THE INFLUENCE OF EXTRACURRICULAR ACTIVITIES IN THE MANAGERIAL COMPETENCIES DEVELOPMENT IN RESEARCH GROUPS

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SUMMARY

This study aimed at identifying relationship between extracurricular activities (EA) and the managerial competencies (MC) mastery in Brazilian research groups (RG) with the use of MC mastery scale in RG developed by Freitas & Odelius (2017), along with issues related to the EA contribution to MC development in RG. Electronic questionnaire applied to 528 participants and submitted to descriptive statistics, Kendall-tau b correlation analysis and Kruskal-Wallis test enabled to deduce that: 1) participation in research group, scientific initiation, university extension, internship, professional performance in general, volunteer work and consulting project are related to the MC mastery in all its dimensions; 2) performance in junior enterprise has not proven able to significantly influence MC mastery in RG; and 3) there are significant differences in MC mastery due to the role performed in RG, the type of institution, the knowledge area, schooling, and length of experience with academic research. At the end, conclusions, limitations and agenda were submitted to future researches.

Keywords: Managerial Competencies, Research Groups; Extracurricular Activities, Managerial Competencies Development.

INTRODUCTION

Universities have encouraged more and more to ally extracurricular activities (EA) to theoretical knowledge produced academically in order to complement theoretical content, as well as fostering economical and social development and the advance in science and technology (FREITAS JR., 2003). Such activities, at times, constitute informal opportunities to develop Managerial Competencies (MC), as they enable actual contact with organizational context and its complexities (LEITE, 2009).

Despite studies which deal with Research Groups (RG) members' competencies being recommended, moreover the ones related to the exercise of leadership, and research projects orientation role (HIGUITA-LÓPEZ; MOLANO-VELANDIA; RODRÍGUEZ-MERCHÁN, 2011), we come across the research issue which we intend to face with the study herein: lack of studies which cover relationship between EA and MC development, specially in RG context, as studies in such research locus are scarce.

It is believed that this study can contribute both for the provision of academic gap presented and to guide investments in EA, as efforts, strategies and resources can be targeted with the purpose of searching for more promising results by RT, universities and development institutions (ODELIUS et al., 2011).

Therefore, this study has the purpose of identifying relationship between extracurricular activities (EA) and the managerial competencies (MC) mastery in Brazilian research groups (RG). The following EAs have been studied: participation in RG, scientific initiation; university extension; internship; volunteer work; performance in junior company; consulting project; and professional activities in general.

For that matter, it is expected that, at the end of this article, the reader is aware of the relation existent between the MC mastery in all its dimensions and the RG performance, scientific initiation, university extension, internship, professional performance in general, volunteer work and consulting project, as well as the lack of significant relationship between the junior enterprise performance and the MC mastery in RG.

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THEORETICAL BENCHMARK

MANAGERIAL COMPETENCIES IN RESEARCH GROUPS

Research Group (RG) is a "group of people who interact to generate research and knowledge products in one or more subjects, according to work plan at short, average or long term, with the purpose of solving problems" (COLCIÊNCIAS, 2015, p. 30). Its environment is favorable to develop MC as, by incorporating teaching, research and extension, the interaction in the RG context propitiates new behaviors and learning about the search for results, interpersonal arrangement, work organization and situational adaptation (ABBAD; BORGES-ANDRADE, 2004; FONSECA et al., 2012).

There are countless definitions to competencies, arising from different currents (American, European and integrative), which have in common considering that, from a certain specific context, a set of knowledges, capabilities and attitudes are used to show a performance result which generates value to the individual or to the organization he/she acts in. (CAMPION et al., 2011; BRANDÃO; BORGES-ANDRADE; GUIMARÃES, 2012; FERNANDEZ; ODELIUS, 2013; CAMPOS; ABBAD, 2014; CHOUHAN; SRIVASTAVA, 2014; MONTEZANO; ABBAD; FREITAS, 2016).

Individual competencies can be rated in different ways, one of them remitting to the occupational role, with a subdivision in technical and managerial competencies. Brandão (2009) suggests that the technical competencies are related to the professional specialties or specific ones from certain areas, while managerial specialties are related to a work team or organizational area leadership. While Chouhan & Srivastava (2014) state that managerial competencies are the ones of an individual, who, by performing, takes responsibility to manage resources.

Facing the multiplicity of definitions to MC, the study herein will be guided by the definition used by Freitas & Odelius (2017): Managerial Competencies are the expression of a set of knowledges, capabilities and attitudes converted in obserbable behaviors or potential ones which generate value and results to the manager himself/herself, to other individuals, to staffs, to organizational units, to the organization or to networks, consid-

ering the context in which they are inserted, the resources made available and the organization strategy.

There are several scales to identify managerial competencies (DENISON; HOOIJBERG; QUINN, 1995; PILLAY, 2008; PRESTON, 2009; BRANDÃO et al., 2010; FERNANDEZ; CHO; PERRY, 2010; LORBER; SAVIC, 2011; VIEIRA; SILVA; ITUASSU, 2015; BRITO-DE-JESUS et al., 2016; AVELINO; NUNES; SARSUR, 2016). However, considering this study specific interest in identifying the EA contribution in RG, "MC in RG Scale" by Freitas & Odelius (2017), has been chosen, as it is specific for this context. The scale is made by 50 itens grouped in 2 factors: PRRM - People and Research Results Management (related to the teams management to achieve RG results); and RPR - Resources Raising and People Attracting (related to the resources and people supply to carry out the group activities).

It is highlighted, finally, that competencies shall be linked to a certain contexts to be expressed and generate the result expected. Therefore, competencies development, during the students' education, undergraduate or postgraduate one, remits to the need of its participation in EA bound to the competencies application in a context similar to the one of work to be performed by the future professional.

RELATIONSHIPS BETWEEN EXTRACURRICULAR ACTIVITIES AND THE DEVELOPMENT OF MANAGERIAL COMPETENCIES

Extracurricular Activities (EA) are considered those which are carried out by the students, but are not scheduled in the regular curriculum of school or college education. Normally, despite not being compulsory, such activities are recommended and made available to several students, regardless their knowledge area (VALENÇA, 1999; FIOR; MERCURI, 2003).

EAs are important as, through them, students may experience the competencies application in a context similar to the one he/she will live with after his/her education. There are several studies which point to the need of linking competencies development to the practice in work context environment (RUAS; COMINI, 2007; LAUTENSCHLAGER, 2009; MARTINS-SILVA; SILVA; SILVA JÚNIOR, 2016; ODELIUS; PORTO, 2016),

including the ones referring to managerial competencies development (RUAS; COMINI, 2007; ODELIUS; PORTO, 2016; SANT'ANA et. al, 2017).

Cassundé et al. (2015) have performed a research at a Federal University and have found that around 77% of the sample take part or have taken part of such type of initiative. According to these authors, the most sought activities are: lectures, round tables and participation in events (23.2%), workshops and courses (17.6%) and internship (10.2%). The participation in extension projects, junior company, scientific initiation, monitoring and mentoring was smaller. Students' justification in searching for taking part in EA is due to the fact they believe it makes for the insertion in work market. On the other hand, students who have not taken part in EA argued as reasons the low availability of time as they also have to work and study, besides the unawareness of these types of activities offered by the Institution, which occurs due to the lack of disclosure.

According to Pereira et al. (2011), in research with students and graduates of the Administration Course from Universidade Federal de Santa Catarina, students find it difficult to define in which extracurricular activities they shall take part to contribute to their professional development, due to lacking University guidance. These authors also showed levels of importance as per the belief of the contribution of some extracurricular activities to such development. For the undergraduates, 82.8% highlighted the importance of internship; 82.8%, of working in companies in general; and 58.6%, of acting in juniors companies. For the graduates, 87.8% reported the importance of internship; 82.9%, of working in companies in general; 51.2%, of taking part in juniors companies and 48.8%, of taking part in scientific initiation. Besides, 30.3% out of the undergraduates showed indifference regarding the importance of taking part in juniors companies and 42.4%, regarding scientific initiation, while 29.3% out of the graduates showed indifference as to acting in a junior company. Among the extracurricular activities, which the undergraduates intend to take part the most, it is highlighted: to study foreign languages (72%); do internship (70%); take part in academic interchange (53%); take part in events, conventions and conferences (41%). Graduates, on their turn, have stated taken part most

frequently in the following activities: internship (83%); events, conventions and conferences (71%); to study foreign languages (68%); to work for companies (54%); and to carry out technical trip (51%). The other activities had frequency below 40%.

In turn, Martins-Silva, Silva & Silva Júnior (2016) have carried out research with the Management course graduates and have determined that life experience contributes more than formal education to the manager's competencies development. The authors have identified that the competencies most developed by means of formal education and non-formal education are teamwork, interpersonal relationship and commitment to the organization goals, reinforcing that practical living is necessary so they are developed.

In general, Ruas & Comini (2007) have identified that learning strategies used in post-graduation courses for managerial education are not suitable to develop MC, as they are not associated to the work environment condition in which they will be put into practice. According to the authors, to develop MC, it is necessary to use strategies with social learning approaches, learning by experience, located learning and learning communities. For that matter, the process of consolidating competencies is fundamental, notably for the most valued competencies in work market (strategic and business view, capability of acting in complex environments, capability of using contemporary management concepts and methods, guidance to results, and relationship networks establishment). However, students point out that the course propitiates potential development of such competencies instead of its realization. These authors reinforce that rethinking learning approaches is necessary to enable competencies development at work environment, so that the competencies concept can be adopted associated to the capabilities mobilization in work context for effective result delivery.

On the other hand, Odelius & Porto (2016) have inquired how EAs can influence competencies mastery during undergraduates Management education. Authors consider that, within the academic context, there are some activities which may be carried out to complement the student's learning in order to place him/her in practical situations which will be able to develop

professional competencies and prepare him/her to the work market, depending on the carrier he/she wishes to follow. According to the authors, Management course students taking part in internship, scientific initiation or junior enterprise report the perception of holding greater technical-professional competencies mastery when compared to the students taking part in research groups, university extension project and volunteer work.

Sant'ana et al. (2017) also emphasize, to competencies development, it is necessary to extrapolate learning in the classroom from getting closer to the student with organizational reality, by means of practical experiences in internship, junior company, activities related to companies and market, besides participation in seminars and debates.

Specifically, there are studies which deal with the relationship between certain EAs and its respective resulting managerial competencies. Regarding junior enterprise participation, according to Lautenschlager (2009), students who have the opportunity of performing such activity report to have developed competencies related to creativity and innovation, as so to searching for self-development, generating greater initiative and autonomy capability.

Valadão Jr., Almeida & Medeiros (2014) have also identified that participation in junior enterprise is a means of building competencies, due to the contribution for professional carrier development of their staff, notably, related to the competencies as communication, negotiation, leadership, planning, decision taking, teamwork, results orientation, among others.

Campos et al. (2015) note that this activity brings work market closer to the academic environment, as the students may apply theoretical knowledge acquired during education. These authors have also identified that the junior companies context is suitable to the development of capabilities turned to strategic management, time management, communication and cooperative relationships, although the first two ones give rise to priority training in detriment of the other two ones.

Silva, Almeida & Ferreira (2015) have investigated junior enterprise participants' perception, identifying that the main reason alleged by the members to act in junior enterprise is acquiring market experience, fol-

lowed by learning itself. These authors also point out that the main competencies acquired during the experience in a junior enterprise are: people management, team development, leadership, conflict management, initiative, flexibility and self-motivation.

In turn, Lima & Cantarotti (2010) have carried out study in junior companies and have identified that the contents taught in classroom during education are not enough to prepare students to the work market. These authors emphasizes that acting in junior enterprise makes MC development available, as it propitiates opportunities so the members act as change agents, conduct meetings, coordinate teams and projects, develop creativity and entrepreneurship, distribute activities and responsibilities, search for reaching targets and goals, manage budgets and finances, identify and solve actual problems, negotiate with clients, suppliers, sponsors and partners, as well as ponder on strategic decisions.

At last, regarding the junior company, Bervanger & Visentini (2016), in a bibliometric analysis, have determined that this activity is a practical learning space of knowledges and skills bound to the junior adviser and that it provides a differential to the student's development and his/her professional education.

Regarding the internship, it is considered that this activity during the education in graduation, enables competencies development which will significantly contribute to the student's insertion in the work market (OLIVEIRA et al., 2009). Also, it is worth to highlight that internship is the most mentioned activities in the studies and recurring in managers professional carrier (REIS, 2007) and it can be considered a non-formal development action of great effectiveness (DUTRA, 2008), included concerning MC. Oliveira et al. (2009) have depicted the monitored internship context at nursing area in a private university, showing that 68% of the research undergraduate participants mentioned that the experience during internship had propitiated integral development of MC, while 29% pointed to a partial development.

For Silva, Coelho & Teixeira (2013), perception of satisfaction with the experience in internship is related to the possibility of developing competencies in problem solving, organization, planning and management of

available material and time resources. However, these authors have alerted that the internship accomplishment does not necessarily ensure competencies development, as such learning requires intern to really perform activities related to his/her acting area, i.e., it will depend on the work conditions and context.

Cassundé et al. (2017), on the whole, studies on the internship contribution in the student's life, to his/her education are, essentially, qualitative and case studies, with the purpose of understanding the learning process and competencies development, as well as the student's view regarding this practice contribution to insertion in work market. Dealing specifically with Management graduation, these authors have concluded that internship is able to develop competencies needed to Management professional education, as they have many points in common with managerial competencies, notably, problem-solving, decision-taking, communication, negotiation, logical, analytical and critical thinking, initiative, ethics, creativity, determination and will, openness to changes, knowledge management and strategic management.

Regarding the research groups, it is worthwhile highlighting Freitas & Odelius (2017) study, which has pointed that research groups members, even not being leaders, develop managerial competencies aimed to people and research results management (as planning, communication, conflict management), as well as concerning resources raising and people attraction (as performance in networks, partnership formation, relationship with development institutions). Such activity also stimulates the search for knowledge related to the work performed, which generates a differential to the professional's future. Moreover, its exercise does not depend on financing by the development agencies (KRAHL et al., 2009).

Soares et al. (2017, p. 23) have noted that research groups participants, even temporarily, hold greater tendency of being leaders due to the "critical view and personal reflection power expansion or due to the intellectual maturity itself". Besides, Krug et al. (2011) have listed several benefits and learnings propitiated to the research groups participants, as many of them relate to the managerial competencies, as teamwork, interperson-

al relationship, management of several commitments responsibly, critical capability, creativity, performance in meetings, activities organization, actions planning and consolidation of targets established.

Regarding the scientific initiation, there are also possible relationships with the development of managerial competencies (TEIXEIRA; VITCEL; LAMPERT, 2008). According to Odelius et al. (2016), it is an activity intended to stimulate high school youngsters or undergraduates to become researchers, in order to improve the knowledge existent. These authors state that, having direct contact with skilled researches and with RG, students under scientific initiation develop not only competencies related to academic research and scientific methods, but are also stimulated to deal with issues and act creatively, which are aspects closely linked to managerial performance. Nascimento, Bezerra e Morosini (2014) have noted that the scientific initiation is also able to develop the knowledge management, as the scholars not only assimilate but also produce and spread knowledge, solving or contributing to the problems resolution related to their area of activity.

Regarding the volunteer work, Rego, Zózimo & Correia (2017) asset that such activities promotes the social competencies acquisition, capability of initiative and sensitivity, by means of informal leaning and volunteering experience. Besides, for Allen, Galiano & Hayes (2011), volunteering improves leadership competencies, strengthening capabilities to deal with staffs, forming partnerships, and the priority sense, being acknowledgedly a strategic resource to engage, commit and develop people. Besides leadership, Santos (2017) also points that volunteer work develops competencies of negotiation, owner view, customer service and efficiency.

Regarding the consulting projects, this activity is considered a connection between universities and entrepreneurial desires (RAPINI, 2007). Neo-institutionalists theorists acknowledge the isomorphic role of consultancy as organizational models disseminators (DIMAGGIO; POWELL, 2000), besides also being the main propagators of organizations approach which learn (BASTOS; GONDIM; LOIOLA, 2004). This activity may be defined as a support to managers as per the decision-taking of great impact in organizational results, notably, the strategic character ones. This direct

performance in organization sensitive areas provide the advisers with MC development turned to deal with uncertainty, risks, competition and environmental complexities (LIMA; CANTAROTTI, 2010), besides giving opportunity for advisers to feature changes (REIS, 2007).

Regarding university extension, it is about a communication process between the scientific community and the society, so that the academic knowledge and the society practice improve mutually (FREITAS JR., 2003). This activity is inserted in a full-time education policy, in which university students are oriented by professors, who are supported in their teaching researches and activities, with the purpose of provide the society with citizenship, assistance and consulting projects, besides the students own insertion in work market (FONSECA et al., 2012). For Tavares et al. (2016), university extension activity, when dealing with the community, contributes for attitudes and values development with autonomy, critical sense, respect, professional ethics and morality. Nobre et al. (2018) stated that the extension also has potential for competencies development as teamwork, leadership, decision-taking, problem-solving, communication, besides principles as ethics.

Finally, concerning to professional performance in general, there are many studies, in several contexts, which link the work itself to the managerial competencies development, as professional performance figures as a mechanism which convert concrete experiences in really effective learnings (ARNS; PRICE, 2007; LEITE, 2009; MINTZBERG, 2010; CLOSS; ANTONELLO, 2012; SANTANA; MAIA, 2014).

Frame 1 summarizes the studies identified from literature analysis, along with the indication of managerial competencies emphasized, organized according to the rating proposed by Freitas (2016). It is possible to note similarities and peculiarities regarding managerial competencies liable of being developed with the participation in extracurricular activities during students' formation.

It is also noticed that managerial competencies mostly recurrent in the studies, considering the relationship with EA are: attitudes and values (ethics, initiative, commitment); capability with people and staff (teamwork, inter-

personal relationship), skill with changes, innovations and skill in situational adaptation; capability of dealing with issues and opportunities; strategic view; communication; organization; resources allocation and mobilization; negotiation and persuasion; leadership; planning; and results orientation.

Frame 1 Managerial competencies which may be developed by means of Extracurricular Activities

Author (year)	Extracurricular Activity	Managerial Competencies																	
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Ruas e Comini (2007)	EA in general			X		X						X			X				
Odelius & Porto (2016)		X	X	X	X	X	X	X	X			X	X	X					
Sant'ana et al. (2017)		X	X		X	X	X	X	X		X		X			X		X	
Lautenschlager (2009)	Junior Company	X		X															
Valadão Jr., Almeida & Medeiros (2014)		X	X	X	X		X	X	X	X	X	X	X	X	X		X		
Campos et al. (2015)			X			X	X				X								
Silva, Almeida & Ferreira (2015)		X	X							X							X		
Lima & Cantarotti (2010)		X	X	X			X	X	X			X		X					X
Silva, Coelho & Teixeira (2013)	Internship				X			X			X								
Cassundé et al. (2017)		X		X	X	X	X		X				X	X		X			
Freitas & Odelius (2017)	Research Group	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Soares et al. (2017)										X									
Besides, Krug et al. (2011)		X	X					X			X	X				X			

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Author (year)	Extracurricular Activity	Managerial Competencies																	
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
According to Odelius et al. (2016)	Scientific Initiation			X	X														
Nascimento, Bezerra & Morosini (2014)					X								X						
Rego, Zózimo & Correia (2017)	Volunteer Work	X	X																
Allen, Galiano & Hayes (2011)			X							X	X				X				
Santos (2017)		X				X			X	X		X							
Lima & Cantarotti (2010)	Consulting Project			X		X													
Reis (2007)				X															
Tavares et al. (2016)	University Extension	X																	
Nobre et al. (2018)		X	X		X	X	X			X									
Number of events		13	11	10	9	9	8	7	7	7	7	7	6	5	4	4	3	2	2

Key: A = Attitudes and values (Ethics, initiative, commitment); B = Capability with people and staff (teamwork, interpersonal relationship); C = Skill with Changes, innovations and skill in situational adaptation; D = Capability of dealing with issues and opportunities; E =Strategic view; F = Communication; G =Organization; resources allocation and mobilization; H = Negotiation and persuasion; I = Leadership; J = Planning; K = results orientation; L = Knowledge and Learning Management; M = Decision-taking; N = Political Ability and networks articulation; O = Critical, logical and analysis/synthesis Ability; P = Ability with conflicts; Q = Systemic View; R = Empowerment; Delegation and Decentralizing.

Source: Prepared by the authors based on Research Data.

METHOD

The research herein has theoretical-empirical character and explicative-explanatory nature, with cross cut and quantitative approach, by means of data collection technique with electronic questionnaire developed in *SurveyMonkey* tool, besides statistic data analysis technique (descriptive and inferential) using SPSS tool, which are detailed below.

Conselho Nacional de Desenvolvimento Científico e Tecnológico - CNPq census, published in 2014, pointed that there are 35,424 RG and 180,262 researches, who were considered as population for this study. To calculate the minimum sample, Cochran (1977) formula was used, which recommended that at least 384 repliers would be needed to grant statistical power to the analysis, providing 95% ($Z = 1.96$) confidence level and allowable error margin = 0.05 (COCHRAN, 1977, p. 72). For this study, 528 complete replies were obtained from RG members. During data treatment, it was possible to identify 13 univariate or multivariate outliers, who were excluded, remaining 515 individuals as research sample, who are characterizes on Table 1.

Table 1 Socio demographic and functional variables

Socio demographic or functional variable	Categories	Frequency	%	% accumulated (valid)
Actuation in group	Group leader	374	72.6	72.6
	Project leader	41	8.0	80.6
	Other participants	100	19.4	100.0
	Overall	515	100	
Gender	Male	303	58.8	59.4
	Female	207	40.2	100.0
	Overall	510	99.0	
	Did not reply	5	1.0	

Socio demographic or functional variable	Categories	Frequency	%	% accumulated (valid)
Schooling level	High School	3	0.6	0.6
	College Education	11	2.1	2.7
	Specialization	8	1.6	4.3
	Master's degree	39	7.6	11.8
	PhD	177	34.4	46.2
	Post-doctorate	277	53.8	100.0
	Overall	515	100.0	
Age	Up to 25 years old	8	1.6	1.6
	Up to 35 years old	40	7.8	9.5
	Up to 45 years old	82	15.9	25.7
	Up to 55 years old	159	30.9	57.1
	Up to 65 years old	163	31.7	89.3
	66 years old or older	54	10.5	100.0
	Subtotal	506	98.3	
	Did not reply	9	1.7	
	Overall	515	100.0	
Period or Experience with Research	Less than 1 year	5	1.0	1.0
	Up to 4 years	45	8.7	9.7
	Up to 9 years	30	5.8	15.5
	Up to 29 years	257	49.9	65.4
	More than 30 years	178	34.6	100.0
	Overall	515	100.0	
Productivity Scholarship in Research	1A	69	13.4	13.4
	1B	47	9.1	22.5
	1C	62	12.0	34.6
	1D	71	13.8	48.3
	2	90	17.5	65.8
	I do not have scholarship	173	33.6	99.4
	Overall	512	99.4	
	Did not reply	3	0.6	100.0
	Overall	515	100.0	

Socio demographic or functional variable	Categories	Frequency	%	% accumulated (valid)
Geographic Region where the Group meetings take place	North	16	3.1	3.1
	Northeast	83	16.1	19.2
	Central-West	79	15.3	34.6
	Southeast	245	47.6	82.1
	South	92	17.9	100.0
	Overall	515	100.0	
Type of Teaching / Research Institution the group is bound to	Public	465	90.3	90.3
	Private	50	9.7	100.0
	Overall	515	100.0	
Group Great Area of Knowledge	Exact Sciences and Earth Sciences	96	18.6	18.6
	Biological Sciences	69	13.4	32.0
	Engineering	39	7.6	39.6
	Health Sciences	65	12.6	52.2
	Agricultural Sciences	74	14.4	66.6
	Applied Social Sciences	99	19.2	85.8
	Human Sciences	60	11.7	97.5
	Linguistic, Languages and Arts Arts Arts	13	2.5	100.0
	Overall	515	100.0	

Source: Prepared by the authors based on the Research Data

Sample obtained is not probabilistic per convenience, because replies were attained from volunteers who made themselve available to take part in the research, which was disclosed by means of three fronts: snowball sampling started by coordinator of 93 post-graduation programs from sev-

eral knowledge areas from a federal university; reply request to RG who were enrolled openly at Facebook; and forwarding of link to 6,630 electronic mails of RG members all around Brazil. It is important to emphasize that analysis of data obtained showed that the sample, despite not widespread, have kept very similar characteristics to the population researched, moreover, related to the schooling, gender, age and geographic distribution variables.

The instrument used to collect data was the MC Scale in RG developed by Freitas & Odelius (2017), which uses anchors that vary from 1 to 5 (no mastery to full mastery). It is a two-factor scale: Factor 1 - Peoples and Research Results Management (PRRM), with 41 items (factorial loads between 0.550 and 0.916; Cronbach's Alpha 0.983); and Factor 2 - Resources raising and peoples attraction (RRPA) with 9 items (factorial loads between 0.495 and 0.820; Cronbach's Alpha 0.903). Scale has been checked as per the converging and discriminating validity and per reliability. Scores for each of these factors have been obtained from arithmetic average of the respective items.

Besides this instrument, participants were invited to point how their participation in EA has contributed to the development of their MC in RG, in a five-point scale, Likert Type (no contribution to total contribution). There was also a field so that participant would check in case there was no experience in the respective activity. Besides, the instrument had the respondent party's profile characterization questions.

Data have been submitted to descriptive statistical analysis (central tendency measures: mean, median, mode and standard deviation) for sample distribution understanding. Following, statistical presumptions tests were carried out, which as shown that data have not presented normal distribution. Then, non-parametric tests were used for correlation (Kendall-tau b) and variance (Kruskal-Wallis Test) analysis.

RESULTS SUBMISSION AND DISCUSSION

Replies concerning EAs distribution for MCs development indicate that a little more than half responding individuals had performed in all extracurricular activities researched, 14% took part in 7 EAs and the percentages for 5 and 6 EA were, respectively, 11.6% and 11.9%, according to the data from Table 2. That means data covers the EA experiences diversity lived by the majority of respondent individuals.

Table 2 Number of extracurricular activities in which he/she took park.

Quantity of EA	Frequency	%
0	1	0.2
1	2	0.4
2	5	0.9
3	17	3.2
4	35	6.6
5	61	11.6
6	63	11.9
7	74	14.0
8	270	51.1
Overall	528	100.0

Source: prepared by the authors based on Research Data.

Out of 74 respondent individuals who performed in 7 of the EAs researched, 50 have not taken part of EJ, 7 have not practiced Volunteer work and 7 have not been involved in consulting projects. Scientific initiation activities, university extension and professional activity have not been carried out by 2 responding individuals, in each of them, and 3 have not had experience with internship.

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CONTRIBUTION OF EXTRACURRICULAR ACTIVITIES FOR THE DEVELOPMENT OF MANAGERIAL COMPETENCIES

The descriptive statistics of central tendency measures (mean, median and mode) and dispersion ones (standard deviation, asymmetry and kurtosis), which represent how much each of the extracurricular activities contributed to the development of the managerial competencies in research group, are inserted on Table 3.

Table 3 Descriptive statistics and Central tendency Measures

Extracurricular Activity	N		Mean	Median	Mode	Standard Deviation	Asymmetry	Kurtosis
	Contributed	With no experience						
Patricipation in RG	502	13	4.538	5	5	0.858	-2.117	4.391
Scientific Initiation	459	56	4.100	5	5	1.291	-1.264	0.302
University Extension	427	88	3.245	3	5	1.518	-0.219	-1.422
Internship	458	57	3.483	4	5	1.462	-0.462	-1.19
Volunteer Work	406	109	3.283	4	5	1.476	-0.321	-1.287
Junior Company	421	94	2.109	1	1	1.428	0.9	-0.664
Project	303	212	3.496	4	5	1.465	-0.582	-1.051
Professional performance (in general)	499	16	4.515	5	5	0.851	-2.108	4.746

Source: prepared by the authors based on Research Data.

Regarding the measures of central tendency, according to the opinion of the respondents, the AE that most contribute to the development of CG in GP are participation in GP, professional performance in general and

scientific Initiation (HF) and. The activity that least contributed was the performance in a junior company..

These findings can be opposed to the ones found by Odelius & Porto (2016), who have studied Management course students' perception about the degree of greater mastery of technical-professional competencies. Results are compatible to scientific initiation, but differ to junior enterprise and volunteer work performance. Probably, divergences are due to the research locus, as MC and RG are different from Management undergraduate students' technical-professional competencies. Also Dos-Santos et al. (2015) have studied the junior companies' context and the results submitted are different from the one found in this study. To these authors, professors' or more skilled colleagues' mentorship from junior enterprise propitiate competencies development, both technical-operational, and behavioral, due to a social-practical approach, which enables greater learning.

It is fundamental to stress that the perception of smaller contribution from participation in junior companies to the development of MC and RG may be due to the fact that, in practice, it is common that the ones taking part in junior enterprise are not interested or available to take part in RG and vice-versa. Therefore, the criterion variable context is delimited to RG, as there was expectancy participation contribution in junior companies was, in fact, smaller.

Turning to the instrument validity and reliability evidences checking, two factorial analysis were carried out, separately, one for each factor. PRRM and RRPA factors have kept original factorization and drew variances of 59.08% and 58.2%, respectively, which corroborates to the instrument convergent validity, due to exceeding the 50% mark in each factor (HENSELER, RINGLE, SINKOVICS, 2009). Also, Cronbach's alphas were recalculated, which have been kept above 0.7 (0.982 and 0.902, respectively), ractifying the measure reliability. At last, correlation between factors ($\tau = 0.668$, $p < 0.001$) was assessed, which grants discriminating validity to the scale based on the Shipp, Burns & Desmul (2010) criterion, according to whom, there is discriminating validity when the correlation between the factors involved is below 0.85.

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After the validity and reliability evidence verification, non-parametric tests and correlation analysis results are shown. To compare the respondent individuals' perceptions regarding the EAs contribution for the MC in RG development, H non-parametric test from Kruskall-Wallis was used, which compares groups, specifying possible differences considered statistically significant, normality assumption not being required. On Table 2, there are the referred test results, at times where there were significant differences (p value < 0.005). For each category, mean, median and standard deviation were presented.

Table 4 Perceptions with statistical differences, as per EAs contribution for the MC development in RG, according to the respondent individuals' features.

Socio demographic or functional variable	Extracurricular Activity	P value	Categories	Mean	Median	Standard Deviation
Performance in RG	Junior Company	0.023	RG Leader	4.35	4.45	0.58
			Project leader	4.20	4.33	0.61
			Other participants	3.68	3.70	0.84
Type of Institution	Scientific Initiation	0.048	Public	4.24	4.41	0.72
			Private	4.25	4.47	0.62
	Internship	0.010	Public	4.22	4.36	0.71
			Private	4.24	4.47	0.65
	Project	0.029	Public	4.22	4.37	0.71
			Private	4.23	4.47	0.70

Socio demographic or functional variable	Extracurricular Activity	P value	Categories	Mean	Median	Standard Deviation
Knowledge Area	Scientific Initiation	0.005	Exact Sciences and Earth Sciences	4.31	4.34	0.54
			Biology	4.29	4.50	0.73
			Engineering	4.14	4.66	0.78
			Health	4.41	4.66	0.67
			Agriculture	4.29	4.44	0.67
			Applied Social Sciences	3.95	4.03	0.84
			Human	4.25	4.42	0.70
			Languages, Linguistics and Arts	4.33	4.53	0.69
	Internship	0.001	Exact Sciences and Earth Sciences	4.37	4.39	0.51
			Biology	4.34	4.53	0.62
			Engineering	4.15	4.25	0.76
			Health	4.45	4.66	0.54
			Agriculture	4.25	4.41	0.69
			Applied Social Sciences	3.82	3.86	0.84
			Human	4.20	4.33	0.74
			Languages, Linguistics and Arts	4.37	4.60	0.75
	Junior Company	0.034	Exact Sciences and Earth Sciences	4.30	4.33	0.51
			Biology	4.30	4.45	0.63
			Engineering	4.20	4.40	0.78
			Health	4.43	4.57	0.55
			Agriculture	4.29	4.49	0.64
			Applied Social Sciences	3.86	3.80	0.83
			Human	4.22	4.34	0.71
			Languages, Linguistics and Arts	4.44	4.53	0.25

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Socio demographic or functional variable	Extracurricular Activity	P value	Categories	Mean	Median	Standard Deviation
Schooling	Research Group	0.006	College	2.84	2.98	0.88
			Specialization	2.86	2.80	1.03
			Master's degree	3.65	3.69	0.77
			PhD	4.18	4.22	0.65
			Post-doctorate	4.36	4.54	0.63
	Junior Company	0.003	College	3.66	3.67	0.86
			Specialization	3.00	2.86	1.18
			Master's degree	3.60	3.65	0.75
			PhD	4.23	4.28	0.59
			Post-doctorate	4.35	4.54	0.62
Period or Experience with Research (Seniority)	Research Group	0.029	Less than 1 year	3.36	3.80	1.58
			Up to 4 years	3.36	3.35	0.78
			Up to 9 years	3.94	4.13	0.87
			Up to 29 years	4.22	4.33	0.64
			More than 30 years	4.41	4.63	0.65
	Junior Company	0.020	Less than 1 year	4.12	3.91	0.56
			Up to 4 years	3.29	3.31	0.74
			Up to 9 years	4.05	4.10	0.80
			Up to 29 years	4.22	4.33	0.60
			More than 30 years	4.45	4.65	0.59

Source: Prepared by the authors based on the Research Data

In general, data seem to reinforce that the features linked to the individual's performance, to schooling, to the knowledge area and to the context influence the EAs contribution perception for the MC development. This fact should be considered to the establishment of education strategy.

Among the variables available on Table 4, it is worth pondering, specially, on the time of experience with research (seniority), as, despite the significant difference both for contribution perception of the participation in RG and for the junior enterprise performance in developing MC in RG, seniority level increase results in distinct behaviors in these AEs. Regarding the participation in RG, it is noted that the respondent individuals with less than five-year experience with research (mean = 3.36) they cannot realize how group participation is important to MC development. Such perception starts changing around the fifth to the ninth year of experience, as, from such period, contribution perception is kept with high and always increasing values (mean of 3.94, 4.22 and 4.41, in the following categories). A possible explanation is that beginner members taking part in RG environment turn to more operational procedures, performing research techniques competencies development more, such as literature analysis and review, data collection and analysis, scientific text writing (FERNANDEZ; ODELIUS, 2013). As far as they progress in academic research experience, then they start practicing RG, and, therefore, recognizing the group as environment favorable to these competencies development.

Regarding the performance in junior company, time of experience with academic research causes a fall and recovery effect. junior enterprise activities contribution in MC development is increasingly recognized by newly-enrolled researchers (mean = 4.12), decreasing between the first and the fourth year of experience (mean = 3.29), and increasing again from the fifth year of experience with academic research (mean of 4.05, 4.22 and 4.45). A possible reason for that effect is the fact that 84.5% of respondent individuals are seniors (with more than 10-year experience in academic research). Therefore, maybe, they do not remember how much their mastery in MC comes from experiences in junior companies. By contrast, less experienced individuals have learning related to MC in their most recent memories, implying in higher contribution perception in first years of experience in academic research. Anyway, future studies can assess at length these differences, besides testing the seniority level in other samples related to the other EAs.

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CORRELATION BETWEEN EXTRACURRICULAR ACTIVITIES AND THE MANAGERIAL COMPETENCIES DEVELOPMENT IN RESEARCH GROUPS

Kendall-Tau b Correlation analysis has enabled to identify the correlation between EA and the MC Development in Research Groups, as submitted on Table 5.

Table 5 Correlation analysis between Extracurricular Activities and the Managerial Competencies Development in Research Groups

Extracurricular Activity	Managerial Competencies for Peoples and Results Management	Managerial Competencies for Resource Raising and Peoples Attraction
	Degree of correlation (τ)	Degree of correlation (τ)
Participation in Research Group	0.350	0.300
Scientific Initiation Project	0.233	0.255
University Extension Project	0.139	0.181
Internship	0.176	0.244
Volunteer Work	0.152	0.172
Junior enterprise Performance	0.053	0.095
Consulting Project	0.214	0.204
Professional performance (in general)	0.222	0.262

Source: prepared by the authors based on Research Data.

Note 1: * significance: $p<0.05$ ** significance: $p<0.01$

It is worth mentioning that the correlations, even the ones that have shown positive and significant, were low (less than 0.4 is considered poor correlation, according to Dancey & Reidy (2013)) and only junior enterprise performance has not had significant correlation.

Participation in Research Group was the Extracurricular Activity which had shown significant correlation with the greatest indexes along with both managerial competencies factors of the scale adopted (FREITAS; ODELIUS, 2017), both for Peoples and Results Management, and for Resources Raising and Peoples Attraction, aligned to Fonseca et al (2012) suggestion, as per the fact that the research groups are favorable to develop managerial competencies. This correlation support the fact that managerial competencies necessary for research groups proposed in Freitas & Odelius (2017) scale are consistent for RG context. Despite positive and significant correlation, even so, the association degree is poor, as already mentioned. This can be due to the difficulty of the RG participants expressing these competencies, which need to be developed, or due to have been already developed in previous experiences by means of other extracurricular activities, getting more prepared to act in research groups

On the sample researched, extracurricular activities of volunteer work, scientific initiation project, university extension project, internship, professional performance (in general) and performance in consulting project have come out significantly correlated, to the MC mastery in research group, aligned to the scientific production as has been presented in theoretical referential (REIS, 2007; ALLEN; GALIANO; HAYES, 2011; SANTANA; MAIA, 2014; NASCIMENTO; BEZERRA; MOROSINI, 2014; SANTOS; 2017; REGO; ZÓZIMO; CORREIA, 2017; NOBRE et al., 2018). It is noted that competencies developed in these EAs relate directly with the items of Resources Raising and People Attraction factor, specially, concerning the researchers partnership establishment with productive sector companies, attainment of resources and financing for researches and strategic actions implementation appropriate to the organizational environment, supporting this research result Besides, competencies developed in those EAs also have empirical link with Peoples and Results Management mastery, as shown in literature, because, in those EAs, participants need to get along well with people to generate the results needed.

Regarding junior enterprise performance, it has not shown significantly correlated to MC mastery in research group, although there is the-

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oretical basis for the relationship with competencies development for professional education, as submitted in the theoretical referential (REIS, 2007; LAUTENSCHLAGER, 2009; LIMA; CANTAROTTI; 2010; VALADÃO JR.; ALMEIDA; MEDEIROS, 2014; CAMPOS et al., 2015; SILVA; ALMEIDA; FERREIRA, 2015; BERVANGER; VISENTINI, 2016). It is possible that such divergence is due to the fact that, different from the study herein, many of these authors have carried out theoretical assumptions or, when referred to empirical studies, such were related to other contexts, with qualitative or quantitative approach based on descriptive and non-inferential statistics. Finally, another justification would be the possibility of responding individuals having taken part in extracurricular activities, but not experienced the management activities practice.

FINAL CONSIDERATIONS

The study reached its goal as, by means of descriptive and inferential statistics, using Kruskal-Wallis Test and Kendall-tau-b Correlation Analysis, relationships between Brazilian extracurricular activities (EA) and managerial competencies (MC) mastery activities in research group (RG) were identified. Results have ascertained that performance in research group, scientific initiation, university extension, internship, volunteer work and professional performance in general and in consulting project correlate to the MC mastery in all its dimensions; while acting in junior enterprise has not revealed able to significantly influence MC mastery for People and Results Management in RG.

It can be concluded that the majority of EAs is able to provide MC development, important to RG context. This does not mean that the other EAs shall be disregarded or overlooked, as it is expected they are able to influence MC mastery in other contexts. It is worth remembering that the conclusions are applicable to the RG context. That reinforces the issue that competencies definition is linked to its expression in a certain context. It is possible that, in EAs which are significantly correlated, as for instance, the scientific initiation and the university extension, there are similar requirements to the ones needed to act in RG, as all of them have academic bias and aim the scientific production of knowledge, searching for answers to research issues. On the other hand, the differentiated context can have contributed for the lack of significant correlation between the participation in junior companies and the managerial competencies development regarding RG.

Therefore, with the goal of developing MC in RG, it is believed that RG, universities and development institutions shall privilege efforts, strategies and resources to EAs shown more correlated, in this order: participation in RG; internship; scientific initiation project, university extension; and professional performance in general.

As for the limitations, the sample composition highlights that it was not probabilistic and random, but by convenience, which impairs the re-

sults generalization, even attaining sample size higher than the minimum needed; although it is determined that the sample featuring gets close to the population features inserted in CNPq 2014 census.

Other limitations need to be considered: a) the possibility of the self-assessment bias, as both RG and EAs contribution were determined according to the participants' own perception of RG; b) it is possible, for instance, that the participation contribution in RG has been overestimated to the detriment of other EAs, as the searching was to identify aspects which contribute to the MC development in RG context; c) there was no questioning about when and how long have the respondent individuals have taken part in EAs, which impaired some analysis; and d) although the research has been oriented only to RG participants, thirteen respondent individuals have stated not having experience in RG, which seems strange, and may represent neglet or negligence when replying to the questionnaire or the need of adapting the collection instrument in order to avoid such nature misunderstandings.

Finally, it is suggested that, in future researches, studies be carried out which determine the relationships found in other samples and that: a) add aspects which influence the MC expression in different contexts; b) identify the way MCs necessary to RGs were effectively developed by the participants (in previous EAs, in education courses or with the practice in group); c) deepen the investigation of the reasons that lead to the lack of significant correlation between the junior companies performance and the MC development in RG, including, the testing of differentiated weights for the correlation of such activity with MC development, in general context and in RG context; d) correlate EA to the expression of technical competencies not limited to the managerial performance; e) deepen the tests of the influence of the experience period with academic research in the EAs contribution perception in developing MC, and that such results be followed in longitudinal cutout.

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