

Factors Associated With Management By Competences In The Mineral Resources Research Company – Cprm/Sgb

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Abstract:

Research Objective: To identify and describe the factors associated with competency-based management in CPRM/SGB for the position of Geosciences Researchers holding managerial positions in the Directorate of Geology and Mineral Resources - DGM.

- Theoretical Framework : Calazans' (2021) understanding of professional competencies was utilized, which categorizes them into personal/cognitive; social/managerial/professional; methodological; and technical competencies.

- Methodology: A case study was conducted at CPRM/SGB, involving the application of focus groups with the participation of managers, department heads, division chiefs, and project leaders, totaling 28 participants from different states. Information triangulation included the analysis of internal regulations and the lexical analysis of information obtained through the focus group.

- Results: Documentary analysis revealed that the competencies required for the researcher position are organization-specific, involving technical, human, and conceptual competencies. From the focus group analysis, four categories were highlighted emphasizing organizational processes, fieldwork, relationships with colleagues, and organizational policy.

- Originality: The qualitative research, with a single question type of critical incidents in focus groups, allowed the participation of all, capturing in the perspective of research leaders in the organization the gaps between required and existing competencies, indicating appropriate training and qualification of geosciences researchers in the company.

- Theoretical and Practical Contributions : The research contributed to understanding the technical and professional competencies necessary for a key function in the organization, enabling it to carry out managerial activities accurately, conduct research, provide geological information, and achieve excellence in the Brazilian Geological Survey. It contributes to advancing knowledge of competency-based management in public organizations and provides practical guidance to enhance this process in CPRM/SGB. (10)

Key Word :Professional Competencies, Competency Mapping, Managerial Role, Mineral Resources Research Company.

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I. Introduction

The exploration of mineral resources encompasses several complex activities, from the discovery of deposits to economic feasibility studies and environmental assessments. These activities require innovation, development of specific techniques and continuous analysis of various factors (Lorenz et al., 2016). The global search for mineral resources aims to meet society's growing demand while keeping costs low. To achieve this, organizations must train their employees, ensuring that they have the necessary skills to maintain a competitive advantage. The competency-based management model is crucial for organizational performance (Bitencourt, 2004), integrating efforts and directing people management to develop and maintain the necessary competencies. In public administration, the implementation of this model was driven by legal provisions, despite the challenges in aligning people management policies with legislation and organizational reality (Silva & Costa, 2015).

Given the context presented, the question arises what are the factors associated with management by competencies in the Mineral Resources Research Company – CPRM/SGB for the position of Geoscience Researchers in the management role in the Geology and Mineral Resources Directorate – DGM? Thus, the general

objective is to identify and describe the factors associated with management by competencies in CPRM/SGB for the position of Geoscience Researchers. The specific objectives: i) Identify the factors associated with competency-based management necessary for those occupying management roles at DGM; ii) identify the factors associated with management through technical and behavioral skills necessary for DGM researchers; and, iii) verify the existing gap in professional skills of DGM Researchers.

II. Theoretical Foundations

Competencies and main currents

In the 1980s, administrative and organizational changes led to the restructuring of production and the consolidation of flexible accumulation (Harvey, 1992), resulting in new forms of work. This required a new type of employee, capable of carrying out their activities with responsibility and readiness in the face of different situations (Amaro & Bianco, 2007). Models for transforming work processes are based on constructivist and critical-emancipatory approaches (Schwartz, 1998), which consider how individuals reproduce or transform work processes. Competencies are often studied within three main approaches, highlighting authors such as Spencer and Spencer (1993), Boyatzis (1982), McClelland and Dailey (1972) in the English and American current, and Zarifian (2004, 2008), Perrenoud (2001), Dubar (1998), Stroobants (1997) and Le Boterf (1994) in the French current. In Brazil, the notion of competencies and the implementation of competency-based management models emerged in the 1990s (Barato, 1998). In this research, competence is defined as the combination of knowledge, skills and attitudes involved in professional and organizational work, capable of adding value to the individual and the organization.

In this research, recognizing the different integrating dimensions of competence, it was defined as the combination of knowledge (knowledge), skills (does) and attitudes (values) involved in professional and organizational work, carried out with a performance capable of adding value to the individual, characteristic of self-development, as well as the organization (Brandão, Bahry, & Freitas, 2008; Carbone, 2006).

Competence is the ability to mobilize, integrate and transmit knowledge, resources and skills in the work environment and organizational culture, dealing with challenges and limitations. Flexibility, uncertainty, transience and transversality are inherent characteristics of a job market in constant evolution. This evolution results in the emergence of new management models, both globally and in Brazil. Before the 2000s, Brazil adopted the strategic people management model, linking individual performance to organizational performance in the pursuit of strategic goals. (Fischer, 2002). However, it was observed that employees often resorted to unethical strategies to achieve these goals, harming customers and the organization itself (Dutra, 2001). In response to this question, the competency-based management model emerged as an alternative aligned with the organizational strategy to achieve competitive advantage.

Skills at work

Competence at work refers to the actions of employees in professional contexts, contributing to adding economic, social, individual and organizational value (Zarifian, 2004). These actions aim to achieve the organization's objectives and promote social recognition of the capabilities of employees and the organization (Brandão & Guimarães, 2001).

Competencies are generally expressed by behavior patterns previously established by the organization. In the 1990s, there was a growing interest in managerial skills, driven by the perception that managers' skills influence employee performance (Gonczi, 1999) and, consequently, organizational results (Fernandes et al., 2006). Several studies have been carried out to identify relevant managerial skills in different contexts (Boak and Coolican, 2001; Walker & Webster, 2006; Brandão et al., 2010). These studies resulted in the development of scales to measure managerial skills, such as the one developed by Brandão et al. (2010), which include dimensions such as strategic management, financial management, customer relationships, people management, process management and socio-environmental management. The concern with identifying competencies that promote improvements at work is constant in studies, reflecting the importance of competency-based management to align employees' individual competencies with the organization's needs, especially in a context where social interactions are fundamental.

Given the current scenario in which organizations need to establish social interactions in their daily relationships, competency management becomes a way of aligning employees' individual competencies with the organization's needs.

Professional skills

Industry 4.0, with its technological changes and globalization, requires new skills from employees, enabling smart and flexible factories. The digitalization of production processes in the Fourth Industrial Revolution impacts daily work at all hierarchical levels, requiring automation and universal access to data, which demands changes in technologies and employee skills. With these changes, recruitment becomes a challenge for companies (Kazancoglu & Ozkan-Ozen, 2018), which need to be aware of new approaches to hiring to select the best employee. New skills are essential in an ever-evolving digital world, with job opportunities focused on these

skills. Organizations face economic, social and technological challenges with the arrival of Industry 4.0 (Liszka et al., 2019), and to overcome them, they need people with dynamic and innovative capabilities (Shamim et al., 2017). This implies investing in the development of skills necessary to work in this context, such as technical, methodological, social and personal skills (Jerma et al., 2018).

Skills in Brazilian public administration

The National People Development Policy (PNDP) of the Federal Public Administration, established by Decree No. 9,991/2019 (Brazil, 2019), aims to promote the development of public servants with a focus on the skills necessary to achieve excellence in the performance of bodies and entities federal. This decree revokes the concept of competency-based management in Decree No. 5,707/2006 (Brazil, 2006), but maintains the emphasis on competency management to develop knowledge, skills and behaviors necessary for work in the public service (Brazil, 2006, 2019). Normative Instruction SGP-ENAP/SEDGG/ME n° 21/2021 (Ministry of Economy. Special Secretariat for Debureaucratization, Management and Digital Government. Secretariat for Personnel Management and Performance, 2021) provides guidance to the bodies of the Civil Personnel System of the Administration Federal Public Policy (SIPEC) on the implementation of the PNDP, including deadlines, conditions, criteria and procedures. The People Development Plan (PDP) must be prepared annually, recording the development needs of the employees of each body or entity, together with the actions planned to meet them, to be carried out in the year following the planning, and sent to the central body of SIPEC.

In recent years, interest in implementing the competency-based management model in the Brazilian public service has grown, as observed by Araújo and Martins (2014) and Montezano et al. (2019). Studies such as those by Andrade and Ckagnazaroff (2018) and Montezano et al. (2022) address this topic, as well as research on university management carried out by Montezano et al. (2019), Morais and Martins-Silva (2018), Paes et al. (2019) and Paiva e Melo (2008).

Andrade and Ckagnazaroff (2018) analyzed the process of selection and monitoring results of employees designated as public entrepreneurs, observing that the competency model used meets the expectations of managers and candidates, but faces difficulties in measuring deliveries and aligning with the strategy of government.

Lima (2017) investigated factors that affect the implementation of the competency model in a federal public body, identifying resistance to change and lack of sponsorship from senior management among the main issues.

Von Kriiger et al. (2018) reported discontinuity in the management of public bodies and highlighted the need for awareness and support from higher administration to implement competency-based management in public administration.

Montezano et al. (2019) identified limiting factors, such as personnel restrictions, lack of management support, resistance from employees and lack of planning, for the implementation of competency-based management in federal institutes.

Sousa and Barbosa (2018) analyzed the implementation of competency-based management at a Federal University, identifying the need for adaptations to the models to adapt them to Public Administration, as perceived by technical administrative staff. Morais and Martins-Silva (2018) found similar results when analyzing the process of forming social representations of employee competencies in a Federal Higher Education Institution (IFES), highlighting the importance of reflecting on the import of management practices to public organizations. Identifying and analyzing organizational competencies in public organizations makes it possible to deal with the limitations of capabilities to transform them into opportunities for organizational improvement. Despite progress in studies on competencies and competency-based management in public administration, there are still many challenges in implementing these models in Brazilian public institutions. To overcome such challenges, it is crucial to understand the opinion of public servants on the subject, filling gaps, such as the lack of studies that simultaneously address the views of managers and non-managers on the concept, policies and practices of skills management in these institutions (Butler & Ferlie, 2020).

Conceptualization of skills

Several scholars from different areas of knowledge, such as Boyatzis (1982) and McClelland and Dailey (1972), have explored the construct of competence. This complex topic is discussed both in academia, addressing learning through skills and curricular guidelines, and in business, dealing with professional and organizational skills (Fleury & Fleury, 2001). The definition of competence is broad and addressed both in strategy, related to competitiveness and the Resource-Based Vision, and in people management, involving practices such as recruitment and evaluation (Silva, 2013). Authors such as McClelland (1973) and Boyatzis (1982) contributed to this aspect, while others such as Hoffman and Tadelis (2021) and Lepeley et al. (2021) continue to enrich the debate. Understanding competence from the perspective of people management practices is the most widespread and well-known application, even beyond the scientific world (Silva, 2013).

In the scientific field, several scholars from different areas of knowledge have already focused on the construct “competence” (Boyatzis, 1982; McClelland & Dailey, 1972; Manfredi, 1998; Spencer & Spencer, 1993). A complex and diverse theme addressed both in the academic field when dealing with learning through competencies with a curricular focus, discussing teaching guidelines, methodology and learning assessment, and in the business field when discussing competencies of professionals, organizations and countries (Fleury & Fleury, 2001).

The concept of competence is approached from different perspectives and schools of thought, such as the American, English and French (Cascão, 2014), reflecting changes in the job market and organizations. There is no absolute consensus on the concept, which results in philosophical and ideological divergences. Anglo-American approaches generally focus on the performance requirements demanded by organizations, while French approaches highlight the link between work and education, emphasizing the development of skills through learning processes. Competence is commonly defined as a set of knowledge, skills and abilities that produce results or solve problems (Boyatzis, 1982; Fischer et al., 2008; McClelland & Dailey, 1972; Spencer & Spencer, 1993). Companies show an interest in understanding how to develop and use skills in their modernization and restructuring processes to face a competitive market.

The combination of multiple knowledge, knowing how to do, knowing how to act, knowing how to be, necessary in identifying individual skills in contemporary organizations that need to respond effectively to challenges is an object of study in the Anglo-American approach, as can be seen in the works of Spencer and Spencer (1993), Boyatzis (1982) and McClelland and Dailey (1972) and in the French approach, such as studies by Zarifian (2004), Perrenoud (2001), Dubar (1998), Stroobants (1997) and Le Bortef (1994).

Competency mapping and Competency Management

Competency mapping is a process that aims to identify gaps between the organization's existing competencies and those necessary to achieve strategic objectives (Ienaga, 1998). Through observation of behaviors in the work environment, competencies are described, supporting the identification of these gaps. This allows decisions to be made in line with organizational objectives regarding employee development. The profile of each position is defined based on the necessary knowledge, skills and attitudes, in line with the demands of the task, the organizational environment and individual skills (Carbone 2006; Dutra, 2004; Brandão & Borges-Andrade, 2007). Mapping begins by identifying the competencies that contribute to organizational objectives (Carbone, 2006), using documentary research and other techniques, such as questionnaires. This information can be used to guide continuing education actions and improve the efficiency of public services. Mapping also allows for continuous monitoring and review of organizational processes (Bahry & Tolfo, 2004).

Competency management is a model that aims to align individuals, groups and organizations with strategic objectives through the identification and development of the necessary skills (Brandão & Guimarães, 2001). A competency-based management model is proposed, consisting of six stages, aligned with a cycle of public policies composed of stages such as strategy formulation, mapping, capture and development of competencies, monitoring and evaluation, and retribution (Brandão & Bahry, 2005).

This model makes it possible to predict employee performance (Bartram, 2005), and integrate people management systems into organizational strategy. Chouhan and Srivastava (2014) assert that the model also provides employees with a clear understanding of their responsibilities and performance expectations. It is based on observable behaviors in the work context and contributes to greater organizational competitiveness.

For this model to be well used, it needs to be developed with the participation of employees, who are the holders of practical knowledge, and not just with the participation of senior management (Campion et al., 2019).

Skorková (2016) agrees that competency management requires a list of competencies to achieve effective performance in the organization. This list allows employees to know how to manage organizations efficiently, requiring a set of technical, human and conceptual skills (Barros, 2018).

III. Method

The case: CPRM/SGB

The Mineral Resources Research Company (CPRM) arose from the need of the Ministry of Mines and Energy to research and quantify mineral deposits in Brazil. Founded in 1969 as a mixed capital company, it became a public company in 1994 (Brazil, 1969). Since then, it has focused on basic geology, hydrology and applied areas, strengthening institutional partnerships. The organizational structure is defined by the Basic Organization Plan, emphasizing decentralization, clear authority and informality. Administration is led by the Executive Board, made up of five directorates. The Directorate of Geology and Mineral Resources (DGM), the Directorate of Hydrology and Territorial Management – DHT, the Directorate of Geoscientific Infrastructure – DIG and the Directorate of Administration and Finance – DAF. DGM coordinates basic geology and mineral resources projects. DGM is made up of two departments, the Department of Geology (DEGEO) and the Department of Mineral Resources (DEREM). DEGEO's basic objective is to coordinate, execute and control

operations in Basic Geology and similar projects, including the use of support tools, such as: Geophysics, Geochemistry, Remote Sensing, Paleontology, Geology
 CPRM/SGB employs around 500 professionals specialized in geology and hydrology, many with master's or doctorate degrees, being a valuable technical resource for the country.
 Research design and participants

This research is characterized as a single case study (Yin, 2003) and had institutional support. The approach was predominantly qualitative (Silva & Menezes, 2005). Regarding technical procedures, documentary research was used, with data collection through focus groups.

Table 1
Participant characteristics

Occupation	Quantity	Units	Sex
Department Heads	2	Departamento de Geologia - DGEO Departamento de Recursos Minerais - DEREM	2 male 0 female
Managers GEREMIS	8	Belém; Belo Horizonte; Goiânia; Manaus; Porto Alegre; Recife; Salvador e São Paulo	5 male 3 female
Heads of Division	10	5 Heads of Division of DGEO 5 Heads of Division of DEREM	7 male 3 female
Project Managers	8	Chefes de projeto da GEREMIS	6 male 2 female
Total Participants: 28			

Note: research data.

Single Case Study Protocol

To construct the protocol, the steps suggested by Freitas and Jabbour (2011) were followed, which are in line with Yin's (2003) case study understanding.

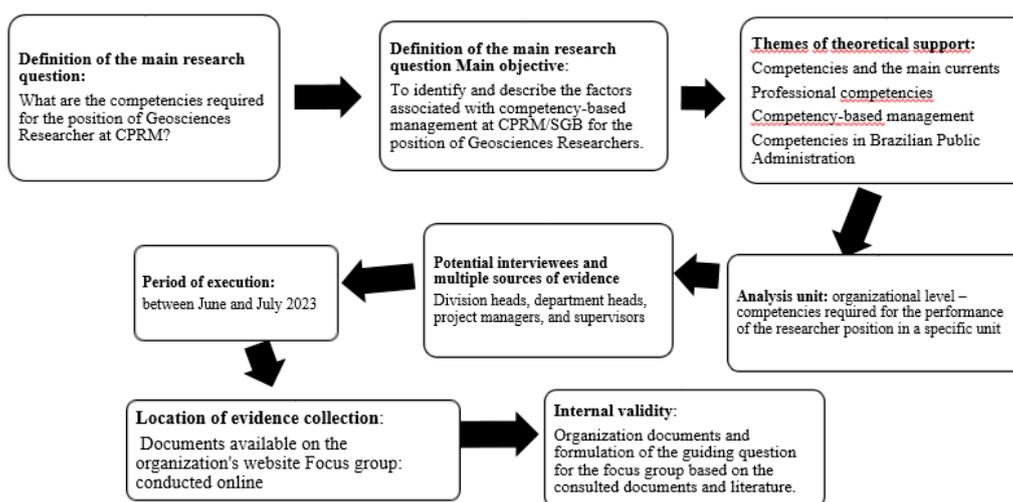


Figure 1. Case Study Protocol
Source: survey data

Focus group details

The focus group was conducted by a coordinator and a facilitator. The meetings took place four times and on different days, per occupation group, as shown in table 1. The focus group dynamics were developed in three moments: an initial dynamic to welcome the participants; followed by the main question prepared using the critical incident technique and the conclusion. The central questions were: when conducting your activities and tasks in your day-to-day work, were there any problem situations, difficulties you experienced or unforeseen events that you faced? What did you do, how did you act, what measures did you take? Participants were given the opportunity to express their opinion freely always.

The application took place via the Google Meet platform, authorization to record the event was requested and obtained and the participants agreed.

Analysis procedures

From focus groups

The recordings were transcribed, tabulated and entered into the Iramuteq qualitative analysis software. The Reinert method was used (Camargo & Justo, 2018). This method consists of an analytical approach used to identify the existence of interactions between the analyzed data, organizing lexical forms into classes according to the relative importance in each class. The data is grouped, generating a descending hierarchical classification (CHD) that allows visualization in more homogeneous groups. These results are presented graphically in a dendrogram of textual classes.

From the documents.

IV. Results And Discussion

It is noteworthy that entry into the position of researcher in geosciences at CPRM/SGB takes place through a public competition for tests and qualifications.

Document analysis

The documents were read in full to seek aspects that would lead to an understanding of the skills required for the position of researcher, considering the professional profile, recruitment and selection policies, the personnel development plan and the organization's technical publications. After reading all the documents, it was verified that those that contained information about competencies are: Internal Regulations; PLA Instruction 02.03-04 Prerogatives and Standard 008/PR.

The Internal Regulations of the CPRM Executive Board (chapter 11) describe the competencies of those who serve on the Executive Board. Among the skills, the following stand out: planning and managing activities and evaluating their results; deliberate on acts, contracts, agreements, adjustments and agreements necessary to achieve the corporate purpose; monitor business sustainability, strategic risks and respective mitigation measures, preparing management reports with management indicators; prepare annual and multi-annual budgets and monitor their execution; approve internal operating rules, including general personnel management rules; promote the preparation, in each year, of the management report and financial statements, submitting the latter to the Independent Audit and the Administration and Fiscal Councils and the Audit Committee; make available to other corporate bodies qualified personnel to act as their secretary and provide the necessary technical support. These competencies are aligned with the concept of competency management in a model in which competencies considered necessary for individuals, groups and organizations as a whole, in their recruitment, selection, training and career management processes, are considered to act in alignment to organizational strategy (Brandão & Guimarães, 2001).

In instruction PLA 02.03 -04 prerogatives, duties and responsibilities of managers, in which the Company's organization is characterized by broad functional authority. In item 4.3 of this instruction, the competencies for heads of Departments are defined, including: preparing; suggest; propose; establish priorities; authorize; identify need; plan and request training; and, improvement and training of personnel in their sector of responsibility. They are directly associated with competence at work and involve the actions of employees in professional situations, in which economic, social, individual and organizational value is added (Zarifian, 2004), so that these actions contribute to the organization achieving its objectives and promote social recognition of the capabilities of employees and the organization (Brandão & Guimarães, 2001).

In Standard 008/PR, some responsibilities are mentioned in this standard, such as: providing advice to SUREG on all matters relevant to its specialties, as well as integrating, into a single program, the projects developed by its teams. In this regulation, factors associated with management through specific and comprehensive competencies were identified, such as: technical (methods and equipment), human (empathy, relationships) and conceptual (theory and systemic vision) (Barros, 2018).

Analysis of focus groups

By applying the Reinert Method (via Iramuteq) it was observed that the corpus was formed by four texts corresponding to the four focus groups, and contained 494 text segments, 17,517 occurrences, 3,281 forms, of which 2,101 (64.4%) they are unique shapes (hapax). The content was categorized into four distinct classes: class 1, with 29 Text Segments - ST (16.57%); Class 2, with 44ST (25.14%); Class 3, with 65ST (37.14%) and Class 4, with 37ST (21.14%).

Hierarchical Descendant Classification

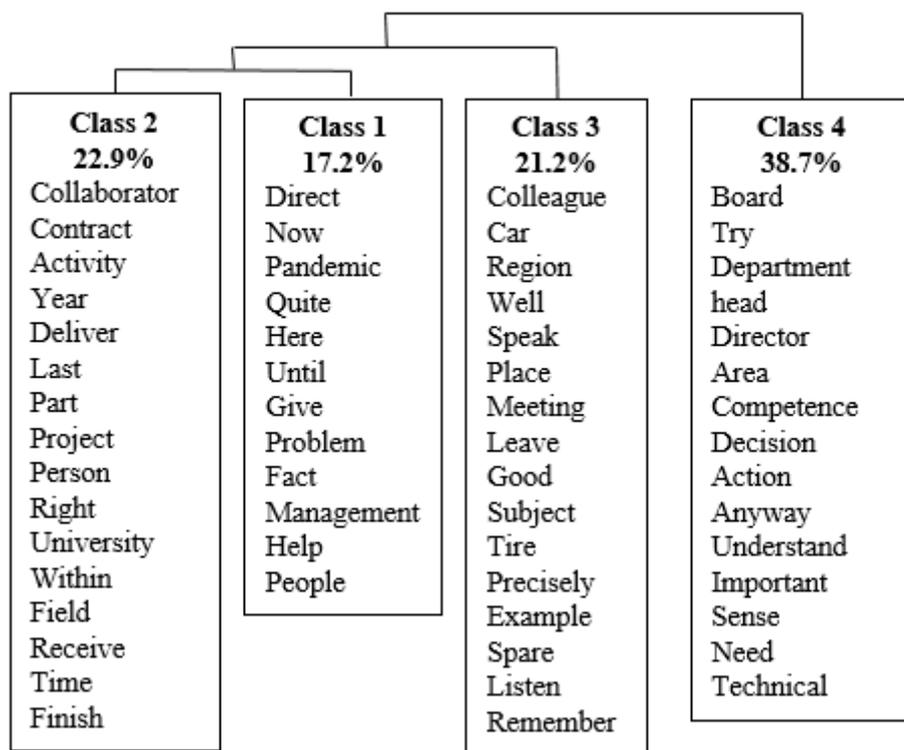


Figure 2 Dendrogram
Source: research data.

In Class 1, there is the importance attributed to collaborators and the understanding that the collaboration of colleagues is fundamental for the execution, continuity and completion of projects.

It's a question, often biased here, [...], you start the project with a number of collaborators and you do another project planning, deadline, put it in that press system, [...] However, in the course of of the project you lose collaborators. This is because the employee went to another unit, this issue of medical leave for psychological reasons is very common, mainly, so we already have few people within the project and during the project you lose some people and at the same time the company demands that you meet deadlines and deliver products [...]

Class 1 refers to problems in relation to planning and adapting the number of people assigned to the field, considering the nature of each project. It indicates that some people assigned to the field do not have the physical conditions to do so, given the characteristics of the field activity, which in some cases are exhausting, for example, walking for many hours in the sun. He mentions work overload for some people in the outsourced and company teams who go to the field. There is concern about the people on the field team in terms of their health and ability to carry out the work and also the maintenance of the car used by the teams.

The word project was also highlighted, as it is related to the factors associated with management by competencies for the managerial position of Geosciences Researcher. Management positions require the ability to solve problems (competence), “take a few leaps”, and face the challenge of being in a research company, considered a Scientific, Technological and Innovation Institution (ICT). In it, researchers will come across the industry 4.0 scenario and the need to develop new professional skills.

It is noteworthy that the organization needs to allow the union of individual and collective competence. Because, in the composition of their skills, the individual uses different sources existing in the organization, establishing an exchange of knowledge and connections between the different activities (Zarifian, 2008).

In Class 2, the words process(es), area, institution, governance, resource, approach, try and resolve stand out. It presents the complexity in terms of the areas involved in carrying out the organization's activities. It indicates that people from different areas need to have teamwork skills, openness to learning and the ability to work with different areas. For example, understanding aspects of the different organizational areas involved in an activity, in order to develop it well. It also presents some situations, such as facing external problems that do not depend on the department's management, therefore, they are reported to the responsible bodies so that action can be taken. In this sense, one interviewee cites a situation of misunderstanding with the board.

[...]I will mention a problem that I had recently [...], in fact a misunderstanding with the board, regarding compliance with certain standards for the name of a function that is within the department's jurisdiction and that

the , in the department's opinion, the procedure was not respected in accordance with the company's best practices and regulations [...].

It is understood that communication between management and the team needs to be well aligned to avoid distortions of understanding. It is important to be aware of the institution's objectives, as one of the interviewees points out. Organizational communication is an important skill in this context.

[...]. I understand that the relationship of forces between directors, between management and people sometimes forget that we are in the geological service in Brazil at the Ministry of Mines and Energy. So, this is a very big cost that we have, we deal daily with internal convincing to show the difference between what is important and what is fundamental. What is fundamental is the hard core, the objective for which the institution was created [...].

The word “area” is contextualized in relation to the deliveries to be carried out, the individual tasks of the employees, the collective tasks of the bodies, the responsibility for carrying out the task and the management of people. It is understood that the execution of activities must be aligned with the strategy defined by CPRM, and that those responsible for this connection between the operational, strategic and tactical levels are the Heads of Departments and Divisions.

[...]. he is there making a connection between the board's strategy and the tactician there who is executing it, but also with the transversal areas that are thinking about the problem that was posed here or what was unforeseen. [...].

The word “approach” has the meaning of delivering results to achieve the organization’s objectives. Some respondents associated it with the context of teamwork, dealing with unforeseen events and new work processes. Thus, it became clear that employees were faced with this new reality present in organizations in the 21st century (Aires et al., 2016; Manfredi, 1998). In this context, CPRM/SGB needs to continually invest in people's development, encouraging appropriate human resources practices to promote learning and innovation (Shamim et al., 2017). Thus, the individual competence of employees will be aligned with the need for multidisciplinary teamwork to achieve the company's results.

[...] so we, as technicians, try to get closer to the administrative and legal area so that the opinions can allow us to unlock the processes that we are interested in.

The achievement of the organization's objectives and the process of improving the company's performance, as reported, was expressed by the word try. It was possible to identify that this factor is associated with competency-based management as being necessary for those occupying managerial positions at DGM/CPRM/SGB as described in the document analysis.

In relation to the institution's mission, some decisions impact deliveries, meaning that some “deliveries are not as agile as they should be”. In other words, the issue of meeting deadlines (competence).

[...]. the unpredictable and the difficulty comes from the outside in and what we do is try to get closer to the area that has a hand in this governance to try to meet the extent to which we can collaborate. [...].

The competence to deal with unforeseen events was necessary to deal with adverse situations.

[...]. the first thing is to try to put myself in the other person's situation and show that I am not there as a collection agent and just as a partner who is ready to contribute in the best way possible regardless of position. [...].

Competence is a multilevel construct, as it is present both at the level of the individual, the team and even the organization (Carbone, 2006), even because individual and organizational competencies interfere and influence the effective collaboration of teams (Merrit & Kelleey, 2018).

[...]. we have finally made good progress and have tried to support all areas by helping to instruct hiring processes, trying to set up teams internally from the board itself to provide support in this to relieve the technician and the researcher, although he is very burdened in this role. [...].

Self-management skills were identified, as CPRM employees must have the ability to set goals and manage the progression of activities to achieve them, to evaluate their own progress and collaboration competence. Employees are expected to have the ability to develop a social network and work as a team to exchange information, negotiate agreements and make decisions with mutual respect, to achieve a common goal (Van Laar et al., 2017).

The importance of delivering results is aligned with the proposed objective of “identifying the factors associated with competency-based management necessary for those occupying managerial positions at DGM/CPRM/SGB.

Competence is knowledge that involves knowing how to mobilize, integrate and transmit knowledge, resources, and skills, in work relationships, in organizational culture and in facing limitations (Zarifian, 2008). In this context, capacity was highlighted as knowledge that involves mobilizing, integrating, and transmitting knowledge, resources and skills, in work relationships, in organizational culture and in facing limitations. A lack of uniformity in terms of skills and abilities in the organization of the technical area was also observed.

[...] this is where we in the technical area can help, this delay is related to our function as well, so we have to get closer to try to understand the problem within the processes that are not in our governance. [...].

All focus group participants have the role of geoscience researchers and participants in each focus group have different levels of complexity and hierarchy. In order from highest to lowest in the hierarchy, the Head of Department, Head of Division, GEREMIS and Project Heads. So the skills required or to be developed in each function are different, so that the functions of Head of Department, according to hierarchy, have a much higher level of deliveries, responsibility, people management, budgetary and financial resources than those of occupants of the functions below in the organizational structure, the lowest of which is performed by those occupying the managerial role of Project Head.

In Class 3, several terms were mentioned, including: colleague, see, subject, meeting, interesting, find and others.

The word “colleague” was contextualized in relation to decision making, people management and effective communication. The competence of effective communication was highlighted in the participant's speech when he explained to another colleague the reasons for having given the material, demonstrating the ability to transmit information to other people, ensuring that the meaning is expressed effectively.

In this same context, the competence of making decisions was identified, the process of making choices, identifying a decision, collecting information, and evaluating alternative resolutions (Grzybowska & Łupicka, 2017), and the competence of people management, which acts on motivation, development and directing people while they work, identifying the best people for the job (World Economic Forum, 2016).

In Class 4, several terms were mentioned, including: policy, politician, competence, aggregate, company, director, front, act, exist, wait, mission and others.

The term “competence” appears related to teamwork: [...] so how do I deal with this? So the first competence is patience, it is the ability to be patient and to try or add collaborators who are not necessarily linked to the team. board [...]”. This is in line with the understanding that competence is the ability to develop a social network and work as a team to exchange information, negotiate agreements and make decisions with mutual respect, to achieve a common goal (Van Laar et al. 2017).

Table 2 presents the relationship between the identified competencies and the level associated with each of them.

Table 2
Summary of identified skills

Identified competencies	Context
Troubleshooting	Individual
Knowledge exchange	Collective
Result Delivery	Organizacional
Dealing with unforeseen events	Individual
Self	Individual
Make a decision	Individual
Effective communication	Coletiva
People management	Organizational
Collaboration	Collective
Teamwork	Collective

Note: survey data

In relation to the existing gap in the professional skills of Geoscience Researchers in the exercise of a managerial role, some factors related to the dimension of skills and attitudes were identified, but those related to knowledge were not mentioned in the focus groups. The organization's internal regulations provide for the responsibilities, duties, prerogatives and attributions in general for the exercise of the managerial function of chief at different levels. Therefore, the existing gap in professional skills is the need to specify the skills of each management level in current regulations.

Regarding the educational level of the participants, 90.48% were postgraduates. This percentage is in line with the knowledge needs intrinsic to each position and the nature of CPRM, being recognized as a Scientific, Technological and Innovation Institution – ICT.

Finally, based on the skills gaps identified, a knowledge trail was created that can be applied in the organization.

Table 3
Knowledge Trail

Behavioral Training	Technical Training
Negotiation, problem-solving, and decision-making	Introduction to Project Management
Leadership and team management	Preparation of Public Notices for Acquisitions in the Public Sector
Communication	Controls in Public Administration
Self-knowledge and motivation	Como Fiscalizar com Eficiência Contratos Públicos
Leadership: how to manage and lead teams in remote environments	How to Efficiently Inspect Public Procurement
Productive meetings	Facilitation of Meetings, Teams and Workshops in the Online Environment
Business Continuity Management in Public Administration	Managing Hybrid Teams and Challenges for Organizational Culture
Personal Management - Basis of Leadership	Organizational Process Management
Time Management and Productivity	

Note: survey data

V. Conclusion

The purpose of this study was to identify and describe the factors associated with competency-based management in the CPRM/SGB for those occupying the managerial role. From the documentary analysis, in the regulations, it was possible to identify some elements associated with competency-based management. They set out the responsibilities, duties, prerogatives and attributions in general for the exercise of the managerial function of head of department, head of division, GEREMIS and project heads. During data collection in the four focus groups, factors associated with competency-based management were identified, described by the participants.

Institutionally, the results of this research may contribute to improving and discriminating in the company's regulations, which are the skills that must be developed by those occupying the managerial role of Heads of Department, Heads of Division, GEREMIS and Project Heads, as well as guiding how to must implement competency-based management in the Company. Based on the results, we also indicate a path of behavioral and technical knowledge for those occupying management roles at DGM.

It is hoped to have contributed to generating reflections regarding the factors associated with competency-based management in a public company. This topic is still little explored in the literature, mainly due to the lack of studies with greater methodological and empirical depth, which are relevant to provide greater effectiveness and applicability of competency-based management in public administration.

Finally, as an immediate and practical result, the suggestion to implement the elaborate knowledge trail, with behavioral and technical training, was presented to the DGM Director, which will serve to develop employees with new professional profiles and new skills necessary to achieve organizational objectives. from CPRM/SGB.

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