SAPIENZA UNIVERSITÀ DI ROMA

DIPARTMENTO DI MANAGEMENT

DOTTORATO DI RICERCA IN MANAGEMENT, BANKING AND COMMODITY SCIENCES

XXXII° CICLO

SAPIENZA
UNIVERSITÀ DI ROMA

Developing competency models supporting public universities' strategic objectives: an application of a convergent mixed methods approach

DESIREE GIACOMELLI

A.A. 2018-2019

Tutor: Prof. Mauro Gatti

INDEX

This page is intentionally left blank

INTRODUCTION

In recent years, the attention on competencies in the workplace has grown rapidly. Organizations are progressively realizing how human capital figures as a key source of competitive advantage and how highly performing organizations are commonly linked to highly performing employees (Pfeffer, 1994; Lado and Wilson, 1994; Murray, 2003). In fact, it seems that traditional sources of success, as the existence of barriers to entries or the creation of economies of scale (Porter, 1996; Barney, 1991), are now perceived as able to provide competitive leverage to a lesser degree, while a robust organizational culture, strategic human resources management and organizations' core competencies are becoming comparatively more important.

Against this background, organizations are starting to employ new approaches to human resource management. The competency based management approach (Prahalad & Hamel, 1990; Green, 1999; Kochanski, 1997) is becoming increasingly popular among private companies. On the other hand, European public administration systems are only recently starting to implement competency management practices, attempting to keep pace with the demands of some major reforms introduced in the last thirty years (Horton *et al.*, 2002).

Public administration systems, in fact, are undergoing deep changes, striving to respond to the constantly mutating environment in which they are bound to operate: many activities are being outsourced back to the market in the belief that private companies are able to better respond to uncertainty and innovation, while the activities that still remain within governments' direct control are increasingly adopting typical business practices and starting to benchmark themselves against their private equivalents, moving closer to a market based management logic that have been defined as "New Public Management" (Horton *et al.*, 2002).

The application of market logics to public administrations affected public universities as well, moving them towards what is being defined as "entrepreneurial" universities (Gibbons *et al.*, 1994; Etzkowitz, 2003; Slaughter & Leslie, 1997; Sporn, 2001). These new logics strongly affected universities' internal organizational assets, which, coherently with their specific context and characteristics, embraced a variety of different approaches and assumed diverse and mixed forms (Kwiek & Maassen, 2012; de Boer & File, 2009; Clark, 2000; Bleiklie, 2007).

Competency based management approaches appear to be greatly discussed among public administrations, because they configure as a potentially effective and flexible

solution to face these continuous changes in the modern economy and society, such as the growing globalization, the challenge of big data, the increasing competition, and the constant demand for innovation and optimization of processes and services.

However, empirical implementations of competency models in public administrations are rarely traceable in the literature (Skorkovà, 2016; Cerase, 2003; Pastorello, 2010; Campion *et al.*, 2010), and even less studies can be found in referral to public universities, especially if referred to non-academic employees, embedded in the technical, technical scientific, data processing, administration, and library professional areas.

This extremely heterogeneous and complex context, however, undoubtedly ask for deeper investigation.

Given these premises, the purpose of this action research is to contribute to the extant literature, attempting to understand how competencies of non-academic employees help them reach the university's strategic objectives in one of the currently largest European universities, and, from the information arisen, generate an interpretative competency model that could be employed as a comparative framework for future practices and researches.

A purposeful sampling strategy has been employed, leading me to select, as the site of the research, Sapienza, University of Rome. The choice fell on this specific university because it figures as an incredibly rich source of information, being the largest university in Europe with more than 4.000 technical, administrative and library employees.

More specifically, to address the identified research questions, this doctoral study employs a convergent mixed methods approach (Caracelli & Greene, 1997; Greene, 2007) characterized by a robust qualitative component.

The qualitative strand of the research involved employing a bottom up grounded approach to competency modeling, while the quantitative strand derived the competency model from the theory, aiming to link the individual competencies to the strategic objectives of the organization, applying a top down approach. The resulting model from the quantitative strand was, afterward, tested through a survey research. The bottom up grounded approach involved the use of phenomenological interviews detailing operant thoughts and actions associated with success or failure in 125 the technical, administrative, and library employees. Additionally, observations, memoing and field notes were collected with the aim to enrich the analysis.

Thereafter, revealing an emergent design of the research, and pursuing the aim to reach a more comprehensive overview of the phenomenon, results from the qualitative strand have been integrated with a concurrent theory driven quantitative approach. The quantitative approach comprised the submission to participants of a list of competences, derived from the review of the literature and the study of the organization, querying them to attribute a level of importance on a scale from "0" to "5" (from "not important" to "extremely important") to those competences, comparatively to their ability to positively impact on the achievement of their professional objectives.

This doctoral thesis represents the outcome of a research conducted during the years 2017, 2018 and 2019, funded by Sapienza University of Rome, within a project entitled "the analysis of processes, competencies and job positions for the definition of an organizational model in complex public organizations". The first phase of this project was dedicated to designing an organizational model for faculties and departments. The second phase was focused on building a competency model for the technical, administrative and library staff, for which, a formal organizational model figured as a necessary condition. The organizational model, revised and adapted by the organization and development area's staff, has been implemented in the end of the year 2018. An extension of the research has been considered, thus, necessary, in order to project and build a competency model for the university's employees that would enable the introduction of more flexible and dynamic strategies to human resources management. The realization of a competency model, in fact, is a key step to undertake in order to orient administrative and executive actions, to reach the strategic objectives and to promote employees' skills and potential.

This study can provide a useful framework for either scholars, researchers, practitioners, labor unions and policy makers intending to introduce or consider new approaches to human resource management in public universities or administrations, Furthermore, this study may provide useful insights to update existent contractual collective agreements or to introduce new organizational positions or professional roles. Administrators can employ the defined model to identify professional roles' competencies, monitor employees' actual level and plan interventions to eventually enhance it through training.

The thesis contains six chapters that have been structured as follows: 1) the research design provides a preliminary overview of the research, by discussing its main features and underlying logic; 2) the second chapter reviews the main themes related to the competency based approach, starting from the analysis of the main

interpretation of the term competency and concluding with an overview over the state of the art of competency modeling in European and Italian public administrations; 3) the chapter on methodology presents the adopted convergent mixed methods approach to competency modeling; 4) the fourth chapter provides an extensive outline of the adopted procedures, the emerging results, the limits and implications arising from the qualitative and the quantitative strands; 5) the section on interpretation describes the adopted mixing strategy and the results of the analysis of the emerging dataset; 6) the final chapter briefly reviews the main aims of the study, its core assumptions and discusses the results that arose from the interpretative and analytical phases, together with considerations on their limitations and how these limitations may configure further challenges in future research.

CHAPTER 1. RESEARCH DESIGN

Overview

This chapter provides a preliminary outline of the research design, focusing on the rationale underlying the researcher's motivation to choose specific methods or to adopt particular lens to interpret topics. Afterwards, the research purpose and the related research questions are outlined, together with the site of the research. More specifically, this research aims at understanding how competencies of non-academic employees help them reach strategic objectives in public universities. In the final section of this chapter, the chosen methods to address the research questions will be disclosed together with the reasons underlying their selection, their main characteristics and their points of intersection. Finally, the structure of the chapters of the doctoral thesis will be briefly summarized.

1.1 Research rationale

Private companies started, in recent years, to introduce competency based approaches to human resources management. This type of approach is beginning to be implemented in Italian public administrations as well.

In fact, as it has been highlighted by different authors (Horton *et al.*, 2002; Kettl, 2000), public administrations are increasingly approaching typical business logics. However, issues arise because of the public nature of these organizations, which follow different logics than private institutions. As an example, problems regarding possible ruptures in the working processes, or overlaps between effective core competencies and established bureaucratic procedures are becoming more critical, and the employment of bottom up approaches to competency based practices' design and implementation are being progressively requested in order to mitigate these undesired effects (Campion *et al.*, 2011; Cerase, F., 2002).

When contextualized in public universities, these changes in management practices seem to move them towards what is being defined as entrepreneurial universities (Gibbons *et al.*, 1994; Etzkowitz, 2003; Slaughter & Leslie, 1997, Sporn, 2001).

In this doctoral thesis, an attempt to describe how competencies may help non-academic employees to reach the university's strategic objectives is undertaken. Moreover, the research will move a step forward from the mere descriptive aim, developing an interpretative competency model, through an action research approach.

In fact, while studies on scholars and researchers' identity, performances, and skills have been thriving in these last years (Kyvik, 2013; Lee *et al.* 2010; Geuna, & Shibayama, 2015; Creswell & Browns, 1992), universities' technical, administrative

and library employees have not been provided with the deserved attention. Nevertheless, they are key resources for either the design, improvement or implementation of the internal strategy of any organization aiming to effectively reach its objectives.

To attain the objective of analyzing non-academic employees' competencies, a mixed methods technique has been applied to one of the largest European universities, namely Sapienza, University of Rome, that figures as a formidable source of information, with its 4.000 technical, administrative and library employees.

The reason for employing a mixed methods technique, thus collecting both quantitative and qualitative data, is to converge the two forms of data to bring greater insight into the study than would be obtained by either type of data separately.

More specifically, a convergent mixed methods design, characterized prevalently by qualitative components, has been employed. In this type of design, the qualitative and quantitative data are collected concurrently, analyzed separately, and merged before the analysis. Phenomenological interviews, internal documents, observations and memoing have been employed to explore how actual employees developed competencies to reach strategic objectives in the site of Sapienza, University of Rome, applying a bottom up grounded approach to research that involved 125 participants. Concurrently, a quantitative questionnaire was designed and submitted to the same participants, with the aim to enhance the overall design. The questionnaire collected rating scales testing the employees' perceived relevance of some theoretically derived competencies (Prahalad and Hamel, 1990; Green, 1999; Hitt, & Hoskisson, 2005; Cardy & Selvarajan, 2006) needed to reach their professional objectives.

The following figure summarizes the design of this research.

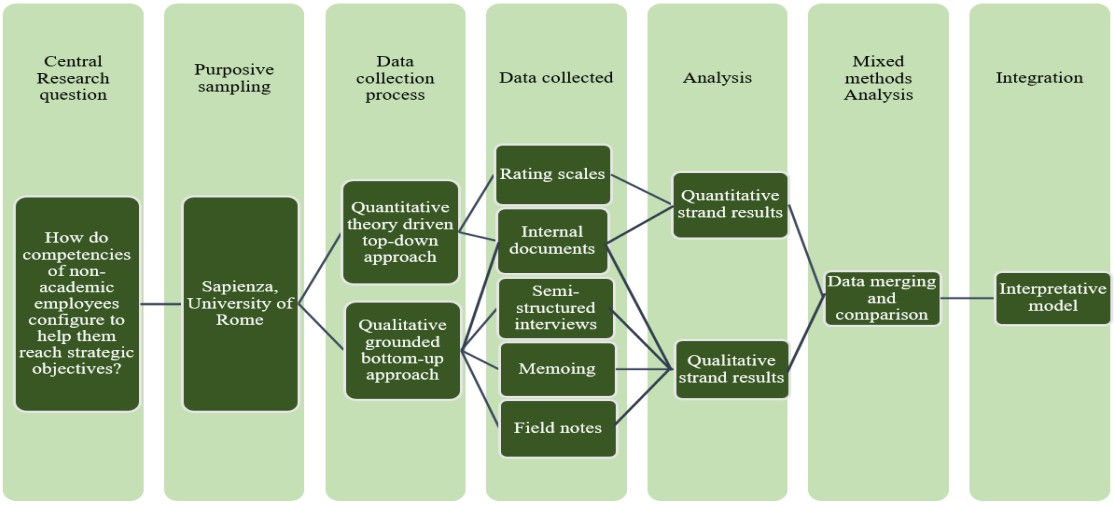

Figure 1.1 The research design's main phases and components. Own elaboration.

1.2 Research purpose

The purpose of this action research is to understand how competencies of non-academic employees help them reach the university's strategic objectives. At this stage, competencies are described as a cluster of knowledge, skills, abilities, and other characteristics that are needed to effectively perform a job (Green, 1999; Kochanski, 1997; Lucia, & Lepsinger, 1999; Mansfield, 1996; Mirabile, 1997; Parry, 1996; Rodriguez, *et al.*, 2002; Schippmann *et al.*, 2000).

Moreover, this research design is coherent with an action research framework because it is additionally guided by the intention to train and empower technical, administrative and library employees in public universities, thus improving their working conditions. To do so, employees were involved in the process, and I worked with them in order to find helpful insights and solutions for introducing a coherent competency based management approach to human resources.

1.3 Research questions

The following research questions aim to narrow the outlined research purpose, hence helping its conceptualization, encoding and foreshadowing. I identify one central question and, then, several sub-questions drafting from it.

Central RQ:

RQ1: *How do competencies of non-academic employees configure to help them reach strategic objectives?*

Qualitative and quantitative strands RQ:

RQ2: *What are the core competencies shared by non-academic professional roles?*

RQ3: *How do different professional roles differ in terms of competencies?*

Mixed methods RQ:

RQ4: *To what extent do the qualitative and quantitative results converge?*

RQ5: *How may an interpretative competency framework better be configured to describe and explain the emerged critical competencies for non-academic employees?*

1.4 Research methodology

Diverse methods have been employed in this research, in agreement with the literature thread strongly calling for new and adaptive approaches to competency

modeling, and with the aim to address the research questions considering different angles and employing multiple and mixed techniques.

To identify the needed competencies to best reach professional objectives, a different approach than traditional job analysis is believed to be necessary, because job analysis cannot provide the required flexibility in managing human resources and in developing technical and administrative practices to the same extent than competency modeling. Competency models differentiate from job analysis because they provide richer information on professional positions and they enable managers to easily identify top performers and average performers, through a competency based management approach to performance assessment.

Moreover, competency models do not focus only on actual job needs, but they tend to identify competencies that are future-oriented, highlighting a complementary function to the traditional approach of job analysis (Parry, 1996). Job analysis, in fact, traditionally does not focuses on future job needed characteristics. In truth, future-oriented or strategic job analysis can be often found in literature (Brannick *et al.*, 2007; Sackett, & Laczo, 2003), yet it is rarely traced in empirical practices (Campion *et al.*, 2011).

A competency model is the collection of competencies needed to perform well in a specific professional position; it comprehends information on how competencies changes or update with career progress, different competency's levels and advised salary. Moreover, it is connected to strategic objectives and it employs a deductive approach to derive competencies from results. It considers, directly or indirectly, future professional requirements and it adopts an easier language, usually adapted to the specific organization it refers to.

Competency models are traditionally characterized by a top down approach but, in time, as mentioned earlier, bottom up practices have been increasingly called for to better tailor the model to the specific needs of the organization and to support its implementation, especially when the organization is undergoing a phase of critical organizational changes, as is the case of many public administrations.

In the light of these considerations, I chose to apply, concurrently, a bottom up and a top down approach to competencies' identification and modeling to the organization under study, using a mixed methods technique.

To provide a preliminary understanding on the techniques, the following table has been created, synthetizing the main characteristics of the adopted mixed methods

approach. Each of the following features, however, will be extensively described in Chapter 3.

CHARACTERISTICS	**MIXED METHODS FEATURES**
Content area and field of study	Competency modeling in public universities
Content purpose	To understand how competencies of non-academic employees configure to help them reach public university's strategic objectives
Reasons for mixing methods	Need to relate quantitative measures of competencies' perceived relevance with qualitative descriptions of employees' experiences and opinions to develop a more complete overview and a better fit of the competency model to the organization under investigation
Priority of the strands	Qualitative priority
Timing of the strands	Concurrent
Points of interface	Data analysis; interpretation
Mixing of the strands	Merge: developed a matrix that related qualitative derived competencies to quantitative scores; Discussion: discussed how comparison across the two data sets to provide a better understanding
Mixed method design type	Convergent
Notation	QUAL + quan = enhanced understanding
CHARACTERISTICS	**QUALITATIVE STRAND**
Sample	Purposefully selected (N = 125) employees across departments and faculties of a large university
Data collection	Semi structured interviews; memoing; observation; internal documents
Data analysis	Thematic analysis
CHARACTERISTICS	**QUANTITATIVE STRAND**
Sample	Same employees (N = 125), purposefully selected across departments and faculties of a large university
Data collection	Questionnaire including 5-point scales to measure the perceived relevance of a list of theoretically derived competencies
Data analysis	Descriptive statistics; comparison of professional roles in terms of mean values of attributed level of expected competencies

Table 1.1 Characteristics of the adopted convergent mixed methods design (adapted from Creswell, & Clark, 2011)

1.5 Theoretical background

Competency based management approaches are based on competency models, that are aggregations of expected competencies needed to perform certain tasks or reach specific objectives, usually including descriptions of those competencies as well as indicators to measure their performance or identifying reference standards. Their specific configuration, however, strongly depends on the underlying interpretation of competencies, which is not univocally defined. On the contrary, an intense debate

is still ongoing and researches on competencies, following different approaches, advanced pursuing extremely independent paths.

Coherently with the interpretation of competencies embraced in this research, competency models are necessarily contextualized in a specific organization, and they are meant to describe and explain the relationships between competencies. Moreover, competency models, in order to be effectively implemented, need to be fully aligned with the organizational culture of the organization under study in order to support employees by providing them with a better understanding of their role inside the organization, thus improving their motivation and, expectantly, the quality of their work.

Competency models are incredibly flexible tools, having many possible applications in human resources management: they can be adapted, using behavioral event interviews (McClelland, 1978), to personnel selection procedures; they may be employed to add depth to traditional performance assessment systems by creating evaluation tools based on competencies; they may be structured with the aim to detect employees' training needs in referral to specific competencies; or they can be used for the development of careers, guiding the identification of the job tasks. Moreover, they provide rich information on employees' abilities, their education, and their experience, thus facilitating internal mobility, by making it more agile and effective.

Lastly, and more importantly, the flexibility of competency models is a critical feature, allowing the organization to effectively supports changes, through the employment of a strongly future oriented system able to align human resources to a shared and common set of competencies.

1.6 Contextual background

After the introduction of new regulations and laws, approximately starting from the year 1990, many modifications have been implemented that profoundly affected the internal asset of Italian public administrations[1]. The reasons for these changes may be reconducted to the intent to innovate the public administration, transposing some governance guidelines commonly employed in the European Community, and, thus,

[1] Within the several regulations, the following ones should be cited: law n. 142 of 1990, on administrative procedures and right of access; the legislative decree n. 29 of 1993 on rationalization of public administrations; and laws 59 and 127 of 1997, later integrated and modified, introducing a simplification of decision making and control's procedures.

keeping pace with other countries that already introduced those managerial principles distinctive of the New Public Management movement (Casula, 2008).

Accordingly, Italian public universities have gone through deep changes concerning many different aspects of their organization, from their organizational structure to their underlying logic, administration and performances (Vaira, 2011; Bassi *et al.*, 1999).

These changes aimed at solving or containing typical problems such as failure to adapt to changing contexts, nepotism and barony, students' high drop-out rate, old-fashioned teaching methods and structures, and scarce internationalization of research and teachings services. [2]

Trying to face these problems, actions seeking to design more efficient organizational models have been undertaken, and significant changes were introduced in terms of improvement of the organizational and individual competencies in order to achieve the objectives of independence, responsibility, quality and control.

More specifically, these changes often led to the introduction of new professional figures and to the need for more flexible human resources management approaches (Silvestri, 2005).

The expected competencies of both traditional and newly introduced non-academic professional figures, however, are hardly traceable in both academic and managerial literature. In fact, even if there are some important national studies focusing on the changes of academic organizations (Comacchio & Pastore, 2005; Casciotti, 2005; Riviezzo, & Napolitano, 2014), not much can be found regarding competencies or competency based approaches for human resources in public universities or in analogous contexts.

Thus, this research will attempt to fill the detected gap in the literature, providing a contribution to the research in this field, which is believed could offer important insights and inputs, both for researcher and practitioners, and, as well, to policy

[2] Contents of this thesis have been partially developed in two research papers:
1) Giacomelli, D., Iannotta, M., Meret, C., Gatti, M. (2018). Coordinating and Supporting Research and Teaching Processes in Italian Public Universities: A Job Profiles and Competences Analysis. Presented at the *Workshop di Organizzazione Aziendale 2018*, Rome, Italy, 15th-16th February 2018;
2) Iannotta, M., Giacomelli, D., Meret, C., Gatti, M. (2018). The academic teaching manager: a comparative case study within the Italian context. Presented at *34th Colloquium of the European Group for Organizational Studies*, Tallin, Estonia, 4th -7th July 2018.

makers, which may find it a useful reference framework for future decision and related actions.

1.7 Thesis' structure

The following chapters will linger on each of the essential aspects of this research, seeking to provide the reader with knowledge regarding the main arguments, considerations, interpretations, deductions and decisions undertaken in each phase.

The first chapter has been dedicated to a preliminary outline of the research design, focusing on the rationale underlying the researcher's motivation to choose specific methods or to adopt particular lens to interpret topics; then, the research purpose and the related research questions are defined, and, finally, the adopted methods to address them are introduced, by sharing the reasons underlying their selection, their main characteristics and their points of intersection.

The second chapter focuses on the theoretical background of the research. More specifically, it shows the outcome of a broad scholarly literature review, which aims to provide the reader with a coherent and intelligible understanding of the key concepts on the conceptual framework of the study, by organizing the structure in themes following a logical path. The first part has been dedicated to illustrating the main interpretation of the term competence in a work environment, thus providing the most acknowledged definitions of competencies. The second part of the chapter is committed to provide an overview on competency modeling, especially in referral to emerging best practices and experimented techniques to link competencies to the organizations' strategic objectives. The third part focuses on depicting the state of the art on competency based management practices in European and Italian public administrations. Finally, the last paragraph, focuses on competency modeling in public universities, highlighting the identified research gaps in the literature.

The third chapter describes the methodological procedures of the research. More specifically, extensive descriptions and insights are provided regarding the philosophical assumptions of the research, the methodological approaches employed, the role of the researcher, the anticipated ethical issues, the data collection procedures, the strategies for validating the findings, and the analytical and integration phases of this research.

The fourth chapter illustrates the conducted analysis of both the qualitative and the quantitative strands in each of their phases, addressing the two dedicated research questions, both for the qualitative and the quantitative strand, through the deployment of the previously mentioned strategy.

The fifth chapter presents an accurate description of the procedures and the results of the integration of the qualitative and quantitative strands, and the arising interpretative model. The final part of the chapter is dedicated to analyzing how the interpretative model answer to the last two research questions.

The sixth chapter finally discuss the overall results, the connections and contradiction between the model and the extant literature, the significance of the study, its implications and limitations, additional findings from the data and future research propositions.

The first appendix (Appendix A) provides an overview of the database of the informants, describing their professional area, their structure, the number of collected critical incidents, the type of data entry and the number of transcribed pages submitted of the analysis.

Appendix B reports the interview outline adapted from the critical incident interview technique. Coherently with the interview outline, Appendix C illustrates an example of the critical incident checklist, adapted from Flanagan (1954) and Spencer and Spencer (1993). Finally, appendix D shows the employed observational protocol.

CHAPTER 2. THEORETICAL FRAMEWORK

Overview

This chapter illustrates the results of the conducted scholarly literature review. The review has the aim to properly define and describe the theory underlying the competencies identification, to identify the most acknowledged approaches for their modeling, to introduce the concept of New Public Management and describe the state of the art on competency based practices in the European and Italian public administrations' context. Overall, a complex and heterogeneous cluster of definitions and approaches emerges, even if it is possible to identify two main approaches to the definition of competencies: an input based approach, where competencies are interpreted as subjective characteristics of an individual that contribute to a better performance, and an output based approach were competences are defined based on job tasks and professional roles, and they are directly related to some identified standards of performances or objectives. Afterward, the link between competences and the strategy of an organization will be analyzed by retracing the main theories that addressed this topic, highlighting the emerged strengths and weaknesses of these approaches. Finally, an overview on the evolution of the competency movement in public administration will be provided considering different context, hence moving from a more general description contextualized in European public administrations, toward a focus on Italian public administrations. It emerged that few studies have dealt with competency based approaches in public universities, thus, highlighting the need to fill this theoretical gap by contributing to a better understanding on how competency models may shape in public universities, in referral to non-academic employees.

2.1 How are competencies defined?

As the title suggests, this section aims to define competencies. However, this topic is characterized by a peculiar complexity, given the considerate number of meanings, interpretations and use of the term competence (or competency, as it will be later explained), especially when embedded in different scientific fields, comprising psychology, sociology, economics, organizational studies, semantic, linguistic, and so on, with as many different epistemological approaches to reality.

Given these considerations, it has been thought as appropriate to answer the question through a review of the literature analyzing the main developments in the interpretation of competence during the years, hence not attempting to provide a complete overview on the different existing interpretations, but to identify some milestone that are believed to have provided a significantly new interpretation of competence that has later evolved in different practical approaches and methods.

To do so, I will start analyzing competences' interpretation in the traditional approach of the scientific management (Taylor, 1911), afterward moving toward Chomsky's (1965) theory, to reach the mainstream competency based management approach introduced by McClelland (1973), and later significantly developed until maturity by Boyatzis (1982), and Spencer & Spencer (1993). Furthermore, I will

describe the different approach proposed by the English Training Agency (1988), and I will briefly illustrate some alternative interpretations provided by Prahalad and Hamel (1990), Terssac (1992), Woodruff (1992), and Fletcher (1997).

The main differences between these approaches can be summarized in viewing competences as input-based and worker-oriented or interpreting them as work-oriented and output based or as referred to a specific organizational dimension as hierarchical levels or work processes. Phenomenological approaches differ from more functional and objective logics both in the interpretation of the meaning of competence and in other critical aspects that are still object of a vibrant debate.

Long before Taylor's scientific management approach's renowned success and spread, Charles Babbage (1832) argued that the effective division of labor would enable companies to purchase and apply exactly the quantity of skill and knowledge required to effectively conduct each work process, thus enabling the organization to employ the most competent employees in more complex activities and the less competent in simpler ones, by fitting the precise level that is required.

Moreover, according to Babbage, the frequent repetition of the same actions would upgrade the worker's skills until perfection. Skills are, thus, clearly interpreted as strictly tied to the execution of a defined operation.

The described competence manifests only in relation to the specific conducted activity and it is discreet, freely available, measurable and its maximum expression is perfectly clear to the management.

This interpretation is typical of an assumption of an *a-priori* rationality that permits to optimally manage the work processes through regulations, moved by an exact identification and planning, and the possibility to compose and decompose work processes and the competences needed to effectively execute the process' activities.

Hence, competences are also universal, homogeneous, easily substituted and transferred within the system.

With Taylor (1911), a similar interpretation is recognizable, in fact, skills are interpreted as the ability to correctly execute some prescribed operations. The scientific management approach highly focuses on the aim to develop a science characterized by the perfect knowledge of each operation and gesture related to the production that would lead the management to design the best way to organize the work process. As Taylor effectively states "*in the past the man has been first; in the future the system must be first*" (Taylor, 1911, p.2), revealing a wish to abandon the

idea that ability or competence is exclusively owned by individual workers, in favor of the realization of a production system storing knowledge, techniques and methods functional for an optimal work process. The ability and the authority to regulate the work process is demanded to the management, considered as the only able to plan in advance how to effectively conduct the work activities. In this system, competence is recognized as the ability to reach the identified standards, which have already been carefully planned and that are hardly improvable: there can be no errors, no autonomy, no discretion.

In 1966 Noam Chomsky, a renowned linguist, developed a different interpretation of the term competence: the first main "*distinction must be made between what the speaker of a language knows implicitly (what we may call his competence) and what he does (his performance)*" (Chomsky, 1966, p. 9-10). The author defines performance as evident in a specific behavior, while competence is described as "*a mental reality underlying (...) behavior*" (Chomsky, 1965, p.4). A competence should not be, in any case, related to a performance, nor deducted, because, according to the author, the theory of competence is not behaviorist, but it is mentalistic.

The competent individual should value, every time that a problem or an incident presents itself, which solution is better, to the point that he or she is able to face unknown or unexpected situations as well.

Some years later, Reboul (1980) developed the idea of competence introduced by Chomsky, introducing the distinction between knowledge and know-how. The concept of knowledge directly refers to Chomsky's interpretation of competence, while the concept of know-how is related to the power, owned by an individual, to employ its means (knowledge, reason, experience) to reach specific objectives. Knowledge is functional to know-how, but it is separated from it. Moreover, according to Reboul, repetition or routine does not upgrade the knowledge on how to do something, because it is an automatic behavior, where the individual may not be completely conscious of what or why he is conducting specific actions.

This means that know-how is not mere execution, but it must comprehend knowledge, ability to adapt the actions to the objectives coherently with the means at disposal, and full commitment of the individual. Knowledge is understanding the reasons, the principles, the meanings, and the rules; it is not mere information, because it goes beyond the access to a stock of data, but it leads to problem solving, and to problem creation.

A competence is different from the know-how and from knowledge, because it indicates an ability to judge, thus integrating both knowledge and know-how. This interpretation of competence does not contemplate an optimal execution, nor a superior knowledge on a specific topic, but it manifests relatively to an activity, and to an evaluation that the individual makes of that activity, leading to a judgement on specific actions that can be undertaken under specific limits and opportunities. Moreover Bara (1999), sharing the conceptual roots of Chomsky's theory, observed that even if a competence is not evident, but it is potentially available, it should be part of the system of competencies. In fact, even if the performance is not observed, this does not necessarily mean that it does not exist, but it could mean that the right conditions for it to be manifest, did not occur.

In 1982, the psychologist Boyatzis, developing an approach initially proposed by David McClelland, defines competency at work as an "*underlying characteristic of a person which results in effective and/or superior performance in a job*" (Boyatzis, 1982, p.21). A competency may assume different forms, it could be a motivation, a trait, a skill, a self-perception, a social role or a specialized knowledge. It can be knowledgeable or unconscious, observable and superficial or hidden and subjective.

Moreover, the same competencies in different context may be observed in different actions or behavior: there is no unique relation between competencies and behaviors. This means that it is not possible to determine all the behaviors generated by a competency, but it is possible to identify an underlying competence in a behavior. In the interpretation of Boyatzis, competency is not qualified by the performance, but it is qualified by the effectiveness in doing a specific job. Job characteristics and requisites, thus, figures as key information to define a competency, through the description of a professional role.

Competencies are not about executing effectively some defined tasks, but they figure as a know-how capable of adapting to changes in the job and in the internal and external environment. A worker employs his or her competences to best conduct a job and reach its defined objectives.

This approach can be identified as the mainstream approach to interpret competencies, largely shared, even today, by many scholars and practitioners (Spencer, & Spencer, 1993; Schroder, 1989; White, 1959).

In 1988 the English training agency stated that "*a competence is a description of something which a person who works in a given occupational area should be able*

to do. It is a description of an action, behavior or outcome which a person should be able to demonstrate" (Training Agency, 1988).

This interpretation of competence completely abandoned the idea of competence as a characteristic of a person, while embracing an interpretation tied to activities and results, which was highly welcomed by different authors and practitioners (Geffroy, & Tijou, 2002; Mansfield, 1989; Mitchell, 1989; Trotter, & Ellison, 1997) and which led to the need for the definition of some standards for competences.

In this context, the rational strategic approach proposed by Prahalad and Hamel (1990), needs a special highlight, because of the future extensive success it experienced (Ulrich, & Lake, 1991; Rothwell & Lindholm, 1999; Delamare & Wintertone, 2005). These authors advanced the idea that organizations need core competencies to gain a competitive advantage. Thus, they related the concept of competences to corporates' strategy, as necessary resources to sustain it. This resource-based approach to strategy involving competences was greatly acknowledged, in fact, many authors recurred, over the time, to the notion of competence or capability to identify key factors for competitiveness and profitability of businesses (Grant, 1996; Stalk, *et al.*, 1992; Kay, 1993; Teece, *et al.*, 1997; Sanchez, *et al.*, 1996), but Prahalad and Hamel have the merit of firstly conceptualizing the relationship between competences and strategy.

The main difference between rational and objective interpretations of competence and the mainstream interpretation introduced by Boyatzis and later perfected by Spencer & Spencer (1993), is that competences are here considered as outputs to specified minimum standards, and not a subjective contribution of an individual to the organization's objectives.

In order to distinguish these two contrasting interpretations, Fletcher (1997) defined as competences the ones figuring as the results of a specific job, while as competencies the inputs that a person brings to a job.

Competencies are, thus, focused on the personal characteristics of an individual, usually referred to managers, and aiming to identify best performers' competencies. Competences are focused on the job tasks and the professional role, and they are directly related to objectives and performances and they are generally referred to professional positions and less often to managers.

In 1992, Woodruffe, attempting to define a universal interpretation of competency, defined competency in terms of behaviors or, more specifically, as a characteristic of the behavior and of the performance of a task. Keeping the competency separated

from the concept of job tasks, it is possible to distinguish between what people should do and what characteristics individuals should possess to perform effectively. Hence, "*a competency is a set of behavior patterns that the incumbent needs to bring to a position in order to perform its tasks and function with competence*" (Woodruffe, 1992, p.17). Hence, competency is related to performance in a specific job position or, in other words, it is a know-how underlying a performing behavior.

In the same year, Tersaac (1992) developed a new theory starting from the analysis of work processes in the organizations. He conducted an important research aiming at identifying how rules are created and consolidated in a specific professional environment, and how they relate with each other. He started his analysis assuming that, in a specific professional environment, different rules are created by different management groups. These rules contrast or combine with each other, creating a coherent system in the work processes leading to a specific production. According to Tersaac, there can be two complementary sets of rules in a specific professional environment: 1) written rules, intended as a set of arrangements defining job tasks, expected professional competencies, tools and methods to employ, which are formally defined by the management and that influence the workers' behavior, and 2) unwritten rules, corresponding to behaviors, decisions and organizational solutions that managers execute, according to their own strategy, and that are implicitly accepted. Rules are transitional because they are the results of a constant negotiation between the actors of a specific process, and they are strictly local, hence they cannot be considered out of their specific professional environment. This approach figures as a third option between the phenomenological interpretation of competencies, because the main focus is not on the individual but the process, and it is not a rational objective approach, because it does not contemplate an *a-priori* determination of the system and its rules, which depend on the relations developed between the actors in the process, that are, by definition, constantly changing. Thus, competencies are created in the process, and they figure as the knowledge that an individual possess and his or her ability to use them within a work process to reach a specific objective.

No precise instructions are provided *a-priori* and uncertainties are managed using the competencies at disposal of individuals and through their ability to employ those competencies to develop unwritten rules. Competencies are, hence, created during the activities, because they consist in knowing how to intervene in a changing environment.

To summarize, competencies have been interpreted through a variety of meanings, that shaped following an imprecise order, often revealing important differences in the same scientific fields, especially when characterized by different analytical perspectives, leading to several heterogeneous and often contrasting interpretations. A simplification can be proposed, dividing between functionalistic approaches that reifies competences, hence indicating them as expected qualities or actions needed from an individual to reach specific organizational objectives, and a socio-constructivist approach interpreting competences as the characteristics developed by individuals in a specific community or organization. A third approach may additionally be recognized (Maggi, 2001) in the interpretation of competencies as the undertaken actions of an individual in a specific decisional and executive process.

2.2 Linking competencies to strategy

In order to understand how competencies may be linked to strategic objectives, this paragraph will be dedicated to a preliminary in-depth analysis of the rational strategic approach to competency based management, then the focus will be shifted to the exploration of more recent approaches to competency modeling linking individual competencies to the organization's strategy.

As already mentioned, Prahalad and Hamel (1990) introduced the concept of core competence, rooted in the assumption that firms have different resources and capabilities that can create value in several business settings and that differentiate them from their competitors in the eyes of the customers.

According to the authors, the competition between firms goes beyond the ability to sell a single product or a service better than the competitors, and it is more closely related to the set of skills and technologies through which it can reach a leadership in various potential markets. The mix of technologies and skills is, hence, the core competence of the company.

Moreover, in order to avoid being surpassed by competitors, a company needs to develop in advance core competencies that enable access to future opportunities, finding new applications of the present core competences as well. Hence, constantly developing core competencies is a crucial feature of a firm in order to survive the competition, reached by creating or perfecting categories of value for clients. As Prahalad and Hamel effectively state "*the corporation, like a tree, grows from its roots. Core products are nourished by competencies and engender business units, whose fruit are end products*" (Prahalad, & Hamel, 1990, p.228).

The main obstacle of this approach is in defining core competences in the practice by clearly identifying what is distinctive of a firm and what is not.

To help practitioners and scholars to identify core competencies, the authors provide a reference comparatively to the optimal number of core competences to search for: "*Few companies are likely to build world leadership in more than five or six fundamental competencies. A company that compiles a list of 20 to 30 capabilities has probably not produced a list of core competencies*." (Prahalad, & Hamel, p. 229). The suggested aggregation level for the competencies, hence, should vary between five and fifteen core competencies, and it would probably take months for a large company to define them in a precise, creative and extensively shared way. A large consent on the identified core competencies is, in fact, considered a critical factor from the authors, because it figures as a first step for the effective implementation of the stemming process.

Moreover, the authors state that the perceived benefits of a firm's services or products from its clients should be interpreted as a distinctive competence. However, it is not always possible for the clients to directly perceive or appreciate the created value, thus, making it more difficult to identify some core competencies implicit in the process or not clearly apparent. Furthermore, a competence should be unique and provide a clear and sustainable advantage to the firm in terms of potential access to new markets or to the creation of new products or services. The authors Hitt e Hoskisson (2005) introduced some additional elements to the ones suggested by the authors, aiming to help with the identification of core competences, defining them as a mix of resources and capabilities with the characteristics of being precious, given, hard to imitate and to substitute. Regardless of these instructions, however, it remains particularly difficult to effectively identify core competences, and it is easy to fall in error.

After the delicate phase of definition of the core competencies, thought, a company should start elaborating a program for acquiring, developing and sharing them within the organization. This means to invest important amount of money in some specific activities and to safeguard competencies from deterioration through periodical checks of their status and progress.

In all these phases, large consent within the organization is described as a key feature, and a measure of potential effectiveness of the management of core competencies. However, some authors questioned how this large consent would fit with the politic nature of an organization, which surely will influence at least the initial phase of identification of the core competencies, where each representative of

a specific interest will likely pressure in order to make its interests prevail over the others. Rules guaranteeing an effective and democratic participation of the employees at all levels seem, thus, an essential solution to effectively identify core competencies able to substantially represent the organization, thus not pursuing power dynamics.

However, this aspect figures as particularly controversial, because it weakens the assumption that core competencies can be defined *ex ante* and, at the same time, effectively represent the values, principles and culture of the organization at all levels.

Another contradictory assumption of the authors seems to be the idea that competencies can be easily shared between employees, highlighting the perception of competencies as reified. In fact, the modalities for sharing competencies are not clearly identified and seem to be perceived as an automatic consequence. Thus, it is not clear how employees holding critical competencies will be motivated to share them, hence improving the risk of being easily substituted.

From this initial analysis, it seems clear that, in order to reach success, an organization should search for synergies and fit between organizational competencies and strategic objectives. Without the appropriate competencies, even the best strategies are hardly implemented. Competency models are usually built to be directly related to strategic objectives. More specifically, they identify the individual competencies that employees with different professional positions need to own in order to reach their organizational objectives.

Organizational competencies are, hence, part of the individual competencies, and the identification of these last ones poses as a base for a competence-based system. To identify these competencies in a competency model, it is critical to define the main strategic objectives of the organization and to derive from them the appropriate competencies. The link between strategic objectives and competency models is crucial and it figures as a fundamental tool to address managers and employees' effort and attention toward the strategic objectives.

According to the authors Campion *et al.* (2011), in order to link a competency model to the organization's strategy, the first step is to define organizational objectives. Competencies can be a direct translation of organizational objectives or they may be tied to fundamental requisites of the organization that do not necessarily have an evident link with organizational objectives. This last case is typical of lower

professional categories of workers, while the link between executives' and strategic objectives tend to be more obvious.

As already hinted during the analysis of the rational strategic approach, a recurrent problem is provided by the difficulty to effectively relate the individual and subjective dimension of competencies with a rational, objective top down and *ex ante* definition.

Campion *et al.* (2011) suggest starting the analysis from the highest levels of an organization, through the confrontation with top management, which has the additional practical advantage of including them in the process from the beginning and to gain precious insights from their experience relatively to the future direction of the organization, hence accessing important information on future professional requirements of different professional positions.

Moreover, the exchange with top managers helps identifying the most appropriate terminology to employ to effectively present the information on competencies. This top-down approach may need to be reiterated even at professional level or at an organizational unit level.

The next phase involves finding a way to identify the organizational competencies and individual competencies, in order to provide a complementary overview. It is particularly difficult, however, to identify which capabilities, knowledge and skills practically lead to a competitive advantage or even to correctly interpret the organization's vision in order to derive the appropriate competencies for its realization.

Moreover, according to some authors (Cardy, & Selvarajan, 2006) the link between employees' competencies, strategic achievements and organizational efficiency, is not immediate, but it is mediated by the organizational context that could influence the results even in the case employees own the appropriate competencies.

According to Cardy and Selvarajan, different frameworks may be used to derive competencies from strategy. These approaches differ based on the nature of competencies and the organizational context. The job-based approach is characterized by deriving competencies through an analysis of job requirements, the future-based approach, focuses on the competencies needed to realize a future strategy and it is often based on an analysis of the composition of a specific future professional position. Less traditional approaches are those defined as *value-based* and *person-based*. The first framework is based on the analysis of the value of the

organization, the second one id based on workers' characteristics more than objectives.

The choice of the approach should depend on the specific organizational context under investigation; moreover, competences' measurement criteria should be defined both at an individual and at a collective level.

These approaches are not alternative, but they can and should be combined in order to identify the approach best fitting the organizational context and the level of analysis. The competency based approach should, thus, not follow rigid pre-determined schemes or models, but it should be contingent to the organization under study.

Thus, all the reviewed approaches seem to abscond from choosing a rigid path between the crossroad of the traditional worker-oriented or work-oriented frameworks, moving closer to mixed approaches that may best moderate the limits of each methods and that could best adapt to the organization under investigation.

2.3 Competency based management in public administrations

Competency based approaches to management have been prevalently adopted by private organizations. This paragraph will, thus, be dedicated to illustrating the state of the art on competency based management approaches in public administration and, more in depth, in Italian public administrations.

Primarily, it is useful to understand that one of the main differences between traditional personnel management and competency based management is the approach to vertical and horizontal integration (Guest, 1987). In competency based management, employees' individual competencies are linked to the core competencies of the organization, while their individual performance is usually linked to the strategic aims of the organization. Tools for human resources management are, then, comprehensively connected and coordinated. Individual competencies are derived from a competency model built following the organization's mission statement and its strategic objectives. Competency models are the key tools in competency based management approaches, because they represent the main reference framework for employees' selection, appraisal, development and rewarding systems.

In recent years, competency based management is increasingly being adopted in human resource systems and practice. Lawler (1994) describes an important transition from job-based organizations toward competency based organizations,

where the main challenge is identified in the difficulty to properly select employees able to carry out the organization's vision and mission, to meet the targets and to maximize the organization's ability to create a supportive culture for them.

The motives for this transition in management approaches should be sought in the continuously and rapidly changing modern economy, driven by the introduction of new technologies and by a growingly interconnected and global knowledge economy which requires competencies that are suitable to such a dynamic and unpredictable context. Globalization, the growingly amount of available information, the evolution toward knowledge and services oriented organizations, and the increasing competition, demand for continuous innovation and optimization in almost, if not all, the organizations. In fact, in order to survive in this rapidly changing economic environment, organizations need to achieve greater flexibility, and, because of this, they are moving toward a flatter organization that asks for a revision of the traditional interpretation of careers.

In this context, the competency movement assumes that competencies of the organization and its employees make the difference. This approach has been primarily embraced by businesses, striving for a lead on competitors. In facts, Hondeghem (2002) underlines the interesting semantic similarity between the words competition and competence and arguments that, when moving to the public sector, even if competition is less evident, it is still present: there is competition when recruiting and retaining valuable human resources or other critical resources, there is competition to win contracts and when league tables compare public (and private)'s performances, when trying to obtain and retain capable employees in a rapidly changing public sector and when facing the increasingly competitive labor markets.

In recent years, there have been several pressures upon public organizations to review their traditional approaches to human resources management: the traditional measures of performance of the private sector, such as economy, efficiency and effectiveness, are becoming common principles for the public sector as well, slowly modifying the role of the state from the one of a producer of public services, of a regulator or facilitator, to one characterized by an orientation towards users, customers and consumers' logics, where government approaches the concept of governance, thus radically modifying its institutional culture.

The adoption of typical businesses' principles relatively explains the attractiveness of competency based management for public organizations, together with the advances in technology which create new opportunities for introducing innovative

ways to offer services and organize work. Public administrations are, then, driven to define what kind of employees are needed today in the public service and what skills, experiences, abilities and attitudes should public managers and officials possess to effectively achieve their objectives.

The competency movement originated in the U.S.A. and the U.K., and it appears that, even today, it is more commonly found in countries adherent to Anglo-Saxon traditions and language (Farnham, *et al.*, 1996; Farnham, & Horton, 2000). In general, however, competency based management in European public administration has not yet been particularly successful (Hondeghem, 2002). This is probably reconducted to the fact that approaching a competency based management for public organizations involves many difficulties such as problems in the implementation of the new practices, possible ruptures in the working processes, or overlaps between effective strategic competencies or established procedures, or even the discouragingly complicated process to undergo in order to identify competencies and to build competency models, furthermore aggravated by the need to build pragmatic and *ad hoc* competency frameworks for each organization, thus, having few comparative reference frameworks. Some scholars, however, strongly believe that the employment of bottom up approaches to competency based practices' design and implementation may mitigate, if not solve, many of these issues (Campion *et al.*, 2011; Cerase, 2002).

Hondeghem, (2002) strongly emphasizes the evidence that there are no relevant differences between the private competency based management approach and the public one, but there are many differences in the country-level application of competency based management, depending on the existing organizational models, and on the political orientation and sensitivity. In fact, the vision of government, as well as the institutional and political context have an important impact on how organizational and individual competencies are perceived.

Competency based human resource approach is, however, increasingly becoming a central theme in modern public management, but, when referred to the practical implementation, it seems to be still in a preliminary phase: governments mostly employ it as a system for assessing performances by determining the needed competencies for new specific professional positions, and for other governments the competency based management is still perceived as an excessively difficult challenge to confront (Skorkovà, 2016).

According to Cerase (2003) critical changes investing Italian public administrations can be summarized in three main events: the process of Europeanization, the newly

introduced principles and measurement criteria of the New Public Management and the rise of a new interpretation of governance. Moreover, the increasing and frequently changing demands for services from the community, result in public administrations reconsidering the content and the structure of their activities, often leading to the necessity to re-learn some professional competencies. In other words, new abilities, skills, know-how and knowledge needed to effectively conduct the latest interpretation of professional activities are searched for. It appears that, when these changes affect ordinary activities, employees' adaptation to the new procedures and rules seems to be almost implicit, while, when new objectives or professional positions are introduced, the adaptation becomes much more complex, because the required flexibility to adapt asks for an explicit recognition and for definite actions favoring the integration process.

Finally, as a practical example, in 2009, a new law was introduced in Italy, re-establishing[3] an internal assessing system affecting the remuneration, the career and the procedures related to all the public professional categories. This law is particularly relevant, because some scholars attribute to its introduction the main motive explaining the renewed interest on competency based management approaches (Pastorello, 2010) which led some public institution to recently re-experiment the introduction of competency models in their organization.

2.4 Moving toward entrepreneurial universities

When we focus our attention on universities, it is revisable how they, as well, are increasingly adopting the same managerial principles that business schools typically promote, becoming what has been defined as entrepreneurial universities (Gibbons *et al.*, 1994; Etzkowitz, 2003; Slaughter & Leslie, 1997, Sporn, 2001).

Some new professional figures are being introduced, with the aim to support their government, and to increase their efficiency and effectiveness.

At a European level, many modifications have been introduced for what it regards the way universities are being run and new organizational forms are arising, coherently with the specific characteristics of the organization and its context (Kwiek & Maassen, 2012; de Boer & File, 2009; Clark, 2000); however, a common tendency seems to be the creation of administrative infra-structures placed in parallel, or even replacing, traditional academic structures (Bleiklie, 2007).

[3] In 1980, with the law of 11th July n. 312, all internal assessing systems were abandoned in almost all the Italian public administrations. The reasons for this important choice, can be traced in the detection of excessively arbitrary evaluation systems and favoritisms, and in the will to limit the growing pressures aiming to increase the number of new public job positions.

Enforcing this process of entrepreneuralization of universities, different reforms of public administrations strongly impacted on many different aspects of the academic organization from their organizational structures to their management and the performance assessment system (Vaira, 2011).

These reforms aimed at increasing the efficiency of academic organizations, directly impacting on typical problems such as the difficulty to adapt to changing contexts, the need to innovate teaching methods and structures, the presence of nepotism and barony, and scarce internationalization of research and teaching.

Trying to face these problems, significant modifications in management approaches were introduced with the aim to achieve the generic objectives of independence, responsibility, quality and control.

For what it regards competency based approaches to human resources in public universities, there seem to be a gap in the literature on non-academic employees. Moreover, if we focus the attention on the Italian context, even if some important studies have been conducted on the introduction of competency models in the public administration in general (Cerase, 2002, 2003, 2010; Pastorello, 2010), scarce literature can be found on competency modeling in public universities, especially if not referred to scholars and researchers' professions.

CHAPTER 3. METHODOLOGY

Overview

This chapter details the methodological procedures of the research. More specifically, extensive descriptions and insights are provided regarding the philosophical assumptions of the research, the methodological approaches employed, the role of the researcher, the anticipated ethical issues, the data collection procedures, and the strategies for validating the findings. A convergent mixed method approach is employed, aiming to integrate bottom up approaches with the traditional top down approaches of competency modeling. The need for this integration arose clearly from the literature on competency modeling techniques, in the light of the difficulties in the implementation of traditional competency based approaches in organizations. Thus, this research conducts an action research with the twofold aim to define a functional mixed methods approach to competency modeling and to understand to what extent the qualitative bottom up approach and the quantitative top down approach converge, thus, providing an enhanced understanding on the topic under investigation.

3.1 Research methods

In order to address the research questions, the application of a mixed methods approach is believed to be the most suitable, considering that competencies are not easily identifiable and measurable with exclusively quantitative or qualitative approaches and, moreover, this research focuses on competencies of specific groups of employees which still need to be explored exhaustively, thus a mixed methods approach may be useful to explain the findings generated by each strand, thus providing a more comprehensive account of the area of inquiry.

Furthermore, this study is governed by the belief that the research questions should guide the employed methodology without restraints to specific methods which could limit the researcher freedom to consider different angles to cope with the research objective (Patton, 1990; Rossman & Wilson, 1985; Cherryholmes, 1992; Murphy, 1990).

During this study, the collection of data on the field has been favored, since it enables the researcher to locate herself at the site where participants experience the issue under study. This allows to gather information by talking directly to participants, see them behave within their context and search for an understanding of contextual features and their influence on participant experience. This approach favors the understanding on how events, actions, and meaning are shaped by the unique circumstances in which they occur (Maxwell, 2013). To enforce this belief, the research outcome is intended to best describe a solution that is suitable with the

present context, thus it is not aiming to generalize the results, but to find a solution that functions in a determined context and in a specific time.

The employed mixed methods approach follows a convergent design (Caracelli & Greene, 1997; Greene, 2007), where I collect qualitative and quantitative data parallelly, thus adopting a concurrent approach to data collection (Morse, 1991), and create a dataset merging both qualitative and quantitative results, thus analyzing them jointly and comparatively with the aim to provide a comprehensive interpretation of the results.

With this approach, multiple and mixed forms of data are gathered, such as interviews, rating scales, observations, memos and documents. The gathered qualitative information is then reviewed, inductively examined and organized into categories and themes. Furthermore, deductive thinking is employed while continuously checking the categories and themes against the data, employing a complex reasoning that follows throughout the whole process of research and that attempts to provide a holistic outline of the many perspectives and factors. In order to present this intricate overview of the experiences and evaluations that participants bring to the research, the themes have been organized in order to reflect multiple perspectives on the topic and diverse views. Quantitative data, diversely, fulfilled a secondary role compared to qualitative data, mostly providing validation and support to the qualitative results.

3.1.1 An action research design

Action research is a specific form of mixed methods research that does not only seek to understand how participants make meaning or interpret a phenomenon or a problem in their workplace, but it strives to engage participants in the research process, at least at some level, to solve practical problems, improve their organization or introduce social changes (Stringer, 2014; Lewin, 1946).

My research design unfolded over time, guided by the purpose to improve human resources management practices and employees' general working conditions through the study on how competencies could help employees reach strategic objectives, hence nurturing their talents. Referring to Kemmis, McTaggert and Nixon (2014) distinction of action research, I would define this study as a practical action research, guided by an interest to help practitioners to employ more adaptive and considerate managerial approaches.

Coherently with this research design, I engaged with a group of employees and managers from the central headquarters area "organization and development" of

Sapienza, university of Rome, consequently forming an heterogenous research team. Results arising during the different phases of the research were shared approximately every three months during meetings. Afterwards, possible next steps were discussed, and decisions were made on how to progress further with the study.

3.1.2 Ethical issues

Through all the phases of the research process, different ethical considerations (APA, 2010; Creswell and Poth, 2018; Lincoln, 2009; Mertens and Ginsberg, 2009) have surfaced and have been carefully addressed. More specifically, prior to conducting the study, approval from university was obtained: the research project has been formally approved by the competent authorities and published on the Official Journal of the university. Moreover, the university's management team of the organization and development's area has been involved during the whole research process, providing regular feedbacks on the conducted activities, together with the access to offices and permissions to advance further with the study.

In the preliminary phase of the research, participants have been informed of the general purpose of the research, the modalities of data gathering and its average duration through different internal communications both from the author's supervisor, the top management team and, later, by the author of this research. The participation has been completely voluntary: middle managers and managers were asked to actively respond to the communications in case they were interested to participate to the study. Furthermore, employees were informed once more of the voluntary nature of the participation at the beginning of the phase of data collection.

During the data collection phase, peculiar attention has been paid to avoid making any leading question, sharing personal impressions or sensitive information. Participants were informed comprehensively of the voluntariness of the participation, the anonymity, and the modalities of collection, storage and publication of the information, which were structured in order to prevent any undesired disclosure.

Moreover, it is important to highlight that some field notes containing both observations and unrecorded speeches from informants, were digitally stored in a password-protected file. These password-protected files were excluded from the analysis because they contained sensible information with possible deleterious consequences for some employees. This data was not coherent with the objective of the research, thus, no attempt to verify its reliability was conducted. Moreover, I do not possess neither the competencies nor the agency to explore these events further.

The analysis and reporting of the data were conducted with the utmost respect for the anonymity of the participants. Furthermore, distinct effort has been put to report multiple perspectives and contrary findings, thus, limiting the subjective judgement of the researcher.

Finally, this research has been funded by Sapienza University of Rome during the years 2017, 2018 and 2019 through a research grant for the research project entitled "the analysis of processes, competencies, and job positions for the definition of an organizational model for complex public organizations".

3.2 The researcher as primary instrument for research

Embracing an exquisitely qualitative perspective (Belk, 1989), the researcher figures as an ideal research tool, being capable of immediately respond and adapt to unusual or unanticipated events or feedbacks; she is able of clarifying and summarizing material, expand his or her understanding through nonverbal as well as verbal communication, process information and check with respondents for accuracy of interpretation.

On the other hand, possible biases can overcome due to the researcher's subjectivity: his or her specific theoretical frameworks, interests and interpretative lens may undeniably impact on the study. Thus, it is important, rather than eliminating these subjectivities, to highlight them and monitor the possible repercussion they could have on the study (Creswell & Poth, 2018; Merriam & Tisdell, 2016; Berry, 1989).

To begin with, a critical aspect to address is surely related to the site of the research: in fact, this research was conducted in the author's workplace and this may rise issues of power and risks for both the researcher and the participants. However, the interviewed employees were not in the same professional area of the researcher and they were embedded in various faculties and departments related to different scientific fields, different than the one of the author. This variety provided a moderation of both risks and power issues. Nevertheless, careful precautions were taken to avoid silencing any perspective and multiple strategies have been employed to validate the results.

From another perspective, being already an insider to the organization, undoubtedly facilitated and accelerated the acculturation process of the researcher (Barley *et al.*, 1988; Berry, 1989; Lafromboise, *et al.*, 1993). The intent of the acculturation advancement was to move closer to the emic perspective of the informants, and to provide an interpretation of the results that could reflect a derived etic standpoint (Berry, 1989).

However, the researcher perspective will put an unavoidable mark on the study, figuring as the lens through which all the data have been inevitably interpreted (Wolcott, 2010). Therefore, it is believed appropriate to provide the reader with some information regarding my epistemological and ontological assumptions and theoretical background. More specifically, my scientific field's studies were largely characterized by a positivistic approach to research. In time, I grew close to qualitative methodologies and endorsed a more pragmatic approach, increasingly entertaining the belief that it can provide key insights to the traditional interpretation on how organizations could or should be, overcoming some traditional rigidities of the field.

Recent debates discussing the role of the researcher (Teddlie & tashakkori, 2003a; Guba & Lincoln 2005, Lather, 2006; Morse, 2006b; St. Pierre & Roulston, 2006) occurred in different scientific sectors, and gradually gave rise to a new approach defined as "critical qualitative research" (Denzin & Giardinia, 2009). This approach energetically stresses that qualitative research should make a difference in people's everyday life through the promotion of human dignity and social justice principles (Denzin & Giardinia, 2009). By adopting an action research design (Stringer, 2014; Lewin, 1946), I wanted to pay tribute to this perspective. In fact, significant efforts were made to make this research relevant for the people it will impact on and to improve their working conditions.

3.3 Purposeful sampling

The purposeful sampling strategy for collecting data involved the intentional selection of groups of employees that could best inform the author about the research problem under examination. These employees, in fact, undeniably possess a broader understanding of the issues under study and access to information on forthcoming developments and changes in their professional areas and organization; moreover, they often bear the responsibility for the definition and the implementation of new practices.

The choice on the needed numerosity of informants followed a logic of saturation (Saunders, *et al.*, 2018). In other words, interviews were conducted and simultaneously content analyzed, keeping count of the addition of critical behaviors they added, and the data collection ceased when no new critical behaviors was detected in the last 10 interviews.

Thus, multiple individuals have been identified who directly experienced university's work reality. More specifically, coherently with the traditional

distinction within Italian public universities, employees embedded in the following main professional areas have been selected:

a) administration and management area;
b) technical, technical-scientific and data processing area;
c) library area.

Additional professional areas exist defined as “medical, dental and sociomedical area” and “services area”; however, during the data collection, no employee was found related to them, thus, the research has been restricted to only three main areas of interest.

91 participants to the study were embedded in the administration and management area, 19 in the technical, technical-scientific and data processing area, and 15 in the library area, for a total sample of 125 employees.

The participants were related to 12 different organizational positions; anyhow, a complication arose when discovering that many employees with the same employment contract and with no organizational position assigned, practiced very different activities and owned extremely diverse competencies. Thus, during the data collection phase, the author decided to sample participants not on organizational positions but on professional roles, so that it would be possible to effectively distinguish the related competencies.

In the next table, a summary of the number of participants divided in terms of their organizational area and structure, professional category, organizational position (when existing) and professional role, is represented:

ORGANIZ. AREA	PROF. CATEGORY	ORGANIZ. POSITION	PROF. ROLE	STRUCTURE	N. OF PART.
Administration and management	Administration and accountancy	Head of Student Office	Head of Student Office	Central Headquarter	1
		Unassigned	Student Office staff	Central Headquarter	10
		Administration manager	Administration manager	Department	7
		Administration manager	Administration manager	Faculty	2
		Unassigned	Administration staff	Department	25
		Unassigned	Administration staff	Faculty	4
	Support to teachings	Unassigned	Faculty office staff	Faculty	3
		Unassigned	Teachings administration staff	Department	11
		Unassigned	Teachings administration staff	Faculty	4
		Faculty manager	Faculty Office manager	Faculty	3

		Teachings administration manager	Teachings administration manager	Faculty	3
		Teachings administration referent	Teachings administration referent	Department	8
	I.C.T.	I.C.T. referent	I.C.T. referent	Department	3
	Support to research	Research referent	Research referent	Department	7
Library	Library	Library director	Library director	Department	5
		Unassigned	Library staff	Department	10
Technical, technical-scientific and data processing area	Support to research	Research referent	Research referent	Department	1
	I.C.T.	I.C.T. referent	I.C.T. referent	Department	4
		Unassigned	Webmaster	Faculty	1
	Laboratories	Laboratory Head	Laboratory Head	Department	6
		Laboratory Head	Laboratory Head	Faculty	1
		Unassigned	Laboratory staff	Department	6
Total					125

Table 3.1. Representation of the number of participants, organizational area and structure, professional category, organizational position and professional role. Own elaboration.

Informants were sited in 3 different faculties, 11 departments and one organizational area embedded in the university's central quarters. This sites' dispersion provides important contextual information useful in developing categories in the axial coding phase of the study.

In order to protect anonymity of the participants the specific structures will not be disclosed. However, the faculties and departments were related to the main scientific disciplinary sectors except medicine and natural sciences.

Information recording followed different procedures according to their nature. More specifically, interviews have been tape recorded or, if the answers were written, collected. In both cases, they have been digitally transcribed and translated, to facilitate the encoding procedure, and stored; Field notes and memos were noted on site and later digitally transcribed. Data were stored securely, both physically and digitally, in places only accessible by the author.

3.4 The qualitative and the quantitative strands

This study adopts a convergent mixed methods design (Creswell, 2015, Denzin & Lincoln, 2011) since it employs both a quantitative strand and a qualitative strand to answer the alleged research question, with the aim to reach a more comprehensive understanding of the subject under investigation. In practical terms, this approach involved a concurrent collection of qualitative and quantitative data and, then, a combined analysis of the emerged results.

The logic underlying this choice emerged during the data collection phase of the research where, with the aim to reach a more comprehensive overview on the

research subject, I decided to integrate, to an original grounded theory approach, a theory driven quantitative approach.

This choice allowed to consider both subjective evidences and objective organizational needs in the study. In other words, it has been applied both a grounded bottom-up logic and a theory driven top-down logic to the study.

The following figure provides a visual support to the description of the adopted data collection strategy's structure.

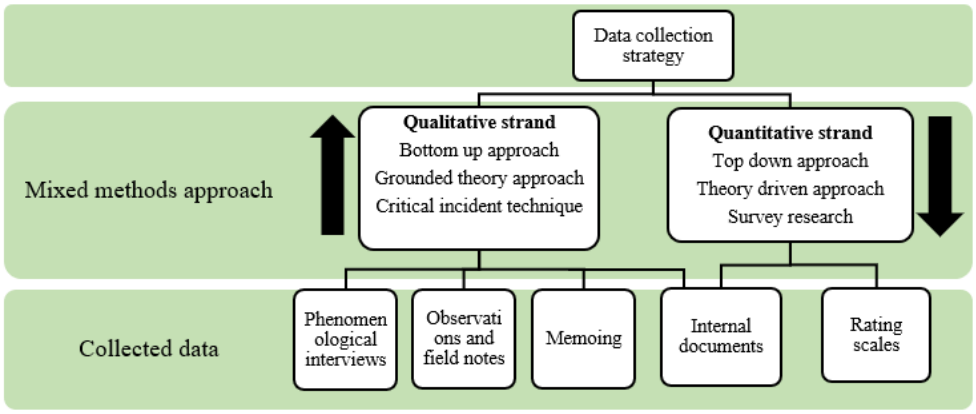

Figure 3.1. Data collection strategy. Own elaboration.

The level of interaction between the mixed methods is an interactive one (Greene, 2007), thus the two strands are not considered as independent and they are mixed before the final interpretation. Otherwise stated, a unique dataset is proposed, with both qualitative and quantitative data, that is afterwards jointly and comparatively analyzed.

Each method will be discussed and described in detail in the next paragraphs according to the following structure: 1) the qualitative strand description, stating the qualitative questions, the adopted methods, the collection tools, and the collected qualitative data; 2) the quantitative strand description, stating the quantitative question, the adopted methods, the collection tools, and collected quantitative data.

3.5 The qualitative strand in the mixed methods approach

The intent of this research is to explore how non-academic (technical, administrative and library) human resources' competencies configure to help employees reach public universities' strategic objectives, hence supporting the organization's core activities. Nevertheless, my intent is to move beyond mere description of the result and generate an interpretative model (Corbin & Strauss, 2007) grounded in data from participants in the study and other sources of information from the field.

Numerous models studying employees' competencies and their related behaviors are available in the scholarly and professional literature, however, these were developed and tested on samples and population other than that of interest to this research. Moreover, competency modeling is strongly related to contexts, culture and organizations, thus, even if some elements, from both theory and practice, could be borrowed and applied in this study (e.g. existing competencies' libraries), they would always need to be adapted by the researcher to the reality under investigation. Moreover, competencies evolve over time: a competency model cannot be employed for more than approximately five years (Campion *et al.*, 2011) without the need to update or re-define it according to the external or internal changes that likely occurred during that time.

After these considerations, I decided to apply a grounded approach (Corbin & Strauss, 2007) to study the emerged competencies and behaviors directly from the field. This approach involved the employment of different tools for data collection and analysis as interviews (Creswell, & Poth, 2018; Flanagan, 1954), observations and memoing (Corbin & Strauss, 2007).

3.5.1 Interview protocol

With the aim to explore how technical, administrative and library's employees may best support the core activities of the university, and to identify the competencies arising from their narratives, interviews were employed as a primary tool for the exploration.

The structure of the interviews followed the subsequent rationale: 1) a first section gathered professional information from the participant (professional position, years of experience, workplace, main responsibilities, main professional objectives, and professional area); 2) a second section of the interview collected qualitative information related to perceived emerging changes and new trends in the informants' professional environment and the definition of informants' main purpose relatively to their professional role; 3) the last part employed a phenomenological approach to explore participants' work experiences and to collect critical incidents, using the critical incident technique to structure the interview protocol.

Interviews involved 125 participants and were conducted between January 2019 and June 2019.

The location for the interviews was negotiated together with the participants in a preliminary meeting, and it was commonly sited inside the employees' workplace and mostly in employees' own offices.

3.5.1.1 The critical incident interview technique

The critical incident technique (Flanagan, 1954) is a flexible method that, combined with thematic apperception tests, led to the development of the renowned behavioral event interview (McClelland, 1978; Spencer & Spencer, 1993), specifically created with the aim to identify employees' critical competences.

However, given the exploratory purpose of this research, the critical incident technique has been the primary tool of investigation, combined with some typical components of the behavioral event interview. During the interviews, I could not access to individual performance measurements of the participants due to a policy of data protection. However, indications of outstanding performers have been provided by supervisors and peers and transcribed in the fieldnotes. Being the identification of average and outstanding performers subsequent to the voluntary participation of the subjects, though, it could not be *a priori* reached the desirable 3:2 ratio between outstanding and average performers (McClelland, 1998), but a 1:3 ratio has been detected.

Therefore, a grounded bottom up approach has been employed, not aimed at testing employees possession of some previously identified characteristics needed to perform well in their specific job position, but analyzing their work experiences referred to specific unstructured events (the critical incidents), attempting to identify frequent and peculiar characteristics arising from the data, thus applying a phenomenological approach to interviewing.

To do so, semi structured interviews were conducted (Flanagan, 1954; Motowildo *et al.*, 1992) towards 125 technical, administrative and library employees.

The posed questions required a great deal of careful thought from the informants, thus a written response was solicited, even if in different cases and for various reasons (e.g. inability to write because of injuries or time issues) the individual response have been taped recorded and later transcribed by the author. More specifically, 18 interviews have been tape-recorded and 107 were handwritten by the informants. In both cases, however, interviews were digitally transcribed and translated by the author to allow analysis.

The employment of a written response has been suggested by Flanagan (1954) especially when an elevate number of informants are available. He suggests the use of a procedure that he defines as group interviews, however, this definition will not be used in this research, because it is believed that it could lead to an ambiguous interpretation, given its term's similarity to the more conventional focus group

interviews (Frey & Fontana, 1991). To be more specific, the difference between the two approaches is that the focus group technique is characterized by an interactive nature and it generally attributes the same weight to group and individual opinions, while the present technique is principally considered as an effective tool for gathering written individual responses of the interviewees, without encouraging any interaction between them.

The proposed approach consists in asking the participants, after a provision of introductory remarks and the opportunity to ask questions and clarifications, to write incidents in answer to specific semi structured open-ended questions. These questions queried each person to recount what they did in past successful or unsuccessful events, where successful events are intended as those situations that determined the protagonist of the narrative to effectively reach the objectives of his or her specific professional position and where unsuccessful episodes are intended as situations that determined the protagonist to not reach the objectives for his or her specific professional position.

A facultative part of the interview protocol provided additional questions, asking the informants to recall successful and unsuccessful episodes of their colleagues, subordinates or superiors.

To facilitate and address interviewees' memories, examples have been provided of events of success reaching important objectives, difficult situations encountered during work that led to difficulties or failures in reaching the objectives, and events referred to the introduction of innovative and experimental practices to best reach objectives.

Finally, as Flanagan recommends, before concluding the interview, I read the responses of each informant to make sure that he or she understood what was asked and, eventually provided additional questions to help participants extend their answers.

Each interviewee described an average of three critical incidents, for a total collection of 346 critical incidents.

This technique's main merit is surely its cost effectiveness in terms of time and number of reachable informants. In fact, this approach retains the advantages of the individual interview for what it regards the personal contact, the availability of the interviewer to answer questions and explain the study's objectives, and to provide for a check on the data supplied by the interviewees.

Moreover, this method reduced the researcher's discretion because visual and other nonverbal cues could barely influence her evaluation, thus improving the reliability of the approach (Wagner,1948).

On the other hand, these cues might represent important characteristics as interpersonal skills, self-assurance, or social poise and they could be missed with the employment of this specific approach. However, a study focused on this specific aspect (Motowildo et. al., 1992) showed that valid judgements are possible even without access to nonverbal cues.

The semi structured framework of the interviews was chosen to reach the twofold aim to allow for comparison, and to provide the possibility for the researcher to explore some experiences in more depth, by asking additional questions to the informant (Spencer & Spencer, 1993; Motowildo *et al.*, 1992).

Interviews' questions were pilot tested with 15 volunteers from technical administrative and library employees from one faculty and two departments. The questions were then revised, with the aim to maximize participants' understanding and the effectiveness of the interview protocol.

Interviews lasted approximately 50 minutes, both for oral and written responses, where the longest interview lasted 1 hour and 50 minutes and the briefest 30 minutes.

3.5.2 Observation and memoing

Participants observation is a key tool that expresses the act of noting a phenomenon in the field setting, paying attention to physical surroundings, participants, activities, interactions, conversations and behaviors (Angrosino, 2007).

As the observer, I watched the conducted activities in different sites and took notes without participating, hence recording data without a direct involvement (Bernard, 2011).

The observational protocol (Appendix D) was designed to record notes in the field, including descriptive notes, date, place and time of the observation. Particular attention was payed to aspects such as the physical settings, events or activities that occurred in my presence (Bogdan & Biklem, 1992; Emerson & al., 2011).

This form of data has been considered important for understanding the context under study, however, it probably played a secondary role compared to interviews. Unfortunately, reports and field notes cannot be shared in order to protect anonymity of the participants, but they have been employed in the analytical phase.

Memoing occurred both during the data collection and data analysis phases and consisted in reporting reflective notes about what I learned from the data or observations. Therefore, ideas and records about concepts and their relationships were written in reports or as memos during the analysis, attempting to synthetize data into higher level meanings.

3.5.3 Internal documents

Internal documents had a critical role in different phases of the research process: in fact, they were gathered both during the data collection phase and during the analytical phase. During the first phase, the main aim of the collection was to understand the internal structure, the organizational chart and the professional roles' formal hierarchy, needed to define a coherent purposive sampling of the informants, as previously described. Moreover, some internal official documents were provided directly by the participants, often to support the motives of some behaviors, or to better explain criticalities they encountered, or the temporary, normative or spatial context where they took place.

Finally, during the analytical phase, some documents were actively searched in order to verify the validity of some claims or to analyze some connection between competencies or events.

3.5.4 Thematic coding

In this phase, evidences from the database and labeling ideas are grouped into codes, and codes are grouped in categories and/or themes, so that they reflect broader perspectives.

This strand's analysis has adopted an open coding structure (Corbin, & Strauss, 1998), adapted following Charmaz's suggestions (2006, 2014). In open coding, categories are formed from the different information gathered about the phenomenon being studied by segmenting information and attributing labels to each unit (phrases, sentences, or paragraphs). The coding label came from the exact words of the participants, phrases composed by the researcher, or concepts used in organizational studies. Memos were placed to text segments during the coding process. Within each identified category, several properties and subcategories have been found and data were analyzed in order to define dimensions of the categories.

A successive phase involved axial coding of the identified categories. This is a semi structured approach where a coding paradigm is presented in which links among categories are investigated and possible relationships are identified according to

specific frames of reference, using data fragments to provide supporting evidences to the explanations (Birks & Mills, 2015).

The formulation of the categories followed a traditional procedure involving the division of data in codes and categories related to the frame of reference selected. New categories, when observed, have been added and larger categories were divided in smaller groups with similar types of behaviors in the attempt to reach a homogeneous division.

The identified preliminary tentative categories were submitted to the research group for review, comprehensive of an early definition of the tentative themes and the cumulative addition of text exerts, incidents, observations and other information.

In the final phase of selective coding, aiming to discover patterns and categories, ideas about the evolving theoretical proposition were recorded throughout the data procedures (Lempert, 2007; Corbin and Strauss, 2015). Afterwards, to determine the most appropriate level of specificity to use in reporting the data, the following considerations have been made: headings and requirements have been structured with the aim to provide a discernible and easily remembered structure, thus, the chosen category's titles sought to be meaningful to the reader even without detailed explanations. The list of statements was defined exclusively in positive terms, to provide homogeneity and the headings of a given type were of the same general magnitude or level of importance. Finally, the list of headings covered all incidents having significant frequencies, aiming to provide a comprehensive overview.

3.5.5 Strategies for validating the findings in the qualitative strand

Before conducting the analysis of the interviews, the following validation procedures referred to the descriptive process of the critical incidents were undertaken: 1) the representativeness of the sample was tested while conducting the last interviews by checking if they added any new critical behavior following a saturation procedure (Flanagan, 1954); 2) the procedures for observing and reporting incidents have been accurately reported; 3) the gathered data have been efficiently described and analyzed so that it was possible to both draw inferences from them and compare the activities.

During the definition of the frame of reference, to ensure its validity, references and comparisons with previously developed definitions and classification systems have been grouped together with formal considerations on interpretation and reporting.

Moreover, during the comparative procedures of both open and axial coding, data were consistently triangulated between the information and the emerging categories. Questions on how the categories related between each other were posed, and evidences (incidents, events) explaining the relationship were looked for, following a process defined as discriminant sampling (Corbin, & Strauss, 1998).

3.5.6 Integration and interpretative modeling

The integration phase is the last analytical step, where different themes are related to each other to provide an overview on the subject under investigation.

The integration process has been shaped throughout the simultaneous and iterative data collection, analysis and memoing process previously described. During these phases a data set arose containing the main emerging themes, their categories and codes describing behaviors or elements shaping the identified categories.

The analysis of the resulting display, then, led to an overarching interpretative model (Spiggle, 1994), aiming to provide a visual representation of the emerged relationships.

The model attempted to interpret the data set through a process of analysis and framing of the narrative movement, and through the contextualization of the story in the identity project and the socio-cultural background (Thompson, 1997).

Results of the analysis and the interpretative model, coherently with the research's agenda, will be presented in the next chapters.

3.6 The quantitative strand in the mixed methods approach

The purpose of this mixed methods study, focused on identifying how competencies configure to help employees reach strategic objectives in a public university, may also be interpreted with a different approach that involves employing a quantitative method. In other words, I decided to reverse the previously described grounded setting approach, by applying a top down approach to address the research questions. I started conducting a literature review, as suggested by Rodriguez *et al.* (2002), on emerging competency models and the related competencies, and studied a way to implement those models in the organization under investigation. Subsequently, I confronted the suggested theoretical method with the organization under study, through the examination of the organizational documents, and I developed a theoretical common set of core competencies, including also technical and professional competencies, for the organization under study. Moreover, coherently with an action research scheme, I involved middle managers and a top manager of

the organizational area of organization and development in a research team to gather their opinions on a preliminary formulation of the competency model.

Finally, to extract critical competencies from the strategic objectives of the analyzed university I referred to Prahalad and Hamel (1990) firstly theorized approach, later developed and adapted by different authors such as Green (1999), Hitt and Hoskisson (2005), and Cardy and Selvarajan (2006).

After extracting the early competencies, they have been again compared with renowned reference frameworks (Boyatzis, 1982; Spencer & Spencer, 1993) in order to define, deductively with a top down approach, competencies that should be critical for reaching the specific organization's strategic objectives.

Afterwards, I structured a survey research, with descriptive aims. The central purpose was to investigate the common set's fit within the organization by developing a questionnaire to assess the theoretically derived model. The questionnaire queried employees to assign a perceived level of importance (Fraenkel *et al.*, 2012; Creswell, 2005), by using a six-point scale, from "0" to "5", to the identified model's core competencies. Afterwards, I conducted comparative analysis aiming to answer the following research question:

RQ3: *How do different professional roles differ from in terms of competencies for non academical employees in a public university?*

The structured questionnaire was submitted, coherently with the aim of comparing the two strand's data sets, to the same employees involved in the qualitative interviews and results of the analysis were included in a comprehensive data set and analyzed together with qualitative data.

The process for the definition of the theoretically derived competency model (Campion *et al.*, 2011; Shippmann *et al.*, 2000) can be summarized in four main steps: 1) in depth review of the scholarly literature on competency modeling with a focus on its linkage to organizations' strategic objectives; 2) analysis of the organizational documents for the identification of some preliminary core competencies; 3) definition of a research survey to test the relevance of the identified core competencies and to identify professional roles' technical and professional competencies; 4) implementation of the results in the competency model, organization and presentation of the information on competencies.

In the next paragraphs, each phase of the quantitative strand is described extensively, according to the reported structure.

3.6.1 Scholarly literature review

The focus of the literature review, at this stage, is to define competency based management's roots and methodological approaches to competency models' design and, through it, to identify how competencies link to strategic objectives.

The content of the literature review has already been extensively described in Chapter 2 of this study; hence, this paragraph will be dedicated to disclosing the employed technique for conducting it.

Following some established methodological approaches (Ridley, 2008; Ramdhani *et al.*, 2014), I gathered all scholarly literature published on journals or books or presented in conferences between 1973 and 2019, searching through previously defined keywords and refining the research phases through an approach of backward and forward reference searching.

The period 1973-2019 has been chosen because 1973 undoubtedly figures as a turning point in the field, thanks to McClelland (1973), who firstly theorized that competencies may be the key to individual and professional success.

With the aim to make the literature review more comprehensive (Ramdhani *et al.*, 2014), the research has been conducted on different databases, such as: ScienceDirect (Elsevier), Google Scholar, Business Source Complete (EBSCO), Scopus, Web of Science (ISI) and Emerald Insight.

Only scholarly articles and books were comprehended in the review, thus excluding doctoral thesis, degree thesis, editorials, and grey literature. Moreover, an additional filter was introduced, given the rich national literature on the subjects in native languages, selecting only literature written in English or Italian.

All literature having in the title, the abstract, the text of the article, or in the keywords the terms "competency based management" and later, in a separated research "competency model" have been examined, including also plurals (eg. "models") and including hyphens ("competency-based").

234 articles and books have been gathered containing the keyword "competency models" and 132 containing the keyword "competency based management". Duplicates were excluded, and the remaining literature has been subjected to an in-depth screening procedure.

Results of the literature review have then been represented in the previous chapter, selecting a narrative structure that could provide the reader with an inclusive overview on the state of the art and major emerging themes on the defined subjects.

3.6.2 Analysis of organization's internal document

Different internal documents from the organization were gathered and analyzed in depth, assuming they would add precious information to understand the context, the organizational structure, and previously adopted approaches to human resources and competencies' management.

More specifically, a meticulous analysis of the organizational strategy of Sapienza, University of Rome, of its mission, vision, strategic and organizational objectives was conducted, with the aim to reach an early declination of core competencies related to the identified strategic objectives (Prahalad & Hamel, 1990; Green, 1999; Hitt e Hoskisson, 2005; Cardy, R.L., Selvarajan, T.T., 2006).

Organization's processes mapping referred to the year 2017 has also been reviewed, in order to gather detailed and objective information on professional roles and to understand how job tasks entangled and interacted between different structures and organizational areas.

Moreover, data referred to a survey involving 1925 employees and conducted in 2017, was analyzed. This survey collected a self-evaluation of the perceived owned level (using a scale from 1 to 3) of some competencies by non-academical employees. The library of competencies employed for this survey was provided by an inter-university consortium operating in the national research, teaching and academic field (CINECA). The competencies contained in the library were mostly technical-professional competencies and they were partially used as a base to define this research's library of competencies.

Information regarding existing job positions, professional categories, and the recently introduced organizational model were also carefully examined, together with regulations and laws referred to university's administration, normative changes and collective labor agreements' updates, useful to better comprehend the context and the operational limitations of the human resources management's area.

Aside from the university's department, faculties and athenaeum' statutes, all gathered organizational documentation was dated between 2014 and 2019, such as strategic plans, guidelines to performance measurements, national programs for research and teachings, internal communications introducing a new organizational

model, collective labor agreements and assessment indexes. In the end, I gathered a total of 22 internal organizational documents, and I leveraged on them to design a competency model that could best fit the organization under study.

3.6.3 The survey research method

Appealing to the insights surfaced in the previous phases, a *multiple-job approach* (Mansfield, 1996) to the competency modeling has been selected, because it has been considered as the most appropriate when an elevate number of professional and managerial job positions is available in a single organization and because it is the most effective when aiming to introduce performance management and hiring practices grounded on the contents of competency models.

According to this approach, a common set of transversal competencies should be preliminarily defined, thus not considering the specific characteristics of each professional position. Afterwards, an extension of the set including specific technical and professional competencies can be integrated through an in-depth study of single job positions and professional families, and through the analysis of the performance ratings of employees, comparison of employees' measurable achieved objectives or analysis of assessment from superiors or self-evaluations of the employees.

Given the restricted access to the information on employees' performances and some limits of the design of the data collecting employees' self-evaluations in 2017, I decided to implement the professional and technical competencies identified by CINECA in the common competency set, and to submit it again to the employees through a survey research asking them to rate those competencies according to the perceived relevance in their present and future job.

The survey's questionnaire, was structured as follows: 1) The first section collected the professional data of the respondents, as professional position, workplace (distinguished between faculty, department and central headquarters), professional area (technical, administrative or library); 2) the second section aimed at quantifying the relevance of the expected competencies extrapolated from the strategic organizational objectives, thus, each subject was asked to assign a value of perceived relevance on a six-point scale (from "not important" to "extremely important") to each competence of the common set, comprising either soft, technical and professional competencies. The specific aim was to understand how critical the specific competence was considered in helping respondents reach their professional present and future objectives.

Using the survey design, the questionnaire was developed and administered to the voluntary participants measuring the variables (competencies) suggested by the theory and the study of the organization. The respondents represented a total of 17 groups related to their professional roles. The analysis of the quantitative data resulted in a comparison between professional roles to identify whether they had significant different scales attributed to competencies.

In the initial phase of the analysis, data have been carefully prepared, by cleaning data entry errors and developing a codebook listing all the variables and the numbers associated with the responses.

The gathered variables were distinguished between nominal variables of 17 professional roles, 3 different workplaces (faculty, department or central headquarters), and 3 types of professional areas (technical, administrative or library). The professional role is considered as the independent variable in this study; then, the dependent variable of the perceived relevance referred to 292 competencies was measured through numerical equally distant scales from 0 to 5 points. The workplace and professional areas have been considered mediating variables.

The aim of the research is to understand if the independent variable of the professional role shows differences in the relevance ratings attributed to the competence, and then, interpret the results in order to identify critical competencies for professional roles.

In the exploration phase, data were visually inspected, and a descriptive analysis has been conducted (mean, standard deviation, and variance of responses to each item), in order to determine the general trends in the data. The quality of the scores from the data collection tool (rating scales) was also examined using procedures to assess their reliability and validity. Descriptive statistics have been developed for all major dependent and independent variables.

The resulting outcomes of the analysis were, then, directly connected to the competency model by attributing an average expected level of each competence based on the evaluation provided by the respondents, according to the patterns surfaced in the analysis. The survey research, thus, naturally integrated a process of content and criteria validation where I ask employees with expertise in their field to provide an evaluation on the relevance, importance and accuracy of the theoretically identified core competencies.

An in-depth description of the processes, the results on the analytical phase and their interpretation are, however, provided in the next chapters.

3.6.4 The theoretically derived competency model

In this phase, the results of the survey are implemented in the competency model. More specifically, descriptive measures have been extrapolated, and a comparison between groups of professional roles has been conducted.

Afterwards, the outcomes were implemented in the competency model, attributing a perceived value of the competencies and moving toward a definition of a theoretically derived competency model validated through the survey on the sample of interest.

The presentation of the information on the competencies and the structure of the competency model have been guided by the following logic: a competency library was created, where each competence has been described defining: 1) the competence's denomination; 2) a general description of the competence derived from theory. Then, the competency model has been designed distinguishing competences according to four main characteristics:

Characteristic of the competence	**Description**
Knowledge	It indicates the knowledge of specific disciplines or topics. It indicates complex competencies resulting from the assimilation of information through learning. They predict what a person could potentially do, not necessarily what he or she will do.
Technical and professional competencies	They indicate capabilities and knowledge typical of a definite organizational area or professional role. They usually ask for specific training.
Skills	They describe the ability to execute a specific intellectual or physical task and to apply the assimilated knowledge to fix problems and reach objectives
Traits	They indicate the tendency to act or react in a determined way to specific events or communications. They are intrinsic, active and spontaneous personal characteristics that predict how people will work in the long term, even without supervision.

Table 3.2 Description of the characteristics of the competencies in the theoretically derived model. adapted from Spencer & Spencer (1993) and Boyatzis (1982).

In the theoretically derived model, competencies are finally listed and classified according to their characteristics, together with the rating scales relative to the core competencies resulting from the survey analysis, thus indicating an expected level of the alleged competence distinguished for professional roles.

The following table shows the synthetical structure of the competency model, however, in the analytical phase, technical and professional competences will be analyzed separately, tailoring them to specific professional roles, as the adopted approach to competency modeling suggests.

Professional role		
Competence's characteristic	**Competence**	**Expected level**
Generic knowledge	Competence n. 1	Value from 1 to 5
	Competence n. 2	Value from 1 to 5
	Competence n. 3	Value from 1 to 5
Technical and professional competencies	Competence n. …	Value from 1 to 5
	Competence n. …	Value from 1 to 5
	Competence n. …	Value from 1 to 5
Generic skills	Competence n. …	Value from 1 to 5
	Competence n. …	Value from 1 to 5
Traits	Competence n. n	Value from 1 to 5

Table 3.3 Illustration of the theoretically derived competency model's structure. Own elaboration.

3.6.5 Strategies for validating data and results of the quantitative strand

Quantitative validity procedures are needed to verify that the scores received from the participants are meaningful indicators of the construct being measured (Thorndike, 1997b). Thus, validity is seen as a single unitary concept and indicates the degree to which all the evidence points to the intended interpretation of test scores for the proposed purpose (Hubley & Zumbo, 1996; Messick, 1980).

I referred to Impara's (2010) summary of the AERA, APA, NCME standards and analyzed evidences based on the internal structure of the relationships among test items, test parts, and the dimensions of the test. Moreover, reliability tests checking internal consistency of the individual scores have been conducted, measuring the coefficient alpha (Cronbach, 1984) of the continuous variables, equal to 0,974.

3.7 Mixing and data analysis

As already mentioned in previous paragraphs, the merging strategy's point of interface of the quantitative and qualitative strands (Morse & Niehaus, 2009), occurs during the phase of data analysis. I adopted an interactive strategy of merging, where the two sets of results are brought together through a combined analysis. In other words, a data consolidation strategy (Caracelli, & Greene, 1993), comprising the

joint review of both data types in order to create consolidated data sets to use in further analysis.

Five stages for the analytical process (adapted from Onwuegbuzie, & Teddlie, 2003) have been pursued:

1) Data reduction: collected data have been reduced by summarizing qualitative data and quantitative results;
2) Data display: tables, charts and rubrics have been employed to provide visual support to the analysis;
3) Data consolidation: both data types were combined to create consolidated or new variables;
4) Data comparison: data were compared from different sources;
5) Data integration: data have been integrated in a comprehensive framework.

3.8 Strategies for validating the findings

Embracing Onwuegbuzie and Johnson (2006) perspective on validity in mixed methods, this study has been structured in order to relate its validity in either the design or interpretation stages comprised in the whole research process.

In fact, a focus on the data analysis validity legitimization has been already provided for both the qualitative and quantitative strands. However, in this section I will provide a summarizing overview, following Creswell and Clark (2011) suggestions, on the adopted strategies for minimizing possible threats to this study's validity.

In the data collection phase, by drawing the quantitative and qualitative samples from the same population, addressing the same research questions, I minimized the risk of selecting inappropriate informants and of collecting conflicting topics; I avoided obtaining an unequal sample size by using a concurrent design involving the same informants for both the qualitative and quantitative strands, while using in the meantime different data collection procedures to avoid introducing potential biases.

During data analysis, I developed a joint display with quantitative categorical data and qualitative themes to enable an adequate convergence of the data sets, finding quotes that matched the statistical results, thus holding an explanatory role.

Finally, during the interpretative phase, I addressed each mixed method question, and explained the rationale underlying my choice to give more weight to the qualitative form of data, assuming that it provides a better understanding of the problem under study.

3.9 Interpreting mixed data

Mixed methods interpretation involves looking across the quantitative and qualitative results and assessing how the information address the mixed methods questions in the study.

In this research, inferences and meta-inferences (Teddlie, & Tashakkori, 2009) are drawn separately from the strands and across them with the aim to improve the quality of the overall conclusions, thus to interpret the extent to which the two databases converge, whether differences or similarities are found and what conclusions can be drawn from the differences and similarities.

However, methods to identify and interpret differences and to manage inconsistencies did not follow a fixed and rigid logic. I looked for either congruent and discrepant elements, conflicts that could be made sense of, and contradictions that helped me differentiate evidences.

An accurate description of the results and process of the interpretative phase will be, nonetheless, provided in the next chapters.

CHAPTER 4. # ANALYSIS

Overview

Following a convergent mixed methods approach, this chapter describes the analytical phases of the qualitative and quantitative strands separately. The analysis in the qualitative strand illustrates the undertaken procedures for preparing and organizing the data for analysis, the analytical process and its results. The contextual features arising from the analysis are additionally provided with the aim to enhance the reader comprehension on the results emerged from the thematic analysis. The analysis in the quantitative strand describes the employed approach for the identification of the common set of competences and the setting of the survey research. Results are, then, illustrated, coherently with each research question. Limits and implications are described for each method.

4.1 Analysis in the qualitative strand

4.1.1 Management and organization of the data

As briefly explained in the previous section, collected data was preliminary transcribed, translated and organized into digital files and a file naming system was created. Both written and oral responses from the informants were digitally reproduced, thus providing a coherent textual form, comprising a total number of 535 pages that were submitted to coding. A database was also created to easily identify and locate different files, as Patton (1980) suggests. Appendix A provides an overview of the database of the informants, helpful to understand the nature of the information gathered, its distribution and organization. Some sensible information was, on the other hand, obscured in order to protect the anonymity of the informants.

The next table synthetically illustrate the main data sources and the type of information they were able to provide in this research.

Source	Structural information	Professional information	Critical incidents	Perceived Changes
Informants from 1 to 125	✓	✓	✓	✓
Internal documents	✓	✓		
Observation and field notes	✓	✓	✓	✓
Memoing	✓	✓		✓

Table 4.1. Comprehensive data set of the qualitative strand and type of information provided. Own elaboration.

4.1.2 The coding and interpretation process

The coding process led, in its final representation, to the identification of 154 final codes, that have been described in a codebook (Creswell, & Poth, 2018) articulating the boundaries for each code. Each code in the codebook contained the name of the code, its description and an example using text exerts from the data. The codebook, however, has here been adapted to answer two different RQs, thus it has been divided in two parts: the first part employs the codebook to describe the most frequently emerging themes, and the related competencies (codes and categories) connected to those themes; the second part of the codebook focuses on competencies characterizing specific professional positions, thus applying a different logic to the analysis and considering the professional roles as themes, the specific competencies as codes and their shared characteristics as categories.

Codes frequency has been counted in the analysis, however, as already addressed in the methodology chapter, priority was given to the identification of homogeneous categories and themes of competencies, thus, even if some codes related to specific competencies appeared more often than others, they have not been considered as more important, because it would mean that each code has equal emphasis, and this could lead to a loss of representation of contradictory views, moving far from a qualitative research logic (Bazeley, 2013; Hays & Singh, 2012).

No preexisting library of competencies has been employed in this strand, because the aim was to identify emergent codes and categories of competencies, following a grounded theory approach. The reasoning behind this choice was to avoid limiting the analysis by employing prefigured codes and to open up the codes in order to reflect the views of the participants, thus leaving behind existing theoretical structures. However, codes' names were often drawn from the organizational sciences and, when detected, metaphors or *ad hoc* descriptions were created.

As already mentioned, the analytical phase consisted in three main semi structured steps, namely open, axial and selective coding, coherently with a grounded theory approach to analysis (Glaser, & Strauss, 1967).

In open coding, I produced categories of information from the text; then, through a constant comparative approach, I looked for new information that could add subcategories or properties representing multiple perspectives. Then, subcategories were dimensionalized in order to reduce the database to a smaller set of themes and categories characterizing the experiences being explored. Then, central themes are preliminarily identified.

Afterwards, embracing the less formal approach for axial coding, as Glaser and (1978) Charmaz (2006, 2014) recommend, I attempted to identify interconnection and links between categories, by reviewing the database and looking for insights to specific coding categories that relate or explain an emerging theme or phenomenon.

The information arising from the axial coding phase is then organized through selective coding, by providing an interpretation on how categories interrelate in a single theme through an explanatory theoretical framework.

During the interpretation of the data, careful judgments have been considered about what was meaningful in the patterns, the categories and the themes generated by the analysis. Codes and themes have been abstracted to reach a larger meaning of the data, however, the interpretation phase did not follow a linear logic, but a logic that some scholars (Creswell, & Poth, 2018) define as a spiral logic, moving through analytic circles and advancing deeper in the analysis until a sufficiently large unit of abstraction is reached. During this iterative process, precautions have been taken in order to highlight alternative understandings, by using strategies such as challenging my own interpretation through comparison with existing data, relevant literature, or initial hypothesis. The interpretation is then represented, through text, tables and figures, aiming to provide a clear and comprehensive overview of the results of the research.

4.1.3 Contextual framework

Competency models are built on specific organizations embedded in specific contexts; thus, their generalization is limited to similar context, similar organizations, and only to some extent.

Hence, it is important to describe the background in which the competencies are developed, but also how they are perceived and communicated: the context includes all those factors influencing the organizational behaviors that the competency model aim to improve, including the organizational culture, the life cycle, the environment, the relationships between employees, labor unions' power, and managements' strengths and weaknesses.

On the other hand, an effective competency model identifies competencies that align to the organization's strategy and contribute to the development of a competitive advantage or, in the case of public administration, increased performance, in terms of efficiency and effectiveness.

The link to organizational and professional objectives, in this strand, is analyzed with a bottom-up approach, thus not testing which or if the identified competencies actually align to the organization's strategy, but trying to understand how employees interpret the professional objectives for their position and how they think that owning specific competencies help them reach those objectives.

While gathering these insights, however, I decided to additionally implement a rational strategic approach to understand if these perceptions actually aligned or differed in some way to the competencies that the organization expects them to possess, leading me to a mixed approach to competency modeling that I believe could lead to more comprehensive insights.

During the data analysis, some key contextual features arose providing interesting insights in some way coherent, in other contrasting the extant literature on New Public Management, public administrations and public universities.

In the next paragraphs, I describe some key contextual aspects that emerged during the analysis, structuring the themes as subsequently described: 1) a section analyzing the effects of the process of entrepreneuralization in public universities; 2) a paragraph questioning the actual need for a competency based management in public universities; 3) an overview on the main site of the research, the organizational chart of the informants and a brief description of the main characteristics of the emerged professional roles.

It is believed that these three main contextual features will provide the reader with a deeper understanding of the context in which the organization under investigation operates and with suitable tools to judge the credibility of the results of the analysis.

4.1.3.1 Entrepreneuralization of public universities

The issue of the entrepreneuralization of public universities, or in general of public administrations, interestingly, often transpired during the interviews: while most of the informants agreed with the need to introduce new tools and procedures for a better management, contrary views arguing that this business orientation would move the public university far from its nature, were also recorded:

> "*There is a transformation that I do not like: university is no longer considered as a producer of knowledge, of things … It is considered a business. I never tolerated it and I will never do. When we speak of clients and not users, or when we speak about productivity awards. What productivity? What do we do? What do we produce?"*

Informant #61, administration and management area, administration and accounting.

As informant #61 testifies, public administrations are not easily connected to typical business' logics, moved by the need to win over the competition in order to succeed. However, competition is still evident in public universities through many forms, as widely discussed in Chapter 2, and a form that is strongly influencing the organization under study is surely the need to attract public or private funds.

As a matter of fact, the ability to support scholars in correctly setting the conditions to raise financial funds for the structure is often seen as a source of pride and a measure of success.

"Q: Why do you think these circumstances had a positive impact in reaching you professional objectives?
A: Because they led the department to obtain funds for more than € 100'000,00."

Informant #12, administration and management, administration and accounting

Moreover, departments are competing inside and outside the organization to obtain funds from both public administration and private companies. This competition provides an incentive to work on innovative research projects and to improve internal efficiency.

"Positive critical episodes are those related to the achievement of objectives: this department has been elected as a center of excellence with many funds. Well… they (referred to coworkers) *made it, because I did not do much, but they made purchases (…) in a sublime way, without setbacks."*

Informant #76, administration and management, administration and accounting

Fund raising from privates has increased its weight in public universities, leading to the expansion of the weight of the third mission. The third mission consists in all the activities through which universities directly interact with businesses, and, according to the Italian Ministry of Education, Universities and Research (M.I.U.R., 2013), it can have two different forms: it can be achieved through the economic valorization of knowledge, or through cultural and social missions. The first form comprehends activities such as management of intellectual property, creation of businesses, industry-funded research, or management of supporting and mediating structures; the second form refers to the production of public goods, thus impacting on the society's welfare, which do not necessarily involve a payment or a price for the conducted activities.

Especially in referral to the third mission, some informants believe that procedures aiming to stimulate technical, administration and library's employees to invest energies in its related activities should be improved:

"The motivation and rewarding system (referred to non-academic employees), *should not be unrelated to the third mission, because, for now, it is managed a bit arbitrarily"*

Informant #108 administration and management area, administration and accounting.

Ultimately, however, the process of entrepreneuralization, leading universities closer to a style of management by objectives and the adoption of performance measurement tools, is generally perceived as positive and useful:

"In many realities there are people that have a great desire to work hard, but they are not highly motivated; there are also people that "just care for their own business". With those people you have real inefficiency bags that linger there. They are difficult to face (…) because an administration manager doesn't have the tools if not individual evaluation and the evaluation of the individual contribution to the collective objective. (…) Well … This application of the Brunetta law, hence of the performance assessment system, has been positive, but it should be further developed (…) So, surely … Yes, this has been an important change, which is slowly taking roots. This is a law of 2009, the legislative decree, and then many small steps have been taken to reach its full implementation, because, let's say, it was not immediate."

Informant #108 administration and management area, administration and accounting.

The performance assessment system's implementation is still an ongoing process within the public university, which is still slowly rooting in the organizational system.

The introduction of a trustful performance assessment system and its improvement, as it emerged also in other important studies (Cerase, 2010; Pastorello, 2010), seems to figure as a primary necessity in public administrations, also to mitigate the mistrust that some informants expressed and to improve the general perception of organizational justice (Locke, 1976; Adams, 1965).

Feelings about these interconnected changes in the organization, are mixed but prevalently positive and optimistic, interpreting them as an opportunity to set things

in order and to make the public administration more competitive, efficient and effective.

4.1.3.2 Why may public universities need a competency based management approach?

The traditional rational objective approach to human resource management, recognized in the organization under study, follows a simple logic, that is to position the right person in the right position. To effectively position a person, a long and complex analysis is inevitably required: the main characteristics of a workplace need to be highlighted, together with the characteristics of the single individual, in order to reach the perfect fit, and usually these activities are part of a job analysis process.

The rational management of each element is a mandatory element for a perfectly functioning system, job tasks are, thus, characterized by top-down planned activities.

Coherently with this design, different tasks are related to different profiles with specific knowledge and competencies: at each executive level correspond basic capabilities and knowledges, and other types of competencies for managerial tasks are defined *ex-ante*.

Competencies are, thus, defined implicitly and deductively with a top down approach: starting from the objective characteristics and the descriptions of the job tasks, leading to the needed subjective technical and professional characteristics needed to conduct that specific activity. Building job tasks closer to human psycho-physical possibilities isn't contemplated, the strategic planning follows absolute rational principles and underlie complete knowledge of the needs in the workplace and of the competencies needed to reach the organization objectives in the best way possible.

Hence, the individual is an essential part of the gear who needs to adapt to the objectives, defined by the organization. All this structure portends trust in the strategic planning techniques and to a rigid structure, perfectly capable to foresee and adapt to continuous changes.

However, with the many changes in the economic and social context and the numerous reforms that have been introduced in these last years, this traditional approach to human resources management does not seem appropriate anymore.
In facts, the traditional rational objective approach seems suitable when considering a static context; but at present, organizations live in a dynamic, unstable and unpredictable environment that poses for different approaches to human resources,

increasingly focused on people, processes and transversal and adaptable competencies. This need was strongly stated also by informants, directly experiencing the important changes affecting the public administration and sensing the need to focus and enhance people's competencies.

"Nowadays, public administration needs extremely, extremely competent employees, because the old face of public administration, with the well-known public employee only making "simple math", unfortunately, is not sufficient anymore." Informant #102, administration and management area, administration and accounting.

It seems that the propension to recognize diversities in merit and competencies is not highly developed in public administrations. It appears that it is perceived as if it may cause conflicts mining the cooperation within employees in the organization. However, not adequately recognizing the individual contribution that single employees provide, may easily lead to free-riding, thus opportunistic behaviors, and to neglect the social value of individual diversity.

"Employees with a lower level, let's say "c", find themselves pursuing tasks that someone with a higher level should pursue, but who does not possess the right competencies. Thus, not having a formal document where this specific competence is identified, critical incidents can happen." Informant #102, administration and management, administration and accounting.

"I pursue an activity that is over dimensioned compared to my own professional level (employees of level "c" pursuing tasks of level "d") (...) No specific measures have been identified. There are no real horizontal/vertical opportunities for career. (...) Q: Why do you think this situation has a negative impact on the pursue of your professional objective? A: The negative impact is expressed in the frustration of the worker, even if implies a responsibility waiver." Informant #114, administration and management, administration and accounting.

Moreover, the rigidity to adapt to changes, typical of traditional human resource management approaches, leads to failures in connecting the right competences with the strategic and organizational objectives, thus to contradictions, mismatch and paradoxical situations, characterized by a lack of integration in the organization and by the presence of gaps in the needed organizational competencies and professional roles.

"In a specific incident that involved me not so long ago, I basically was a paper-pusher in a legal recourse. Nonetheless, at some point I was asked, inappropriately

in my opinion, to wear the robe and become a lawyer. That is, to have knowledge in the legal field. Provided that I did not study law (…) I could not even remotely understand the terminology that lawyers employed, because this is not required by my professional position. (…) I, and my colleagues as well, take care of administrative and accounting issues, I cannot be also a lawyer, an electrician, an engineer, a geometrician, or an architect." Informant #123, administration and management, administration and accounting.

A competency based management approach to human resources, may support the changes employees are asking for, guiding public universities from being a bureaucratic institution toward becoming a modern and flexible organization. Competencies, in fact, provide a common language and a shared understanding of the necessary and desirable behaviors and skills needed to achieve strategic and organizational objectives, and they can, as well, figure as useful tools for maintaining coherence in fragmented sectors (Horton *et al.*, 2002).

4.1.3.3 The site of the research

Sapienza, University of Rome, is the largest university in Europe for number of students and one of the oldest universities in the world, being funded in 1303.
It harbors a total student population of 112.000, 4.000 academics and 4.000 technical and administrative employees, structured in 11 faculties, 63 departments, and 288 study courses. In order to effectively manage all its numerous stakeholders and to reach its core objectives, Sapienza must employ flexible and performing human resources' management models.
The organizational chart illustrated in figure 4.1 provides a visual support helpful to understand the relationship and the hierarchical structure of the organization under investigation. It describes an "as is" situation, thus it does not aim to provide neither a formal nor a punctual representation of the actual organizational model, but it provides a reference framework for the reader, helping him or her understanding how interviewees' roles are interconnected and to contextualize the described experiences.

Important changes in the organizational model have been recently introduced, explaining the detection of a mixed organizational area during the data collection phase, where some organizational positions and professional roles were found often embedded in different professional areas.

Summarizing what has been already mentioned in previous chapters, Sapienza, University of Rome, qualifies five main organizational areas: 1) administration and

management area; 2) technical, technical-scientific and data processing area; 3) library area; 4) medical, dental and sociomedical area; and 5) services area. No participant from the medical, dental and sociomedical area and from the service area were registered, thus they have been excluded from the analysis.

The administration and management area was, by my own initiative, further divided in the two professional categories of administration and accounting and support to teachings, coherently with the detected core activities conducted by the organizational positions and professional roles embedded in the identified category.

The mixed area is composed by interviewees from either the technical, technical scientific and data processing area and the administration and accounting category, as table 3.2 in Chapter 3 efficiently illustrated.

I.C.T. professional category is not formally recognized as a category in the organization, thus the division here proposed is not formal, but it aims to distinguish the emerged professional roles that appear, at present, embedded in the mixed area.

Personnel is divided in different level categories, from the lowest level, that is “b”, followed progressively by “c”, “d” and, finally, “ep”.

Organizational positions are formal professional roles, generally related to higher level categories (“d” and “ep”), characterized by superior responsibility and autonomy levels. In the chart, organizational positions have been highlighted with a different color, as the key suggests. Furthermore, professional roles were highlighted with a white background of the box, indicating unassigned employees, generically related to a shared professional area, yet conducting significantly different activities embedded in extremely different processes. In order to build a competency model, it was, thus, important to distinguish these employees, to define the most suitable professional category for them and to distinguish their roles according to the emerged competencies and to the boundaries of their conducted activities within different processes.

The relationships between the different roles, illustrated in figure 4.1, are functional relationships, while hierarchical relationships are those connecting the organizational positions to the head of the specific structures, such as the dean, the rector or the department director.

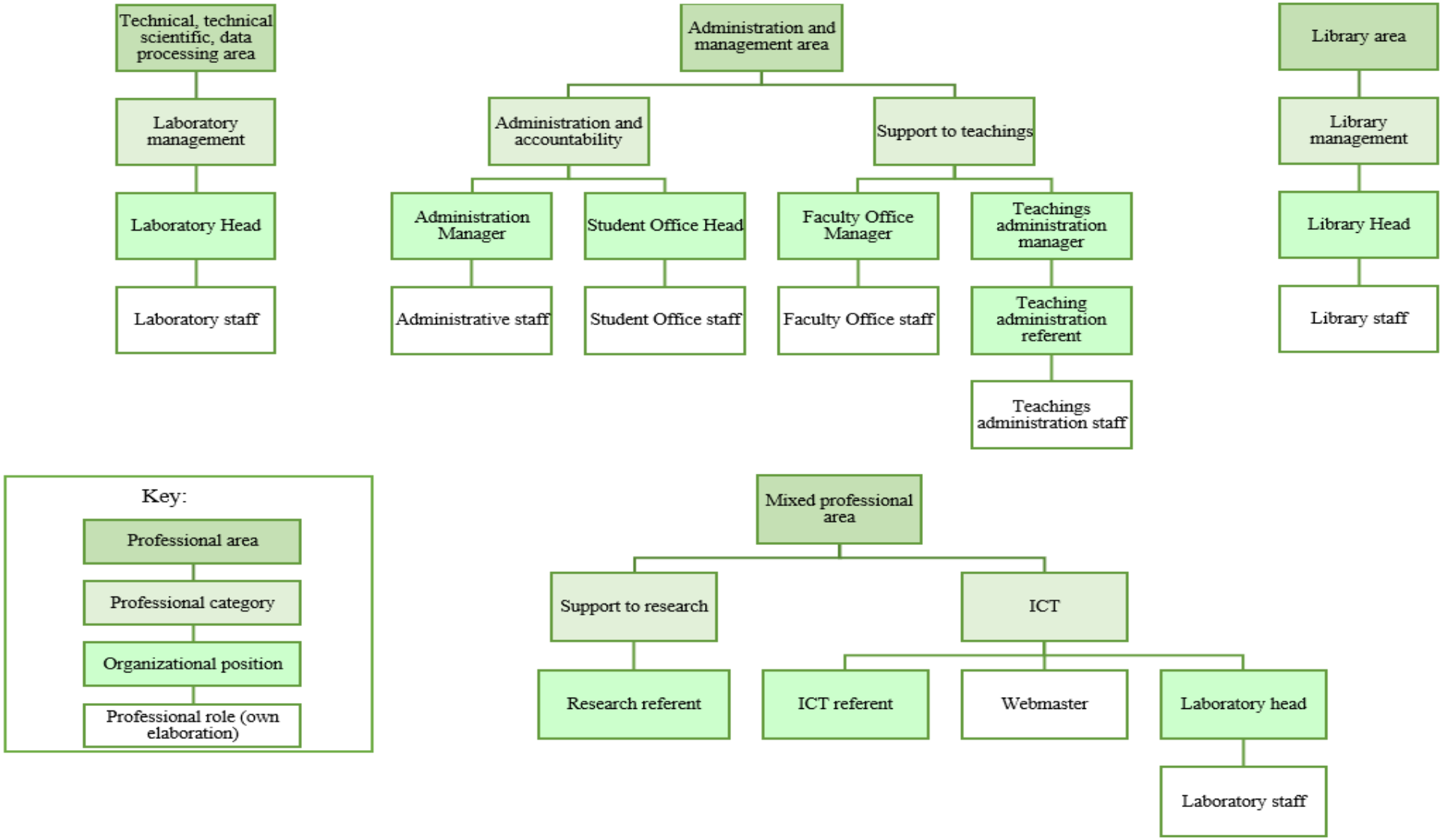

Figure 4.1. Organizational chart of professional roles of informants. Own elaboration.

4.1.4 Emerging themes and categories

This section aims to address **RQ2:** *What are the core competencies shared by the non-academic job positions?*

With this aim, a grounded approach to analysis has been employed, adapting Glaser and Strauss (1967) method to this research,

During the analysis the emerged competencies often appeared as intertwined, hence the next paragraphs will attempt to provide a description based on synergies between them, by considering how often the competencies emerged together with specific themes or categories, or in similar critical incidents.

Moreover, this section provides the results of the selective coding in referral to the connections between categories of competencies, contextual features and professional objectives, leading to a proposition of a set of shared competencies. To do so, the following paragraphs have been structured with the aim to provide an overview pursuing intersections between frequently related competencies of different nature.

4.1.4.1 Moving toward a digital public administration

The increasing adoption of digital technology is profoundly impacting on the internal organization, the processes and the expected competencies of the public university under investigation. Its disruptive effects are slowly forcing a reorganization of many aspects of the internal structure and of the human resource management approach, greatly pressured by the newly introduced laws on data protection, safety and transparency of the administrative procedures.

4.1.4.1.1 Bureaucracy, workload and digitalization

Regulations on transparency of administrative procedures have been profusely implemented in the last years, providing an important increase in the workload of employees, especially when embedded in the administrative and management area, nevertheless not exclusively.

> *"Accounting's administrative procedures adapted to allow transparency were generating a surplus in the workload especially when lacking some specific tools."*
>
> *Informant #74, technical, technical scientific and data processing, laboratory management.*

A possible solution to this pressing workload problem could be the introduction and development of new digital applications aiming to "*reduce the employed hours that*

each person spends working" on specific activities, as *Informant #74 (technical, technical scientific and data processing, laboratory management*) suggests.

"The technology employed at present does not help in managing the administrative procedures. More specifically, I find quite foggy the problem related to privacy and transparency" Informant #48, administration and management, support to research.

The problem of the increased workload is greatly discussed, and homogeneously seen as a growing issue needing to be addressed urgently:

"Q: Do you think your responsibilities will change in the future? A: They will get worse, for sure, with the growth of the departments' dimension and the higher complexity (of the activities) *caused by the transparency measures" Informant #66, administration and management, administration and accounting*

Coherently, the theme of administrative procedures' simplification is particularly recurrent, and it is often related to a demand to introduce, update or improve existing digital tools:

"*I find the duplication of the documents to be sent to the headquarter offices a useless activity. An internal digital system for sharing documents should be developed so that so many copies are not necessary anymore." Informant #73, administration and management, administration and accounting.*

Moreover, interesting critical incidents recorded an orientation toward innovation of many employees, taking personal initiatives and cooperating with different professional areas, with the aim to find a solution to this sensible issue:

"Together with a colleague of the I.C.T., we designed and created a platform for the digitalization of all the procedures related to collegiate bodies. (…) Q: What were the circumstances that led to this initiative? The extreme workload relative to the numerous commitments to fulfill, the intention to reduce the costs related to paper-based processes, and the will to reduce the time needed to work on the practices. (…) Often, the activities for the audit or the accounting, required from the headquarters, are excessive and they withdraw time and resources to effectively do your job." Informant #58, administration and management, support to teachings.

Finally, the need for simplification of the administrative procedures was detected also for the administrative activities conducted in libraries:

"(I made) *the comparison of sales quotes to ensure a biennial supply, warranting transparency and accuracy of the procedures, but also rapidity (…), thus simplifying the supply procedure (…)* (because) *the repetitiveness of the operations lengthened the times for delivery." Informant #19, library, library management*

In fact, in libraries as well, digitalization is considered an important ongoing process and thus, the need to learn how to effectively manage digital tools is often highlighted, thus confirming the pervasive effects of digitalization.

"Digitalization (is impacting) *on human resources who now need to go through a constant professional training." Informant #21, library, library management*.

A specification on which specific training is needed for library personnel is provided by *Informant #42 (library, library management*), who stated that there is the need for *"technical training on digital platforms, training on the administrative procedures and on the expected work modalities".*

The inspected issue and its suggested solutions imply owning specific competencies that transversally cross the organizational areas under investigation. These competencies can be summarized in: 1) an in-depth knowledge of regulations and laws notably impacting on the internal procedures of the public organization; 2) the ability to propose and implement innovative solutions; 3) the capacity to effectively manage digital tools and procedures.

4.1.4.1.2 Digitalization of the services and procedures

The process of entrepreneuralization of universities occurred together with the introduction of new technologies aiming to increase performance and efficiency.

In the last years, many procedures that were once managed by physically filling, sending, and storing documents are now digitally managed. This digitalization of the services had several effects on the internal organization: it changed the way employees communicate with students, now mostly through emails or softwares (e.g. Skype) and more rarely through face-to-face communication. Moreover, it reduced the workload thanks to the automatization of many procedures.

"Work has changed over time, with the increasing technology for the management of all the practices related to students that come to the student office, saving time and paper." Informant#31, administration and management, administration and accounting.

The digitalization strongly impacted on offices where the front office activity was primary, such as the student secretariat, responsible for managing procedures related to the students' career (degrees' certificates, study credits, etc.) and the libraries. Even other offices such as the administration's offices, the teaching administration's offices and the faculty office registered a decreased students' turnout, but less than the two professional categories previously indicated, where the digitalization had a more disruptive impact on the organization of the work activities.

"Q: Do you think your responsibilities will change in the future? A: Yes, the way we offer services, the digitalization and the front office will change; (it will also impact) *the simplification of the procedures and the training of the personnel" Informant #61, administration and management, administration and accounting.*

"(…) Resources in electronic format are increasingly establishing, and management softwares are evolving." Informant#19, library, library management.

Informants describe an ongoing process, which is going to exponentially modify the work modalities

"Q: Do you think your responsibilities will change in the future? A: They probably will change in referral to the different aspects related to internet mediated activities, hence all the services that are remotely offered." Informant #122, library, library management.

Nostalgic statements were also registered, stating that support through the front office permitted to better manage the relationship with the students, which is now slowly weakening:

"At the beginning, the relationship with the student was direct and it was prevalently managed through the front office. Thus, there were more ways to show personal commitment. Activities were conducted with more attention and accuracy, which made the relationship with users easier. (…) It was advantageous for the structure because it could immediately solve students' problems." Informant #23, administration and management, administration and accounting

However, a factual evidence is that through digitalization of the procedures, long lines of students in the offices almost disappeared and students only resort to front office when uncommon problems occur.

"The introduction of the online request to access the graduation session, introduced in 2015, stopped the impressive lines daily forming in the front office. (…) (it eliminated) *the exhausting lines that students had to endure only to present*

the request." Informant #24, administration and management, administration and accounting

What emerges clearly from this analysis is the need to accompany employees with a coherent training throughout this process of digitalization of the services, especially in those areas where it radically modified the nature of the conducted activities.

4.1.4.2 The internationalization of services

Together with entrepreneuralization and digitalization, a process of internationalization has been recently impacting the university's organization and employees' needed competences.

The strategy to introduce new study courses in English language, to increase the number of visiting professors and researchers, and to launch international projects, highlights the need to align the competencies of the employees to effectively support these strategic objectives or to introduce new professional figures functioning as integration bodies, thus filling the cultural and knowledge gaps that inevitably would arise.

"*A professor just wrote to me: it is about a research agreement (…) I received seventeen pages written in English. How can I give my approval, alone, to this? To whom should I ask for help? I write to the internationalization department and they tell me to contact the legal office. I contact the legal office and they tell me to call* (surname of an employee). *At the end what will happen? "I am sorry professor, but we cannot approve this contract." Who should I call for something like this? (…) I do not know English that well, and, moreover, I believe that commercial or juridical English is so complex that I cannot just translate it with Google translator." Informant #76 Administration and management area, administration and accounting.*

This text exerts clearly highlight a critical aspect that should primarily be addressed, and referred to the knowledge of foreign languages, especially English, at an advanced and technical level. This can be achieved through advanced training classes at least towards higher organizational positions, such as managers and referents, or introducing professional figures expert in technical English, supporting employees in different structures.

At a lower complexity level, the knowledge of English still is felt as an overwhelming gap, especially by employees working in the front office, often communicating with foreign students.

"Internationalization leads us to use English and this is a deficit we all have in the university. Hence, I would introduce more training classes, not much on grammar, but on communication. I attended various classes that were surely useful to freshen up my English grammar, but when we need to converse, we are all a bit lacking, because in Italy this is how we study English, it is more about grammar than communication. (…) English classes should be organized at different levels. (…) every month there should be something!" Informant #124 administration and management, support to teaching.

Thus, aside from possible implementable improvements to make English learning more effective, it surely appears that its knowledge is critical and needed to improve the quality of the offered services, for different professional roles throughout the organization even if at different levels of complexity.

However, a more nationalistic informant also shared a different point of view, stating that:

"(There should always be) *courtesy, respect and availability, but we are in Italy and the first language is Italian, the others come afterwards; you cannot expect us to always speak English. (…) Every time, we must call the colleague that speaks English, but I think this is wrong, because* (students) *should do at least one exam in Italian, at least the basics. I, an employee, do not speak English, but many users do not speak Italian as well." Informant #22, administration and management, administration and accounting.*

This point of view appears as strongly conflicting with the mission of internationalization, and probably describes a phenomenon of resistance to change, that could be mitigated by focusing more attention in providing constant and leveled training, following a program throughout the years, thus helping personnel in building their confidence when talking a foreign language.

4.1.4.3 Supporting students and scholars

The support to students and scholars appears as the main professional objective, common to all the interviewees, unrelatedly to the nature of the conducted activities, such as support to research, support to teachings or third mission, thus revealing a particularly transversal property.

Students are the main users of the university's services and the employees appear fully aligned to this specific mission, with a great orientation toward service and assistance.

"(…) Hence, it is as if students are all my children. Now, none of my sons went to the university, but it is as if they did." Informant #64, administration and management area, support to teachings.

The orientation toward service and assistance (Spencer, & Spencer, 1982) is intended as the desire to help or serve users, to satisfy their needs, focusing their own energies to research and to satisfy those needs.

"Some students had difficulties passing some specific exams, (…) we asked the professors if they could do additional lectures and increase the number of exams during the year." Informant #96, administration and management area, support to teaching.

"I believe that the student should see the problem solved as fastest as possible, coherently with the University's regulations" Informant #10, Technical, technical scientific and data processing,I.C.T..

The personnel orientation toward this mission has been found outstandingly pervasive of all the outstanding performers, from administration, to laboratories and libraries, making it impossible to not considering it as a critical transversal competence.

"Support to scholars and students has always been the main objective that encompasses all the others. The computer structure serves exactly to this: to enable conducting exercises and exams comfortably and safely. A malfunctioning computer could risk the student failing his or her exam. Thus, all my, and my co-workers' attention was oriented to ensure that (this did not happen) *(…) Thus… my satisfaction was exactly this: I never received any complaint from scholars." Informant#63, Technical, technical scientific and data processing, laboratory management.*

4.1.4.4 Problem solving, initiative, innovation and autonomy to create a more efficient and effective university

Problem solving is the ability to figure out a solution method for reaching a specific objective when such method is not obvious, hence, representing and solving problems in different areas (Duncker, 1945; Wirth, & Klieme, 2003; Bassok, & Novick, 2012). This ability frequently emerged during the interviews and it seems common to most professional roles, obviously focused on different aspects according to the type of specific activities conducted.

"Every day there are complex cases, not impossible to solve, but which require more attention and effort for their resolution. (…) These circumstances at the beginning generate a negative impact (on the successful achievement of the professional objective). *The positive side is that from the resolution of the problem, you can solve future cases by analogy." Informant #78, administration and management, administration and accounting.*

As an example, for I.C.T. roles, problem solving may involve solving technical emergencies with improvised tools, while for library employees it could mean solve problems related to the availability of books or to cataloging books in archaic languages. However, a common characteristic is the need to improvise a solution for which personnel does not already have a clear procedure to follow.

"(…) The resolution of a massive breakdown in the network with relapses on the whole building. The adopted solution was a success, even if I employed improvised tools, in less than four hours I completely restored the services and their functionality." Informant #97, administration and management, I.C.T.

"(…) (I had to) *classify some German books, written in Gothic, without knowing the language. Q: What did you do exactly? A: I used Google translator and downloaded all the Gothic alphabet." Informant #32, library, library management.*

This widespread problem-solving ability often imply the possibility to autonomously take the initiative to propose or introduce innovative solutions.

"In a specific case, referred to a problem related to a refund, its competence started being bounced between different offices of the central headquarters. We analyzed the regulation in depth, and we proposed a possible solution to the problem, which was afterward validated by the offices that proceeded with the refund." Informant#12, administration and management, administration and accounting.

However, it appears that some typical problems tend to appear more often than others, such as inefficiencies in the internal information and communication system, or the necessity to solve particular complex practices in a reduced time, or excessive bureaucracy, leading some employees to express frustration, but at the same time highlighting some possible organizational criticalities that should be addressed.

Sapienza, in fact, appears as a particularly complex organization, because of nature of the conducted activities, and because of the numerous and diverse resources to coordinate and its large dimensions (Thompson, 1967; Decastri, 1997).

Thus, it is hard to identify in the delegation of responsibility and in the hierarchy the only employed tools of coordination. These tools necessarily need to be accompanied by more complex organizational solutions.

This issue is revisable in difficulties often arising during specific activities, that lead the employees to act autonomously, and to take initiative and significant efforts to overcome problems and to reach their objectives.

"In referral to the activity of placement for students, which is usually difficult because of the mismatch between the available profiles and the job description from the companies, I managed to organize an interview for a student in a prestigious international firm, and, after many encounters, I received a positive response for the student. The difficulty was aggravated by the lack of support from the central headquarter, that did not answer to the company which, at some point, threatened to cancel the stage. Finding myself in this situation, I reassured the student, and directly called the company, managing to activate the stage in a few days, by writing different emails and by physically going to the headquarter offices. Finally, the stage was activated, and the company called me later to activate future stages." Informant#1, administration and management, administration and accounting

When the organizational complexity is particularly elevated, it can be useful to adopt strategies aiming at improving the information processing system and the communication ability of the organization, through the enhancement of the information systems and/or the introduction of actions reducing the complexity (Galbraith, 1972).

Referring to the first typology of strategy, the aim is to improve the quality and the quantity of manageable and shareable information, aiming to avoid employees missing key instructions or reports, which would lead to critical gaps.

The following text exert, for example, shows a possible criticality arising from a faulty information system.

"(...) we receive some funds for laboratories, libraries, or for tutoring students (...). Communications related to some of these funds are sent to the dean, the faculty manager, and the administration manager, others are only communicated to the administration manager. (...) The administration manager is sick. What happens? Now I tell you this: I receive this email, sent to different sectors (...). It says: "there are some funds to support students". You should know that we also receive funds to support foreign students, so I thought they were those type of

funds. Then, something wakes me up and I tell myself: "we still have not received the funds for tutoring!". So, I send an email to my colleague and he answers: "Ah no, we already received those funds, we need to distribute them." (...) I think that the central headquarters should send these communications both to the faculty manager, the dean and the administration manager, because they need to be approved by the council (before being distributed)*!" Informant #107, administration and management, administration and accounting*

Possible modalities to improve the processing, access and sharing ability of the organization, could be the improvement of the I.C.T. and the SI both at an intra-organizational level and at an inter-organizational level, by organizing more meetings, task forces, working groups, or even by creating new professional roles or bodies aiming to connect and integrate activities, areas and structures (Galbraith, 1977; Premkumar, 2000).

Transparency normative increased the workload, while the overall workforce is being reduced, showing a negative turnover. This situation is perceived as potentially dangerous, leading to incapacity to comply with deadlines and to an increase in mistakes.

"Procedures are complex, composite and not clear. Thus, problems tend to continuously overlap. Deadlines compliance is always reeling." Informant #95, administration and management, administration and accounting

Solutions to this problem, as briefly mentioned before, may be a better management of the employees' turnover and the introduction of a simplification strategy for the procedures, incentivizing innovative and enterprising behaviors and investing on employees' competencies in terms of knowledge of the regulations and laws referred to administrative procedures.

"A recurrent critical incident in my activity consists in matching the demands of scholars with the current legislation. There is a strong detachment between the scientific timing and the administrative one. Academics hardly adapt to the required timing and obligation, making the daily work hard and difficult. (...) In order to solve these criticalities, we often need to draft documents to legitimize the activities." Informant#114, administration and management, administration and accountability.

An action aiming at simplifying and standardizing the administrative procedures is strongly demanded, and a clear difficulty to comply with the deadlines is testified,

especially from administrative employees. Nevertheless, bureaucracy permeates the whole organization, creating discomfort in many organizational areas.

"We often need to rotate suppliers, even to buy a toner. (…) This permitted the public administration to save expenses, I do not doubt that, but we should also look at the reality, even at the timing. (…) Even because, according to the new law, for each purchase it is needed to publicly approve it, to protocol it, to follow all the obligations for transparency. (…) Lately the work has become more complicated because regulations have become so punctual, so precise, and meticulous, that in the end … Well, as an example, the application of the code of public contracts: let us say things are easier now, but there was a period that it really slowed many processes to purchase goods and services in the public administration." Informant#102, Administration and management area, administration and accounting.

4.1.4.5 Proficient knowledge of the national legislation to cope with changes

Bureaucratic knowledge, thus the knowledge of legislation and of the Institution, appears as a basic requirement for all employees at different levels.

"The State law is continuously changing; hence, it is necessary to be supported with constant updates from competent personnel" Informant #77 administration and management, administration and accounting

Obviously, different categories of employees would be interested in specific regulations affecting their work, nonetheless, they need to be constantly updated.

"We need to be updated, supported, that is why I read so many regulations by my own initiative. (…) I'll make you an example: two years ago, the regulation on missions was modified, thus they did not need to be approved by the faculty council anymore. Afterward, they started calling me and asking: "why you did not approve our missions?" I answered them: "Did you read the new regulation?" Understand? If I am not updated … they do not send all the information from the central headquarters. There should be someone responsible for updating us. (…) It was my curiosity that led me to read the document to understand what changed with missions" Informant#107, administration and management, support to teachings.

It seems that the employed information strategy is based on communicating and training managerial positions that, then, are expected to update their subordinates.

This strategy, however, reconnect to the theme of inefficiencies in the information and communication system, where failure from the manager to communicate an important variation of the law or procedures to its subordinates, may lead to important mistakes and difficulties.

"Her superior did not share the communication that the central headquarters sent. (…) The missing share of those information had a negative impact not only on the professional sphere of my colleague, but also on the efficient management of the procedures of which the department was responsible". Informant#5, administration and management, support to teachings.

Thus, it should probably be considered a different approach, aimed at upgrading and enhancing the information system to share critical information more directly and efficiently.

Different aspects of legislative knowledge should be of interest of different professional roles; as an example, administrative employees should be proficient in *"all that is referred to the legislation, the new laws, and especially to the type of activities we conduct, such as purchases, or contracts" Informant# 15, administration and management, administration and accounting.*

Laboratory and I.C.T. staff should, on the other hand, be updated on the *"application of the legislation relatively to security measures, G.D.P.R., transparency of procedures, in cloud purchases according to AgID (Agency for the Italian Digitalization)'s guidelines." Informant#82, Technical, Technical scientific and data processing, laboratory management.*

Finally, library staff, seems to need a lower knowledge on generic legislation, while they mostly need to master administrative procedures for the ordinary activity or regulations related to specific projects in order to receive funds.

Knowledge on legislation, however, seems critical in order to be able to adapt to changes. It is the main tool that employees own to introduce new solutions or approaches to integrate the existing processes and activities with newly acquired knowledge.

"I take care of advanced training, stages and study courses' support. The main changes are those related to the legislation and to the reference procedures, from which it arises the need to adapt competencies and activities." Informant#105, administration and management, support to teachings.

4.1.4.6 Teamwork, communication ability and emotional intelligence for a highly performing university

Teamwork often emerges as a critical transversal competence, with diametrical opposed examples, both positive and negative, which, anyhow, indicate its perceived importance:

"(…) a positive and supportive climate facilitates work and a constructive attitude (helps) *when facing criticalities" Informant #105 administration and management, teachings' administration*

"I asked for help on several fronts, someone helped, others did not." Informant #95, administration and management, administration and accounting

Teamwork implies the desire to work by cooperating with others, to be part of a group. It is strongly related to capabilities such as the ability to communicate by sharing important information with others, to recognize others' merits or to encourage and help others.

"*A colleague of mine, with whom I work closely and who has greater knowledge in our professional area where I recently started to work, showed me the history of some practices I had to take care of, thus providing me with improved clarity on what to do. Q: What exactly did he or she do? A: We searched together all the previous documents and we analyzed the past criticalities trying to anticipate the future ones." Informant #106 administration and management, teachings' administration*

Examples of high orientation toward cooperation and team working have been often detected and signaled as appreciate behaviors to incentivize.

"In order to face the difficulty to insert data in an almost unknown platform, a colleague of mine, instead of having people responsible of the process send him an email with all the information, took an appointment with them and they inserted the data together. (…) I believe that this modality of work is particularly efficient because they faced a concrete difficulty in a constructive way, by sharing the responsibility of the process with other experts involved in the management of those information." Informant #105, administration and management, teachings' administration

Some informants, such as library directors, teaching administration managers or faculty managers, for instance, underlined as particularly useful some attended training courses focused on human resource management and soft skills, which they

believed to have provided them with valuable tools to interpret situations and manage criticalities in their working environment.

A recurrent issue, as already mentioned both in referral to problem solving and knowledge sharing system, is the need for a better information and supporting system from the central headquarter. This organization, in fact, is characterized by strongly interrelated and interdependent activities (Thompson, 1967) clearly highlighting a need for coordination and improvement of the existing information and system, that coud be reached considering, for example, the introduction of integration bodies, supporting and coordinating different structures and professional areas.

"What we feel that is missing (we are not polymaths, me least of all), is: "excuse me colleague, how should I do this?" This is what we miss. I would not know how to express it in a better way". Informant #76, administration and management area, administration and accounting

An interesting virtuous example of advanced coordination and cooperation, greatly witnessed by all the related professional positions, is the one of the teaching administration managers' network. In fact, these professional roles organized monthly reunions with all the same professional positions at different structural levels, thus between the central headquarters and the faculties, aimed at updating on the most important issues, organize future activities, or also to ask for help with some specific issues, thus strengthening the relationships and the team building. This approach resulted in advanced collective performances, thus demonstrating how critical these competencies can be.

"I have to thank our teachings administration manager from the central headquarter (…), with whom we have monthly reunions that enable us to have a more direct exchange of information on many issues and, moreover, from her side, there is always an extreme availability to help us (…). Hence, aside from the faculty, we all help each other, and this network of managers is working." Informant #124, administration and management, teachings administration

4.1.4.7 The common set of core competencies for Sapienza, University of Rome

The following table summarizes what emerged from the analysis of the data, by listing the competencies previously described and characterized by a pronounced transversal feature:

Competency characteristic	***Competency***	***Description***
Generic knowledge	*English Knowledge*	It indicates proficiency in the knowledge of the language, the ability to use it and select its most appropriate use in different situations at

		work. It implies motivation to improve his or her own level and share its knowledge with others. It manifests in the ability to write, to read and to communicate using the language at different levels of complexity.
	Knowledge on legislation and Institutions	It indicates knowledge of laws, regulations, guidelines and their updates, referred to public administration, and impacting to the conducted activities. It can be referred to as bureaucratic knowledge and is strongly related to an attitude toward lifelong learning, thus to autonomous and constant update and to organizational awareness. It can be enhanced by an efficient information system.
Skills	*Digital competencies*[4]	It indicates a demonstrated ability to use digital tools for information, communication and problem-solving. It underlies a basic digital literacy level, but it needs to be considered comparatively to the usage of specific softwares and digital tools, critical in the working context, and at different levels of proficiency, according to the specific professional role's requirements.
	Development of others	It indicates a particular modality in employing own persuasion and influence skills, aimed at teaching, or help colleagues in acquiring knowledge, competence or reach objectives. For managers, it is not measurable by the quantity of training courses that employees are permitted to attend, but it figures as a daily and genuine activity. It is strictly related to emotional intelligence, leadership, teamwork and cooperation competencies.
	Internal relationship building	It indicates the ability to create and maintain courteous relationships with colleagues who are or may be instrumental to reach his or her own professional objectives. This competence appears particularly critical to overcome failures in the information or coordination system. It comprehends the ability to build networks, develop work and personal contacts, and establish sturdy relationships. It is critical for every professional position, but particularly for managers.
	Organizational awareness	It indicates the ability to understand and use at his or her own advantage, the organizational culture and policy. It comprehends the knowledge of the organizational model, his or her professional role's characteristics and objectives, his or her superiors' role and professional objectives and possible referents for solving different issues. This competence is parallel to emotional intelligence, but it focuses on the organization and not on people.
	Problem solving	It indicates the ability to figure out a solution method for reaching a specific objective, when such method is not obvious, hence, representing and solving problems in different areas. It usually is revisable in the following, evident or implicit, reasoning and decisional phases: problem identification, goal definition, solution evaluation, evaluation of alternatives and selection of an optimal solution.
	Team working and cooperation	It indicates the desire to work cooperatively with others, to be part of a group.It implicates the ability to mitigate or solve conflicts, motivate and encourage others, recognize others' merits. It is strictly related to the ability to motivate others and to be able to effectively communicate and share useful information.
	Written and oral communication	Oral communication indicates the ability to develop, organize, and present a persuasive speech. Written communication indicates the ability to write clearly and succinctly and to properly adapt the writing style to a variety of situations. These competencies underline a mastery in the knowledge of the national language, the ability to effectively persuade and appropriately motivate his or her own decision through speech or writing.
Traits	*Achievement orientation*	It indicates the personal interest to work well and to compare with optimal objective or subjective standards. It is strongly related to an

[4] A research paper conducting a literature review on digital competencies has been developed: Giacomelli, D. (2017). Digital competences for the future: what is needed and how to measure it. Presented at the Workshop di Organizzazione Aziendale 2017, Pisa, Italy, 16th-17th February 2017.

		orientation toward efficiency and optimization, lifelong learning, entrepreneurship, and deadline compliance.
	Attitude toward lifelong learning	It indicates the ability to constantly and increasingly learn during the life cycle, by organizing his or her own way to learn even through an effective time and information management, both individually and collectively. This key competence is strongly connected to individual characteristics of persistence and resilience.
	Autonomy	It indicates the experience of a sense of volition and psychological freedom. According to the self-determination theory (Deci, & Ryan,2000; Vansteenkiste, Ryan, & Deci, 2008) it is a psychological need that needs to be satisfied for individuals to flourish. In this context, it is interpreted as the availability to manage independently ordinary job tasks, to express opinions and implement possible improvements or solutions in the working context. It is strictly related to the attitude toward innovation, to problem solving and to the ability to take the initiative.
	Emotional Intelligence	It indicates the desire to understand others. It comprehends the ability to listen carefully, to understand and correctly answer to desires, feelings and concerns, even when they are not explicit. It means to be open minded and sensible to individuals, groups, and diversity. It is strictly related to empathy, listening ability, and intuition.
	Flexibility and adaptation to changes	It indicates the ability and will to adapt and work efficiently in different situations, people and groups. It implies to be open minded, to be able to change opinions, and to adapt and accept changes in the organization or in the entrusted tasks.
	Innovativeness	It indicates an attitude to go beyond the conventional, a willingness to take risks and try different solutions. It involves questioning the status quo as well as generating and implementing creative solutions and novel ways to achieve professional objectives. It is strongly related to the ability to take initiative, to flexibility and to problem solving.
	Initiative ability	It indicates an inclination to act. It implies doing more than the task requires, and to strive to upgrade or perfect his or her professional outcomes. It means to be proactive, future oriented, and resolute.
	Organizational Commitment	It indicates the ability and will to align its own behaviors to the needs, priorities and objectives of the organization. It is usually recognizable in a pronounced attitude toward teamworking, participation and achievement orientation.
	Service orientation	It indicates the desire to help or serve others and to satisfy their needs, by focusing his or her energy to understand and satisfy the users' needs. It implies emotional intelligence and it is strictly connected to persuasion, influence skills and to organizational commitment.

Table 4.2. Summary of the emerged competencies shared by non-academic employees. Own elaboration.

The identified categories can be interpreted following the same logical structure illustrated in table 3.2. Of course, these different categorizations are not to be considered as rigid attributes, but as prevalent components of a competency. In fact, competencies are complex, and they usually originate from different characteristics of a person, as combinations of both visible and underlying characteristics (Spencer, & Spencer, 1993).

Moreover, each identified competency can be composed or be strictly related to other competencies, and it could manifest through different sub-competencies, which also differ according to the specific context and dynamics where they are demonstrated. It is not possible, hence, to list all the behaviors underlying a competence; but it is possible to identify a competence from specific manifest behaviors and conducted actions.

4.1.5 Competencies at a professional roles' level

This section addresses **RQ2:** *How do different professional roles differ in terms of competencies for non academical employees in a public university?*

According to the qualitative analysis conducted, in this section I present the competencies that are peculiar for specific professional roles, in the sense that they frequently recurred for those definite roles more than others.

This section is structured in a more synthetical form, providing a list of competencies for each analyzed professional role. Moreover, when a description of a behavior through a text extract is possible or considered particularly explanatory, it will be provided in the introductory paragraph of each professional category.

Thus, professional roles' competencies will be listed in the next sections, divided according to their professional area and following an alphabetical order. The transversal competencies, identified in the previous paragraph, will not be comprehended in the next models, but should be considered as common to all the professional roles, while the following competencies are those that emerged as distinctive of a specific role.

4.1.5.1 Administration and management area

The administration and management area, formally identified in the collective agreement contracts, statutes and the internal documentation, appeared to be decomposable in two different professional categories, namely administration and accountability and a support to teachings. These two categories are characterized by conducting different types of activities, being involved in diverse processes, pursuing deviating professional objectives, providing divergent outputs and requiring dissimilar competencies.

Thus, the following section will provide a brief contextual description of each professional category and list the competencies characterizing the professional roles of the participants to the research.

4.1.5.1.1 Administration and accountability

The administration and accountability personnel mainly take care of the administrative procedures of typical activities of each academic structure.

This involves both accounting and bureaucratic procedures and the employment of specific management softwares. As already mentioned, the constant update of the legislation on these themes, require administration and accountability personnel to

be constantly updated on all the laws and regulations impacting on the administrative procedures they are responsible for.

All these professional roles seem characterized by an overwhelming pressure to comply with deadlines and thus, they need to be able to effectively manage stressing situations to keep the peace with the various requirements and obligations.

Excessive bureaucratization of many procedures is a recurrently cited problem, and the impossibility to implement own ideas to simplify processes, together with the perception of scarce autonomy and possibility to take initiative are sometimes surfaced as critically negative events. These competencies, in facts, seems to be a prerogative of the administration manager.

The administration manager, figures as the main referent for all the employees, thus it is critical that they possess competencies such as leadership, communication ability, relational and motivational competencies, together with high professionality and specialization in juridical and accounting regulations and laws, crucial to effectively reach their professional objective to effectively *"manage the activities of the structure ensuring the administrative, legal and accounting correctness" (Informant#3, administration and management, administration and accounting)*. This general professional objective also involves "*managing the human resources in order to optimize the processes and the procedures related to the structure*" (*Informant#5, administration and management, administration and accounting).*

Referred to this last objective, many difficulties have been expressed for the effective management of human resources, as already highlighted, because of the lack of advanced tools for evaluating performances and motivating employees.

It is, however, believed that a competency based performance assessment system could figure as a useful tool, for managing and improving behavioral shortcomings and technical and professional gaps of the employees.

Results for this perceived lack seems to generate the tendency to overload with work more capable and achievement oriented employees, thus causing stress and frustration, against a severe discharge of responsibility for others.

Thanks to the digitalization of the services, the assistance, information and front office activity of the administrational and accounting category's employees, has profoundly changed, especially in the student's office, where employees take care of "*managing the administrative position of students since their registration until their*

graduation" (Informant#23, administration and management, administration and accounting).

Employees, in fact, previously mostly interacted with students directly through the front office, while today they prevalently employ digital tools.

This transition toward more digitalized services strongly need to be accompanied by the appropriate digital competencies, not only in referral to the knowledge of a specific software or tool, but also to basic problem solving and flexibility in using similar digital tools. Thus, online communication, basic I.C.T. knowledge, digital competencies, and written and oral communication are surely critical competencies for all the personnel both directly and digitally interacting with students. Another critical change impacting on the administrative and accounting employees, having the main professional objective of *"administratively supporting users* (students and scholars) *in order to reach the highest administrative accuracy of the procedures"* and *"to be at their disposal by sharing knowledge and professionality" (Informant#77, administration and management, administration and accounting),* seems to be the massive growth in the number of foreign students, who seem to be the ones mostly in need for direct assistance. Thus, the pursuing of an internationalization objective should be necessarily accompanied at least by the provision of a basic knowledge of the English language to the personnel, oriented to provide not less than the main information that students or scholars usually may look for.

Even in the case of the student office, even though an intense attitude toward problem solving, autonomy and initiative was generally detected, it seems that these competencies are perceived predominantly as competencies of the student's secretary's head, whose main objective is to coordinate and manage the activities in the student's office.

A final consideration is related to the correct management of sensible data that has emerged as a general element of concern for employees, for which a specific training or update may be required.

Administration manager

Competence category	**Competence**
Technical and professional knowledge	*Juridical administrative and accountability knowledge*
	Knowledge on regulations on transparency
	Knowledge on security measures
	Knowledge of the G.D.P.R.

Technical and professional competencies	*Accountability proficiency*
	Administrative procedures
	Application of security measures
	Assets and liabilities
	Auditing basics
	Commercial contracts
	Control of the correctness of the administrative procedures
	Digital competence on management softwares
	Human resources management
	Public contracts procedures' management
	Workload management
Skills	*Analytical thinking*
	Conceptual thinking
	Emergency management
	Leadership
	Stress management
Traits	*Orientation toward deadline compliance*
	Trustworthiness

Table 4.3. Distinctive competencies of the administration manager. Own elaboration.

Administrative staff

Competence category	**Competence**
Technical and professional knowledge	*Juridical and administrative knowledge*
	Knowledge on regulations on transparency
	Knowledge on security measures
	Knowledge of the G.D.P.R.
Technical and professional competencies	*Accountability*
	Administrative procedures
	Administrative support to research
	Assistance to students and scholars
	Cataloguing
	Digital competencies on management softwares
	Management of the process for expenditures
Skills	*Analytical thinking*
	Conceptual thinking
	Multitasking
	Stress management
	Time management
Traits	*Orientation toward deadline compliance*

	Orientation toward accuracy, quality and order

Table 4.4. Distinctive competencies of the administrative staff. Own elaboration.

Students' Office Head

Competence category	**Competence**
Technical and professional knowledge	*Juridical and administrative knowledge*
	Knowledge on regulations on transparency
	Knowledge on security measures
	Knowledge of the G.D.P.R.
Technical and professional competencies	*Application of security measures*
	Control of the correctness of the administrative procedures
	Digital competence on management softwares
	Human resources management
	Students' careers administrative procedures
	Workload management
Skills	*Analytical thinking*
	Conceptual thinking
	Emergency management
	Leadership
Traits	*Trustworthiness*

Table 4.5. Distinctive competencies of the students' office head. Own elaboration.

Students' Office Staff

Competence category	**Competence**
Specific knowledge	*Juridical and administrative knowledge*
	Teachings' regulations knowledge
	Knowledge on regulations on transparency
	Knowledge on security measures
	Knowledge of the G.D.P.R.
Technical and professional competencies	*Application of security measures*
	Assistance and support to students
	Cataloguing
	Digital Communication proficiency
	Digital competencies on management softwares
	Management and control of students' administrative practices
Skills	*Research of information*
Traits	*Orientation toward accuracy, quality and order*
	Orientation toward deadline compliance

Table 4.6. Distinctive competencies of the students' office staff. Own elaboration.

4.1.5.1.2 Support to teachings

Professional categories characterized by an activity prevalently oriented toward supporting teachings, can be identified in those of the faculty office and of the teaching administration management.

The teaching administration management is characterized by a particularly developed vertical hierarchy, where the teaching administration manager is the role with highest responsibility and is embedded in the faculty, functioning as the main integration and coordination body, while academic teachings referent are embedded in the department and they act as main referral for the academic teaching staff.

However, it seems that the coordination between the teachings administration manager and the referents should be enhanced, because there is not much coherence between the conducted activities and the pursued objectives both between different departments, but also in the relationship with the manager. This unbalance could be caused by the recent introduction of these figures, that could, hence, still need to perfect their integration and coordination system.

However, high performing staff, in this professional category, seem characterized by a great attitude toward cooperation and teamwork, together with achievement orientation, innovativeness and initiative.

The role of the teaching administration manager figures as a key role, that should probably be empowered to better function as an integration and coordination body for the whole professional category, being his or her main professional objective to *"guarantee an effective organization of the teachings, maintaining high quality standards" (Informant#57, administration and management, support to teachings).*

In this perspective, relational and motivational competencies figures as essential for this role, together with a profound knowledge on quality protocols, and laws and regulations referred to teachings. Team leadership and workload management for subordinates are also distinctive competencies, critical for reaching the professional objectives. However, it was often highlighted that many academic teaching managers suffer from shortage of personnel, which may impact on their performances.

The teaching administration referent describes his or her main professional objective in the one of guaranteeing "*to users (students) the higher quality in teachings,*

through the implementation of an effective and efficient system of procedures" (Informant#103, administration and management, support to teachings).

As briefly introduced, best performers for this professional role appear to own the critical competencies of innovativeness, initiative, communication ability, and cooperation and teamwork especially with scholars, the faculty teaching administration manager and colleagues of the same professional category embedded in different structures. On the other hand, issues have been indicated, referred to the perceived lack of autonomy in introducing innovations and improvements to processes and activities, even when coherent with legislative dispositions.

The faculty office functions as an integration body between political bodies and boards, personnel and students. The main activity of the faculty office staff is to manage procedures and prepare formal documents, to comply with the required academic obligations.

In this context, deadlines compliance is a preponderant objective and an essential element of the activity, together with an in-depth knowledge of procedures, laws and regulations referred to the different administrative and statutory tasks.

Orientation toward support and assistance of students has emerged as a distinctive competence for the faculty office staff, together with innovativeness referred to services and processes.

In facts, some critical initiatives have been taken aiming at improving the existing processes and at simplifying the administrative procedures, by involving different professional areas and positions embedded in different structures, thus indicating a great attitude toward cooperation as well. Being the Faculty office a key integration body, the capability to work in teams, cooperate, and create and maintain relationships is certainly critical for all the staff, especially for the faculty manager, who is the recording secretary of the academic collegial bodies additionally responsible for managing the faculty office's staff and for coordinating the general activities referred to the organization of events in the faculty, class and exam schedules and security.

Finally, many informants underlined the need to perfect the knowledge of the English language, in order to better communicate with foreign students and visiting professors and researchers and manage international practices.

Faculty Office Manager

Competence category	**Competence**

Technical and professional knowledge	*Juridical and institutional procedures knowledge*
	Knowledge on regulations on transparency
	Knowledge on security measures
	Knowledge of the G.D.P.R.
	Teachings regulations and quality protocols' knowledge
Technical and professional competencies	*Application of security measures*
	Assistance and support to students and scholars
	Digital competencies on management softwares
	Human resources' management
	Institutional communication
	Insititutional documents' writing (resolutions, reports)
	Organization of events (conferences, seminars)
	Workload management
Skills	*Analytical thinking*
	Conceptual thinking
	Integration and coordination of activities
	Leadership
Traits	*Orientation toward accuracy, quality and order*
	Orientation toward deadline compliance

Table 4.7. Distinctive competencies of the faculty office manager. Own elaboration.

Faculty Office Staff

Competence category	**Competence**
Technical and professional knowledge	*Juridical and institutional procedures knowledge*
	Knowledge on regulations on transparency
	Knowledge on security measures
	Knowledge of the G.D.P.R.
	Teachings regulations and quality protocols' knowledge
Technical and professional competencies	*Assistance and support to students and scholars*
	Cataloguing
	Digital competence on dedicated softwares
	Institutional documents' draft (Invitation to tender, resolutions, reports)
	Maintenance checks
	Management of incoming and outgoing students' procedures
	Management of spaces (classrooms, security, reservations)
	Support to the organization of events (conferences, seminars)
	Third mission and extra-institutional *assignments*
Skills	*Multitasking*
	Time management

Traits	*Orientation toward accuracy, quality and order*
	Orientation toward deadline compliance

Table 4.8. Distinctive competencies of the faculty office staff. Own elaboration.

Teachings' administration Manager

Competence category	**Competence**
Technical and professional knowledge	*Knowledge on regulations on transparency*
	Knowledge of the G.D.P.R.
	Teachings regulations and quality protocols' knowledge
Technical and professional competencies	*Coordination and monitoring of teachings' processes*
	Data entry procedures
	Digital competence on dedicated softwares
	Human resources management
	Quality management
	Training and teachings' programs design
	Workload management
Skills	*Analytical thinking*
	Conceptual thinking
	Integration and coordination of activities
	Leadership
	Motivational competence
	Multitasking
	Relational competence
	Time management
Traits	*Orientation toward deadline compliance*

Table 4.9. Distinctive competencies of the teachings' administration manager. Own elaboration.

Teachings' administration referent

Competence category	**Competence**
Technical and professional knowledge	*Knowledge on regulations on transparency*
	Knowledge of the G.D.P.R.
	Teachings regulations and quality protocols' knowledge
Technical and professional competencies	*Assistance and support to students and scholars*
	Digital competencies on dedicated softwares
	Exams commissions' management
	Management of scholarships related processes
	Management of study courses, Phd, masters, graduate schools, stages programs
	Management of teachings agreements

	Study courses' monitoring
Skills	*Analytical thinking*
	Conceptual thinking
	Multitasking
	Relational competence
	Time management
Traits	*Orientation toward accuracy, quality and order*
	Orientation toward deadline compliance

Table 4.10. Distinctive competencies of the teachings' administration referent. Own elaboration.

Teachings' administration staff

Competence category	**Competence**
Technical and professional knowledge	*Knowledge on regulations on transparency*
	Knowledge of the G.D.P.R.
	Teachings regulations and quality protocols' knowledge
Technical and professional competencies	*Assistance and support to students and scholars*
	Assistance for the organization of lectures and exams
	Data entry of exams
	Digital communication
	Digital competencies on dedicated softwares
	Management of exam sessions' reservations
	Support in the draft of administrative documents related to teachings
Skills	*Information research*
Traits	*Orientation toward accuracy, quality and order*
	Orientation toward deadline compliance

Table 4.11. Distinctive competencies of the teachings' administration staff. Own elaboration.

4.1.5.2 Library area

In recent years, libraries have been affected by the increasing digitalization of the services and by the introduction of new technologies that completely changed the management modalities of the library resources and the related competences expected from the library personnel.

The number of available resources is increasing exponentially and the management softwares related to their cataloguing, search, and sharing with the library's users become more complex and require a constant professional training update, together with the possess of at least a basic level of digital literacy and the capability to effectively interact with fairly advanced softwares.

A great orientation toward support to users has been detected as a critical competence for a performing librarian, especially in light of the evidence that contact with outside users is a core activity of this professional category, together with an advanced knowledge of English, and optimally of other foreign languages as well, at least at a basic level, in order to provide an efficient service to international students and to effectively manage library resources in different languages

The ability to work in a group and to cooperate often emerged as a distinctive ability of best performers, critical for an optimal management of libraries, especially considering that libraries usually employ different coworkers such as students with a scholarship or civil service volunteers, thus, the number of coworkers in an individual library appears often much greater than the one of the ordinary library employees.

Given the main professional objectives of *"managing and developing services for users through the coordination of employees' activity" (Informant#19, library, library management)* and of *"organizing and managing the library, solving problems, identifying and implementing projects and innovative solutions" (Informant#71, library, library management)*, the library head should dedicate much attention and effort to effectively manage human resources to increase performances, stimulate innovativeness and in equally distribute the workload. In facts, it appeared, as a critical competency, an orientation toward lifelong learning, especially aimed at learning the modalities to effectively coordinate human resources. This specific type of training has been highlighted as particularly useful, together with advanced technical and professional competencies, especially in information literacy, and cataloguing.

Coherently, library staff professional objective can be synthetized in the aim to *"meet, quantitatively, the collective objectives that we define as a group and, qualitatively, to guarantee efficiency in the information services" (Informant#8, library, library management)*.

In general, library employees seem to own high levels of autonomy and they feel as they can easily contribute in improving the offered services by proposing and implementing upgrades or changes. There appears to be a desirable openness to dialogue and information sharing, where employees often consult both superiors and colleagues, sharing their ideas, which are then discussed together as a group, before reaching a final decision.

Competence category	**Competence**
Technical and professional knowledge	*Foreign languages knowledge (French, Spanish, Chinese)*
	Knowledge of the G.D.P.R.
	Knowledge on security measures
	Knowledge on study courses teachings
	Libraries procedures, regulations and quality protocols' knowledge
Technical and professional competencies	*Assistance and support to students and scholars*
	Administrative procedures related to libraries
	Books purchase and journals subscriptions and updates
	Application of security measures
	Cataloguing
	Database use proficiency
	Digital communication
	Digital competencies on dedicated softwares
	Human resource management
	Management of spaces
	Update and development of library collections
Skills	*Information literacy*
	Information research
	Leadership
	Motivation competencies
	Relational competencies
	Workload management
Traits	*Orientation toward accuracy, quality and order*

Table 4.12. Distinctive competencies of the library head. Own elaboration.

Library staff

Competence category	**Competence**
Technical and professional knowledge	*Foreign languages knowledge (French, Spanish, Chinese)*
	Knowledge of the G.D.P.R.
	Knowledge of security measures
	Knowledge on study courses teachings
	Libraries procedures, regulations and quality protocols' knowledge
Technical and professional competencies	*Assistance and support to students and scholars*
	Administrative procedures related to libraries
	Books purchase and journals subscriptions and updates
	Cataloguing
	Coworkers and students' registry maintenance
	Database use proficiency

	Digital communication
	Digital competencies on dedicated softwares
	Inventory
	References management
Skills	*Information literacy*
	Information research
	Research assessment
	Update and development of library collections
Traits	*Orientation toward accuracy, quality and order*

Table 4.13. Distinctive competencies of the library staff. Own elaboration.

4.1.5.3 Mixed area

The mixed organizational area has been here represented to highlight differences in specific professional roles and organizational positions, where informants often resulted embedded in both the administration and management area and in the technical, technical, scientific and data processing area. This mixed embeddedness may be explained by the recent introduction of the role of the research referent and in a missing official identification of an I.C.T. professional category. In fact, while for the research referent the embeddedness in both areas may seem reasonable, according to the specific field of the department in which the referent operates (e.g. a research referent in a chemistry department, being a chemist, thus embedded in the technical, technical scientific and data processing area, seems suitable, while a research referent in economics or law departments, may reasonably be an administrative employee) for the I.C.T. referent and the webmaster, it would seem more appropriate to reconduct these positions exclusively in the technical, technical scientific and data processing area, considering the technical specialization they need to effectively conduct their activity.

Moreover, computer laboratory head and staff regularly emerged to possess remarkably similar competencies than the ones expected from the I.C.T. referents, with whom they occasionally cooperate to introduce new digital systems or to increase the effectiveness of the digital processes. Thus, it may be wise to consider the creation of an I.C.T. professional category, embedded in the technical, technical scientific and data processing area, comprehending the organizational positions of I.C.T. referent and computer laboratory head, and the professional roles of webmasters and computer laboratory staff.

4.1.5.3.1 I.C.T.

The I.C.T. professional category is not identified in the organizational chart of the university. Furthermore, the professional position of the I.C.T. referent has been introduced just recently in each department of the University, generally embedded in mixed professional areas.

During this research, however, it emerged an evident functional and logistical separation between the organizational position both for the I.C.T. referent and for the professional role of the webmaster responsible for updating and maintaining faculty or department's websites.

The need to develop an extended and structured hierarchy for I.C.T. personnel is often expressed as a desire of a more solid internal structure to help coordinate the activities.

"*There is no hierarchy here. To whom… to whom should I ask for deadlines? (…) I do not feel I ever had a deadline. This is a problem, for example. (…) We decide our own objectives, with the consent of the department director, obviously…"*

Informant #62, technical, technical scientific and data processing area, I.C.T.

The need for a hierarchy has frequently appeared as related to the recurring necessity to work as a team in order to extensively and simultaneously implement safety and privacy measures in each structure, thus cooperation between I.C.T. referents and computer laboratories' staff becomes critical to effectively operate in the I.C.T. system and to ensure the respect of the law on data protection and security measures.

In fact, virtuous examples of teamwork have been detected related to initiatives to create security protocols and optimize and improve the digital procedures. On the other hand, difficulties were expressed when this cooperation was not possible, providing, as a possible solution, the idea of the creation of a coordinator or an integration body that could help manage and organize activities through a network of I.C.T. referents and computer laboratory staff.

"(…) I am saying this because working in a team, with people who have a coordinator, someone who cares of their needs and how they satisfy these needs through sharing and dialogue… A coordinator, in my opinion, is essential (…) A coordinator should be allocated on several fronts. (…) Unfortunately, nowadays, you need to go and ask, with great difficulty, for a technical advice, or help. If there was a coordinator, he would say: "there is no problem: go to her, go to him, let us ask, let us solve." Informant #63, technical, technical scientific and data processing area, laboratory management

Moreover, constant training and update is required in I.C.T., in view of the constant introduction of innovations and improvements and sharing knowledge between a coordinated group could create important synergies in terms of effectiveness and deadline compliance. As an example, during the "*completion of the implementation procedures of the Ag.I.D. requirements, in conjunction with the colleagues in the faculty"* Informant #51, of the technical, technical scientific and data processing area, I.C.T. described as critical the "*creation of an internal commission developing detailed deployment plans, (…) because they were the result of the work of a group of people sharing the same problem and collectively facing it.".*

I.C.T. referent tasks, as already mentioned, do not seem to be clear, and there seems to be a common tendency to confuse the I.C.T. referent with the network referent, at the extent that these roles have been lately merged in the role of the I.C.T. referent, as some internal communications revealed, probably as an attempt to solve this complication.

However, it is here possible to identify a commonly shared definition of the main professional objective of the I.C.T. referent in *"supporting students and scholars' activities. Hence, ensuring that the structure works well, in terms of teachings and research activities occurring without obstructions or difficulties" (Informant#62, technical, technical scientific and data processing, I.C.T.)* that could be reached by *"improving the network and system services for users, (…) general services (online scheduling services, print accounting), and creating a security plan for the administration area" Informant#79, (technical, technical administrative, data processing, I.C.T.).*

I.C.T. employees require advanced computer, digital and I.C.T. knowledge, together with the appropriate skills to effectively implement new digital procedures, softwares or systems. Constant training and update on newly introduced softwares, systems, legislation impacting on digital processes, especially in referral to the G.D.P.R., appear as vital competencies for these roles as well.

Webmasters seem to differentiate from I.C.T. referents because they require less advanced and specialized competencies, and they are more autonomous. In fact, they do not feel the need for teamwork with their I.C.T. coworkers, but, on the other hand, they work closely with scholars and the administrative and teaching staff to implement the required updates or changes.

The main objective of the webmaster can be described as the one *"to keep students and interested parties informed on the structure's activities" (Informant#53, technical, technical scientific, data processing, I.C.T.).*

Thus, competencies referred to coding, online programming, S.E.O., are basic requirement for this professional role while his or her ability to identify and propose innovative online solutions and implement them can be considered as a distinctive ability of best performers. Sometimes, the I.C.T. referent directly manages the structure's website, thus this role is not present in every structure.

I.C.T. referent

Competence category	**Competence**
Technical and professional knowledge	*Computer engineering knowledge*
	Firewall and antivirus systems knowledge
	Knowledge of digital security measures
	Knowledge of the G.D.P.R.
	Knowledge on internet law and regulations
	Knowledge of transparency measures
Technical and professional competencies	*Assistance and support to scholars and personnel*
	Backup installation and scheduling
	Digital tools maintenance and update
	I.C.T. infrastructure management
	I.C.T. protocols
	Implementation and maintenance of digital security measures
	Internal server management
	Monitoring server softwares management
	Network system management
	System security
	User accounting system
	Virtualization technology
	Webmail support
Skills	*Analytical thinking*
	Conceptual thinking
	Emergency management
	Flexibility
Traits	*Orientation toward accuracy, quality and order*
	Orientation toward deadline compliance

Table 4.14. Distinctive competencies of the I.C.T. referent. Own elaboration.

Webmaster

Competence category	**Competence**
Technical and professional knowledge	*Knowledge on internet law and regulations*
	Knowledge of internet basics
	Knowledge of digital security measures
	Knowledge of the G.D.P.R.
	Knowledge of transparency measures
Technical and professional competencies	*Assistance and support to scholars and personnel*
	CSS
	HTML
	Search engine optimization
	UX and UI
	Web accessibility
	Web audio and video
	Web Graphics
	Web project management
	Web security management
Skills	*Analytical thinking*
	Conceptual thinking
	Emergency management
	Flexibility
Traits	*Orientation toward accuracy, quality and order*
	Orientation toward deadline compliance

Table 4.15. Distinctive competencies of the webmaster. Own elaboration.

4.1.5.3.2 Support to research

The research referent figures as an important role for both support and integration between researchers, Ph.D. students, scholars and the administrative staff.

Academics, in fact, are often overwhelmed by the responsibility to autonomously manage research projects, which often cause them to overlook interesting research opportunities or to lower their creativity and productivity because of the time spent in managing researches.

The figure of research referent, thus, should support academics in exploring and extending their knowledge, also providing them with new job and research opportunities. To provide them with an effective support in finding calls or bans, in updating them on new granting opportunities in their scientific field and in administratively supporting them, by controlling and taking care of the practices

needed to participate to calls and bans, it seems that a study title in their same field would be optimal, together with knowledge in accounting and competences in managing administrative practices.

Employees with a Ph.D. level of education seemed to be particularly performing as research referents. This may be related to the familiarity they possess with the terminology employed in research calls and bans, as well as proficiency on research methodologies.

However, aside from these optimal, thought particularly demanding, technical and professional competencies, critical competencies are also recognized in owning high relational and behavioral competencies, together with a pronounced orientation toward service and assistance towards academic staff.

Finally, knowledge on administrative procedures and regulations referred to research, surely figures as a minimum requirement for this particular organizational position.

Research referent

Competence category	**Competence**
Technical and professional knowledge	*Familiarity with the scientific field subjects of the structure*
	Knowledge in accounting
	Knowledge on administrative laws and regulation referred to research
	Knowledge on possible research sources for fund raising
	Knowledge on regulations on transparency
Technical and professional competencies	*Accountability*
	Assistance and support to academics
	Auditing basics
	Digital communication
	Digital competencies on dedicated softwares
	External employment contracts
	Management of administrative procedures related to research
	Research assessment systems
	Research database consulting
	Research projects draft
	Support in the draft of administrative documentation related to research
Skills	*Information research*
	Multitasking
	Relational competence
	Time management

Traits	*Orientation toward accuracy, quality and order*
	Orientation toward deadline compliance

Table 4.15. Distinctive competencies of the research referent. Own elaboration.

4.1.5.4 Technical, technical scientific and data processing area

The main activities conducted by the laboratory staff can be synthetized in the application of the regulations on security and preventive measures related to the management and maintenance of chemical reagents, equipment, devices and laboratory's waste.

Thus, a proficiency in the knowledge of security measures and the constant update on their changes, is an indispensable competence for laboratory employees.

Moreover, laboratory staff need to own all the specific technical competencies for maintenance to prevent deterioration and to define and manage a renewal plan for devices and equipment.

Additional competencies are related with the assistance provided to users, who they often train for correctly employing the laboratory's equipment and security measures. Given this evidence, behavioral and relational competencies and the ability to clearly present and explain concepts are desirable in order to provide a quality service,

The laboratory head has the main objective to "*guarantee that the laboratory is operational. A second objective is to enable scholars and students attending the lab, to appropriately use the equipment, by providing them with assistance" (Informant#63, technical, technical scientific, laboratory management).*

Laboratory staff seems to have corresponding objective, but less responsibility, hence figuring more as supportive figures, while the laboratory head is characterized by a high level of responsibility. However, scarce level of autonomy has often been lamented, especially in referral to the possibility to update equipment, often related to lack of dedicated funds.

Laboratory Head

Competence category	**Competence**
Technical and professional knowledge	*Knowledge on correct use and maintenance of the laboratory's equipment and devices*
	Knowledge on G.D.P.R.
	Knowledge on laws and regulation referred to laboratories
	Knowledge on security measures
	Assistance and support to scholars and students

Technical and professional competencies	*Human resources' management*
	Inventory
	Maintenance of equipment and devices
	Management of users' access
	Prevention from deterioration of the equipment
	Software, devices and equipment's substitution
	Software, devices and equipment's upgrade and optimization
	Technical competencies in the management of laboratory's equipment
	Technical consultancy
	Waste management
Skills	*Analytical thinking*
	Conceptual thinking
	Effective oral communication
	Emergency management
	Leadership
	Relational competence
Traits	*Orientation toward accuracy, quality and order*

Table 4.16. Distinctive competencies of the laboratory head. Own elaboration.

Laboratory staff

Competence category	**Competence**
Technical and professional knowledge	*Knowledge on correct use and maintenance of the laboratory's equipment and devices*
	Knowledge on G.D.P.R.
	Knowledge on laws and regulation referred to laboratories
	Knowledge on security measures
Technical and professional competencies	*Assistance and support to scholars and students*
	Inventory
	Maintenance of equipment and devices
	Management of users' access
	Prevention from deterioration of the equipment
	Software, devices and equipment's substitution
	Software, devices and equipment's upgrade and optimization
	Technical competencies in the management of laboratory's equipment
	Technical consultancy
	Waste management
Skills	*Analytical thinking*
	Conceptual thinking

	Effective oral communication
	Emergency management
	Relational competence
Traits	*Orientation toward accuracy, quality and order*

Table 4.17. Distinctive competencies of the laboratory staff. Own elaboration.

4.1.6 Limits and implications of the analysis in the qualitative strand

The employed method interprets competencies as underlying characteristic of an individual, and, thus, employs an approach aiming at defining those characteristics that make him or her particularly effective in a specific job.

This method, however, shows some typical limits, such as the existence of some theoretical weaknesses and a difficulty in the effective implementation of the practice in the organization.

To begin with, the main aim of this approach, shared by different authors such as McClelland (1975), Boyatzis (1982) and Spencer & Spencer (1993), is to identify competencies in a more objective way, overcoming some traditional restrictions of phenomenological approaches to competences.

A competency can be an evident characteristic of an individual, such as knowledge or skills, or a hidden characteristic, such as motivation or personality traits, and it can be considered a competency as long as it affects some type of performance. However, especially in the definition of hidden competencies, the literature is particularly confused and contradictory, thus, generating a concrete risk to translate this confusion to the definition of the competencies as well (Woodruffe, 1992): there are no clear guidelines in the literature helping to understand which trait or motivation can be elected as competence, thus leaving this choice to the subjectivisms of the analyst. The researcher, in fact, should look for the relation between hidden traits or motivations and a manifest and objective performance. However, performance measurement is often subjected to the preferences and personal opinions of the superiors, thus lacking the required objectivity.

There is no actual solution to this problem, and, as Boyatzis states: *"unfortunately, direct output measures often are not available or are difficult to identify, (…) supervisory and/or peer judgements* (thus) *must be used"* (Boyatzis, 1982, p.44).

This method aims at gathering past conducted behaviors in order to focus the analysis only on actions and behaviors that were manifest and that are, hence, disconnected from subjective interpretations of the informants on what they think they would do

in specific situations. However, this does not provide a solution to the problem of the identification of hidden competencies, hence making the identification of causal connections between behaviors and hidden competencies inevitably subjective and ambiguous, and it is completely entrusted to the analyst's ability.

The traditional competency based approach does not seem interested in knowing or understanding the point of view of workers on the characteristics, the qualities and the skills that he or she considers important, but it only focuses on the identification of actual undertaken actions and behaviors. Furthermore, conducted researches on competencies, often do not consider organizational elements that may provide important contextual explanation to the results of the analysis. These last limits have been, however, surpassed in this research, by employing a grounded approach to analysis, thus using a constant comparative method, moving iteratively between codes and text to derive themes related to the organizational context under investigation and the perceptions of informants on its current and future transformations, in the attempt to provide an explanation on why some competencies are considered more critical than others, hence enriching the results of the analysis.

The next section of this research aims to apply a top down approach to the identification of competencies, thus, opposite to the one just applied, by deriving a model from the study of the theory and of the organization's strategy, and by validating it through a survey research querying employees on the perceived importance of those theoretically derived competencies that are considered critical to meet the strategic objectives of the organization.

4.2 Analysis in the quantitative strand

The traditional top down approach to competency modeling has its roots in a rational objective approach that interprets competencies as constituted by a particular set of attributes, such as knowledge and abilities, that are needed to conduct a specific activity. In this approach, a competence is a phenomenon based on some attributes that are independent from a specific context, thus employable in different work activities.

This method implies an *a priori* identification of the nature, dimensions, and expected levels of a competence, by conceptualizing competence as an analytical construct characterized by different elements and dimensions that can be detected, measures and standardized. However, implying that a competence can be defined *a priori* does not mean that it can manifest independently from the single individual, on the contrary, only his actions can prove the possess of the specific competence.

An adaptation of the rational objective approach is proposed by Prahalad and Hamel (1990), and later further developed by different authors. The main purpose of this method was to connect individual competencies to the strategic objectives of an organization, thus, still conserving the idea of an a priori identification and reification of competences but recognizing the need to efficiently align them with the specific organization, as extensively argumented in Chapter 2.

In this section, I develop a competency model where competencies are related to the strategic objectives of the organization under investigation. Thus, starting from the analysis of the vision, mission and the publicly identified strategic and organizational objectives of the organization under investigation, I was able to derive a common set of competences, employing a multiple job approach to competency modeling (Mansfield, 1996).

Moreover, the employed approach has been adapted in order to represent future oriented competences, thus not rooted on the past experiences, but on present and future previsions. In this sense, the derivation from the strategy that is, by definition, oriented toward the long term, somehow guarantees the meeting of this objective; furthermore, the subsequent validation procedure of the model will be structured accordingly, thus, maintaining the model's orientation, as it will be argumented in the next sections.

More specifically, the Integrated Plan 2017-2019 of Sapienza, University of Rome, lists the operational objectives derived from the strategic plan 2018, comprehending the objectives of the general manager and of each area of the central headquarter, and the general objectives of transparency, prevention from corruption and improved overall quality.

The mentioned document explicates the cascading of the objectives that, starting from the identification of the missions and programs of the university, identifies the objectives and the strategic activities, and proceeds with the identification of the operational objectives accompanied by performance indicators and targets, both for the academic area and for the administration and management, library, and technical, technical scientific and data processing areas. Parallelly, it highlights the cascading of responsibilities.

The statute states that the governance defines the management objectives to the general management and that the general manager defines consequently the objectives for each area of the headquarters. The same process is followed through

each faculty and department, where the responsibility is delegated to deans and department's directors.

The strategic operations and the related performance indicators are then connected to each objective.

The prior strategic objectives of the organization are identified in: 1) support to students; 2) scientific research; 3) internationalization; 4) property building and renovation. These strategic objectives, together with the organization's values, mission and vision, can be reconfigured in the light of the specific need of identification of competencies for non-academic employees, hence, excluding from the analysis the objectives related to the academic staff and those objectives that configures as irrelevant for the administration and management, library and technical, technical scientific and data processing professional areas.

From the analysis conducted on the performance plan 2018 and the strategic plan 2016-2020, it is possible to list the main strategic operations of this research's interest in: 1) support to teachings; 2) support and development of scientific research; 3) internationalization; 4) quality and sustainability of services and results; 5) transparency of the administrative procedures; 6) participation.

From these main objectives, core competencies having the characteristics of being transversal and strictly related to the organization's strategy, can be identified.

Different competences' libraries have been employed to this aim, such as traditional Spencer & Spencer (1993) and Boyatzis (1982) competencies' libraries, the library developed by the Onet* program of the United States Labor Department, together with previous researches on Italian public administration's competences (Cerase, 2003; Cerase, 2010; Pastorello, 2010), conveniently adapted to the scope of the research.

Obviously, when referred to specific structures, operating units or professional roles, competences should be adapted to their specific or individual objectives, but, in any case, common sets of competences figure as an important reference framework that enable to keep the strategic priorities highlighted, easily identifiable and that provide a tool to transversally organize different areas' competences.

The alignment of the competency model to the organization is a delicate operation, especially during the initial phase, thus when choosing the competencies from a specific competence library.

The first requisite for the adopted multiple job approach for designing the competence model (Mansfield, 1996), is that different models should be built based on a common set (McLagan, & Suhadolnik, 1989). In fact, this design permit to connect the specific individual to the professional position and to compare and evaluate different professional and to simultaneously emphasize the skills, knowledge and qualities that best describe the organization's vision, values and strategy. This approach to modeling usually comprehends from 20 to 40 competencies and from 5 to 15 behaviors that may prove each competency, however, behaviors will not be indicated in this section.

The competency model should enable customization because, even if a competence may be required for more than one professional role, it may be manifested in different behaviors. These differences may be expressed both between same professional categories and at different hierarchical levels.

Each competency model should define a set of levels for the competences, common to all the existing roles in order to permit comparison, identifying the level of importance in a specific professional role. Each level should follow a hierarchical structure so that each subsequent level indicates a higher level of possession of the specific competence.

Furthermore, the identification of technical and professional competences configures as a particularly difficult, but still very important, phase of the process and, for their definition a mixed approach is usually suggested (Campion *et al.*, 2011).

Technical and professional competences might be derived from the key activities and processes related to different professional roles, or by conducting interviews with managers or with human resources management staff, with the aim to define a minimum set of technical and professional competences that are considered critical in selecting a new employees for a specific professional role, together with the behaviors related to those technical and professional competences. Moreover, at least three levels of proficiency should be determined.

In this research, however, I chose to employ an existing competency library for the definition of technical and professional competences, created by an inter-university consortium operating in the national research, teaching and academic field (CINECA), that is employed in other public Italian universities as well.

An attempt to use this library to map the existing competencies, moreover, was conducted by the research team and it configures as the actual main reference framework for the human resources management. Hence, this library is considered as the most fitting in order to integrate the common set of competencies with

technical and professional competencies appearing more critical, using the results of the following validating procedure as indicators of its fit.
In fact, to validate this top down derived model, different approaches are possible, generally implying the collection of different data from the organization, aiming to improve the fit of the model in the organization and thus making its implementation more effective.

In order to validate the model, a survey research has been conducted, structured in different phases: 1) the first section collected professional data from the respondents, such as professional position, workplace (distinguished between faculty, department and central headquarters), professional area (technical, technical scientific and data processing, administration and management or library); 2) the second section aimed at quantifying the perceived importance of the expected competences extrapolated from the strategic organizational objectives and the library of technical and professional competencies previously mentioned, thus, each respondent was queried to assign a value of perceived importance on an equally distant six-point scale from "0" to "5" (from "not important" to "extremely important") to each competence of the model.

4.2.1 The survey research method

The common set of core competences and the integrated technical and professional competences derived from the competence library developed by CINECA, have been submitted to 125 subjects, whose professional roles were identified in a previous section of the questionnaire. Informants were asked to attribute a value of perceived importance to each competence, on a six-point scale, evaluating its ability to impact on the attainment of their professional objectives. During the data collection, it was often stressed that it was not necessary to indicate the level that informants believed to possess of each competence, but what level they thought it should be possessed to effectively operate in their specific professional position, considering current and future changes in their job, as well.
Even though some misunderstandings relatively to the aim of the questionnaire are still possible, results are considered as sufficiently reliable.
The analytical phase was focused on two main aspects: 1) to explore each item identifying the competences perceived as generally more relevant; 2) to describe the emerging differences in the attributed relevance level between different professional roles, aiming to identify the items characterizing specific professional positions.

4.2.2 Testing the common set of competences

This section aims to address **RQ2:** *What are the core competencies shared by the non-academic job positions?*

The common set of core competences that has been derived by the strategic objectives of the organization, as previously illustrated, has been validated through a survey research querying employees to determine the perceived level of importance of the identified competences in their job.

The following tables have been organized in different categories of competences (knowledge, skills and traits) and show the mean values of the ratings. A distinction has been made between managers and staff of different professional categories, aiming to highlight possible significant differences.

To distinguish managers and staff, it has been considered both the level category of the job qualification ("b", "c", "d", "ep"), the related level of responsibility in terms of performance, conducted activities and human resources management. Results of this distinction are showed in table 4.18.

	Managers	**n.**	**Staff**	**n.**
Administration and Accounting	Administration manager	9	Administrative staff	31
	Students' office head	1	Students' office staff	10
Support to teachings	Faculty office manager	3	Faculty office staff	4
	Teachings' administration manager		Teachings' administration referent	6
			Teachings' administration staff	13
Library management	Library head	5	Library staff	10
Laboratory management	Laboratory head	7	Laboratory staff	6
I.C.T.			I.C.T. referent	8
			Web master	1
Support to research			Research referent	8

Table 4.18. Respondents' responsibility and autonomy level division. Own elaboration.

After the collection of the data, items have been properly reduced from 292 to 235, excluding competence showing no variation from the rating "0". Of these items, 42 were part of the common set originated from the analysis of internal strategic documents, while 193 were technical and professional competencies derived from the CINECA's library. This section will only focus on describing results referred to the common set of competences, while the following paragraph will focus on technical and professional competencies characterizing specific professional roles.

Tables 4.19, 4.20, and 4.21 show results of the analysis, in terms of means of the rating scales. The first columns provide results derived from the total sample and the distinction of the results between responsibility and autonomy roles, while the

following columns provide an overview on the means of the attributed scales for each professional role, distinguishing between managers and staff roles.

4.2.2.1 Generic Knowledge

The knowledge of G.D.P.R. and transparency measures appears as the most important competence of the common set, followed by the knowledge of administrative procedures, and security regulations (Table 4.19).

These data can be read as an important signal of change, indicating that knowledge that typically characterizes a bureaucratic organization (knowledge of organizational charts, internal regulations and guidelines, and administrative procedures) is starting to integrate with new regulations that are currently affecting the internal processes and the related activities of the public administration.

Managers seem to attribute higher values than staff to each knowledge, which seems coherent with their professional role's higher responsibility level.

4.2.2.2 Generic Skills

Clear frameworks emerge from the detected generic skills: it seems that a priority is attributed to an achievement orientation characterized by skills such as deadline compliance, emergencies management, accuracy and problem solving (Table 4.20). Communication and teamwork skills appear to follow in priority. Digital competences and English knowledge related skills seems to be commonly perceived as critical characteristics as well.

All these skills indicate an attitude toward innovation, or an aspiration to pursue it.

Managers tend to attribute consistent higher values to skills, even if the emerging hierarchical level of importance seems equally perceived by both managers and staff, thus, regardless of the responsibility and autonomy level, except in the case of library management professional category where this discrepancy is less evident.

In general, the skills depicted in the common set seems to be coherent with the perceptions, experiences and orientation of the employees.

4.2.2.3 Traits

The attributed level of importance to traits appear in line with previous results.

An orientation toward achievement and innovation of services, procedures and processes seems to be particularly favored.

Priority is, in fact, attributed to the attitude to improve processes, services and themselves through lifelong learning, followed by the attitude of achievement orientation and attention to detail (Table 4.21).

Managers, in the case of traits as well, attribute constantly higher values to traits than staff, except in the case of library management professional category.

4.2.2.4 General considerations

From the detected values, it seems that the identified common set of competences effectively reflects the perceptions, experiences and expectations of the non-academic employees. A changing working context seem to emerge from the data, where employees appear to perceive flexibility, proficiency and an orientation toward achievements and success as desirable competences to face the ongoing transformations.

Professional area	**Total sample**			**Administration and management**				**Library**		**Mixed**		**Technical, technical scientific, data processing**	
Professional Category	All professional categories			Administration and accountability		Support to teachings		Library management		I.C.T.	Support to research	Laboratory management	
Responsibility and autonomy level	M	S	Tot.	M	S	M	S	M	S	S	S	M	S
Knowledge of the G.D.P.R. and transparency measures	4,4	3,9	**4,0**	4,2	3,7	4,0	4,1	4,4	4,5	4,7	3,3	3,5	4,6
Knowledge of administrative procedures	4,5	3,7	**3,8**	4,3	3,7	4,2	3,9	4,6	4,4	3,3	4,4	2,3	3,0
Knowldege of security regulations	3,8	3,6	**3,6**	3,7	3,3	2,7	2,9	4,6	4,3	3,1	2,9	3,7	3,3
Knowledge of organizational charts, procedures and internal regulations	4,2	3,3	**3,5**	3,7	3,3	4,5	3,4	4,0	4,3	3,3	3,3	3,0	2,6
Knowledge of internal regulations and guidelines	3,9	3,3	**3,4**	3,5	3,3	3,5	3,1	4,2	4,7	2,9	2,6	3,7	2,7
Knowledge of quality protocols	4,0	3,1	**3,3**	3,5	3,0	4,3	3,1	3,8	4,4	2,8	3,6	3,2	2,4
Knowledge of teachings regulations and legislation	3,7	3,0	**3,1**	3,1	3,0	4,3	4,2	3,4	3,4	1,6	2,4	2,3	1,9
Knowledge of English	4,0	2,7	**2,9**	4,7	2,8	3,5	2,4	4	2,2	3	3,5	3,4	1,2
Knowledge of teachings' administrative procedures, politics and guidelines	3,2	2,8	**2,8**	2,2	2,6	4,3	4,4	3,4	2,7	1,4	2,5	1,8	1,7
Knowledge on administrative legislation and regulation referred to research	3,7	2,5	**2,7**	3,9	2,5	2,8	2,3	3,6	3,4	1,2	4,9	2,5	1,9
Knowledge of research's procedures, politics and guidelines	3,2	2,5	**2,6**	3,2	2,5	2,3	2,1	3,6	3,4	1,7	5,0	1,8	2,1

* M = Managerial level S = staff level

Table 4.19. Results of the analysis on rates of attributed importance for expected competences (mean values): generic knowledge. Own elaboration.

Professional area	**Total sample**			**Administration and management**				**Library**		**Mixed**		**Technical, technical scientific, data processing**	
Professional Category	All professional categories			Administration and accountability		Support to teachings		Library management		I.C.T.	Support to research	Laboratory management	
Responsibility and autonomy level	M	S	Tot.	M	S	M	S	M	S	S	S	M	S
Deadlines compliance	4,9	4,1	**4,2**	4,5	3,6	4,5	4,6	5,0	5,0	3,8	5,0	3,5	3,7
Emergencies management	4,9	4,0	**4,1**	4,7	3,7	5,0	4,0	4,8	4,9	4,6	4,4	3,3	3,6
Accuracy	4,8	3,9	**4,1**	4,4	3,7	4,8	4,1	4,6	4,9	3,9	4,8	3,3	3,6
Written and oral communication	4,1	4,0	**4,1**	3,4	3,8	4,5	4,3	4,6	5,0	4,2	4,0	4,0	3,4
Problem solving	4,7	3,9	**4,0**	4,1	3,3	5,0	4,4	4,8	5,0	4,1	4,4	3,2	4,3
Ability of organization and coordination of activities	4,7	3,9	**4,0**	4,4	3,6	4,7	4,3	4,6	4,8	3,7	4,1	3,7	3,1
Digital literacy	4,0	4,0	**4,0**	3,7	3,8	4,2	3,7	4,8	4,8	4,8	4,5	3,3	3,7
Ability to organize and manage information promptly to ensure correct communication	4,7	3,9	**4,0**	4,2	3,5	4,7	4,4	4,8	4,9	4,3	4,4	3,2	2,7
Ability to effectively present and explain concepts	4,5	3,8	**3,9**	3,9	3,5	4,7	4,1	4,8	4,7	3,4	4,4	4,0	3,1
Administrative databases, softwares and computer systems proficiency in use	4,1	3,8	**3,9**	3,5	3,4	4,5	4,2	4,4	5,0	4,2	4,1	2,3	4,3
Web communication	4,1	3,8	**3,9**	3,5	3,4	4,5	4,3	5,0	4,5	3,8	4,4	3,3	3,1
Teamwork	4,5	3,7	**3,8**	3,8	3,4	4,7	4,1	4,8	4,9	3,8	4,0	3,0	3,4
Active participation to activities	4,5	3,7	**3,8**	3,8	3,3	4,7	4,1	4,8	4,9	4,0	4,1	3,8	2,3
Relational competencies	4,7	3,6	**3,8**	4,1	3,4	4,8	4,0	4,8	4,9	3,6	4,3	3,2	2,6
Reading and writing formal English documents	4,3	3,5	**3,7**	4,3	3,5	4,3	3,2	4,6	4,2	3,9	4,4	3,2	2,6
Motivational competencies	4,4	3,5	**3,6**	3,7	3,2	4,5	3,7	5,0	4,7	4,0	3,9	3,2	2,4
Analytical and synthetical thinking	4,3	3,5	**3,6**	3,9	3,1	4,0	3,6	4,6	4,9	3,7	4,3	3,3	2,6
Stress and uncertainty management	4,2	3,4	**3,5**	3,5	3,3	4,3	3,3	5,0	4,6	2,9	4,0	3,5	3,1
Workload management	4,5	3,2	**3,4**	4,2	3,4	4,0	2,8	5,0	4,9	3,1	3,0	2,0	2,6
Management of administrative documents in English language	4,0	3,2	**3,3**	3,4	2,9	4,2	3,2	4,6	3,6	3,9	4,5	2,8	2,1
Research databases, softwares and computer systems' proficient use	3,6	2,9	**3,0**	3,7	2,3	2,3	2,1	4,2	4,7	3,1	5,0	2,7	4,0

* M = Managerial level S = staff level

Table 4.20. Results of the analysis on rates of attributed importance for expected competences (mean values): generic skills. Own elaboration.

Professional area	*Total sample*			*Administration and management*				*Library*		*Mixed*		*Technical, technical scientific, data processing*	
Professional Category	All professional categories			Administration and accountability		Support to teachings		Library management		I.C.T.	Support to research	Laboratory management	
Responsibility and autonomy level	M	S	Tot.	M	S	M	S	M	S	S	S	M	S
Services and process improvement orientation	4,7	4,0	**4,1**	4,1	3,8	4,8	4,3	5,0	5,0	4,1	3,6	3,8	3,3
Orientation toward lifelong learning	4,2	3,9	**4,0**	3,6	3,6	4,5	4,3	4,4	5,0	3,4	4,5	4,3	3,3
Achievement orientation	4,7	3,8	**4,0**	4,4	3,5	4,5	4,0	4,8	5,0	3,9	4,3	3,3	3,7
Attention to detail	4,5	3,8	**4,0**	4,2	3,5	4,3	3,9	4,6	4,9	4,6	4,3	3,2	3,6
Flexibility	4,7	3,8	**3,9**	4,7	3,4	4,5	4,1	4,6	4,3	3,6	4,1	4,2	3,4
Autonomy	4,5	3,8	**3,9**	4,2	3,4	4,7	4,0	4,2	4,9	3,9	4,0	4,2	3,1
Service orientation	4,3	3,8	**3,8**	3,4	3,7	4,7	4,4	5,0	4,8	3,9	2,6	3,8	2,4
Innovativeness	4,3	3,6	**3,7**	3,5	3,4	4,3	4,0	5,0	4,3	3,6	3,8	3,5	3,4
Initiative	4,0	3,5	**3,6**	3,5	3,2	4,2	3,9	4,4	4,8	3,3	3,6	3,3	3,4
Leadership	4,6	3,0	**3,3**	4,2	2,9	4,7	3,3	4,6	4,2	2,6	3,0	2,8	2,7
Excellence orientation	3,5	3,1	**3,2**	2,4	2,7	4,5	3,7	4,0	4,1	3,6	3,1	2,8	2,9

* M = Managerial level S = staff level

Table 4.21. Results of the analysis on rates of attributed importance for expected competences (mean values): traits. Own elaboration.

4.2.3 Identifying technical and professional competences

This section aims to address **RQ3**: *How do different professional roles differ in terms of competencies for non-academic employees in a public university?*

With this aim, technical and professional competencies characterizing different professional roles have been identified, analyzed and described.

Data were analyzed using the computer software package Statistical Package for Social Scientists (SPSS). Different tests were performed, mainly with descriptive aims and for comparison of means where the 193 technical and professional competences were used as dependent variables, while the independent variable was the professional role.

The main purpose of the conducted analysis, however, had a secondary role compared to the analysis of descriptive measures, considered more explicative given the scope of the quantitative strands, where tests of statistical significance have been considered as approximations merely aiding the interpretation of the results.

This orientation, moreover, is in line with the suggested methodological approach to the validation of competences, employed, as well, in other studies on public administration employees' competencies (Cerase, 2002).

The following tables will illustrate results arising from the analysis organized as illustrated in table 3.3.

From a general overview, it appears that the English knowledge is often attributed with high values of importance, thus confirming the results of the previous section as well.

Afterwards, students' reception and foreign students' reception are the competences most commonly indicated as highly important, except for laboratory head and staff and research and I.C.T. referents, who attributed lower rates of importance.

Students' civil registry and study courses accreditation competences are commonly highly rated by administration and managements' area employees. Other competences do not show significantly similar mean values.

If we move to the analysis of single professional roles, it is possible to employ a similar structure than the one used in the qualitative strand, allowing a subsequent easier merging as well. Thus, following an alphabetical order, results from the survey, in terms of mean value, will be illustrated. Only competences having a mean value higher than 1 ("slightly important") will be considered relevant and be showed in the next tables.

4.2.3.1 Administration and management professional area

Significant similarities can be found in administration and management professional area. The knowledge of English and students' reception have a significant primary importance in all the embedded professional categories. Support to teachings' activities (study course accreditation, educational offer, teachings' regulation, foreign students' reception, etc.), showed higher importance rates for all the categories, highlighting a general preponderant orientation toward support to teachings' activities for administrative employees as well. Disability services have been often highlighted as important, probably aiming to stress a need for an improvement of the services. The next sections illustrate the composition of each professional role competency model, distributed according to the level of perceived importance.

4.2.3.1.1 Administration and accounting

The administration manager seems to be the most demanding role in terms of expected competences. A clear orientation toward accounting activities is perceived, together with the need for juridical and administrative knowledge of the different administrative procedures. Human resources' management also has an important role, especially in terms of required administrative activities and performance assessment.

Administrative staff presents generally lower attributed levels of importance to competences and their activity seems mostly oriented toward operational support to administrative and accounting procedures, in support of daily activities.

Students' office activities are highly oriented toward administrative support to students, especially relatively to exams and teachings. Different languages are indicated as important, primarily English, probably related to the conducted front office activities and students' daily assistance. Disability services have been indicated as highly important, testifying a particular attention toward this theme, or highlighting a particularly felt need to improve those services in the future.

The next tables list the technical and professional competencies' mean values, distinguished for each professional role.

Administration manager	*Level*
Budget	*4,8*
English	*4,7*
Funding	*4,6*
M.I.U.R.' financial reporting	*4,3*
Missions and advances	*4,2*
Tax obligations	*4,2*
Balance sheet	*3,9*
Cashflows	*3,8*

Contracts	*3,8*
Financial statement	*3,7*
Research grants	*3,4*
U-GOV compensations and missions	*3,3*
Performance audit	*3,3*
Processes' mapping	*3,1*
Performances' review	*3,1*
International research projects	*3,0*
National research projects	*3,0*
European research projects	*3,0*
U-GOV projects	*2,8*
Digital and paper cataloguing	*2,7*
Movable and immovable property inventory	*2,7*
Spin off	*2,6*
Workloads analysis	*2,4*
Fund raising	*2,4*
Insolvency proceedings	*2,3*
Supply	*2,2*
Cultural agreements	*2,2*
International relations	*2,0*
Competency mapping	*2,0*
Movable assets	*1,9*
National and international Interuniversity agreements	*1,7*
Fiscal assistance for employees	*1,7*
UGOV human resources	*1,7*
Unmovable assets inventory	*1,7*
E-procurement	*1,7*
Presence/absence	*1,7*
Professional consulting	*1,7*
International research programs setting	*1,6*
Presence stance	*1,6*
Masters	*1,4*
TAB employee's career	*1,4*
Regulation activity	*1,4*
Partnership framework program	*1,4*
Integrating contracts	*1,3*
Guest lecturers	*1,2*
Disciplinary proceedings	*1,2*
INAIL obligations	*1,2*
Warranties	*1,2*
Patents	*1,2*
Courses and seminars organization	*1,1*
UGOV training	*1,1*
Direct dialing of lecturers	*1,1*
Social report	*1,1*
Tenure positions funding agreements	*1,1*
AVA	*1,0*
Lecturers career	*1,0*
Individual/collective performance assessment	*1,0*
Academic appointments	*1,0*
Obligations related to the financial and juridical state of ordinary, associate professors and researchers	*1,0*

Table 4.22. Mean values of attributed importance for expected technical and professional competences of administration manager. Own elaboration.

Administrative staff	*Level*
U-GOV compensations and missions	*2,9*

English	*2,6*
Missions and advances	*2,6*
Tax obligations	*2,6*
Funding	*2,4*
Performance audit	*2,4*
Budget	*2,3*
Balance sheet	*2,2*
M.I.U.R.' financial reporting	*2,2*
Cashflows	*2,2*
Financial statement	*2,2*
Fiscal assistance for employees	*1,9*
Insolvency proceedings	*1,2*
Supply	*1,1*
Contracts	*1,1*
Digital and paper cataloguing	*1,0*
Ph.D.	*1,0*

Table 4.23. Mean values of attributed importance for expected technical and professional competences of administrative staff. Own elaboration.

Students' office head	*Level*
English	*5,0*
Students' reception	*5,0*
Study courses' accreditation	*5,0*
Front-Office	*5,0*
AVA	*5,0*
Disabilities services	*4,0*
National and international Interuniversity agreements	*4,0*
Foreign certification control	*4,0*

Table 4.24. Mean values of attributed importance for expected technical and professional competences of students' office head. Own elaboration.

Students' office staff	*Level*
Students' career	*3,7*
Students' reception	*3,6*
ISEE Control	*3,6*
Foreign students' reception	*3,5*
English	*3,3*
Educational offer	*3,2*
Students' civil registry	*2,7*
Teachings' regulations	*2,5*
Athenaeum teachings' regulation	*2,4*
Disabilities services	*2,3*
Spanish	*2,3*
Students' mobility	*1,9*
Foreign study titles control	*1,9*
Study courses accreditation	*1,8*
Scholarship awards	*1,8*
Stages	*1,8*
Exams for prisoners	*1,7*
Erasmus	*1,4*
Masters	*1,3*
Advanced training courses	*1,3*
Setting and unsetting of courses/schools	*1,3*

International relations	*1,3*
Chinese	*1,3*
Erasmus Staff Mobility	*1,1*
Security in workplaces	*1,0*
Arabic	*1,0*

Table 4.25. Mean values of attributed importance for expected technical and professional competences of students' office staff. Own elaboration.

4.2.3.1.2 Support to teachings

Roles of this category are, not surprisingly, characterized by prevalently teachings' support oriented activities. The knowledge of English is usually rated as important together with a sensibility toward disabilities services.

The faculty office manager appears as a role characterized by activities of integration, comprehending both administrative activities supporting teachings and institutional activities. Moreover, the faculty manager seems to assist the faculty's administration manager in human resources management, indicating many typical administrative activities in this area (fiscal assistance for employees, processes' mapping, competency mapping), hence emerging as a particularly polyvalent and critical figure. Digital and institutional communication also revealed to be particularly important competences, together with English knowledge.

Faculty office staff appears more oriented toward students' supporting activities, with generally lower values of importance attributed to competences, mostly referred to administrative or institutional practices. In this case, as well, English has been attributed with highest levels of importance.

The teachings' administration manager figures as the main expert on teachings' activity, reporting the highest expected levels of competences for all the core activities and processes related to teachings.

The teachings' administration referent shows very similar values than the manager, even if at generally lower levels, except for the competence of students' reception, which presents a higher mean value, probably indicating an activity more focused on direct interactions with students.

This attitude toward serving students is even more evident for the teachings' administration staff. These last three roles clearly highlight a hierarchy in the distribution of the competences in terms of level of expected proficiency at different responsibility levels.

The next tables list the technical and professional competencies' mean values distinguished for each professional role.

Faculty office manager	*Level*

Fiscal assistance for employees	*4,6*
Courses and seminars organization	*4,6*
Digital communication	*4,1*
Collective bodies secretariat	*4,1*
Processes' mapping	*3,7*
Competency mapping	*3,7*
Individual/collective performance assessment	*3,7*
Institutional communication	*3,7*
Election procedures	*3,7*
Direction secretary	*3,7*
English	*3,2*
Press release	*3,1*
Digital and paper cataloguing	*2,8*
Workloads analysis	*2,8*
UGOV human resources	*2,8*
Regulation activity	*2,8*
Integrating contracts	*2,8*
Guest lecturers	*2,8*
UGOV training	*2,8*
Lecturers career	*2,8*
Performance assessment	*2,8*
Events' organization	*2,8*
Students' reception	*2,8*
Foreign students' reception	*2,8*
Front-Office	*2,8*
UGOV assessment	*2,8*
Performances' review	*2,3*
Presence stance	*2,3*
Students' mobility	*2,3*
Orientation and placement	*2,3*
U-GOV projects	*2,2*
Insolvency proceedings	*2,2*
TAB employees' career	*2,2*
Academic appointments	*2,2*
VQR	*2,2*
Study courses accreditation	*2,2*
Athenaeum teachings' regulation	*2,2*
Media relationship	*2,2*
Disciplinary proceedings	*1,9*
Scholarship awards	*1,9*
Master	*1,8*
Obligations related to the financial and juridical state of ordinary, associate professors and researchers	*1,8*
Educational offer	*1,8*
Ph.D. management	*1,8*
INPS insurance	*1,8*
Internal commissions' audit	*1,8*
Setting and unsetting od structures	*1,8*
Pensions	*1,8*
Employees mobility	*1,8*
Teachings' regulations	*1,8*
Advanced training courses	*1,8*
Erasmus	*1,8*
Research grants	*1,3*
Direct dialing of lecturers	*1,3*
AVA	*1,3*
Students' civil registry	*1,3*
Students' career	*1,3*
Disabilities services	*1,3*

Setting and unsetting of courses/schools	*1,3*
Stages	*1,3*
Specialization schools setting and unsetting	*1,3*
ISEE control	*1,3*
ISO certificate	*1,3*
Retirement	*1,3*
Career design	*1,3*
Personnel presence/absence	*1,0*

Table 4.26. Mean values of attributed importance for expected technical and professional competences of faculty office manager. Own elaboration.

Faculty Office staff	*Level*
Students' reception	*4,8*
English	*4,5*
Teachings' regulations	*2,8*
Collective bodies secretariat	*2,5*
Processes' mapping	*2,5*
Electing procedures	*2,5*
Direction secretary	*2,5*
Digital and paper cataloguing	*2,5*
Foreign students' reception	*2,5*
Performances' review	*2,5*
Disciplinary proceedings	*2,5*
Employees mobility	*2,5*
Presence stance	*2,0*
Scholarship awards	*2,0*
Educational offer	*1,5*
Fiscal assistance for employees	*1,3*
Regulation activity	*1,3*
Guest lecturers	*1,3*
Students' mobility	*1,3*
Masters	*1,3*
Advanced training courses	*1,3*
Students' civil registry	*1,3*
International relations	*1,3*
National and international Interuniversity agreements	*1,3*
Erasmus Staff Mobility	*1,3*
Internal legal consultancy	*1,3*
Supply	*1,3*
International research programs setting	*1,3*
Spanish	*1,3*
Athenaeum teachings' regulation	*1,0*
Ph.D. management	*1,0*
French	*1,0*
German	*1,0*

Table 4.27. Mean values of attributed importance for expected technical and professional competences of faculty office staff. Own elaboration.

Teachings' administration manager	*Level*
Orientation and placement	*5,0*
Study courses accreditation	*5,0*
Athenaeum teachings' regulation	*5,0*
Educational offer	*5,0*
Teachings' regulations	*5,0*

AVA	*5,0*
Setting and unsetting of courses/schools	*5,0*
Students' civil registry	*4,7*
Students' career	*4,7*
Disabilities services	*4,7*
ISO certificate	*4,7*
Students' reception	*4,3*
Foreign students' reception	*4,3*
Erasmus	*4,3*
Students' mobility	*4,0*
Master	*4,0*
Scholarship awards	*3,7*
Specialization schools setting and unsetting	*3,7*
Exams for prisoners	*3,7*
Digital communication	*3,3*
English	*3,3*
Advanced training courses	*3,3*
Stages	*3,3*
Events' organization	*3,0*
Ph.D. management	*3,0*
Institutional communication	*2,7*
ISEE control	*2,7*
Foreign students' titles control	*2,3*
Press release	*2,0*
Integrating contracts	*1,7*
Front-Office	*1,7*
International relations	*1,7*
National and international Interuniversity agreements	*1,7*
Erasmus Staff Mobility	*1,7*
State exams	*1,7*
Supply	*1,7*
International research programs setting	*1,7*
Media relationship	*1,3*
Lecturers career	*1,0*

Table 4.28. Mean values of attributed importance for expected technical and professional competences of teachings' administration manager. Own elaboration.

Teachings' administration referent	*Level*
Study courses accreditation	*5,0*
Athenaeum teachings' regulation	*5,0*
Educational offer	*5,0*
Teachings' regulations	*5,0*
Students' reception	*4,8*
AVA	*4,6*
Students' career	*4,2*
Setting and unsetting of courses/schools	*4,0*
Orientation and placement	*3,8*
Foreign students' reception	*3,4*
Scholarship awards	*3,2*
Students' mobility	*3,0*
Students' civil registry	*3,0*
Advanced training courses	*2,8*
Stages	*2,6*
Specialization schools setting and unsetting	*2,6*

Masters	*2,4*
Ph.D. management	*2,2*
Erasmus	*2,2*
State exams	*1,8*
Foreign study title control	*1,6*
Integrating contracts	*1,0*
Guest lecturers	*1,0*
Disabilities services	*1,0*
ISO certificate	*1,0*
Exams for prisoners	*1,0*
Labor unions relations	*1,0*

Table 4.29. Mean values of attributed importance for expected technical and professional competences of the teachings' administration referent. Own elaboration.

Teachings' administration staff	*Level*
Students' reception	*4,8*
Educational offer	*4,6*
Teachings' regulations	*4,5*
Foreign students' reception	*4,2*
Study courses accreditation	*4,1*
Setting and unsetting of courses/schools	*2,9*
Athenaeum teachings' regulation	*2,8*
Master	*2,8*
Students' civil registry	*2,7*
Orientation and placement	*2,5*
Advanced training courses	*2,5*
Students' career	*2,4*
Stages	*2,4*
Scholarship awards	*2,3*
Students' mobility	*2,2*
English	*2,2*
Disabilities services	*2,2*
AVA	*1,9*
Specialization schools setting and unsetting	*1,9*
Exams for prisoners	*1,9*
Ph.D. management	*1,8*
Erasmus	*1,3*
Digital communication	*1,2*
Front-Office	*1,2*
State exams	*1,1*
Supply	*1,1*
Spanish	*1,1*

Table 4.30. Mean values of attributed importance for expected technical and professional competences of the teachings' administration staff. Own elaboration.

4.2.3.2 Library professional area

Library management roles are, as predictable, prevalently focused on activities related to the management of library resources, comprehending the management of administrative procedures such as those related to loans, purchases, and inventory, and activities related to supporting research. The employment of digital tools such as softwares, websites or databases seems generally perceived as a critical

competence, more important than front office activity, which is, however, showing medium rates of importance.

Generally higher levels of competences seem to be expected from the library head, who appears to have a role more oriented toward decision making and management of the activities, while library staff shows a particular attitude toward providing operational support to the library's activities. The knowledge of different languages in addition to English, also appears as desirable competences for this professional category.

The next tables list the technical and professional competencies' mean values distinguished for each professional role.

Library head	*Level*
Loans and purchases management and cataloguing	*5,0*
Interlibrary loans management and document provision	*5,0*
Cataloguing, classification and cataloguing by subject	*4,8*
Management, update and maintenance of digital catalogue	*4,8*
Reference service	*4,8*
Reading room management	*4,8*
Quality of produced data monitoring	*4,8*
Purchases programs and choice of material	*4,8*
Series management	*4,6*
Monographs and special material purchase	*4,6*
Storage	*4,2*
English	*4,0*
Training in the use of the library and bibliography search	*3,8*
Offered service monitoring (data collection, evaluation by indicators and reporting)	*3,6*
Collections review	*3,4*
Digitalization planning	*3,4*
Students' reception	*3,0*
Foreign students' reception	*3,0*
Digital communication	*3,0*
Front-Office	*3,0*
Erasmus Staff Mobility	*3,0*
Supply	*3,0*
VQR	*3,0*
Spanish	*3,0*
Students' civil registry	*2,0*
Institutional communication	*2,0*
International relations	*2,0*
National and international Interuniversity agreements	*2,0*
International research programs setting	*2,0*
Chinese	*2,0*
French	*2,0*
Events' organization	*1,8*
Lecturers career	*1,8*
Performance assessment	*1,8*
Workloads analysis	*1,8*
Movable and immovable property inventory	*1,6*
German	*1,6*
Disabilities services	*1,0*
Scholarship awards	*1,0*
Press release	*1,0*
Media relationship	*1,0*

Statistics	*1,0*
Digital and paper cataloguing	*1,0*
UGOV human resources	*1,0*
INPS insurance	*1,0*
Employees mobility	*1,0*
INAIL obligations	*1,0*
Movable assets	*1,0*
Sponsorships	*1,0*
Merchandising	*1,0*
Russian	*1,0*
Arabic	*1,0*

Table 4.31. Mean values of attributed importance for expected technical and professional competences of library head. Own elaboration.

Library staff	*Level*
Loans and purchases management and cataloguing	*5,0*
Interlibrary loans management and document provision	*5,0*
Management, update and maintenance of digital catalogue	*5,0*
Training in the use of the library and bibliography search	*5,0*
Cataloguing, classification and cataloguing by subject	*4,9*
Storage	*4,8*
Reference service	*4,5*
Series management	*4,5*
Collections review	*4,2*
Offered service monitoring (data collection, evaluation by indicators and reporting)	*3,2*
Reading room management	*3,1*
Quality of produced data monitoring	*2,9*
Monographs and special material purchase	*2,9*
Digitalization planning	*2,7*
Purchases programs and choice of material	*2,5*
Front-Office	*2,3*
English	*2,2*
Lecturers career	*1,8*
Performance assessment	*1,8*
Workloads analysis	*1,6*
Students' reception	*1,5*
Foreign students' reception	*1,5*
TAB employees' career	*1,5*
French	*1,4*
Events' organization	*1,4*
Integrating contracts	*1,4*
Digital communication	*1,3*
Spanish	*1,3*
Media relationship	*1,3*
Insolvency proceedings	*1,3*
Processes' mapping	*1,2*
Competency mapping	*1,2*
Guest lecturers	*1,2*
Students' civil registry	*1,1*
VQR	*1,0*
UGOV evaluation	*1,0*

Table 4.32. Mean values of attributed importance for expected technical and professional competences of library staff. Own elaboration.

4.2.3.3 Mixed professional area

4.2.3.3.1 I.C.T.

The I.C.T. category presented very unusual competence models. In facts, no digital competences have been traced in the analysis, except generic ones as digital communication and digital and paper cataloguing. The reason for this gap can be reconducted to the fact that the employed library does not contain specific I.C.T. technical and professional knowledges.

This is a very important gap, which, according to the author, highlights a critical weakness of the top down approach to competency modeling.

However, this gap was signaled during the data collection by the I.C.T. personnel and laboratory employees, who were, thus, asked to write down a list of specific digital competences that they thought to be important to effectively do their job and to attribute a level of importance to them. In other words, I.C.T. personnel were asked to integrate the library with the missing expected competences and to rate them.

The additionally gathered information have then been used in the integration phase of this mixed method research, in order to attribute a numerical value to the identified digital competences in the final interpretative model.

This gap provides interesting insights that will be further argumented in the last chapters of this thesis.

The next tables list the technical and professional competencies' mean values distinguished for each professional role.

I.C.T. referent	*Level*
English	*2,8*
Digital communication	*2,5*
Institutional communication	*1,9*
Regulation activity	*1,8*
Insolvency proceedings	*1,8*
Courses and seminars organization	*1,6*
Events' organization	*1,5*
Collective bodies secretariat	*1,3*
Direction secretary	*1,3*
UGOV training	*1,3*
Supply	*1,1*
VQR	*1,1*
International relations	*1,1*
National and international Interuniversity agreements	*1,1*
Chinese	*1,1*
French	*1,1*
Arabic	*1,1*
Missions and advances	*1,1*
Digital and paper cataloguing	*1,0*
Masters	*1,0*

Table 4.33. Mean values of attributed importance for expected technical and professional competences of I.C.T. referent. Own elaboration.

Webmaster	*Level*
English	*5,0*
Students' reception	*5,0*
Foreign students' reception	*5,0*
Digital communication	*5,0*
Students' civil registry	*5,0*
Institutional communication	*5,0*
Events' organization	*5,0*
Workloads analysis	*5,0*
Press release	*5,0*
Merchandising	*5,0*
Courses and seminars organization	*5,0*
Competency mapping	*5,0*
TAB employees' career	*5,0*
Civil service	*5,0*
Security measures	*5,0*
Press services	*5,0*

Table 4.34. Mean values of attributed importance for expected technical and professional competences of the webmaster. Own elaboration.

4.2.3.3.2 Support to research

The research referent is a professional role strongly oriented toward fund raising activities related to research. Thus, an expertise on administrative procedures related to international and national research projects is mandatory, together with accounting competences, needed to support academics in drafting projects and take advantage of funding opportunities. English knowledge, especially for international projects, figures as a critical competence to effectively support research activities.

Research referent	*Level*
International research projects	*5,0*
Partnership framework program	*5,0*
National research projects	*4,9*
European research projects	*4,8*
U-GOV projects	*4,5*
VQR	*4,0*
Fund raising	*4,0*
Spin off	*3,8*
English	*3,5*
Consortium	*3,4*
International research programs setting	*3,1*
Brokering on technological transfer	*3,1*
M.I.U.R.' financial reporting	*3,1*
INAIL obligations	*3,0*
National and international Interuniversity agreements	*2,9*
U-GOV compensations and missions	*2,9*
Funding	*2,5*
International relations	*2,4*
Performance audit	*2,3*
Budget	*2,1*
Missions and advances	*2,1*
Erasmus Staff Mobility	*2,0*
Supply	*2,0*
Balance sheet	*2,0*

Financial statement	*2,0*
Cashflows	*1,9*
Tax obligations	*1,8*
Unmovable assets inventory	*1,0*

Table 4.35. Mean values of attributed importance for expected technical and professional competences of the research referent. Own elaboration.

4.2.3.4 Technical, technical scientific and data processing area

Laboratory management category, similarly to the I.C.T. category, does not seem to present particularly characterizing competences, aside from security measures application, maintenance and care for the laboratory equipment and students' training to the use of the equipment. This may probably be related to some gaps in the top down definition of the competences. However, as in the case of the I.C.T. category, laboratory employees have been asked to write down the additional competences that they thought to be most relevant in their job, and to rate their importance on a scale from 0 to 5.

The emerging competencies were mostly related to I.C.T. area's activities, highlighting their criticality and an important limit of the top down approach to competency modeling, as already mentioned.

Laboratory head	*Level*
English	*3,4*
Masters	*1,4*
Advanced training courses	*1,4*
Ph.D. management	*1,4*
Security measures	*1,4*
Press services	*1,4*
Students' exercises	*1,3*

Table 4.36. Mean values of attributed importance for expected technical and professional competences of the laboratory head. Own elaboration.

Laboratory staff	*Level*
Digital communication	*1,7*
Internal emergency squads	*1,7*
Equipment testing	*1,5*
English	*1,2*

Table 4.37. Mean values of attributed importance for expected technical and professional competences of the laboratory staff. Own elaboration.

4.2.3.5 Limits and implications of the analysis in the quantitative strand

The employed multiple job approach (Mansfield, 1996) offers different advantages, providing a shared conceptual framework and at the same time the possibility to customize the single professional roles.

This type of approach is considered as the best method since it enables comparison of competency models for different professional profiles, thus, making human resource management practices easier. It is, in fact, commonly considered as the best approach in cases where, as in the case of this research, in the same organization coexist numerous and different organizational positions and professional roles.

Moreover, organizations are increasingly recurring to teamwork, thus highlighting the need to recur to a method able to identify the related set of skills and traits, hence considering both technical and transversal characteristics.

However, the implementation of this approach showed some limits, for which the approval and the support of the top management and the human resources is considered a mandatory requirement for success. In fact, critical difficulties can be encountered especially in the communication and the integration phases of the model in the organization, due to its general complexity. An influent intermediary is, hence, considered a critical actor to effectively support the implementation of the model (Campion *et al.*, 2011).

An additional limit, emerged from the analysis, is the failure that pre-determined competence libraries may cause in grasping a critical organizational change, and the related core competences. This gap may lead to disastrous consequences, especially if these elements have not been previously addressed through strategic objectives.

More specifically, it appears that the adopted library presented a misidentification or underestimation of advanced digital competences.

In fact, while in the qualitative analysis digitalization appeared, without any doubt, a critical organizational feature, in the analysis of the strategy, it appeared more as an instrumental tool, making the author question herself if it would configure an underestimation of a critical organizational element.

Moreover, employing the competence dictionary actually in use in the organization, important gaps in the identification of the digital core competences were detected, leading to a misrepresentation of the core competences of professional figures such as the I.C.T. referent, the webmaster and the laboratory management area's staff. The lack of technical and professional competences referred to I.C.T. may lead to critical consequences for the organization, which would find itself uncapable to appropriately address potentially disruptive changes.

However, these gaps could be easily be avoided by moving from rigid approaches to competency modeling and adopting mixed methods, thus integrating top down and bottom up approaches to competency modeling, which appear, according to the author, the most comprehensive and correct way to design competency models strongly related to strategy and, at the same time, sensible to employees' opinions,

organizational changes and characteristics of the organization. Thus mixed methods would help in developing the organizational core competence of flexibility and the ability to promptly adapt to changes. Finally, competency models should be often updated, in order to be performing and coherent with the organizational culture and transformations, otherwise they could lead to a critical detachment between the strategy and organization.

Finally, the employed sample present an obvious limit in referral to the generalization of the results. However, representativity is not an objective of this research, which adopts a mixed approach, with preponderant qualitative features, where the main aim is not to generalize the results, but to reach a solution to a problem, synthetized by the research questions, suitable with a specific context and in the present time.

CHAPTER.5 INTERPRETATION

Overview

This chapter presents an accurate description of the procedures observed during the integration of the results from the qualitative and quantitative strands in a unique dataset. Thus, the merged data analysis strategy is explained, proving indications on the adopted procedures, the main criticalities arising during the process of merging and how these criticalities have been confronted. Afterward, results arising from the analysis of the merged data set, aiming to explore how the core competencies of non-academic staff jointly and comparatively configure, are presented. An interpretative model is finally proposed, structured in order to directly address the last two research questions.

5.1 The integration of the strands

The interpretative model developed in this chapter is intended to explain how competencies of technical, administrative and library's employees may best support them in reaching their professional objectives.

Until this point, coherently with a convergent design of the research, qualitative and quantitative data have been collected concurrently and they have been analyzed separately employing the most suited analytical approaches aiming to answer the common research questions.

In the next section, a specification will be presented in referral to the dimensions by which the results from the two databases have been compared and indications have been provided on how the information will be compared according to those dimensions.

Afterward, the interpretation of the combined results will be presented, coherently with the mixed method questions.

Thus, to provide a summative and concise representation of the model, the next sections are organized as following: 1) the first section aims to highlight the main differences and points of convergence that the two employed methods reported and the adopted data analysis approach; 2) the second section presents the emerged interpretative model, derived from the analysis of the mixed results of the quantitative and the qualitative strand, thus providing a final answer to the main research question.

5.2 The merged data analysis strategy

This section will address **RQ4**: *To what extent do the qualitative and quantitative results converge?*

The first dimension to address is terminology. Competencies and competences often employed equal terms, thus making it easier to merge the database. On the other hand, some terms were similar but different, thus, decisions have been taken on which definition would prevail, thus involving a procedure of consolidation of the data. This consolidation, when occurring, has been subjected to careful consideration and the employment of the organization-specific language has generally been favored (Campion *et al.*, 2011).

Hence, a standardization procedure has been conducted, by merging duplicates, and consolidating similar terms from the different strands into one, until a comprehensive dataset was created. Specific contributions of each strands have been recognized in, for the qualitative strand, behaviors and in depth definitions and, for the quantitative strand, in expected levels of importance.

Hence, data have been reduced by summarizing qualitative data and quantitative results, consolidated and compared from different sources.

Obviously, the emerging model does not hold performance assessment, because quantitative levels only show the perceived priority of each competency, that should afterward be integrated with coherent measurement models, if desired.

The identification of the most fitting measurements for the identified competencies, in fact, is not an objective of this research, which has the main purpose to explore and describe emerging core competencies of the organization under investigation. Thus, levels attributed to the competencies should not be considered as reference for assessment but as levels of importance.

Behaviors, on the other hand, are effective indicators of the level of a specific competence. As already argumented, however, it is not possible to list all the behaviors demonstrating a competency, but it is possible to identify one or more competencies from specific behaviors. Nevertheless, examples of behaviors may be provided to help recognize a specific level of competency.

Qualitative findings showed the tendency to explain quantitative results, thus confirming the ability of the mixed methods approach to bring greater insight into the study that would be obtained by either type of data separately.

Results of the interpretation phase have been organized in tables with the purpose of providing a visual support and a more comprehensive understanding of the results of the research, as it will be illustrated in the next section.

5.3 The interpretative competency model

This final paragraph aims to address **RQ5**: *How may an interpretative competency framework better be configured to describe and explain the emerged critical competencies for non-academic employees?*

With this aim, the next tables have been organized presenting a competency model designed following a multiple job approach (Mansfield, 1996), where the merged qualitative and quantitative data are represented together.

The emerging common set of competencies is convergently illustrated and analyzed. Afterward, information on the professional role will be presented. Conflicting results, differences or similarities were highlighted and interpreted.

Methods to identify and interpret differences and to manage inconsistencies did not follow a fixed and rigid logic: either congruent and discrepant elements, conflicts that could be made sense of, and contradictions were considered in the analysis.

5.3.1 The common set of the interpretative competency model

During the merging process, it appeared clear how the data arising from the qualitative strand functioned as explanatory of the data from the quantitative strand.

In fact, the qualitative strand analysis provided critical contextual features and main recurring themes that effectively explained specific combination of the quantitative data.

Thus, the most reasonable approach to merging has been considered the one that interpreted the competences emerging from the quantitative dataset as sub competences of a larger category of competencies, that clearly arose during the qualitative analysis of the data.

Following this approach, a comprehensive model has been created structured as follows: 1) core competencies were defined as larger categories of competencies; 2) a definition of the core competencies was provided, proficiently matching the one arising during the qualitative analysis; 3) competences validated during the quantitative analysis have been listed inside the fitting category of core competencies, together with their characteristic (generic knowledge, skills and traits)

and with the level of attributed importance arising during the analysis of the quantitative strand.

The only competence from the quantitative strand to be elected as core competency is the leadership. In fact, during the qualitative strand analysis, leadership appeared as a typical competency only for higher responsibility roles, thus it was interpreted as a specific characteristic of a professional role and not as a common one. However, a definition from the qualitative strand's data could be easily extrapolated from the data and added in the interpretative model.

The next table summarizes the results of the analysis of the mixed dataset.

Core competency	Description	Charact.	Sub competencies	Level
English Knowledge	*It indicates proficiency in the knowledge of the language, the ability to use it and select its most appropriate use in different situations at work. It implies motivation to improve his or her own level and share its knowledge with others. It manifests in the ability to write, to read and to communicate using the language at different levels of complexity*	*Skills*	*Reading and writing formal English documents*	*3,7*
		Skills	*Management of administrative documents in English language*	*3,3*
		Generic knowledge	*English Knowledge*	*2,9*
Knowledge on legislation and Institutions	*It indicates knowledge of laws, regulations, guidelines and their updates, referred to public administration, and impacting to the conducted activities. It can be referred to as bureaucratic knowledge and is strongly related to an attitude toward lifelong learning, thus to autonomous and constant update and to organizational awareness. It can be enhanced by an efficient information system.*	*Generic knowledge*	*Knowledge of the G.D.P.R. and transparency measures*	*4,0*
		Generic knowledge	*Knowledge of administrative procedures*	*3,8*
		Generic knowledge	*Knowledge of security regulations*	*3,6*
		Generic knowledge	*Knowledge of quality protocols*	*3,3*
		Generic knowledge	*Knowledge of teachings regulations and legislation*	*3,1*
		Generic knowledge	*Knowledge of teachings' administrative procedures, politics and guidelines*	*2,8*
		Generic knowledge	*Knowledge on administrative legislation and regulation referred to research*	*2,7*
		Generic knowledge	*Knowledge of research's procedures, politics and guidelines*	*2,6*
Digital competencies	*It indicates a demonstrated ability to use digital tools for information, communication and problem-solving. It underlies a basic digital literacy level, but it needs to be considered comparatively to the usage of specific softwares and digital tools, critical in the working context, and at different levels of proficiency, according to the specific professional role's requirements.*	*Skills*	*Digital literacy*	*4,0*
		Skills	*Administrative databases, softwares and computer systems proficiency in use*	*3,9*
		Skills	*Web communication*	*3,9*
		Skills	*Research databases, softwares and computer systems proficient use*	*3,0*
Development of others	*It indicates a particular modality in employing own persuasion and influence skills, aimed at teaching, or help colleagues in acquiring knowledge, competence or reach objectives. For managers, it is not measurable by the quantity of training courses that employees are permitted to attend, but it figures as a daily and genuine activity. It is strictly related to emotional intelligence, leadership, teamwork and cooperation competencies.*	*Skills*	*Motivational competencies*	*3,6*
Internal relationship building	*It indicates the ability to create and maintain courteous relationships with colleagues who are or may be instrumental to reach his or her own professional objectives. This competence appears particularly critical to overcome failures in the information or coordination system. It comprehends the ability to build networks, develop work and personal contacts, and establish sturdy relationships. It is critical for every professional position, but particularly for managers.*	*Skills*	*Ability of organization and coordination of activities*	*4,0*
Organizational awareness	*It indicates the ability to understand and use at his or her own advantage, the organizational culture and policy. It comprehends the knowledge of the organizational model, his or her professional role's characteristics*	*Generic Knowledge*	*Knowledge of organizational charts, procedures and internal regulations*	*3,5*
		Generic Knowledge	*Knowledge of internal regulations and guidelines*	*3,4*

	and objectives, his or her superiors' role and professional objectives and possible referents for solving different issues. This competence is parallel to emotional intelligence, but it focuses on the organization and not on people.			
Problem solving	*It indicates the ability to figure out a solution method for reaching a specific objective, when such method is not obvious, hence, representing and solving problems in different areas. It usually is revisable in the following, evident or implicit, reasoning and decisional phases: problem identification, goal definition, solution evaluation, evaluation of alternatives and selection of an optimal solution.*	*Skills*	*Emergencies management*	*4,1*
		Skills	*Problem solving*	*4,0*
		Skills	*Analytical and synthetical thinking*	*3,6*
Team working and cooperation	*It indicates the desire to work cooperatively with others, to be part of a group. It implicates the ability to mitigate or solve conflicts, motivate and encourage others, recognize others' merits. It is strictly related to the ability to motivate others and to be able to effectively communicate and share useful information.*	*Skills*	*Teamwork*	*3,8*
		Traits	*Active participation to activities*	*3,8*
Written and oral communication	*Oral communication indicates the ability to develop, organize, and present a persuasive speech. Written communication indicates the ability to write clearly and succinctly and to properly adapt the writing style to a variety of situations. These competencies underline a mastery in the knowledge of the national language, the ability to effectively persuade and appropriately motivate his or her own decision through speech or writing.*	*Skills*	*Written and oral communication*	*4,1*
		Skills	*Ability to organize and manage information promptly to ensure correct communication*	*4,0*
		Skills	*Ability to effectively present and explain concepts*	*3,9*
Achievement orientation	*It indicates the personal interest to work well and to compare with optimal objective or subjective standards. It is strongly related to an orientation toward efficiency and optimization, lifelong learning, entrepreneurship, and deadline compliance.*	*Traits*	*Deadlines compliance*	*4,2*
		Skills	*Accuracy*	*4,1*
		Traits	*Achievement orientation*	*4,0*
		Traits	*Attention to detail*	*4,0*
		Traits	*Excellence orientation*	*3,2*
Attitude toward lifelong learning	*It indicates the ability to constantly and increasingly learn during the life cycle, by organizing his or her own way to learn even through an effective time and information management, both individually and collectively. This key competence is strongly connected to individual characteristics of persistence and resilience.*	*Traits*	*Orientation toward lifelong learning*	*4,0*
Autonomy	*It indicates the experience of a sense of volition and psychological freedom. According to the self-determination theory (Deci, & Ryan,2000; Vansteenkiste, Ryan, & Deci, 2008) it is a psychological need that needs to be satisfied for individuals to flourish. In this context, it is interpreted as the availability to manage independently ordinary job tasks, to express opinions and implement possible improvements or solutions in the working context. It is strictly related to the attitude toward innovation, to problem solving and to the ability to take the initiative.*	*Traits*	*Autonomy*	*3,9*
Emotional Intelligence	*It indicates the desire to understand others. It comprehends the ability to listen carefully, to understand and correctly answer to desires, feelings and concerns, even when they are not explicit. It means to be open minded*	*Skills*	*Relational competencies*	*3,8*

	and sensible to individuals, groups, and diversity. It is strictly related to empathy, listening ability, and intuition.			
Flexibility and adaptation to changes	*It indicates the ability and will to adapt and work efficiently in different situations, people and groups. It implies to be open minded, to be able to change opinions, and to adapt and accept changes in the organization or in the entrusted tasks.*	*Skills*	*Flexibility*	*3,9*
		Skills	*Stress and uncertainty management*	*3,5*
		Skills	*Workload management*	*3,4*
Innovativeness	*It indicates an attitude to go beyond the conventional, a willingness to take risks and try different solutions. It involves questioning the status quo as well as generating and implementing creative solutions and novel ways to achieve professional objectives. It is strongly related to the ability to take initiative, to flexibility and to problem solving.*	*Traits*	*Innovativeness*	*3,7*
Initiative ability	*It indicates an inclination to act. It implies doing more than the task requires, and to strive to upgrade or perfect his or her professional outcomes. It means to be proactive, future oriented, and resolute.*	*Traits*	*Initiative*	*3,6*
Organizational Commitment	*It indicates the ability and will to align its own behaviors to the needs, priorities and objectives of the organization. It is usually recognizable in a pronounced attitude toward teamworking, participation and achievement orientation.*	*Traits*	*Services and process improvement orientation*	*4,1*
Service orientation	*It indicates the desire to help or serve others and to satisfy their needs, by focusing his or her energy to understand and satisfy the users' needs. It implies emotional intelligence and it is strictly connected to persuasion, influence skills and to organizational commitment.*	*Traits*	*Service orientation*	*3,8*
Leadership	*It indicates an orientation to assume the role of a leader in a group, the desire to guide and motivate others. It is usually related to formally recognized higher responsibility roles, but it may emerge during teamwork as well. Leadership implies responsibility, autonomy, motivational and relational competencies. Good leadership usually involves emotional intelligence as well.*	*Traits*	*Leadership*	*3,3*

Table 5.1. Interpretative model's common set of competencies. Own elaboration

5.3.2 Technical and professional competencies of the interpretative competency model

In this section, comparison of the qualitative and quantitative data has been conducted at a professional role level.

Thus, the following paragraphs will show the emerged technical and professional competences characterizing the non-academic professional figures. Traits and generic skills have not been considered in the analysis, together with competencies already comprehended in the common set, except from the English knowledge.

The decision to not exclude the knowledge of English from the analysis is related to the evidence that it was often indicated in relation to specific technical and professional competencies, thus they have been considered in the analysis with the aim to provide a complete overview of the results, even if this may cause repetition.

A criticality was detected relatively to the possible identification of specific sub competences in more than one core competence. Careful consideration has been taken in this respect, evaluating the prevalent composition of each sub competence.

In any case, the following tables should not be read as rigid divisions of competences, but as indications of the prevalent feature constituting a specific sub competence, which does not exclude other components.

5.3.2.1 Administration and management professional area

5.3.2.1.1 Administration and accounting

Knowledge on regulations on transparency, knowledge and application of security measures and knowledge of the G.D.P.R. were not considered in the analysis, because already represented in the common set of competencies.

While the quantitative data from the professional roles of the administration manager and administrative staff tended to easily fit in the categories identified by the qualitative data, student office staff and head professional roles reported some incongruences.

In fact, the student office's head did not indicate as important any activity related to human resources management, that is, however, evidently an important activity, given the responsibility level of this figure and the conducted actions of organization of subordinates' activities. However, this conflicting result may be related to the scarce number of respondents having this qualification, who may simply attribute

low importance to coordination activities, despite the fact that past behaviors clearly highlight their importance.

Moreover, Students' office staff, despite during the interviews many witnessed an important change in the modalities of communication with students, today conducted mostly online, did not attribute significatively high values to digital communication. However, considering that they indicated generally high rates of importance to digital literacy in the common set, this may indicate that not advanced levels of digital competences are required to effectively conduct this specific job, despite the important impact that digitalization had in this area.

Administration manager

Competence category	*Core competency*	*Sub competencies*	*Level*
Technical and professional knowledge	*Juridical, administrative and accountability knowledge*	*M.I.U.R.' financial reporting*	*4,3*
		Regulation activity	*1,4*
		AVA	*1,0*
	Knowledge of foreign languages	*English*	*4,7*
		International relations	*2,0*
Technical and professional competencies	*Accountability proficiency*	*Budget*	*4,8*
		Funding	*4,6*
		Tax obligations	*4,2*
		Balance sheet	*3,9*
		Cashflows	*3,8*
		Performance audit	*3,3*
		Insolvency proceedings	*2,3*
		INAIL obligations	*1,2*
		Warranties	*1,2*
	Administrative procedures and control of the correctness of the administrative procedures	*Missions and advances*	*4,2*
		Research grants	*3,4*
		International research projects	*3,0*
		National research projects	*3,0*
		European research projects	*3,0*
		Spin off	*2,6*
		International research programs setting	*1,6*
		Patents	*1,2*
		Courses and seminars organization	*1,1*
	Assets and liabilities	*Movable and unmovable property inventory*	*2,7*
		Supply	*2,2*
		Movable assets	*1,9*
		Unmovable assets inventory	*1,7*
	Auditing basics	*Financial statement*	*3,7*
		Social report	*1,1*
	Commercial contracts	*Fund raising*	*2,4*
		Professional consulting	*1,7*
	Digital competence on management softwares	*U-GOV compensations and missions*	*3,3*
		UGOV human resources	*1,7*
		U-GOV projects	*2,8*
		UGOV training	*1,1*
		Digital and paper cataloguing	*2,7*
		E-procurement	*1,7*
	Human resources management	*Processes' mapping*	*3,1*

		Performances' review	*3,1*
		Workloads analysis	*2,4*
		Competency mapping	*2,0*
		Fiscal assistance for employees	*1,7*
		Presence/absence	*1,7*
		Presence stance	*1,6*
		TAB employee's career	*1,4*
		Masters	*1,4*
		Disciplinary proceedings	*1,2*
		Guest lecturers	*1,2*
		Direct dialing of lecturers	*1,1*
		Lecturers career	*1,0*
		Individual/collective performance assessment	*1,0*
		Academic appointments	*1,0*
		Obligations related to the financial and juridical state of ordinary, associate professors and researchers	*1,0*
	Public contracts procedures' management	*Contracts*	*3,8*
		Cultural agreements	*2,2*
		National and international Interuniversity agreements	*1,7*
		Partnership framework program	*1,4*
		Integrating contracts	*1,3*
		Tenure positions funding agreements	*1,1*

Table 5.2. Interpretative model's technical and professional competencies of the administration manager. Own elaboration.

Administrative staff

Competence category	***Core competency***	***Sub competencies***	***Level***
Technical and professional knowledge	*Juridical and administrative knowledge*	*M.I.U.R.' financial reporting*	*2,2*
		Contracts	*1,1*
	Knowledge of foreign languages	*English*	*2,6*
Technical and professional competencies	*Accountability*	*Tax obligations*	*2,6*
		Performance audit	*2,4*
		Funding	*2,4*
		Budget	*2,3*
		Balance sheet	*2,2*
		Cashflows	*2,2*
		Financial statement	*2,2*
		Insolvency proceedings	*1,2*
		Supply	*1,1*
	Administrative procedures	*Missions and advances*	*2,6*
		Fiscal assistance for employees	*1,9*
	Administrative support to research, students and scholars	*Ph.D.*	*1,0*
	Cataloguing	*Digital and paper cataloguing*	*1,0*
	Digital competencies on management softwares	*U-GOV compensations and missions*	*2,9*

Table 5.3. Interpretative model's technical and professional competencies of the administrative staff. Own elaboration

Students' Office Head

Competence category	***Core competency***	***Sub competencies***	***Level***
Technical and	*Juridical and administrative knowledge*	*AVA*	*5,0*

professional knowledge	*Knowledge of foreign languages*	*English*	*5,0*
Technical and professional competencies	*Control of the correctness of the administrative procedures*	*Foreign certification control*	*4,0*
	Digital competence on management softwares	*National and international Interuniversity agreements*	*4,0*
	Support to students	*Students' reception*	*5,0*
		Front-Office	*5,0*
		Disabilities services	*4,0*
	Students' careers administrative procedures	*Study courses' accreditation*	*5,0*

Table 5.4. Interpretative model's technical and professional competencies of the students' office head. Own elaboration

Students' Office Staff			
Competence category	***Core competency***	***Sub competencies***	***Level***
Technical and professional knowledge	*Teachings' regulation knowledge*	*Educational offer*	*3,2*
		Teachings' regulations	*2,5*
		Athenaeum teachings' regulation	*2,4*
	Knowledge of foreign languages	*English*	*3,3*
		Spanish	*2,3*
		International relations	*1,3*
		Chinese	*1,3*
		Arabic	*1,0*
Technical and professional competencies	*Assistance and support to students*	*Students' reception*	*3,6*
		ISEE Control	*3,6*
		Foreign students' reception	*3,5*
		Disabilities services	*2,3*
	Security measures application	*Security in workplaces*	*1,0*
	Management and control of students' administrative practices	*Students' civil registry*	*2,7*
		Students' career	*3,7*
		Students' mobility	*1,9*
		Foreign study titles control	*1,9*
		Study courses accreditation	*1,8*
		Scholarship awards	*1,8*
		Stages	*1,8*
		Exams for prisoners	*1,7*
		Erasmus	*1,4*
		Masters	*1,3*
		Advanced training courses	*1,3*
		Setting and unsetting of courses/schools	*1,3*
		Erasmus Staff Mobility	*1,1*

Table 5.5. Interpretative model's technical and professional competencies of the students' office staff. Own elaboration.

5.3.2.1.2 Support to teachings

By unifying the data sets, the polyvalent function of the faculty office manager appears more evidently, characterized by a proficient knowledge of the organization and the bureaucracy underlying administrative and teaching practices. Its core activities also comprehend human resources' management, institutional communication and secretariat for the collective bodies. Faculty office staff, on the

other hand, appears to function as an administrative supporting staff for the faculty office manager, highlighting a polyvalent characteristic as well.

The main focus of the teachings' administration manager, referent, and staff is on study courses and teachings' programs, as predictable.

Knowledge of English and other languages appear particularly critical, given the prevalence of activities that these employees conduct, supporting students through the front office.

Institutional communication competences have emerged as particularly relevant for the teachings' administration manager, while, on the other hand, no competence related to human resources' management has been mentioned from this organizational position. This lack, however, may be related to the lamented shortage of subordinates from the teachings' administration manager.

Faculty Office Manager

Competence category	***Core competency***	***Sub competencies***	***Level***
Technical and professional knowledge	*Juridical and institutional procedures knowledge*	*Election procedures*	*3,7*
		Regulation activity	*2,8*
		VQR	*2,2*
		Setting and unsetting of structures	*1,8*
		AVA	*1,3*
	Knowledge of administrative procedures	*Insolvency proceedings*	*2,2*
		TAB employees' career	*2,2*
		Research grants	*1,3*
		ISEE control	*1,3*
		ISO certificate	*1,3*
	Knowledge of foreign languages	*English*	*3,2*
	Teachings regulations and quality protocols' knowledge	*Orientation and placement*	*2,3*
		Students' mobility	*2,3*
		Athenaeum teachings' regulation	*2,2*
		Study courses accreditation	*2,2*
		Scholarship awards	*1,9*
		Advanced training courses	*1,8*
		Educational offer	*1,8*
		Erasmus	*1,8*
		Internal commissions' audit	*1,8*
		Master	*1,8*
		Ph.D. management	*1,8*
		Teachings' regulations	*1,8*
		Setting and unsetting of courses/schools	*1,3*
		Specialization schools setting and unsetting	*1,3*
		Stages	*1,3*
		Students' career	*1,3*
		Students' civil registry	*1,3*
Technical and professional competencies	*Institutional communication*	*Digital communication*	*4,1*
		Institutional communication	*3,7*
		Press release	*3,1*
		Media relationship	*2,2*

		Direct dialing of lecturers	*1,3*
	Digital competencies on management softwares	*UGOV training*	*2,8*
		Digital and paper cataloguing	*2,8*
		UGOV human resources	*2,8*
		UGOV assessment	*2,8*
		U-GOV projects	*2,2*
	Assistance and support to students and scholars	*Guest lecturers*	*2,8*
		Foreign students' reception	*2,8*
		Front-Office	*2,8*
		Lecturers career	*2,8*
		Students' reception	*2,8*
		Academic appointments	*2,2*
		Obligations related to the financial and juridical state of ordinary, associate professors and researchers	*1,8*
		Disabilities services	*1,3*
	Human resources' management	*Fiscal assistance for employees*	*4,6*
		Competency mapping	*3,7*
		Individual/collective performance assessment	*3,7*
		Processes' mapping	*3,7*
		Performance assessment	*2,8*
		Workloads analysis	*2,8*
		Performances' review	*2,3*
		Presence stance	*2,3*
		Disciplinary proceedings	*1,9*
		INPS insurance	*1,8*
		Pensions	*1,8*
		Employees mobility	*1,8*
		Retirement	*1,3*
		Career design	*1,3*
		Personnel presence/absence	*1*
	Institutional documents' writing (resolutions, reports)	*Collective bodies secretariat*	*4,1*
		Direction secretary	*3,7*
		Integrating contracts	*2,8*
	Organization of events (conferences, seminars)	*Events' organization*	*2,8*
		Courses and seminars organization	*4,6*

Table 5.6. Interpretative model's technical and professional competencies of the faculty office manager. Own elaboration.

Faculty Office Staff

Competence category	***Core competency***	***Sub competencies***	***Level***
Technical and professional knowledge	*Juridical and political procedures knowledge*	*Electing procedures*	*2,5*
		Direction secretary	*2,5*
		Regulation activity	*1,3*
		Internal legal consultancy	*1,3*
	Knowledge of foreign languages	*English*	*4,5*
		Spanish	*1,3*
		French	*1,0*
		German	*1,0*
	Teachings regulations and quality protocols' knowledge	*Teachings' regulations*	*2,8*
		Scholarship awards	*2,0*
		Educational offer	*1,5*
		Students' mobility	*1,3*
		Masters	*1,3*
		Advanced training courses	*1,3*

		Students' civil registry	*1,3*
		International relations	*1,3*
		National and international Interuniversity agreements	*1,3*
		Erasmus Staff Mobility	*1,3*
		International research programs setting	*1,3*
		Athenaeum teachings' regulation	*1,0*
		Ph.D. management	*1,0*
	Knowledge of administrative and accounting procedures	*Processes' mapping*	*2,5*
		Performances' review	*2,5*
		Disciplinary proceedings	*2,5*
		Employees mobility	*2,5*
		Presence stance	*2,0*
		Fiscal assistance for employees	*1,3*
		Supply	*1,3*
Technical and professional competencies	*Assistance and support to students and scholars*	*Students' reception*	*4,8*
		Foreign students' reception	*2,5*
		Guest lecturers	*1,3*
	Digital competence on dedicated softwares	*Digital and paper cataloguing*	*2,5*
	Institutional documents' draft (Invitation to tender, resolutions, reports)	*Collective bodies secretariat*	*2,5*

Table 5.7. Interpretative model's technical and professional competencies of the faculty office staff. Own elaboration.

Teachings' administration Manager

Competence category	***Core competency***	***Sub competencies***	***Level***
Technical and professional knowledge	*Teachings regulations and quality protocols' knowledge*	*Athenaeum teachings' regulation*	*5,0*
		Teachings' regulations	*5,0*
		AVA	*5,0*
		ISO certificate	*4,7*
		National and international Interuniversity agreements	*1,7*
		International research programs setting	*1,7*
		Lecturers career	*1,0*
	Knowledge of foreign languages	*English*	*3,3*
Technical and professional competencies	*Assistance to students*	*Disabilities services*	*4,7*
		Students' reception	*4,3*
		Foreign students' reception	*4,3*
		Front-Office	*1,7*
	Coordination and monitoring of teachings' processes	*Orientation and placement*	*5,0*
		Setting and unsetting of courses/schools	*5,0*
		Erasmus	*4,3*
		Master	*4,0*
		Scholarship awards	*3,7*
		Specialization schools setting and unsetting	*3,7*
		Advanced training courses	*3,3*
		Stages	*3,3*
		Ph.D. management	*3,0*
		ISEE control	*2,7*
		Foreign students' titles control	*2,3*
		Erasmus Staff Mobility	*1,7*
		State exams	*1,7*
	Data entry procedures	*Students' civil registry*	*4,7*

		Students' career	*4,7*
	Digital competence on dedicated softwares	*Digital communication*	*3,3*
	Administrative practices	*Integrating contracts*	*1,7*
		Supply	*1,7*
	Training and teachings' programs design	*Study courses accreditation*	*5,0*
		Educational offer	*5,0*
		Students' mobility	*4,0*
		Exams for prisoners	*3,7*
	Institutional communication and events' organization	*Events' organization*	*3,0*
		Institutional communication	*2,7*
		Press release	*2,0*
		Media relationship	*1,3*
		International relations	*1,7*

Table 5.8. Interpretative model's technical and professional competencies of the teachings' administration manager. Own elaboration.

Teachings' administration referent

Competence category	***Core competency***	***Sub competencies***	***Level***
Technical and professional knowledge	*Teachings regulations and quality protocols' knowledge*	*Athenaeum teachings' regulation*	*5,0*
		Teachings' regulations	*5,0*
		AVA	*4,6*
		ISO certificate	*1,0*
Technical and professional competencies	*Assistance and support to students and scholars*	*Students' reception*	*4,8*
		Foreign students' reception	*3,4*
		Disabilities services	*1,0*
		Guest lecturers	*1,0*
	Management of study courses, Phd, masters, graduate schools, stages programs	*Study courses accreditation*	*5,0*
		Educational offer	*5,0*
		Students' career	*4,2*
		Setting and unsetting of courses/schools	*4,0*
		Orientation and placement	*3,8*
		Scholarship awards	*3,2*
		Students' mobility	*3,0*
		Students' civil registry	*3,0*
		Advanced training courses	*2,8*
		Stages	*2,6*
		Specialization schools setting and unsetting	*2,6*
		Masters	*2,4*
		Ph.D. management	*2,2*
		Erasmus	*2,2*
		State exams	*1,8*
		Foreign study title control	*1,6*
		Integrating contracts	*1,0*
		Exams for prisoners	*1,0*

Table 5.9. Interpretative model's technical and professional competencies of the teachings' administration referent. Own elaboration.

Teachings' administration staff

Competence category	***Core competency***	***Sub competencies***	***Level***
Technical and professional knowledge	*Knowledge of foreign languages*	*English*	*2,2*
		Spanish	*1,1*
	Teachings regulations and quality protocols' knowledge	*Educational offer*	*4,6*
		Teachings' regulations	*4,5*

		Athenaeum teachings' regulation	*2,8*
		AVA	*1,9*
Technical and professional competencies	*Assistance and support to students and scholars*	*Front-Office*	*1,2*
		Students' reception	*4,8*
		Foreign students' reception	*4,2*
		Orientation and placement	*2,5*
		Students' career	*2,4*
		Scholarship awards	*2,3*
		Students' mobility	*2,2*
		Disabilities services	*2,2*
	Assistance for the organization of lectures and exams and related administrative procedures	*Study courses accreditation*	*4,1*
		Setting and unsetting of courses/schools	*2,9*
		Master	*2,8*
		Students' civil registry	*2,7*
		Advanced training courses	*2,5*
		Stages	*2,4*
		Specialization schools setting and unsetting	*1,9*
		Exams for prisoners	*1,9*
		Ph.D. management	*1,8*
		Erasmus	*1,3*
		State exams	*1,1*
		Supply	*1,1*
	Digital communication	*Digital communication*	*1,2*

Table 5.10. Interpretative model's technical and professional competencies of the teachings' administration staff. Own elaboration.

5.3.2.2 Library professional area

The increasing impact of the digitalization of the services and the introduction of new technologies related to library resources' cataloguing, search, and sharing with the library's users, becomes more evident in the merged data set, were high values of importance are attributed to digital competences.

Moreover, high levels of importance seem to be attributed to activities supporting users, together with an advanced knowledge of English, and other foreign languages as well, at least at a basic level, in order to provide an efficient service to international students and to effectively manage library resources in different languages

Core activities are clearly related to the management of library resources, comprehending the management of administrative procedures such as those related to loans, purchases, and inventory, and activities related to supporting research.

Generally higher levels of competences seem to be expected from the library head, who appears to have a role more oriented toward decision making and management of the activities, while library staff seems more oriented toward providing operational support to the library's activities.

Library Head

Competence category	Core competency	Sub competencies	Level
Technical and professional knowledge	*Foreign languages knowledge*	*English*	*4,0*
		Spanish	*3,0*
		Chinese	*2,0*
		French	*2,0*
		German	*1,6*
		Russian	*1,0*
		Arabic	*1,0*
	Knowledge on study courses teachings	*Erasmus Staff Mobility*	*3,0*
		National and international Interuniversity agreements	*2,0*
Technical and professional competencies	*Assistance and support to students and scholars*	*Training in the use of the library and bibliography search*	*3,8*
		Students' reception	*3,0*
		Foreign students' reception	*3,0*
		Front-Office	*3,0*
		Students' civil registry	*2,0*
		Disabilities services	*1,0*
		Scholarship awards	*1,0*
	Administrative procedures related to libraries	*Loans and purchases management and cataloguing*	*5,0*
		Interlibrary loans management and document provision	*5,0*
		Monographs and special material purchase	*4,6*
		Purchases programs and choice of material	*4,8*
		Supply	*3,0*
		Sponsorships	*1,0*
		Merchandising	*1,0*
	Support to research	*Reference service*	*4,8*
		Quality of produced data monitoring	*4,8*
		VQR	*3,0*
		International research programs setting	*2,0*
		Lecturers career	*1,8*
	Cataloguing	*Cataloguing, classification and cataloguing by subject*	*4,8*
		Movable and immovable property inventory	*1,6*
		Movable assets	*1,0*
	Human resources management	*Performance assessment*	*1,8*
		Workloads analysis	*1,8*
		INPS insurance	*1,0*
		Employees mobility	*1,0*
		INAIL obligations	*1,0*
	Library services	*Offered service monitoring (data collection, evaluation by indicators and reporting)*	*3,6*
		Collections review	*3,4*
		Statistics	*1,0*
	Digital competencies on dedicated softwares	*Management, update and maintenance of digital catalogue*	*4,8*
		Digitalization planning	*3,4*
		Digital and paper cataloguing	*1,0*
		UGOV human resources	*1,0*
	Management of spaces and maintenance	*Reading room management*	*4,8*

		Storage	*4,2*
	Update and development of library collections	*Series management*	*4,6*
	Institutional communication and organization of events	*Digital communication*	*3,0*
		Institutional communication	*2,0*
		International relations	*2,0*
		Events' organization	*1,8*
		Press release	*1,0*
		Media relationship	*1,0*

Table 5.11. Interpretative model's technical and professional competencies of the library head. Own elaboration.

Library staff

Competence category	***Core competency***	***Sub competencies***	***Level***
Technical and professional knowledge	*Foreign languages knowledge*	*English*	*2,2*
		French	*1,4*
		Spanish	*1,3*
	Assistance and support to students and scholars	*Training in the use of the library and bibliography search*	*5,0*
		Front-Office	*2,3*
		Students' reception	*1,5*
		Foreign students' reception	*1,5*
		Guest lecturers	*1,2*
Technical and professional competencies	*Administrative procedures related to libraries*	*Loans and purchases management and cataloguing*	*5,0*
		Interlibrary loans management and document provision	*5,0*
		Monographs and special material purchase	*2,9*
		Purchases programs and choice of material	*2,5*
		Integrating contracts	*1,4*
		Insolvency proceedings	*1,3*
	Support to research	*Reference service*	*4,5*
		Quality of produced data monitoring	*2,9*
		Lecturers career	*1,8*
		VQR	*1,0*
	Cataloguing	*Cataloguing, classification and cataloguing by subject*	*4,9*
	Coworkers and students' registry maintenance	*Performance assessment*	*1,8*
		Workloads analysis	*1,6*
		TAB employees' career	*1,5*
		Processes' mapping	*1,2*
		Competency mapping	*1,2*
		Students' civil registry	*1,1*
	Library services	*Collections review*	*4,2*
		Offered service monitoring (data collection, evaluation by indicators and reporting)	*3,2*
	Digital competencies on dedicated softwares	*Management, update and maintenance of digital catalogue*	*5,0*
		Digitalization planning	*2,7*
		UGOV evaluation	*1,0*
	Management of spaces and maintenance	*Reading room management*	*3,1*
		Storage	*4,8*
	Update and development of library collections	*Series management*	*4,5*

	Institutional communication and organization of events	*Events' organization*	*1,4*
		Digital communication	*1,3*
		Media relationship	*1,3*

Table 5.12. Interpretative model's technical and professional competencies of the library staff. Own elaboration.

5.3.2.3 Mixed professional area

As previously argumented, the mixed organizational area was created in order to provide a clear identification of those professional roles and organizational positions whose informants resulted embedded in both the administration and management area and in the technical, technical, scientific and data processing area.

The analysis of this area presented many criticalities that need to be highlighted: firstly, while for the research referent's embeddedness in both areas may seem reasonable, for the I.C.T. referent and the webmaster, it would seem more appropriate to reconduct these position exclusively in the technical, technical scientific and data processing area; moreover, computer laboratory head and staff regularly emerged to possess remarkably similar competencies than the ones expected from the I.C.T. referents, strengthening the idea that an adaptation or integration of these roles at an organizational structure level should be considered.

Another criticality was detected in referral to the competency library adopted to identify technical and professional competencies of I.C.T. referents, webmasters, and laboratory head and staff: in fact, while competencies related to other professional roles seemed to be fitting, advanced or specialistic digital competences were not originally comprehended in the library, leading the researcher to query informants to manually add the expected digital competencies for their roles and rate them, thus conflicting with an original top down approach, that would, on the other hand, lead to an unfitting representation of these roles. Digitalization, in fact, seems to have been underestimated in public administrations and, even if the next tables aim to provide a reliable overview of the needed competencies, this subject should probably be object of an additional future investigation.

5.3.2.3.1 I.C.T.

The I.C.T. referent appears as an ambiguous role: it is often confused with the network referent, at the extent that these roles have been recently merged in the role of the I.C.T. referent; moreover, the I.C.T. referent usually manages the departments' websites, hence functioning as a webmaster as well. However, when the I.C.T. referent is not present, as in the case of faculties, there is usually an employee

responsible of managing the websites, explaining the distinction applied between these two roles in the analysis.

It is, however, the author's idea that careful thoughts should be taken on this role's configuration, considering an update of the existing professional categories and the introduction of a hierarchical structure, similarly to the one existing for the teachings' administration manager, referent and staff, which, furthermore, appears to be particularly effective in this organization.

Knowledge of digital systems and digital processes seem to be critical competencies for the I.C.T. referent and should be object of a constant and carefully planned training and update, in view of the continuous introduction of innovations and improvements in the I.C.T. field.

Cyber security appears also particularly important, especially in light of the recent introduction of new security measures, that are, moreover, strongly impacting on the whole organization.

Webmasters seem to differentiate from I.C.T. referents because they require less advanced and specialized competencies, and they seem to be more autonomous and independent figures.

Thus, competencies of the webmaster, seem more oriented toward ensuring a safe and correct web communication, even if advanced competencies such as coding, online programming, or S.E.O., may be also appropriate for this professional role.

I.C.T. referent

Competence category	*Core competency*	*Sub competencies*	*Level*
Technical and professional knowledge	*Computer engineering knowledge*	*Advanced Linux systems*	*3,3*
		Advanced windows systems	*3,3*
	Knowledge of digital security measures	*Cyber security*	*3,3*
	Knowledge of foreign languages	*English*	*2,8*
		Chinese	*1,1*
		French	*1,1*
		Arabic	*1,1*
Technical and professional competencies	*Institutional communication*	*Digital communication*	*2,5*
		Institutional communication	*1,9*
		International relations	*1,1*
	Assistance and support to scholars and personnel	*Regulation activity*	*1,8*
		Insolvency proceedings	*1,8*
		Courses and seminars organization	*1,6*
		Events' organization	*1,5*
		Collective bodies secretariat	*1,3*
		Direction secretary	*1,3*
		Supply	*1,1*
		VQR	*1,1*
		National and international Interuniversity agreements	*1,1*
		UGOV training	*1,3*

		Missions and advances	*1,1*
		Masters	*1,0*
	Digital tools maintenance and update	*Digital and paper cataloguing*	*1,0*
	Backup installation and scheduling	*Backups*	*1,7*
	Network system management	*Network protocols*	*3,3*
		Network attached storage	*1,7*
	Virtualization technology	*Servers and virtualization*	*1,7*

Table 5.13. Interpretative model's technical and professional competencies of the I.C.T. referent. Own elaboration.

Webmaster

Competence category	***Core competency***	***Sub competencies***	***Level***
Technical and professional knowledge	*Knowledge on foreign languages*	*English*	*5,0*
Technical and professional competencies	*Assistance and support to scholars and personnel*	*Students' reception*	*5,0*
		Foreign students' reception	*5,0*
		Students' civil registry	*5,0*
		Events' organization	*5,0*
		Workloads analysis	*5,0*
		Merchandising	*5,0*
		Courses and seminars organization	*5,0*
		Competency mapping	*5,0*
		TAB employees' career	*5,0*
		Civil service	*5,0*
	Web communication	*Digital communication*	*5,0*
		Institutional communication	*5,0*
		Press release	*5,0*
		Press services	*5,0*
	Web security management	*Security measures*	*5,0*

Table 5.14. Interpretative model's technical and professional competencies of the webmaster. Own elaboration.

5.3.2.3.2 Support to research

The research referent figures as an important role for both support and integration between researchers, Ph.D. students, scholars and the administrative staff, showing a pronounced orientation toward service and assistance of academic staff.

The figure of research referent support academics in exploring and extending their knowledge, also providing them with new job and research opportunities. To provide them with an effective support in finding calls or bans, in updating them on new granting opportunities in their scientific field and in administratively supporting them, by controlling and taking care of the practices needed to participate to calls and bans, it seems that a study title in their same field would be optimal, together with knowledge in accounting and competences in managing administrative practices.

An expertise on administrative procedures related to international and national research projects is a minimum requirement for this particular organizational position, together with accounting competences, needed to support academics in drafting projects and take advantage of funding opportunities. English knowledge, especially for international projects, figures as a particularly important competence to effectively support research activities.

Research referent

Competence category	***Core competence***	***Sub competencies***	***Level***
Technical and professional knowledge	*Knowledge of foreign languages*	*English*	*3,5*
		International relations	*2,4*
	Knowledge on administrative laws and regulation referred to research	*Fund raising*	*4,0*
		VQR	*4,0*
		Consortium	*3,4*
		M.I.U.R.' financial reporting	*3,1*
		Erasmus Staff Mobility	*2,0*
Technical and professional competencies	*Accountability*	*INAIL obligations*	*3,0*
		Budget	*2,1*
		Missions and advances	*2,1*
		Supply	*2,0*
		Balance sheet	*2,0*
		Financial statement	*2,0*
		Cashflows	*1,9*
		Tax obligations	*1,8*
		Unmovable assets inventory	*1,0*
		Performance audit	*2,3*
	Assistance and support to academics	*International research projects*	*5,0*
		Partnership framework program	*5,0*
		National research projects	*4,9*
		European research projects	*4,8*
		Spin off	*3,8*
		International research programs setting	*3,1*
		Brokering on technological transfer	*3,1*
		National and international Interuniversity agreements	*2,9*
	Digital competencies on dedicated softwares	*U-GOV projects*	*4,5*
		U-GOV compensations and missions	*2,9*

Table 5.15. Interpretative model's technical and professional competencies of the research referent. Own elaboration.

5.3.2.4 Laboratory professional area

Advanced digital competencies on systems and security measures seem to be critical in the laboratory management activity, together with the maintenance of laboratory's equipment and devices.

Additional competencies are related to the assistance provided to users during lectures, exams or exercises. Laboratory staff and head often train students on the correct use of the laboratory's equipment and the related security measures. Given this evidence, behavioral and relational competencies and the ability to clearly present and explain concepts are desirable in order to provide a quality service.

Virtualization seems to be a desirable technology, in fact, it was often indicated, both in the qualitative and in the quantitative strand, as a future critical requirement for laboratories, which asks for employees owning the suitable digital competences.

Laboratory Head

Competence category	***Core competence***	***Sub competencies***	***Level***
Technical and professional knowledge	*Computer engineering knowledge*	*Advanced Linux systems*	*3,75*
		Advanced windows systems	*3,75*
	Knowledge of foreign languages	*English*	*3,4*
	Knowledge on security measures	*Cyber security*	*2,5*
		Security measures	*1,4*
Technical and professional competencies	*Assistance and support to scholars and students*	*Masters*	*1,4*
		Advanced training courses	*1,4*
		Ph.D. management	*1,4*
		Students' exercises	*1,3*
		Press services	*1,4*
	Network system management	*Network protocols*	*5,0*
	Virtualization technology	*Servers and virtualization*	*2,5*

Table 5.16. Interpretative model's technical and professional competencies of the laboratory head. Own elaboration.

Laboratory staff

Competence category	Core competence	Sub competencies	Level
Technical and professional knowledge	*Computer engineering knowledge*	Advanced Linux systems	3,75
		Advanced windows systems	3,75
	Knowledge of foreign languages	*English*	*1,2*
	Knowledge on security measures	Cyber security	2,5
		Internal emergency squads	*1,7*
Technical and professional competencies	*Maintenance of equipment and devices*	*Equipment testing*	*1,5*
	Digital communication	*Digital communication*	*1,7*
	Network system management	Network protocols	5,0
	Virtualization technology	Servers and virtualization	2,5

Table 5.17. Interpretative model's technical and professional competencies of the laboratory staff. Own elaboration.

CHAPTER 6. DISCUSSION AND CONCLUSIONS

Overview

The chapter discusses the overall results, highlighting the contribution of both the qualitative and quantitative strand to the interpretation of the final model. Moreover, the limits of each strands will be discussed, together with the connections and contradiction between the model and the extant literature. The final part of this chapter will address the significance of the study, its implications, limitations and the related future research propositions.

6.1 Competency based approaches in the modern public organization

This doctoral thesis provides an overview on the state of the art on competency based management approaches in Italian public administrations and universities and, subsequently, it focuses the attention on competencies of public universities' non-academic employees, who are considered vital resources, supporting the university's core activities, but who are, on the other hand, rarely traceable in the literature, unlike their academic counterpart.

In the last decade, in fact, the literature on organizational studies has been deeply enriched with contributions strongly emphasizing the need for more flexible approaches to human resources, able not only to sustain, but to guide changes. This need led to the increasing adoption, from businesses, of competency based management approaches to human resources, in the belief that they would enable them to promptly respond to changes in the economy, in the society and in the technology.

These approaches are based on the belief that competitive success is achieved through people, hence they focus the organization's attention on peoples' competencies more than other traditional strategic sources of competitive advantage.

In the competency movement, the identification, training, empowerment and update of employees' competences are central activities; thus, it may be interpreted as an alternative approach contrasting the mainstream trend of organizations to recur to temporary help, part-time employees, and contract workers.

Competency based approaches to management have been prevalently adopted by private organizations and only in the last years have started to draw the attention of public administrations. In fact, there have been several pressures upon public organizations to review their traditional management approaches by adopting traditional market practices that are slowly changing the public administration internal assets. Public administration systems are, in fact, undergoing deep changes, striving to respond to the constantly mutating environment in which operate, leading

to what has been defined as the "New Public Management" approach (Horton *et al.*, 2002).

In this context, competency based approaches appear to be more commonly found in public administrations embedded in countries adherent to Anglo-Saxon traditions and language (Farnham, *et al.*, 1996; Farnham, & Horton, 2000), while in other European public administrations this approach did not appear to be particularly successful (Hondeghem, 2002): in fact, even though this approach seems to be greatly discussed, its practical implementation is rarely traceable (Skorkovà, 2016).

When we move our attention to the Italian context, these more general considerations are confirmed. In fact, moved by the increasingly changing demands for services from the community, Italian public administrations, as well, appear to be reconsidering the content and the structure of their activities, often detecting the necessity to identify the new abilities, skills, know-how and knowledge needed by their employees to effectively reach their objectives in a constantly changing economic and technological context.

These considerations are progressively leading them to experimenting the introduction of new management approaches in their organization, such as competency based approaches to human resources management. However, it appears that many difficulties are encountered in this regard because of occurring ruptures in the working processes, of overlaps between effective core competencies or established bureaucratic procedures, and of the discouragingly complicated process to undergo in order to identify competencies and to build competency models, furthermore aggravated by the need to build pragmatic and ad hoc competency frameworks for each organization, with few existing comparative reference frameworks (Campion *et al.*, 2011; Cerase, 2002).

Furthermore, focusing our attention on public universities, it is revisable how the application of market logics to public administrations affected their organization as well, moving them towards what is being defined as "entrepreneurial" universities (Gibbons *et al.*, 1994; Etzkowitz, 2003; Slaughter & Leslie, 1997; Sporn, 2001).

Approximately from 1996, in fact, many reforms impacted on the way Italian public universities are being run and new organizational forms are arising, coherently with the specific characteristics of the organization and its context (Kwiek & Maassen, 2012; de Boer & File, 2009; Clark, 2000); however, a common tendency seems to be the introduction of new professional figures aiming to support their government, to increase their efficiency and effectiveness, and the concurrent creation of

managerial infra-structures placed in parallel, or even replacing, traditional academic structures (Bleiklie, 2007).

Competency modeling in public universities is not easily traceable in the literature or in the practice, moreover, if we focus the attention on the Italian context, even if some important studies have been conducted on the introduction of competency models in public administrations (Cerase, 2002, 2003, 2010; Pastorello, 2010), scarce literature can be found on competency modeling in public universities, especially if not referred to lecturers and researchers' professions.

Thus, the aim of this doctoral thesis was to contribute to the existing gap in the literature, by exploring how non-academic employees' competencies configure to help them achieve the university's strategic objectives.

6.2 The overall results and implications of the research

Competency modeling does not follow rigid designs, because its setting strongly depends upon the embraced interpretation of competencies, that, as it was described in Chapter 2, is characterized by the existence of extremely divergent definitions and as much different approaches to their identification (Mansfield, 1996; McLagan, 1997; Lucia, & Lepsinger, 1999; Rothwell, & Lindholm, 1999).

Competency models tend to be characterized by less rigorous approaches than job analysis, probably because the existing literature referred to their design is still rather exiguous (Schippmann et. al, 2000). However, recent studies increasingly suggest employing a mixed methods approach to competency modeling, using data collection strategies such as observations, interviews, focus groups and brainstorming, with the aim to identify potential information on competencies and to add rigor and meticulousness to competency modeling approaches (Catano *et al.*, 2007; Lievens *et al.*, 2004; Lucia, & Lepsinger, 1999; Mirabile, 1997; Rodriguez *et al.* 2002; Sacket, & Laczo, 2003).

Drawing from these studies, best practices can be identified in the employment of clear constructs for competency modeling, coherently related with the extant literature and theory, the employment of questionnaires and surveys to empirically test critical competencies and differentiate levels of importance, the validation of the models by comparing them with the most relevant organizational principles and through the comparison with the gathered information and through discussing results within the research team.

Inspired by these suggestions, this research applied a convergent mixed methods approach (Caracelli, & Greene, 1997; Greene, 2007) to design a competency model for non-academic employees in the context of public universities.

The conducted research, thus, provides a first comprehensive competency framework that could help better configuring these specific professional roles, suggesting optimal conditions to nurture their talents and, coherently, improving their performance.

With this purpose, an action research approach (Stringer, 2014; Lewin, 1946) has been applied, attempting to respond to the literature thread calling for new and more adaptive approaches to competency modeling.

More specifically, the purpose of this mixed method approach was to understand how competencies of non-academic employees configure to help them reach the university's strategic objectives. To do so, employees were involved in the process in order to bring helpful insights and solutions for introducing a coherent competency based management approach to human resources and to address the research questions considering different perspectives.

Results of the convergent mixed methods approach (Caracelli, & Greene, 1997; Greene, 2007) highlighted the strengths and the weaknesses of both the traditional top down approach to competency modeling and the bottom up approach, and, on the other hand, demonstrated their complementarity.

In fact, an enhanced understanding of the employees' needed competencies, of their relations between each other and with the organizational context they are embedded in, was reached, in a way that could not be achieved using these methods separately.

More specifically, the bottom up approach applied in the qualitative strand provided key contextual insights, which enabled a comprehensive understanding on how unfolding organizational changes affect the organization of the work activities, impacting on the expected organizational and individual competencies. Moreover, descriptions on effective behaviors could be gathered from critical incidents and complex descriptions of the emerging core competences could be derived both at a transversal level, and at a professional role's level.

The quantitative strand, applying a top down approach to competency modeling, derived a theoretical competency model applying the approach firstly proposed by Prahalad & Hamel (1990) to the organization under investigation. The arising model was, then, tested by conducting a survey research on the employees of Sapienza,

University of Rome, querying them to attribute a value of importance to the identified core competencies on a scale from 0 to 5. The results confirmed the fit of the model within the organization for what it regarded the common set of competences derived from the strategic objectives of the organization. Diversely, in referral to the results related to the technical and professional competencies, that were contained in a predetermined competency library actually in use in public universities, a critical gap emerged for what it regards advanced digital competences, especially for the professional roles of the I.C.T. referent, the laboratory head, and the laboratory staff. This gap was filled thanks to the integration of a bottom up approach where employees were queried to add and rate those competences manually. During the integration phase, those competences were compared with those emerged in the qualitative strand, revealing various points of convergence.

The defined competency model, thus, uncovered a difference between what the organization officially expects and between what is really required from the employees. This result, however, appears to be reached rather frequently in competency modeling, where this discrepancy often emerges once the analysis is concluded (Skorkovà., 2016).

The designed model comprises 19 individual core competencies, transversal to all the university's employees, independently from the different responsibility and autonomy levels. Competencies have been divided in three main categories: generic knowledge, skills, and traits.

All the identified competencies showed high levels of interrelation, that have been indicated in the description of each competence, as table 5.1 effectively summarizes. Moreover, thanks to the quantitative strand, the model has been enriched with the identification of sub competences related to the core competencies, and furthermore assessed with an attributed level of importance.

When comparing the interpretative competency model in the light of the themes emerged during the qualitative strand's analysis, it is also possible to frame the emerged competencies in specific contexts and processes, to identify the behaviors demonstrating a competence and to understand how they are related with each other.

On the other hand, the quantitative strand, applying a more traditional top down approach to competency modeling, was crucial to understand and verify if the competences derived from the strategic objectives were actually coherent with the perceptions of employees, and thus, if the strategic objectives managed to grasp critical changes occurring in the organization.

In this sense, a criticality emerged because the strategic objectives on which the top down approach was based and the competency library actually employed in the organization, seemed to underestimate the impact of digitalization on the organization, which, however, undoubtedly revolutionized different work processes, especially those involving front office activities, that are now mostly substituted with digitalized services. Moreover, the recently implemented regulations on the G.D.P.R. and transparency of administrative procedures greatly increased the required administrative procedures needed to conclude most of the processes in the organization. The mostly successful solution to this overwhelming problem has been identified in the introduction of digital tools or systems aimed at simplifying and standardizing those procedures, revealing a great attitude of the employees toward innovation and cooperation. However, this increasing digitalization of services and processes should be properly addressed by the governance, considering new strategies aimed at standardizing digital procedures and at optimizing the processes suffering of an excessive workload due to the increased procedures required to conclude practices. Obviously, planned training providing the fitting level of digital competencies should also be implemented concurrently with the cited strategy.

Parallelly to a digitalization process, a process of internationalization has been recently impacting the university's organization and employees' needed competences: the introduction of new study courses lectured entirely in English, the increased number of visiting professors and researchers, and of international research and teachings projects, highlighted the need to align the competencies of the employees to effectively support these strategic objectives or to introduce new professional figures functioning as integration bodies, thus filling the cultural and knowledge gaps that inevitably arose. These objectives can be achieved through advanced training classes at least towards higher organizational positions, such as managers and referents, or by introducing professional figures expert in technical English, supporting employees in different structures. Anyhow, it surely appears that its knowledge is critical and that there is a need to improve the quality of the offered services, at diverse proficiency levels tailored to different professional roles throughout the organization.

Sapienza, university of Rome, shows to be a particularly complex organization, because of its large dimensions, the nature of the conducted activities, and the numerous and diverse resources that need to be coordinated (Thompson, 1967; Decastri, 1997).

Thus, it is problematic to find in the delegation of responsibility and in the hierarchy the only employed tools of coordination. These systems necessarily need to be accompanied by more complex organizational solutions. In fact, when the organizational complexity is particularly elevated, it can be useful to adopt strategies aiming at improving the information processing and communication ability of the organization, through the enhancement of the information systems or the introduction of actions reducing the complexity (Galbraith, 1972), improving the quality and the quantity of manageable and shareable information.

Coherently, a recurring theme is the need for a better information and supporting system from the central headquarter. The university under study, in fact, is characterized by strongly interrelated and interdependent activities (Thompson, 1967) once more highlighting a need for coordination and improvement of the existing information system, that could be achieved by considering the introduction of integration bodies, supporting and coordinating different structures and professional areas. Possible modalities to improve the processing, the access and the sharing ability of the organization, could be the improvement of the I.C.T. and the information system both at an intra-organizational level and at an inter-organizational level, by organizing more meetings, task forces, working groups, or even by creating new professional roles or bodies aiming to connect and integrate activities, areas and structures (Galbraith, 1977; Premkumar, 2000).

Reinforcing these considerations, a virtuous example of advanced coordination and cooperation, greatly witnessed by all the related professional positions, has been detected in referral to the organizational positions of the teaching administration managers. In fact, these employees autonomously organized monthly reunions involving teachings' administration managers at different structural levels, aimed at updating on the most important issues, at organizing future activities, or also to ask for help with some specific issues, thus strengthening the relationships and the team building. This approach resulted in advanced collective performances, thus demonstrating how an effective coordination can significantly improve the results of the conducted activities.

6.3 Significance of the research

The derived interpretative competency model can be employed in many areas of human resource management, such as recruiting, remuneration, training and development. It is a key tool to assess the employees' performances, for career planning and talent management. This model, in fact, may be used as a basis for

implementing a competency based performance assessment system and new standards for human resource management in Italian public universities.

In fact, by answering the research questions, this research could configure as a meaningful tool for any practitioner operating in the higher education sector, providing them with a reference framework for the definition of a competency model to extend to the whole population of technical, technical scientific, data processing, administration, management and library staff. Furthermore, it provides an innovative methodology for the identification of the needed competences relatively to each professional role and an effective tool to reveal gaps in the expected competences. Mixed method approach to competency modeling, in fact, are often called for in order to add practicality, flexibility and rigor to the design and implementation phases of competency models, however, they are rarely traceable in the literature and, above all, in the practice.

In fact, systematic empirical studies on competency modeling are not easily traceable in the literature, thus, by employing an action research approach, it is believed that this research may provide a significative contribution to the extant theme, also presenting insights on the organizational context of the public universities, that appears to have not been provided with the deserved attention in current studies. Finally, studies on competency modeling seem often focused on specific industries more than individual professionals, thus this study may provide useful insights also in this regard, focusing on specific professional roles that can be found in different academic and research organizations.

Critical issues arising during the data analysis have been highlighted and possible organizational actions, that may be helpful in facing them, have been suggested. Lastly, this research may prove useful for the integration and updating of collective contracts, and for the regulation and identification of new job positions in Italian public universities, especially in referral to the I.C.T. sector that could benefit of an evaluation from the policy makers aiming at improving their conditions, considering how this role emerged as crucial in the ongoing process of digitalization in universities.

6.4 Limitations of the research

The main limitation of this research may be related to the reference context. In fact, the study was conducted within an Italian university, but possible future developments may provide for an extension both in terms of the internal survey sample, and in terms of extension of study contexts.

Moreover, the normative and prescriptive nature of competency based management theories and lack of empirical evidence in support of their effects are what is usually mostly criticized in the academic literature. Unfortunately, the proposed interpretative method has not yet been implemented in the organization, thus, results on the effects of its implementation cannot be provided. On the other hand, this may be considered as an input for an extension of the research.

Furthermore, typical limits of competency models may be related to the risk that they might, in time, generate a new time consuming and over proceduralized bureaucracy. To avoid this undesirable effect, competency models should be simple, thus using a friendly language and providing examples of behaviors to identify standard performance, and they should be updated regularly.

However, despite these limits and criticalities, competency based management is believed to have the potential to effectively add value to individuals, the organization, and the society.

6.5 Future research

As previously suggested, a preliminary research advancement could derive from continuing to monitor and assess the competency model's effect on the organization under investigation during and after its empirical implementation.

Moreover, conducting parallel and comparative studies employing mixed methods approaches to competency modeling in other public universities or public administrations could provide helpful insights in terms of recurring issues, criticalities and effective employable solutions.

Obviously, applying the mixed method in different realities would surely lead to a better assessment and, if related to studies on its impact on the organization after being implemented, it would be possible to finally reach a comprehensive overview on competency modeling design and impacts.

Comparative analysis between private and public universities employing competency based models could also benefit the academic research, contributing to the extant scarce literature on these themes.

LIST OF REFERENCES

Adams, J. S. (1965). Inequity in social exchange. In L. Berkowitz (Ed.), *Advances in experimental social psychology*, 2, 267–299, New York, NY: Academic Press.

Angrosino, M. V. (2017). *Doing ethnographic and observational research*. Thousand Oaks, CA: Sage.

Babbage, C. (1832). *On the economy of machinery and manufactures*. New York: Kelley.

Bara, B. G. (1999). *Pragmatica cognitiva: i processi mentali della comunicazione*. Torino: Bollati Boringhieri.

Barley, S., Meyer, G., & Gash, D. (1988). Cultures of culture: Academics, practitioners, and the pragmatics of normative control. *Administrative Science Quarterly*, 33, 24-60.

Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*. 17, 99–120.

Bassi, D., Buccianti, R., Mirandola, R., Modica L., Romano M.F., & Stefani E. (1999). *Campus: Metodologia e organizzazione delle attività di valutazione dei corsi di studio: Modello Campus*. Roma: Fondazione CRUI.

Bassok, M., & Novick, L.R. (2012). Problem solving. In K.J. Holyoak, & R.G. Morrison (Eds.), *Oxford handbook of thinking and reasoning* (pp. 413–432). New York, NY: Oxford University Press.

Bazeley, P. (2013). *Qualitative data processing: practical strategies*. Thousand Oaks, CA: Sage.

Bedaux, C. E. (1932). *Measures labour*, New York: The International Bedaux Institute.

Belk, R. W. (1989). Extended self and extending paradigmatic perspective. *Journal of Consumer Research*, 16, 129-32.

Bernard, H. R. (2011). *Research methods in anthropology: qualitative and quantitative approaches*. Walnut Creek, CA: AltaMira Press.

Berry J. W. (1989), Imposed Etics-Emics-Derived Etics: The Operationalization of a Compelling Idea. *International Journal of Psychology*, 24, 721-735.

Birks, M., & Mills, J. (2015). *Grounded Theory: A practical guide* (2nd ed.) Thousand Oaks, CA: Sage.

Bleiklie, I. (2007). Organization and Governance of Universities. *Higher Education Policy Publication*. doi: 10.1057/palgrave.hep.8300167.

Bogdan, R. C., & Biklem, S. K. (1992). *Qualitative research for education: an introduction to theory and methods*. Boston. MA: Allyn & Bacon.

Boyatzis, R. E. (1982). *The competent Manager: a model for effective performance*. New York, NY: Wiley.

Brannick M. T., Levine E. L., & Morgeson F. P. (2007). *Job and work analysis: Methods, research, and applications in human resource management* (2nd ed.). Los Angeles, CA: Sage.

Brewster, C. (1994). European HRM, Reflection of, or challenge to the American concept, in: Kirkbridge, P. (Ed.), *HRM in Europe* (pp. 56-89). Routledge.

Campion, M. A., Fink, A. A., Ruggeberg, B. J., Carr, L., Phillips, G. M., & Odman, R. B. (2011). Doing competencies well: Best practices in competency modeling. *Personnel Psychology*, 64, 225-262.

Caracelli, V. J., & Greene, J. C. (1993). Data processing strategies for mixed-methods evaluation designs. *Educational Evaluation and Policy Analysis*, 15(2), 195-207.

Caracelli, V. J., & Greene, J. C. (1997). Crafting mixed-method evaluation designs. In J. C. Green, & V. J. Caracelli (Eds.), *Advances in mixed-method evaluation: the challenges and benefits of integrating diverse paradigms* (pp. 19-32). San Francisco: Jossey-Bass.

Cardy, R. L., & Selvarajan, T.T. (2006). Competencies: Alternative frameworks for competitive advantage. *Business horizons*, 49, 235-245.

Casciotti, C. A. T. (2005). *Modelli innovativi di gestione per la nuova università: dal manager al management*. Roma: Fondazione CRUI.

Casula, C. (2008). Il modello post-burocratico, tra management e governance, nel processo di riforma della Pubblica Amministrazione, in G. Sangiorgi (Ed.), *Management e governance nella pubblica amministrazione*. Milano, 2008.

Catano V. M., Darr W., & Campbell C. A. (2007). Performance appraisal of behavior-based competencies: a reliable and valid procedure. *Personnel Psychology*, 60, 201-230.

Cerase, F. P. (2002). The competencies required in public management: a case study in Italy, In Horton, S.; Hondeghem A.; Farnham D. *Competency management in the public sector: European variations on a theme* (pp. 135-153). Brussels.

Cerase, F. P. (2002). Cambiamenti organizzativi nel governo delle pubbliche amministrazioni e loro effetti sulle competenze. *Amministrare*, 3, 379-405.

Cerase, F. P. (2003). Come cambiano le amministrazioni: l'analisi delle competenze professionali. *Amministrare*, 3, 331-371.

Cerase, F. P. (2010). Il modello di competenze come nuovo strumento di valutazione delle prestazioni di lavoro nella pubblica amministrazione: l'Agenzia delle Entrate. *Amministrare*, 1, 7-48.

Cherryholmes, C. H. (1992). Notes on pragmatism and scientific realism. *Educational Researcher*, 14, 13-17.

Clark, B. (2000). The Entrepreneurial University: New Foundations for Collegiality, Autonomy, and Achievement, *IMHE General Conference*, Paris.

Comacchio, A., & Pastore, A. (2005). La creazione del ruolo di manager didattico. In C. A. T. Casciotti (ed.), *Modelli innovativi di gestione per la nuova università.* (pp.249-279) Roma: Fondazione CRUI.

Corbin, J., & Strauss, A. (2015). Basics of qualitative research: Techniques and procedures for developing grounded theory (4th ed.). Thousand Oaks, CA: Sage.

Creswell, J.W. (2015). *A concise introduction to mixed methods research*, Thousand Oaks, CA: Sage.

Creswell, J. W., & Brown, M. L. (1992). How chairpersons enhance faculty research: A grounded theory study. *The Review of Higher Education*, 16(1), 41.

Creswell J. W., & Clark V. L. (2011). *Designing and conducting mixed methods research*. (2nd ed.). Thousand Oaks, CA: Sage.

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design. Choosing among five approaches*. Thousand Oaks, CA: Sage.

Cronbach, L. J. (1984). *Essentials of psychological testing* (4th ed.). New York: Harper & Row.

de Boer, H. F., & File, J.M. (2009). *Higher education governance reforms across Europe*. Brussels: Center for Higher Education Policy Studies.

Decastri, M. (1997). Il coordinamento e l'integrazione, in Costa G., Nacamulli R.C.D., *Manuale di organizzazione aziendale*, vol. III. Torino: UTET.

Deci, E. L., & Ryan, R. M. (2000). The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11, 319–338.

Delamare L. D., Winterton, J. (2005). What is competence? *Human Resource Development International*, 8(1), 27-46.

Denzin, N. K., & Giardina, M. D. (Eds). (2009). *Qualitative Inquiry and Social Justice*. Walnut Creek, CA: Left Coast Press.

Denzin, N. K. & Lincoln, Y. (2011). *The SAGE handbook of qualitative research*. Thousand Oaks. CA: Sage.

Duncker, K. (1945). On problem-solving. *Psychological Monographs*, 58(5).

Emerson R. M., Fretz, R. I., & Shaw, L. L. (2011). *Writing ethnographic fieldnotes*. Chicago, IL: University of Chicago Press.

Etzkowitz, H. (2003). Research groups as 'quasi-firms': the invention of the entrepreneurial university. *Research Policy*, 32, 109–121.

Farnham, D., Horton, S., Barlow, J., & Hondeghem, A. (1996). *New Public Managers in Europe: Public Servants in Transition*. London: Mac Millan.

Farnham, D., & Horton, S. (2000). *Human Resources Flexibilities in the Public Services*, London: Macmillan.

Flanagan, J. C. (1954). The critical incident technique. *Psychological bulletin*, 51. 327-358.

Fletcher, S. (1997). *Analysing competence: Tools and techniques for analyzing jobs, roles and functions*. London: Kogan Page.

Frey, J. H. & Fontana A. (1991). The group interview in social research. *The Social Science Journal*, 28(2), 175-187. doi.org/10.1016/0362-3319(91)90003-M.

Galbraith, J. (1972). Organization design: An information processing view. In J. Lorsch & P. Lawrence (Eds.), *Organizational planning: Cases and concepts* (pp. 530–548). Homewood, IL: Irwin-Dorsey

Galbraith, J. (1977). *Organizational Design.* Reading, MA: Addison-Wesley.

Geffroy, F., & Tijou, R. (2002). *Le management des compétences dans les entreprises européennes. Les différéntes approaches*. Paris: INSEP Consulting.

Geuna, A., Shibayama, S. (2015). Moving Out of Academic Research: Why Do Scientists Stop Doing Research? *Global Mobility of Research Scientists*, Academic Press, 271-303. doi.org/10.1016/B978-0-12-801396-0.00010-7.

Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott, P., & Trow, M. (1994). *The New Production of Knowledge. The Dynamics of Science and Research in Contemporary Society*. London, Thousand Oaks, New Delhi: Sage. doi: 10.4135/9781446221853.

Gilbreth, F. B. (1970). Science in management for the best wat to do work. In H. F. Merril (Ed.) *Classics in management*, New York: American Management Association.

Glaser, B. G., & Strauss, A. L. (1967) *The discovery of grounded theory: strategies for qualitative research*. New York: Aldine Publishing.

Grant, R. M. (1996). Towards a knowledge-based view of the firm, *Strategic management journal*, 17, 109-122.

Green, P. C. (1999). *Building robust competencies: Linking human resource systems to organizational strategies*. San Francisco, CA: Jossey-Bass

Greene, J. C. (2007). *Mixed methods in social inquiry*. San Francisco: Jossey-Bass.

Guba, E. G. & Lincoln, Y. S. (2005). Paradigmatic Controversies, Contradictions, and Emerging Confluences. In: Denzin, N. K. & Lincoln, Y. S., Eds., *The Sage Handbook of Qualitative* Research (pp. 191-215), 3rd Edition, Thousand Oaks, CA:Sage.

Guest, D. E. (1987). Human Resource Management and Industrial Relations, *Journal of Management Studies*, 24, 503–521.

Hays, D, G., & Singh, A. A. (2012). *Qualitative inquiry in clinical and educational settings.* New York, NY: Guilford Press.

Hondenghem, A. (2002). Competency Management: State of the Art in the Public sector? In Horton, S.; Hondeghem A.; Farnham D. (2002). *Competency management in the public sector: European variations on a theme*, Brussels.

Horton, S.; Hondeghem A.; Farnham D. (2002). *Competency management in the public sector: European variations on a theme*, Brussels.

Hubley, A. M., & Zumbo, B. D. (1996). A dialectic on validity: Where we have been and where we are going. *Journal of General Psychology*, 123, 207–215.

Kay, J. (1993). *Foundations of corporate success: how business strategies add value.* Oxford: Oxford University Press.

Kemmis, S.; McTaggert, R., & Nixon, R. (2014). *The action research planner: Doing critical participatory action research*. New York: Springer.

Kettle, D. (2000). *The global public management revolution. A report of the transformation of governance*, Washington, D.C.: Brookings Institution Press

Kochanski J. (1997). *Competency based management. Training and Development*, 51, 41–44.

Kyvik, S. (2013) The Academic Researcher Role: Enhancing Expectations and Improved Performance, *Higher Education*, 65(4), 525–38.

Kwiek M., & Maassen P. (2012). *National Higher Education Reforms in a European Context: Comparative Reflections on Poland and Norway*. Bern, Switzerland: Peter Lang D. doi: 10.3726/978-3-653-02379-4

Impara, J. C. (2010). Assessing the Validity of Test Scores. Paper Presented at the Bureau Centre for Testing Conference on Monitoring Assessment Quality in the Age of Accountability, April 9-10, 2010, Lincoln.

Lado, A. A. and Wilson, M.C. (1994). Human resource systems and sustained competitive advantage: a competency based perspective. *Academy of Management Review*,19, 699-727.

LaFromboise, T., Hardin, L. K., Coleman, and, Gerton, J. (1993). Psychological Impact of Biculturalism: evidence and theory. *Psychological Bulletin*. 114(3), 395-412.

Lather, P. (2006a). Paradigm Proliferation as a good thing to think with: Teaching research in education as a wild profusion. *International Journal of Qualitative Studies in Education*, 19, 35-57.

Lawler, E. (1994). From job-based to competency based organizations. *Journal of Organizational Behavior*, 15, 3-15.

Lempert, L. B. (2007). Asking questions of the data: Memo writing in the grounded theory tradition. In A. Bryant & K. Charmaz (Eds.). *The SAGE handbook of grounded theory* (pp. 245-264). Thousand Oaks, CA: Sage.

Lee, H.; Miozzo, M.; Laredo, P. (2010). Career patterns and competences of PhDs in science and engineering in the knowledge economy: The case of graduates from a UK research-based university, *Research Policy*, 39(7), 869-881. doi.org/10.1016/j.respol.2010.05.001.

Lewin, K. (1946) Action research and minority problems. *Journal of Social Issues*. 2 (4), 34–46.

Lievens F., Sanchez J. I., & De Corte W. (2004). Easing the inferential leap in competency modeling: The effects of task related information and subject matter expertise. *Personnel Psychology*, 57, 881-904.

Locke, E. A. (1976) The Nature and Causes of Job Satisfaction. *Handbook of Industrial and Organizational Psychology*, 1, 1297-1343.

Lucia A, & Lepsinger R. (1999*). The Art and science of competency models: Pinpointing critical success factors in organizations*. San Francisco, CA: Jossey-Bass/Pfeiffer.

Maggi, B. (1990). *Razionalità e benessere: studio interdisciplinare dell'organizzazione*, Etas, Milan

Mansfield, B. (1989). Competence and standard, in J. Burke (Ed.), *Competency based education and training*, London: Falmer Press.

Mansfield, R. S. (1996). Building Competency Models: Approaches for HR Professionals. *Human Resource Management*, 35(1), 7-18, Spring.

Maxwell, J. A. (2013). *Qualitative research design: An interactive approach* (3rd ed.). Thousand Oaks, CA: Sage.

McClelland, D. C. (1973). Testing for competence rather than intelligence. *American Psychologist.* 28, 1-14.

McClelland, D. C. (1975*). A competency model for human resource management specialists to be used in the delivery of the human resource management cycle*. Boston, McBer.

McClelland, D. C. (1978). *Guide to behavioral event interviewing*. Boston, McBer.

McClelland, D. C. (1998). Identifying competencies with behavioral-event interviews. *Psychological Science*, 9(5), 331-339.

McLagan, P., & Suhadolnik, D. (1989). *Models for HRD practice: The research report*. Alexandria, VA: American Society for Training and Development.

McLagan, P. (1996). Great ideas revisited: competency models. *Training and Development*, 50, 60–64.

Merriam, S. B., & Tisdell, E.J. (2016). *Qualitative research. A guide to design and implementation*. Jossey – Bass, 16-17.

Messick, S. (1980). Test validity and the ethics of assessment. *American Psychologist*, 35, 1012–1027.

Ministry of Education, Universities, and Research. (2013). *Rapporto sullo stato del sistema universitario e della ricerca*. Anvur

Mirabile R. J. (1997). Everything you wanted to know about competency modeling. *Training and Development*, 51, 73–77.

Mitchell, L. (1989). Definition of standards and their assessment, in J. Burke (Ed.), *Competency based education and training*, Falmer Press, London.

Morse, J. M. (1991). Approaches to qualitative-quantitative methodological triangulation. *Nursing research*, 40, 120-123.

Morse, J. M. (2006b). Reconceptualizing Qualitative Inquiry. *Qualitative Health Research*, 16(3), 415–22.

Morse, J. & Niehaus, L. (2009). *Mixed methods design: Principles and procedures*. Walnut Creek, CA: Left Coast Press.

Motowildo, J. S., Dunnette, D., Carter, W. G., Tippins N., Werner, S., Burnett, R. J. & Vaughan J. M. (1992). Studies of the Structured Behavioral Interview. *Journal of Applied Psychology*, 77(5), 571-587.

Murphy, J. P. (1990). *Pragmatism: From Pierce to Davidson*. Boulder. CO: Westview Press.

Murray, P. (2003). Organisational learning, competencies and firm performance: empirical observations. *The Learning Organization*, 10(5), 305-316.

Onwuegbuzie, A. J. & Johnson, R. B. (2006). The validity issue in mixed research. *Research in the Schools*, 13(1), 48-63.

Parry, S. B. (1996). The quest for competencies. *Training*, 33, 48–54.

Pastorello, G. (2010). I modelli di competenze nell'Agenzia delle Entrate. Il difficile "trade-off" tra validità e oggettività nella valutazione professionale, *Amministrare*, 1, 49-88.

Patton, M. Q. (1990). *Qualitative evaluation and research methods*. Newbury Park. CA: Sage.

Pfeffer, J. (1994). Competitive advantage through people. *California Management Review*. Berkeley, 36(2),

Porter, M. (1996). What is strategy. *Harvard Business Review*.

Prahalad, C. K., G. Hamel. (1990). The Core Competence of the Corporation. *Harvard Business Review*, 68(3), 79-91.

Premkumar, G.P. (2000). Interorganization Systems and Supply Chain Management: An Information Processing Perspective. *Information Systems Management*, 17 (3), 56-68.

Ramdhani A., Ramdhani M.A., Syakur Amin A. (2014). Writing a Literature Review Research Paper: A step-by-step approach. *International Journal of Basic and Applied Science*, 3(1), 47-56.

Reboul, O. (1980). *Qu'est qu'aprendre? Pour une philosophie de l'einsegnement*, PUF, Paris.

Ridley, D. (2008). *The Literature Review: A Step-by-Step Guide for Students*. SAGE.

Riviezzo, A., & Napolitano, M. R. (2014). *Orientamento imprenditoriale e performance: un'indagine tra le università italiane,* Sinergie, 93, 193-212.

Rodriguez, D., Patel, R., Bright, A., Gregory, D., Gowing, M. K. (2002). Developing competency models to promote integrated human resource Practices. *Human Resource Management*, 41, 309–324.

Rossman, G. B., & Wilson, B. (1985). Numbers and words: combining quantitative and qualitative methods in a single large-scale evaluation study. *Evaluation Review*. 9(5), 627-643. doi: 10.1177/0193841X8500900505.

Rothwell, W. J., & Lindholm, J. E. (1999). Competency identification, modelling and assessment in the USA, *International Journal of Training and development*, 3, 90-105.

Sackett P. R., Laczo R. M. (2003). Job and work analysis. In Borman WC, Ilgen D. R., Klimoski R. J. (Eds.), *Handbook of Psychology*, 12, 21–37, Hoboken, NJ: Wiley.

Sanchez, R., Heene, A., Thomas, H. (1996). Towards the theory and practice of competence-based competition. In R. Sanchez, A. Heene and H. Thomas (Ed.), *Dynamics of competence-based competence: theory and practice in the new strategic management* (pp. 1-35), London: Elsevier.

Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., Burroughs, H., & Jinks, C. (2018). Saturation in qualitative research: exploring its conceptualization and operationalization. *Quality & quantity*, 52(4), 1893–1907. doi:10.1007/s11135-017-0574-8

Schroder, M. (1989). *Mial Competence: the key to excellence*. Dubuque: Kendall & Hunt.

Shippmann, S. J., Ash, R. A., Battista, M., Carr, L., Eyde, L. D., Hesketh, B., Kehoe, L., Pearlman, K., Prien, E. P., & Sanchez, J. I. (2000). *The practice of competency modeling*. Personnel Psychology, 53.

Skorkovà, Z. (2016). Competency models in public sector, *Procedia, Social and Behavioral Sciences*, 230, 226-234.

Silvestri, G. (2005). La risorsa strategica del management didattico. CRUI. In C.A.T. Casciotti (ed.), *Modelli innovativi di gestione per la nuova università*. (pp. 13-18), Roma: Fondazione CRUI.

Slaughter, S., & Leslie, L.L. (1997). *Academic Capitalism: Politics, Policies, and the Entrepreneurial University*. ERIC.

Spencer, L. M. & Spencer, S. M. (1993). *Competence at work: models for superior performance*. John Wiley & Sons, Inc. Hoboken, NJ.

Spiggle, S. (1994), "Analysis and interpretation of qualitative data in consumer research", Journal of Consumer Research, 21(3), 491-503.

Sporn, B. (2001). Building adaptive universities: Emerging organisational forms based on experiences of European and us universities, *Tertiary Education and Management*, 7(2), 121–134.

Stalk, G. J., Evans, P., Shulman, L. E. (1992), Competing on capabilities: the new rules of corporate strategy. *Harvard Business review*, 70(2), 57-69.

St. Pierre, E. A. and Roulston, K. (2006). The State of Qualitative Inquiry: A Contested Science. *International Journal of Qualitative Studies in Education*, 19(6), 673–84.

Stringer, E. (2014). *Action research* (4th ed.). Thousand Oaks, CA: Sage.

Taylor, F. W. (1911). *The Principles of Scientific Management*, Harper & Bros, New York.

Teece, D. J., Pisano, G., Shuen, A. (1997). Dynamic capabilities and strategic management, Strategic Management Journal, 18(7), 509-533.

Teddlie, C., & Tashakkori, A. (2003b). Major issues and controversies in the use of mixed methods, in the social and behavioral sciences. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research*. (pp. 3-50). Thousand Oaks, CA: Sage.

Teddlie, C., & Tashakkori, A. (2009). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences*. Thousand Oaks, CA: Sage.

Terssac, De G. (1992). *Autonomie dans le travail*, PUF, Paris.

Thompson, J.A. (1967). *Organizations in action: Social science bases of administrative theory*. ERIC.

Thompson, C.J. (1997), "Interpreting Consumers: A Hermeneutical Framework for Deriving Marketing Insights from the Texts of Consumers' Consumption Stories", *Journal of Marketing Research*, 34(4), 438-455.

Thorndike, R. M. (1997b). *Measurement and evaluation in psychology and education* (6th ed.). Upper Saddle River, NJ: Macmillan/Prentice Hall.

Training Agency (1988). *The concept of occupational competence*, Training agency, Sheffield.

Trotter, A. & Ellison, L. (1997). Understanding competence and competency, in B. Davies, L. Ellison (Ed.), *School leadership for the 21st Century*, Routledge, London.

Ulrich, D., & Lake, D. (1991). Organizational capability: creating competitive advantage. Academy of management executive, 7(1), 77-92.

Vaira, M. (2011). *La costruzione della riforma universitaria e dell'autonomia didattica, idee, norme, pratiche, attori*. Milano: LED edizioni universitarie.

Vansteenkiste, M., Ryan, R. M., & Deci, E. L. (2008). Self-determination theory and the explanatory role of psychological needs in human well-being. In L. Bruni, F. Comim, & M. Pugno (Eds.), *Capabilities and happiness* (pp. 187–223). Oxford: Oxford University Press.

Wagner, R. F. (1948). *A group situation compared with individual interviews for securing personnel information*. Personnel Psychology, 1, 93-107.

White, R. W. (1959). Motivation reconsidered: The concept of competence. *Psychological Review*, 66, 297-333.

Wirth, J., & Klieme, E. (2003). Computer-based assessment of problem solving competence. *Assessment in Education: Principles, Policy & Practice*, 10, 329–345.

Wolcott, H. F. (2010). *Ethnography lessons: A primer*. Walnut Creek, CA: Left Coast Press.

Woodruff, C. (1992). What is meant by competency? In R. Boam, P. Sparrow (Ed.). *Designing and achieving competency: A competency based approach to developing people and organisations* (pp.16-30), McGraw-Hill, London.

LIST OF TABLES

LIST OF FIGURES

APPENDIX A

#	Professional Area	Structure	Critical incidents	Data entry	Transcribed pages
1	Administration and management	Department	6	written	7
2	Administration and management	Department	3	written	5
3	Administration and management	Department	3	written	5
4	Administration and management	Faculty	2	written	4
5	Administration and management	Department	3	written	4
6	Administration and management	Department	5	written	7
7	Administration and management	Department	2	written	5
8	Library	Department	8	oral	10
9	Administration and management	Department	2	written	5
10	Administration and management	Department	2	written	5
11	Administration and management	Department	5	written	7
12	Administration and management	Department	2	written	4
13	Administration and management	Department	3	written	5
14	Administration and management	Department	3	written	5
15	Administration and management	Department	6	oral	9
16	Technical, Technical scientific and data processing	Department	5	written	7
17	Technical, Technical scientific and data processing	Department	4	written	6
18	Administration and management	Department	2	written	4
19	Library	Department	5	written	7
20	Library	Department	3	written	5
21	Library	Department	4	written	6
22	Administration and management	Central headquarters	5	written	7
23	Administration and management	Central headquarters	4	written	6
24	Administration and management	Central headquarters	4	written	6
25	Administration and management	Central headquarters	3	written	5
26	Administration and management	Central headquarters	2	written	4
27	Administration and management	Central headquarters	3	written	5
28	Administration and management	Central headquarters	4	written	6
29	Administration and management	Central headquarters	3	written	5
30	Administration and management	Central headquarters	4	written	6
31	Administration and management	Central headquarters	2	written	4
32	Library	Department	3	written	5
33	Administration and management	Department	0	written	2
34	Administration and management	Department	0	written	2
35	Administration and management	Department	2	written	4
36	Administration and management	Department	0	written	2
37	Administration and management	Department	1	written	3
38	Administration and management	Department	2	written	4
39	Administration and management	Department	1	written	3
40	Administration and management	Department	1	written	3
41	Library	Department	3	written	5
42	Library	Department	4	written	6
43	Library	Department	3	written	5

44	Administration and management	Department	1	written	3
45	Administration and management	Department	1	written	3
46	Administration and management	Department	2	written	4
47	Administration and management	Department	4	written	6
48	Administration and management	Department	2	written	4
49	Library	Department	5	written	7
50	Technical, Technical scientific and data processing	Department	4	written	6
51	Technical, Technical scientific and data processing	Department	3	written	5
52	Technical, Technical scientific and data processing	Department	3	written	5
53	Technical, Technical scientific and data processing	Department	2	written	4
54	Technical, Technical scientific and data processing	Department	4	written	6
55	Administration and management	Faculty	1	written	2
56	Administration and management	Faculty	2	written	3
57	Administration and management	Faculty	3	oral	4
58	Administration and management	Faculty	4	oral	5
59	Administration and management	Faculty	2	written	3
60	Administration and management	Faculty	2	written	3
61	Administration and management	Central headquarters	5	oral	7
62	Technical, Technical scientific and data processing	Department	5	oral	6
63	Technical, Technical scientific and data processing	Department	5	oral	5
64	Administration and management	Faculty	7	oral	8
65	Technical, Technical scientific and data processing	Faculty	5	oral	5
66	Administration and management	Department	9	oral	9
67	Administration and management	Department	3	written	4
68	Administration and management	Department	0	written	2
69	Library	Department	2	written	3
70	Administration and management	Department	3	written	4
71	Library	Department	4	written	5
72	Administration and management	Faculty	2	written	3
73	Administration and management	Department	2	written	3
74	Technical, Technical scientific and data processing	Department	2	written	3
75	Administration and management	Department	1	written	2
76	Administration and management	Department	6	oral	8
77	Administration and management	Department	2	written	3
78	Administration and management	Department	2	written	3
79	Technical, Technical scientific and data processing	Department	3	written	4
80	Administration and management	Department	0	written	2
81	Administration and management	Department	2	written	3
82	Technical, Technical scientific and data processing	Department	1	written	2
83	Administration and management	Faculty	2	oral	3
84	Technical, Technical scientific and data processing	Faculty	2	written	3
85	Technical, Technical scientific and data processing	Faculty	1	written	2
86	Technical, Technical scientific and data processing	Faculty	1	written	2
87	Technical, Technical scientific and data processing	Faculty	4	written	4
88	Technical, Technical scientific and data processing	Faculty	2	written	3
89	Administration and management	Faculty	1	written	2
90	Technical, Technical scientific and data processing	Faculty	3	written	4

91	Administration and management	Faculty	3	written	4
92	Administration and management	Faculty	1	written	2
93	Administration and management	Faculty	2	written	3
94	Administration and management	Faculty	0	written	2
95	Administration and management	Department	2	written	3
96	Administration and management	Department	6	written	7
97	Administration and management	Department	3	written	4
98	Administration and management	Department	4	written	5
99	Administration and management	Department	3	written	4
100	Administration and management	Department	0	written	2
101	Administration and management	Department	1	written	2
102	Administration and management	Department	4	oral	5
103	Administration and management	Department	1	written	3
104	Administration and management	Department	3	written	4
105	Administration and management	Department	3	written	4
106	Administration and management	Department	3	written	4
107	Administration and management	Faculty	4	oral	5
108	Administration and management	Faculty	3	oral	4
109	Administration and management	Faculty	4	oral	5
110	Technical, Technical scientific and data processing	Department	1	written	2
111	Administration and management	Department	4	written	5
112	Administration and management	Department	2	written	3
113	Administration and management	Department	1	written	2
114	Administration and management	Department	5	written	6
115	Administration and management	Department	0	written	2
116	Administration and management	Department	2	written	3
117	Administration and management	Department	2	written	3
118	Administration and management	Department	0	written	2
119	Library	Department	0	written	2
120	Library	Department	0	written	2
121	Library	Department	1	written	2
122	Library	Department	3	written	4
123	Administration and management	Faculty	3	oral	4
124	Administration and management	Faculty	8	oral	9
125	Administration and management	Department	0	written	2
Total			346		535

Table A.1. Database of the informants. Own elaboration

APPENDIX B

Interview guidelines

1. *Introductory statement*

   We are making a study to define a competency model for the technical, administrative and library staff of Sapienza, University of Rome. We believe you are especially well qualified to tell us about your professional area.
   During the recording, processing and transmission of the data, we guarantee anonymity of the interviewee, whose data will be treated with the utmost discretion, according to law 675/1996 and sequent D.L.vo 196/2003.
   We will inquire you on some topics, to which we ask you to respond according to your opinions, experiences and knowledge.

2. *Professional information*

   This section is dedicated to gather professional information on the informant, such as professional position, professional area, years of experience, study title, main responsibilities, and workplace (Department, Faculty, Central headquarters).

3. *Perceived changes*

   This section is dedicated to identifying future competencies and perceived critical changes. The informants are, thus, asked to describe what are the main occurred or ongoing changes or new trends in their specific professional area and how they think their responsibilities may change in the future. Provide examples when required.

4. *Critical incident interview* (adapted from Flanagan, 1954 and Spencer & Spencer, 1993)
   - 4.1 Request for the informant's professional objective.
     E.g. what would you say is the primary purpose of your activity? How would you summarize it in a few words?
   - 4.2 Solicit the narrative of a critical incident. Provide examples and explanations when required.
     E.g. Think of the last time you did something that was particularly helpful to meet your professional objective.
   - 4.3 Help the informant develop the narrative through questions:
     E.g. Which were, exactly, the undertaken actions? Why do you think they had a positive impact on the achievement of the professional objective? When and where did this incident happen? Which where the circumstances that led to this incident?
   - 4.4 Solicit a narrative of more critical incidents, also referred to coworkers, superiors or subordinates. Ask additional information on professional role and professional objective of the colleague. Help the informant develop the narrative.
     E.g. think of the last time one of your colleagues did something that was particularly helpful to meet his or her professional objectives? What did he/she exactly do? What circumstances led up to the situation?
   - 4.5 Collect both positive and negative incidents, favoring the informant inclinations.
   - 4.6 Use tables to check the collected information (see Appendix C) and ask for specifications when critical descriptions result missing or misunderstood.
5. Do not interrupt the informant while speaking, use non-verbal encouragements to solicit the narrative, do not express opinions or attitude questions, do not argue or contradict the informant.

APPENDIX C

Critical incident n.	
Experience (personal or coworkers')	
Professional characteristics of the informant	
Professional position	
Place of the critical incident	
Positive or negative result	
Summary of the incident	
Critical contextual factors	
Critical behaviors of the informant	
Critical behaviors of others	
Critical competencies, skills or knowledge	
Indirect factors	

Table C.1 Critical incidents checklist. Adapted from Flanagan (1954) and Spencer & Spencer (1993).

APPENDIX D

Observational protocol

Date	
Place	Office, hall, laboratory, etc.
Professional role	Actual professional role, responsibilities, etc.
Characteristics of the informant	Gender, age, physical and mental abilities, etc.
Environmental characteristics	1) Interactions between the informant and other people during the interview (commitment, social relations, availability/necessity to ask others for information, etc.) 2) Search for interaction from the informant 3) Description of the place (dimensions, logistics, light, number and typology of participants, etc.)
Narrative type	1) Language mastery 2) Level of abstraction and use of metaphors 3) Quality of the narrative (fluidity, spontaneity, sincerity, contradictory views, etc.) 4) linguistic preferences 5) availability to produce documents supporting claims 6) para-verbal ability
Key themes	

Table D1. Observational protocol