown' level has high percentage in some areas, in special regard for Linguistics, Literature and Arts, where 30% do not know Agir.
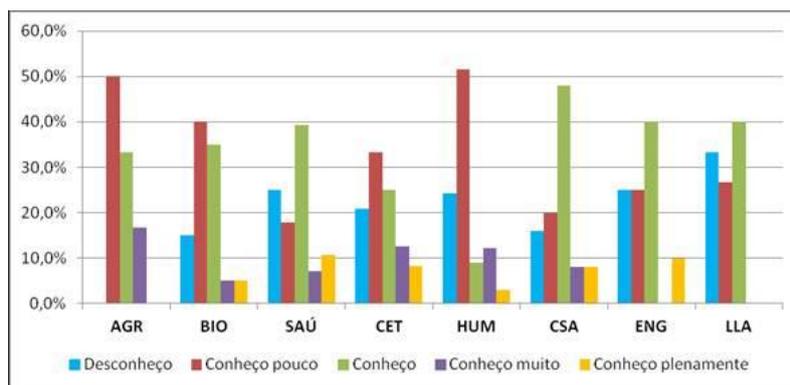
Picture 1 – Rate of knowledge accorgin to area of knowledge - Agency

Fonte: Elaboração própria

About the Company Incubator, there is a high level of 'unknown', as 28% of them chose that option and 49% chose 'know a little', as in Table 4. Only 9 respondents knew the structure.
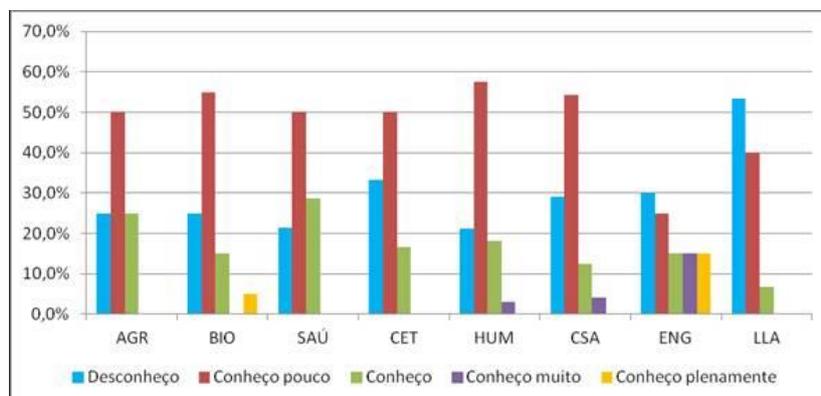
Table 4 – Rate of knowledge to the Incubator

Rate of Knowledge	Frequency of Answers	Percentage	Percentage of Valid Answers
Unknown	50	28,25%	28,41%
Little Known	86	48,59%	48,86%
Known	31	17,51%	17,61%
Well Known	5	2,82%	2,84%
Fully Known	4	2,26%	2,27%
No Answer	1	0,56%	-
TOTAL	177	100,00%	100,00%

Fonte: Elaboração própria

By observing the knowledge area division (Picture 2), we can see that Linguistics, Literature and Arts have the higher percentage of respondents that do not know the Incubator. Even so, the 'unknown' rate can be considered high to all areas. Even on the Engineering area, with the highest levels of 'know well' and 'know it fully,

we can see the highest level of research group leaders that chose 'unknown'. In other areas, the 'know a little' reaches 50%.

Picture 2 – Rate of Knowledge of the Incubator according to area of Knowledge
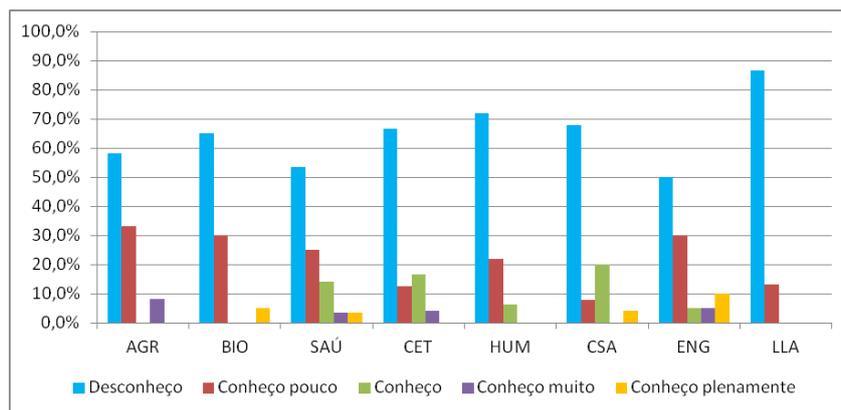Fonte: Elaboração própria

About the Knowledge Transfer Office, the rate of 'unknown' is mesmerizing, as it occurs in 64% of the research group leaders. (Table 5)

Table 5 – Research leaders' knowledge rate about the Incubator

Rate of Knowledge	Frequency of Answers	Percentage	Percentage of Valid Answers
Unknown	114	64,41%	64,77%
Little Known	37	20,90%	21,02%
Known	16	9,04%	9,09%
Well Known	4	2,26%	2,27%
Fully Known	5	2,82%	2,84%
No Answer	1	0,56%	-
TOTAL	177	100,00%	100,00%

Fonte: Elaboração própria

By observing Picture 3, we can notice that the high level of 'unknown' is in every area. The Engineering area, for instance, show the smallest percentage of leaders that do not know the Office, and even so it is at 50%. In some areas, the 'unknown' rate is superior to 70%, with once more Linguistics, Literature and Arts leading, with 90%.

Picture 3 – Rate of knowledge according to knowledge area
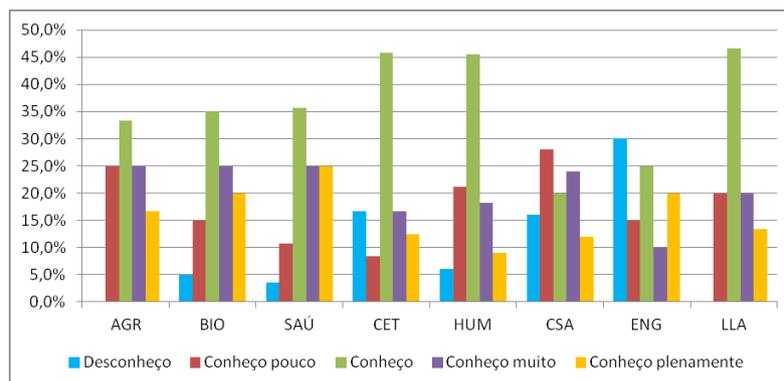Fonte: Elaboração própria

When inquired about the Research Coordinator, research group leaders revealed a greater rate of knowledge, as in Table 6. Only 18 answered that the structure as 'unknown'. Most part of the leaders checked 'know'. In comparison to other structures, the 'know it well' and 'know it fully' are vastly superior.

Table 6 – Rate of knowledge about Coordenadoria de Pesquisa

Rate of Knowledge	Frequency of Answers	Percentage	Percentage of Valid Answers
Unknown	18	10,17%	10,17%
Little Known	31	17,51%	17,51%
Known	64	36,16%	36,16%
Well Known	36	20,34%	20,34%
Fully Known	28	15,82%	15,82%
No Answer	0	0,00%	-
TOTAL	177	100,00%	100,00%

Fonte: Elaboração própria

In this question, the Engineering area has the highest rate of 'unknown'. In Linguistics, Literature and Arts and in Agrarian Sciences none of the respondents chose 'unknown'. Beyond that, as we can see in Picture 4, we can see the crescent rate of 'know it well' and 'know it fully', items that were chosen with low levels earlier in the article.

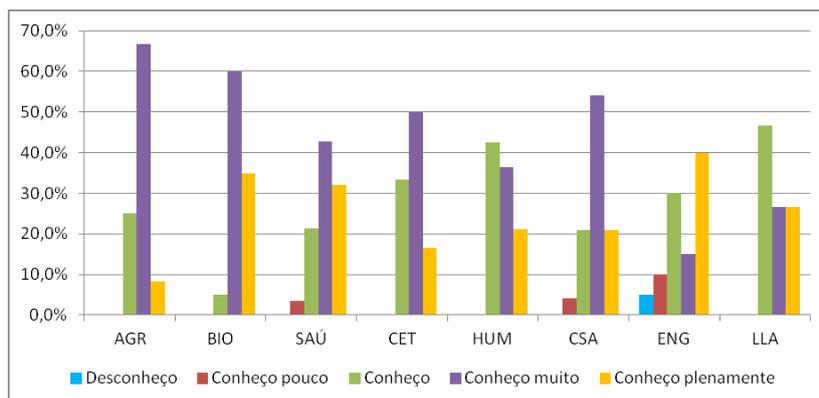Picture 4 – Rate of knowledge divided by area of knowledge
Fonte: Elaboração própria

About PROPPi, the rate of knowledge or research group leaders is still higher. As in Table 7, only one respondent chose 'unknown' for the Rectory. Most part of the leaders chose 'know it well'. The high level rate of knowledge is observed in every area, as in Picture 5.

Table 7 – Rate of Knowledge related to PROPPi

Rate of Knowledge	Frequency of Answers	Percentage	Percentage of Valid Answers
Unknown	1	0,56%	0,57%
Little Known	4	2,26%	2,27%
Known	50	28,25%	28,41%
Well Known	76	42,94%	43,18%
Fully Known	45	25,42%	25,57%
No Answer	1	0,56%	-
TOTAL	177	100,00%	100,00%

Fonte: Elaboração própria

As it was mentioned before, every structure of the formulary are somehow connected to PROPPi, what reveals some inconsistency in the answers of some research group leaders. The high percentage for 'know it fully' is not compatible with the answers about the other structures. This fact may be related to the idea that a research group leader might have chosen 'know it fully' or 'know it well' because it is not adequate for a research group leader to not know the structure at all.

Picture 5 Rate of knowledge about PROPPi divided by area o knowledge
Fonte: Elaboração própria

Institutional Policies Evaluation

Research group leaders were also inquired about the efficiency of the institutional policies of UFF in regard to R&D&I. (Table 8)
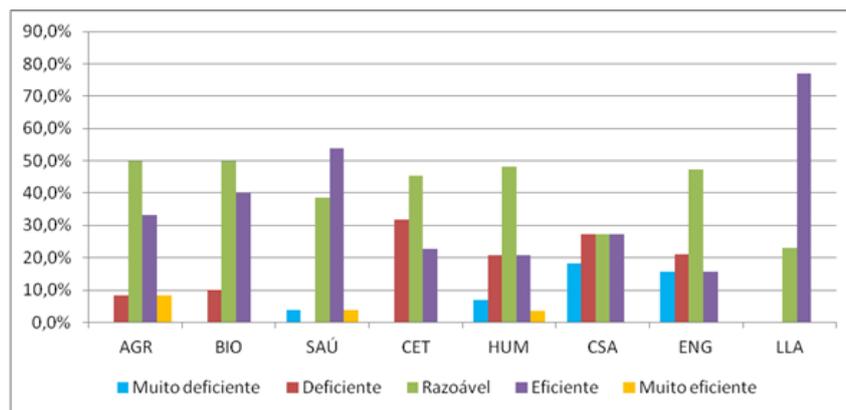
Table 8 – Efficiency of Institutional Policies

Rate of Efficiency	Frequency of Answers	Percentage	Percentage of Valid Answers
Very Deficient	10	5,65%	6,13%
Deficient	26	14,69%	15,95%
Reasonable	68	38,42%	41,72%
Efficient	56	31,64%	34,36%
Very Efficient	3	1,69%	1,84%
No Answer	14	7,91%	-
TOTAL	177	100,00%	100,00%

Fonte: Elaboração própria

The highest percentage of answers is in the 'reasonable' level, with 41.72% of valid answers, followed by 'efficient', with 34,36%.

When answers are organized by area of knowledge (Picture 6), we can see that the area of Linguistics, Literature and Arts has the higher percentage of researches that consider the institutional policies for R&D&I efficient, reaching almost 80%. In Health Sciences, the coefficient is also higher than average. In Agrarian Sciences, Applied Social Sciences, Engineering and Human Sciences, we can see a high level of 'deficient' level, more than 20% of the answers in that area. Even further, more than 15% of Applied Social Sciences and Engineering consider it 'very deficient'.

Picture 6 Efficiency rate of institutional policies by area of knowledge
Fonte: Elaboração própria

Elements of an Entrepreneur University

Research also evaluated the view of research group leaders on the key-elements of an entrepreneur university, as defined by Etzkowitz. They evaluated from 0 to 10 in each element, considering its relevance for UFF.

According to Table 9, we can observe that the highest evaluated elements are the 'organization of research groups' and 'acting in regional economic and social development'. The least considered item refers to the creation of a research base with commercial potential.

Table 9 – Importance of Key-elements of an entrepreneur university

Key-elements of an entrepreneur university	Average	Answers	Std. Deviation
Organization of Research Groups	7,64	156	2,32
Acting in regional social and economical development	7,06	151	2,63
Ability to incubate companies created by students, teachers and researchers	6,66	131	2,92
Development of organizational mechanisms to take research out of university as protected intellectual property	6,54	149	3,01
Integration of academic and company elements in new formats as center of university-industry research	6,36	143	2,88
Creation of a research base with commercial potential	5,92	146	2,72

Fonte: Elaboração própria

However, we can see that the standard deviation was high, which suggests the divergence between the research group leaders. This aspect can be confirmed when the averages are divided by knowledge area.

Another relevant factor is that many of the 177 research group leaders didn't answer or preferred not to answer this question, as in Table 9.

In Table 10 we can see the averages divided by area of knowledge. To most of them, the highest punctuation is related to the organization of research groups. In the other hand, the creation of a base of research with commercial potential is the item least punctuated.

The Agrarian, Biological and Health Sciences seem to be the most open to the elements of an entrepreneur university. Agrarian Sciences, for instance, shows the highest averages in every topic. In the other hand, Human Sciences and Applied Social Sciences are the most resistant to it.

A relevant aspect is the high standard deviation, which means the scattering of the grades. This happens mainly in Human Sciences, Applied Social Sciences and Engineering. In Agrarian Sciences and Linguistics, Literature and Arts the scattering is the smallest.

Table 10 – Importance of key-elements of an entrepreneur university according to area of knowledge

Key-Elements	AGR		BIO		SAÚ		CET		HUM		CSA		ENG		LLA	
	Avg	S.D.	Avg	S.D.	Avg	S.D.	Avg	S.D.	Avg	S.D.	Avg	S.D.	Avg	S.D.	Avg	S.D.
Organization of Research Groups	8,6	1,9	8,2	2,0	8,0	2,5	7,1	2,2	7,4	2,2	7,5	2,7	6,7	2,6	8,1	1,7
Creation of a research base with commercial potential	7,2	2,0	6,3	2,8	6,9	2,7	6,0	2,5	4,7	3,0	5,2	2,8	5,9	2,9	5,4	1,9
Development of organizational mechanisms to take research out of university as protected intellectual property	7,5	2,6	6,8	2,7	7,5	2,4	6,1	2,8	5,9	3,3	5,6	3,5	6,4	3,6	7,2	2,3
Ability to incubate companies created by students, teachers and researchers	7,8	2,5	6,5	3,0	7,6	2,2	7,1	2,6	5,7	2,9	5,6	3,5	6,8	3,5	6,9	2,3
Integration of academic and company elements in new formats as center of university-industry research	7,6	2,5	6,8	2,4	7,3	2,3	6,4	2,8	5,0	2,8	5,4	3,4	6,7	3,6	6,0	2,2
Acting in regional social and economical development	8,2	1,7	8,2	2,3	7,4	2,3	6,3	2,8	6,7	2,7	6,4	3,3	6,9	2,9	6,7	1,7

Fonte: Elaboração própria

5. Final Considerations

Universities have a central role in our society because they deal with the impulse of the social and economical development, knowledge.

The mission of social and economical development in universities is strictly related to research, development and innovation activities, and as seen must be part of the institutional policies.

Universities have structures/organisms related to the R&D&I policies. We verified that, at UFF, many of them are not known by the academic community, represented here by the research group leaders. This situation hinders the success of

policies and programs in UFF, since that, due to the fact the researchers do not know the structures, researchers don't support them.

In spite of the fact that there is a high level of unfamiliarity in relation to certain structures, in special to the Knowledge Transfer Office, there is an interest by the researchers to know these structures better and a desire of involvement in the process of transformation that are happening in university today.

It would be interesting to create mechanisms that allowed greater interaction from university with researchers and among researchers themselves, since it was already proved that there are opinion divergences between the many areas of knowledge. This interaction would serve not only to inform about the objectives of the university but also to allow debate and gather expectations from researchers that should be included in planning.

In relation to the key-elements of an entrepreneur university, we could notice that the researchers are still divided about its importance to UFF. The main questioning refers to applied research. However, it is important to clarify that an entrepreneur university does not stop its basic research.

A group of actions was established by the Innovation Agency at UFF to raise the awareness about itself, as seminars in innovation and a magazine of internal distribution. The Company Incubator was also changed and ordered studies to reach researchers and trace the potential of its research results into entrepreneur terms, remade their site, created an online database to gather entrepreneur projects and established an entrepreneur and innovation short course for house public. Future steps point toward the efforts to increase visibility of Innovation agency and its Incubator to external public, such as investors, other companies, service and product potential demanders and aligning with local and regional public policies.

References

AGÊNCIA DE INOVAÇÃO - AGIR. Sobre a agência. Disponível em: <http://www.proppi.uff.br/portalagir>. Acesso em: nov. 2011.

ASSOCIAÇÃO NACIONAL DE ENTIDADES PROMOTORAS DE EMPREENDIMENTOS INOVADORES - ANPROTEC. Histórico do setor de incubação de empresas no Brasil e no mundo. Disponível em: <http://www.anprotec.org.br >. Acesso em: nov. 2011.

BRASIL. Lei nº. 10.973, de 2 de dezembro de 2004. Dispõe sobre incentivos à inovação e à pesquisa científica e tecnológica no ambiente produtivo e dá outras providências. Diário Oficial [da] República Federativa do Brasil, Brasília, DF, 2 dez. 2004. Disponível em: <http://www.planalto.gov.br/ccivil_03/_ato2004-2006/2004/Lei/L10.973.htm>. Acesso em: abril, 2011.

_____. Lei nº. 11.196, de 21 de novembro de 2005. Dispõe sobre incentivos fiscais para a inovação tecnológica. Diário Oficial [da] República Federativa do Brasil, Brasília, DF, 21 nov. 2005. Disponível em: < http://www.planalto.gov.br/ccivil_03/_ato2004-2006/2005/lei/l11196.htm>. Acesso em: abril, 2011.

BRISOLLA, S. N. Relação universidade-empresa: como seria se fosse. Em: Interação universidade empresa. Brasília: Instituto Brasileiro de Informação em Ciências e Tecnologia, 1998.

CARNEIRO, Ana P. Morgado. Inovação Tecnológica no Brasil: uma análise das indústrias brasileiras através da pesquisa de inovação tecnológica (PINTEC). Dissertação de Mestrado em Sistemas de Gestão. Niterói: UFF, 2005.

CHAGAS, A., T., R. O Questionário na Pesquisa Científica. Administração On Line: Prática - Pesquisa - Ensino, v. 1, n. 1. Janeiro/fevereiro/março. 2000. Disponível em: <http://www.fecap.br/adm_online/art11/anival.htm>. Acesso em: maio. 2011.

CICLO DE SEMINÁRIOS SOBRE INOVAÇÃO, 2.,Niterói. Catálogo Agir. Niterói: Universidade Federal Fluminense, Agência de Inovação, 2011.

CORTE, Andréa Tello da; MARTINS, Ismênia de Lima. 50 anos da Universidade Federal Fluminense – 1960 – 2010. Niterói: Editora da UFF, 2010.

CUNHA, Neila Viana. Mecanismos de Interação Universidade-Empresa e seus Agentes: o Gatekeeper e o Agente Universitário de Interação. Revista Eletrônica de Administração – REAd, nº 9, 1999.

DRUCKER, P. The best of Peter Drucker on management. New York: Harper & Row, 1977. p. 182-190.

ETZKOWITZ, Henry. MIT and the Rise of Entrepreneurial Science. Routledge, London and New York, 2002.

_____. Hélice Tríplice: Universidade – Indústria – Governo, inovação em movimento. Porto Alegre: Editora PUCRS, 2009.

GIL, Antonio Carlos. Métodos e técnicas de pesquisa social. São Paulo: Atlas, 1999.

GUARANYS, Lúcia Radler. Interação Universidade-Empresa e a Gestação de uma Universidade Empreendedora: a evolução da PUC-Rio. Tese de doutorado em Engenharia de Produção. Rio de Janeiro: COPPE/UFRJ, 2006.

GUIMARÃES, F. C. M. S. A política de incentivo à inovação, desenvolvimento econômico e política tecnológica. Parcerias Estratégicas, Brasília, n. 9, p. 121-128, out. 2000.

INCUBADORA DA UFF. Relatório de Atividades 2009. Disponível em: <http://www.incubadora.uff.br>. Acesso em: out. 2011.

INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA - IBGE. Diretoria de Pesquisa, Coordenação de Indústria - Pesquisa de Inovação Tecnológica: 2008. Rio de Janeiro: IBGE, 2010.

KLINE, J.; ROSENBERG, N. An overview of innovation. In: LANDAU, R.; ROSENBERG, N. (Ed.). The Positive sum strategy: harnessing technology for economic growth. Washington: National Academy Press, 1986.

LEMOS C., Inovação na Era do Conhecimento. IN: Parcerias Estratégicas, nº 8, maio, 2000, MCT.

LONGO, P. W. Conceitos Básicos Sobre Ciência e Tecnologia- Ciência e Tecnologia: alguns aspectos teóricos, Escola Superior de Guerra, LS-19/87. Revisto e atualizado em julho de 2004. Disponível em: <http://www.waldimir.longo.nom.br/publicacoes.html>. Acesso em 04/06/2011.

MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E INOVAÇÃO - MCTI. Marco legal da inovação. Disponível em: <http://www.mct.gov.br>. Acesso em: nov. 2011.

MEDEIROS, José Adelino. Incubadoras de empresas: lições da experiência internacional. Revista de Administração, São Paulo, v. 33, n. 2, abr./jun., p. 5-20, 1998.

MOREIRA, Sonia Virgínia. Análise documental como método e como técnica. In: DUARTE, Jorge; BARROS, Antônio (Org.). Métodos e técnicas de pesquisa em comunicação. São Paulo: Atlas, 2005. p. 269-279.

NATIVIDADE, Cláudia Dybas da. Acertos e erros da política de inovação tecnológica envolvendo universidade, empresa e governo. In: MONOGRAFIAS Premiadas no 2° Concurso de monografia sobre a relação universidade/empresa. Curitiba: IPARDES: IEL-PR, 2001. p. 31-59.

ORGANIZAÇÃO PARA A COOPERAÇÃO E DESENVOLVIMENTO ECONÔMICO - OCDE. University Research in Transition. Paris: OECD Publications, 1998.

_____. Manual Frascati. Proposta de Práticas Exemplares para Inquéritos sobre Investigação e Desenvolvimento Experimental. Coimbra: F-Iniciativas, 2002.

_____. Manual de Oslo. Proposta de Diretrizes para Coleta e Interpretação de Dados sobre Inovações Tecnológicas. OECD. Traduzido pela FINEP. 2004.

PEREIRA, Valdecy. Análise da Gestão da Propriedade Intelectual e da Transferência de Tecnologia nas Universidades do Rio de Janeiro. 2008. 90f. Dissertação (Mestrado) – Departamento de Engenharia de Produção, Universidade Federal Fluminense, Niterói, 2008.

RAUPP, Fabiano Maury; BEUREN, Ilse Maria. O suporte das incubadoras brasileiras para potencializar as características empreendedoras nas empresas incubadas. In: ENCONTRO DA ANPAD, XXVIII, 2004, Curitiba/PR. Anais... Rio de Janeiro: ANPAD, 2004.

RENAULT, T. B. O Desenvolvimento Socioeconômico como Terceira Missão da Universidade: Elementos para Estudo do Caso Brasileiro. 2006. 113f. Dissertação (Mestrado) – Departamento de Engenharia de Produção, Universidade Federal Fluminense, Niterói, 2006.

REZENDE, Manoel Barbosa de. Bodas de Ouro da Universidade Federal do Pará. Rev. Para. Med. [online]. 2007, vol.21, n.2, pp. 5-6.

SABATO, Jorge. El comercio de tecnología. Washington, OEA, 1972.

SANTOS, C. M. C. A Transferência de Conhecimento Segundo o Conceito de Universidade Empreendedora: Algumas Experiências na Universidade Federal Fluminense (UFF). 2010. 90f. Dissertação (Mestrado) - Departamento de Engenharia de Produção, Universidade Federal do Rio de Janeiro, Rio de Janeiro, 2010.

SANTOS, Glauber Eduardo de Oliveira. Cálculo amostral: calculadora on-line. Disponível em: <http://www.calculoamostral.vai.la>. Acesso em: fev. 2011.

SCHUMPETER, J. Teoria do desenvolvimento econômico: uma investigação sobre lucros, capital, crédito, juros e o ciclo econômico. (Os economistas). São Paulo: Nova Cultural, 1997.

UNIVERSIDADE FEDERAL FLUMINENSE. A UFF em Números. Disponível em: <http://www.uff.br>. Acesso em: nov. 2011.

UNESCO. Relatório Unesco Sobre Ciência 2010: o atual status da ciência em trono do mundo. Disponível em: < www.unesco.org>. Acesso em jun, 2011.

VALERIANO, Dalton L. Gerência em projetos; pesquisa, desenvolvimento e engenharia. São Paulo: Makron Books, 1998.

VERGARA, Sylvia Constant. Projetos e relatórios de pesquisa em Administração. São Paulo: Atlas, 1998.

YIN, R. K. Estudo de caso: planejamento e métodos. 2ª ed. Porto Alegre: Bookman, 2001.