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Management consulting skills: towards an integrative matrix

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Master in Human Resources Management and Organizational
Consulting

Supervisor:

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ISCTE Business School

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Resumo

As competências dos consultores de gestão têm sido um campo de investigação fragmentado onde muitas propostas abundam, porém, ainda sem que haja convergência entre si. Esta investigação visa encontrar um quadro integrador de competências através da análise crítica dos modelos existentes, conduzindo uma análise de conteúdo documental para extrair uma lista de competências, depois submetida a um escrutínio empírico através de duas técnicas diferentes de procura de consenso: a análise Swarm e a técnica Delphi. Contando com três grupos de participantes provindos de estudos pós-graduados, foram recolhidos julgamentos independentes sobre a importância relativa das competências para a consultoria de gestão. Estes foram contrastados para validar as suas pontuações e classificações, e foram usados indicadores de concordância para avaliar a sua convergência. As conclusões mostram que existe um amplo consenso e que é viável obter um quadro válido de competências centrais na consultoria de gestão. Complementarmente, os resultados mostram que o Swarm e o Delphi convergem fortemente, e que a análise Swarm traz mais eficiência ao processo e abre novas possibilidades analíticas.

Palavras-chave: Competência; Consultadoria de gestão; Recursos humanos; Swarm; Delphi

Código JEL: M12 Gestão de Pessoas, J24 Capital humano, Competências

Abstract

Management consultant's competencies have been a fragmented field of research where many proposals abound, but convergence is still pending. This research aims to offer such an integrative competency framework by critically analyzing extant models, conducting a documental content analysis to extract a list of competencies, which was subjected to empirical scrutiny via two different consensus seeking techniques: Swarm analysis and Delphi technique. Counting on three groups of participants from postgraduate studies, independent judgments were collected on the relative importance of competencies for management consultancy. These were contrasted to validate its scores and ranking, and interrater agreement indicators were applied to judge its convergence. Findings show that there is wide consensus and that a valid core competency framework to be used in management consultancy is deployable. Complementarily, findings prove that Swarm and Delphi mostly converge, and that Swarm analysis brings more efficiency to the process and opens up new analytical possibilities.

Key words: Competency; Management Consulting; Human Resources; Swarm; Delphi

JEL Code: M12 Personnel Management, J24 Human capital, Skills

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Introduction

The term ‘management consulting¹’ was coined by Marvin Bower, a pioneer in the consulting industry (McKenna, 2006). Management consulting, or consultancy, is a recent term, and due to that, there is an ongoing controversy about its definition (Mosonyi et al., 2020). According to these authors, management consultancy has been a topic of interest for academia only since the 1950s although its activity has preceded this date by at least half a century.

Such definitional controversy can stem from the different approaches about what is the nature of consultancy. A prevailing view stated that consultants were taken as expert facilitators of organizational development, which makes them surrogate collaborators of client-managers, thus advocating a functionalist managerial view (Whittle, 2006). Such a functionalist perspective has been also criticized from the 1990s onwards (Mosonyi et al., 2020) as management consultants were accused of being the management fashion promoters which could bring negative impacts (Abrahamson, 1996). Although, according to Tavoletti et al. (2019) have considered this paper one of the most influential papers on consulting (judged by the number of citations reaching over 3190²), today these accusations are dismissed as consultants are seen as being more as co-producers of such fads instead of single promoters (Piazza & Abrahamson, 2020) and fads are no longer necessarily taken as being harmful (Gibson & Tesone, 2001). Beyond this discussion of the role of consultants as either facilitators of managers’ will or carriers of fads, literature has evolved into acknowledging the situational nature of consulting as experienced consultants are seen as a means of reducing uncertainty in the client company (Furusten, 2009).

The nature of management consulting and how academia has built systematic knowledge pertaining to it has been gaining solid grounds as evidenced by comprehensive scholar works such as Kubr (2002), Kipping and Clark (2012) or Tavoletti et al. (2019).

Although management consulting, as a profession, has an uncertain identity (Kubr, 2002), its large scope and complexity are generally acknowledged and gather consensus (Groß & Kieser, 2006). These authors highlight the large diversity in consulting specialization, the many different tasks consultants are hired to perform, the lack of harmonization among consultancies, and the heterogeneity of specializations that cumulate into a lack of common identity. Such diversity would hardly co-exist with a clear-cut set of roles for management consultants. Thus, quite naturally, there is a diverse set of propositions as to what competencies must a management consultant hold to perform well.

¹ This activity is occasionally referred as “consulting” or “consultancy” which we will use as synonyms.

² At current time, the number of citations grew to 4175 (scholar google) which is better represented by the 1013 cited in webofscience. <https://www.webofscience.com/wos/woscc/full-record/WOS:A1996TT33800013>

Among the many examples of proposed competencies (often named as “qualities” or “skills”) Tkaczyk (2017) proposed five qualities of a professional consultant comprehending: 1) consulting skills, 2) in-depth business expertise, 3) personal effectiveness, 4) learning agility, and 5) ethics. Another proposal explored by Silacheva (2019) refers to the International Council of Management Consulting Institute - ICMCI (2013) competence framework which covers three domains of competency: business, technical, and values and behavior. Business competence comprehends understanding the client’s business and own consulting business sector. Technical competence comprehends technical functional and consulting skills, namely: consultancy knowledge and expertise, client focus, planning, risk and quality management, knowledge building, sharing, and applying, facilitation, presentation, reporting, teamwork, consensus building. Lastly, values and behavior competence comprehend: 1) ethical and professional behavior, 2) effective communication and persuasion, 3) problem solving and analytical skills, and 4) personal development. In exploring the venues that digital transformation brings to management consultancy, Nissen et al. (2019) identify nine competencies, namely: affinity in dealing with technical tools, communication ability, ability to grasp things quickly, professional competence, foreign language skills, industry competence related to client’s sector, teamwork capacity, programming expertise, and mobility and willingness to travel. Tokár-Szadai (2020) highlights client relation importance and lists some competencies that can have a positive impact on that, namely: deep experience, methodological knowledge, pioneering thinking, solutions making, persuasion, adaptability, legitimacy, and empathy. Lastly, Larsson et al. (2020) evidence the changes that technology can bring to management consults, which requires much more savviness in terms of IT tool, as well knowledge on some emergent topics such as cyber security and data privacy. Nevertheless, the authors believe that some previous mentioned on literature competencies will remain being a must have for consultants such as the collaborative and interpersonal skills, as well as the multidisciplinary knowledge and expertise.

It is clear that the proposals mentioned above are distinct, given that the overlap of the competencies stated is small which evidence a lack of consensus. Therefore, this array of proposals found in both scholar and professional literature is consistent with the mentioned early stage of the profession. Although this diversity contributes to the enrichment of perspectives, it also hampers the ability to optimize the management of these professionals. Competencies are key to support the tasks of Human Resources Management, such as recruitment and selection, performance appraisal, identifying necessities in terms of workers’ development and training or reward management (Bartram, 2005; Bartram & Roe, 2005; Grote, 2002; Spencer & Spencer, 1993).

In our opinion, not only is the diverse array of competencies profiles harmful to the convergence of literature as most often, but such proposals are also built upon the authors’ own judgement. Independently of the merits of such personal validation, competency profiling has grown out of face

validity into more robust and sophisticated data analysis techniques that indicate validity and reliability of such proposals. Likewise, the theorization on competencies has evolved into clarifying what is and is not a competency (e.g., Neves et al., 2015; Roe, 2014). Hence, there is a research gap in profiling management consultant competencies, which is a research motivation for this study. The leading question is: What are the competencies that a management consultant must hold to perform effectively? Additionally, traditional consensus-seeking techniques such as the Delphi technique (Barrios et al., 2021) have been developed currently into synchronous multi-sourced approaches which are yet to be deployed in organizational settings such as consulting. This is the case for swarm analysis (Brezočnik et al., 2018) that, to our knowledge, is an emerging and under-researched consensus-seeking technique that has promising potential for organizational decision making.

This thesis is structured to offer an answer to this research question starting by reviewing extant literature on the nature of management consulting, the role of consultants, management consulting competencies as found in professional and scholar literature, a critical analysis of current proposals. The thesis progresses by depicting the methods used to deploy the empirical study – the traditional Delphi technique and the recent Swarm analysis – and moves on to show findings, discussing them in the light of literature. It then concludes and explores both the limitations as well as future venues for research in this field.

Chapter I - Literature Review

This section goes through four subsections, starting on the management consulting concept, which is very controversial (Ciampi, F., 2009; Kipping & Clark, 2012). Then, competency models are explored, as well as specifically, management consultant's competency models (Larsson et al., 2020; Nissen et al., 2019; Silacheva, 2019; Tkaczyk, 2017; and Tokár-Szadai, 2020), which are later analyzed comparatively.

1.1. Management Consulting

Despite the different definitions of management consulting, they converge as to the activity, having an advisory nature to provide assistance to an organization (Kubr, 2002; Sturdy et al., 2009). The first use of this term is uncertain but dates to the early 1900s. Nevertheless, its growth and the hiring of management consultants gained popularity through the last decade of the twentieth century (Mosonyi et al., 2020).

There is some controversy around this concept, but this activity can be generally associated with the provision of a service by highly qualified people in some field, who identify, analyze, recommend, and implement solutions to problems that the clients' companies are going through (Ciampi, F., 2009). It may even be considered a helping activity similar to treating organizational illness (Kipping & Clark, 2012) or a fads' promoter (Abrahamson, 1996).

From a broader point of view, Kubr (2002) suggests that anyone can be a consultant whereas they have the knowledge and capacity to advise someone or some company. This author also states that the management consulting basis is the assistance provided to an organization, which can concern various topics and take different forms and paths.

All the authors mentioned emphasize different concepts of management consulting, which can cover many different topics and fields. This is reflected by the different tasks performed by consultants, matching the various reasons they are hired for, which explain the lack of common identity of the consultants' profile and consulting firms.

1.1.1. Why is it important?

Vukotic et al. (2017, p.69) are very assertive in stating that management consulting is "one of the most important management techniques developed over the last fifty years". This is somehow reflected by

its remarkable growth and considerable share in the economic activity. According to FEACO - European Federation of Management Consultancies Associations – the European consulting market, in 2010, had an estimated value of €85 billion, with business/management consulting accounting for 43 per cent of this total (Kipping & Clark, 2012).

Kubr (2002) states that management consulting brings added value to client's companies when the consultant is able to pass them the required know-how to improve their efficiency and performance. To achieve such goals, the consultant may pay attention to a technical dimension of the client, i.e., in which field he/she intervened, and to a human dimension of the client, that involves the consultant-client relationship (Kubr, 2002).

Another reason to sustain the importance of management consulting lies in the concentration of best pools of talent, due to this sector's ability to attract and select many highly qualified younger and experienced workers (Kipping & Clark, 2012). These authors add that this industry is also important due to its role in leveraging new opportunities for improvement and leading the clients' company through a plan and solving its problems with the goal of achieving the clients' purposes (Kubr, 2002).

1.1.2. Types and Dimensions of Management Consulting

There are, as stated, many forms of consulting services. These have been classified earlier by Edgar Schein (1969) who proposed three consulting models, expressing how much part the consultant takes in an organizational change project: Expert Model, Medical Model and Process model (Schein, 1969). The Expert Model is present when the identification of the problem is the client's responsibility. Therefore, clients will choose a consultant from a relevant area of expertise and the consultant will advise the client and, in some cases, implement the solution. The Medical Model occurs when the consultant analyses the client's organization to identify issues and give advice so the client can implement the solutions in a correct and efficient way. Lastly, the Process Model refers to a "joint-diagnosis", in which the consultant is a facilitator of the clients' decision and learning. The consultant is expected only to offer guidance, advice and explain to the client how to identify and solve the organizational current problems and the future ones. Overall, a consultant may play a directive interventive role or a facilitating one (Sadler, 1998) but he or she will remain a consultant. While the first is when the consultant advises, orientates, and demonstrates solutions to the client; in the second, the consultant plays a facilitating role by helping to access the wisdom inside the company in a specific area, so as to enable the client's autonomous problem solving.

Kubr (2002) offers a different classification. He proposes two types of consulting: a technical type concerning the organizational processes, strategy, structure, and technology used as well as decisions

pertaining to resource allocation and use, au pair with, human type consulting which assumes individuals are at the core of the problems.

Considering that implementing changes plays a big part of the consultants' role, power appears to be a relevant political dimension of management consulting (Griethuijzen et al., 2006). Hence, politics are important in terms of influence, which is a main tactic when intending to implement changes. However, most of the time consultants are not internal to the company which means they do not integrate the organization's political realities and cannot be a reference to the client's employees. Thus, they should analyze and diagnose the formal power (hierarchy) in the client's company as to who holds the informal power (who people look up to) and then foster a constructive relationship with those in order to get their commitment with the intended change.

From another viewpoint, there is the so called "referent power" and "expert power" (Davenport & Early, 2010, p.2). These authors claim that the first one refers to something that the consultant can develop through claiming him/herself as a power holder through symbols such as a good car, good clothes, and presentation or due to the reputation of a successful consulting firm. The expert power remains related to the knowledge the consultant has in the specific topic that gives him credibility among the clients and co-workers.

1.2. Towards a Hierarchical structure of competencies

The study of competencies within organizational contexts has long roots in academia (Neves et al., 2015; Roe, 2002; Spencer & Spencer, 1993) but there has been a clear difficulty into finding a common comprehensive definition of what is and what is not a competency (Roe, 2014). The lowest common denominator seems to be considering competencies as a capacity that can be acquired and influences the performance of a task, duty, or role (Roe, 2002). In this regard it is important not to confuse competence with competency. Kurz and Bartram (2002) state that competence is associated with the performance and results in a given job while competencies refer the behavioral repertoire that led to that successful performance.

Spencer and Spencer (1993) model have gained relevance in the field because it was the first proposal of a vertical structure that conceives competencies as an expression of psychological features such as personality traits, self-image, and motives. However, these authors also join knowledge with competencies (skills) which can arguably be elements of the same level.

Robert Roe is eventually the most influential scholar into structuring the nature of competencies and composing elements. He has proposed the architectonic model (Roe, 2014) that establishes a

hierarchical structure where a competency appears built upon a set of knowledge, skills, and attitudes (KSA) which are developed based on abilities, personality, and other individual dispositions (APO). This means that APO influences our interests, and our willingness and ability to learn, which leads to knowledge and skills development, and it is reflected in attitudes. Consequently, competencies will be based on those, and will influence how we act and the success of it. In that sense, the author describes competencies as essential to be successful in our job (Roe, 2002). Moreover, he considers two classifications of competencies: the ones that are specific to a given occupation, and the ones that are used for professional purposes but are not specific to the occupation itself.

According to APA dictionary of Psychology (APA, 2015, p. 580), Knowledge is “the state of being familiar with something or aware of its existence, usually resulting from experience or study”, Skills refer to “an ability or proficiency acquired through training and practice” (APA, 2015, p.986), and attitudes” provide summary evaluations of target objects and are often assumed to be derived from specific beliefs, emotions, and past behaviors associated with those objects” (APA, 2015, p.88). This definition goes in accordance with the content explained by Roe (2002). Similarly, the same dictionary considers Aptitude as something that allows one to obtain a competency or skill (APA, 2015) which is in conformity with the statement defended by Roe (2002) as it is the basis of a competency. Abilities and dispositions are defined by APA (2015) as the capacity to act and as the proneness that differentiate individuals from one another, respectively.

The architectonic model (Roe, 2002) clearly distinguishes between competencies, sub competencies. While the first ones are the equivalent as higher level competencies which are fundamental for the success of tasks from the role, the sub competencies, the same as lower-level competencies, are the ones that contribute for less important tasks in a certain role.

Meriac et al. (2014) research reveals a validation of a framework of competency dimensions used on assessment centers based on previously models. The main considered framework is from Arthur et al. (2003) in which there were seven dimensions that turn out to be reduced to six as Stress Tolerance was dropped. Thus, the Six-Factor Model was composed by: Problem-solving, Planning and Organizing, Drive, Communication, Consideration / Awareness of Others, and Influencing Others. Meriac et al. (2014) tested the empirical validity of using those dimensions in assessment centers by confronting it with some generalized models. In regards of competency domain or dimension level used in work performance, there are also other frameworks, such as The Great Eight Competencies from Kurz and Bartram (2002). This author supports a different division from Meriac et al. (2014), which involves eight competency domains, namely: Leading and Deciding, Supporting and Cooperating, Interacting and Presenting, Analyzing, and Interpreting, Creating and Conceptualizing, Organizing and Executing Plans, Adapting and Coping, and Enterprising and Performing.

All these models have a relevant impact in Human Resources Management because competencies are at the core position as regards different topics of this field such as recruitment and selection (Bartram & Roe, 2005), performance appraisal (Grote, 2002) and consequently reward management (Martone, 2003) and training and development (Hornig & Lin, 2013). These models, especially the architectonic model, are applicable to the management consulting domain and can offer a solid basis for its systematic structuring.

1.3. Management consulting skills

As previously mentioned, management consulting is a multidisciplinary profession that can be related to different topics and field, so there may be a controversy among the different competency profiles of management consultants. This sub-section covers five competency models of management consultants' skills.

1.3.1. Tkaczyk (2017) model

Tkaczyk (2017) states that the consultant role is to “co-create value” with the client in order to improve its performance. Yet, it is possible for a consultant (either internal or external) to fail on attaining the clients' expectations and the consequences of such failure can be bold. Thus, consultants must be carefully chosen through their competencies. Following the same author there are five qualities that a company should look for when hiring a management consultant: 1) consulting skills (comprehending knowledge of the consulting cycle, gaining insights from the research-led and practice and practice-led research, risk management, change management and project management), 2) in-depth business expertise (comprehending expertise of own industry and the clients' industries), 3) personal effectiveness (humble attitude, emotional resilience, positive attitude in communication, curiosity, ability to deal with complexity and ambiguity, to be accountable, authentic, having analytical skills, good people skills, the ability to gain trust, to negotiate, managing difficult conversations, task organization, physical mobility, winning mindset and time-conscious about deadlines), 4) learning agility (comprehending continuous learning and professional development), and 5) ethics (comprehending ethical decision making, integrity, adherence to code of professional conduct).

1.3.2. Silacheva (2019) model – ICMCI’s framework (2013)

According to this model, knowledge, either the explicit – the one that is easily explained to people and can be documented and analyzed – or tacit – the one that we acquire through experiences, is the basis of the consultant’s role. Consultants are entrusted with delivering a solution to the client through their knowledge in an efficient way, so as to facilitate results attainment.

Maria Silacheva (2019) supports her research in the ICMCI’s Framework and points out three main areas of competencies: project management, relationship building, and analysis. In addition, she highlights that ethics and values must be followed by the consultant to provide the service in accordance with the client.

The ICMCI competencies’ framework encompasses three domains also: business, technical, and values and behavior, which include a list of competencies a management consultant should have. Business Competencies includes being an expert in the client’s sector/industry and company and understanding the own role in the client’s company. Technical competencies consist of the know-how in the specific sector and the knowledge of the consulting process from the entry in the project until the end. In addition, it embraces strategy skills such as planning, project and risk management and how to implement the plan itself, and to solve problems and create solutions. Finally, values and behavior competencies are based on ethical and professional behavior, effective communication and persuasion, and analytical skills. Silacheva (2019) considers that the consultant should adopt the behavior that suits the client and the circumstances.

1.3.3. Nissen et al. (2019) model

In their book, Nissen et al. (2019) overlook on the current reality in the consulting area and approaches several domains of the field, but also different types of areas that consulting can take place. The novelty that brought our attention to this book, was the fact it is reaching some more advanced and updated views on the management consulting. Nissen et al. (2019), despite all of competencies mentioned so far by other authors, suggest a competency model based on the digital transformation that is currently influencing management consulting. This acknowledges the information technology (IT) continuous pressure that influences the way companies are working, namely their business models. However, according to these authors, there is not yet the likelihood for the majority of consultants to play a considerable use of IT tools, since they only represent 1.4% of the sample of this study. This competency model has the advantage of bringing into the consultants’ competency

repository the critical IT skills that are gaining ground in all fields of business from simple IT tools to the robotization of production (Dey & Das, 2019).

Given those changes, the qualifications of consultants will have to keep up and be updated continuously. Following Nissen et al. (2019), the use of technical tools will get common, and consultants will have to develop their communication skills to make them feel easily understood by clients and to comprehend client's request and concerns. Furthermore, there will be more flexibility and travel availability will no longer be a required condition. Management consultants are not expected to be experts in programming, but rather to dominate IT tools, either related to communication or analytical purposes. Nevertheless, teamwork, persuasion, problem-solving and industry and professional specialization will still be relevant, as it is the root of the profession. This digital transformation is not only relevant to bridge with clients' developments, but it is deeply affecting the management consulting business itself (Tavoletti et al., 2021).

1.3.4. Tokár-Szadai (2020) model

Tokár-Szadai (2020) conducted a study in Hungary in order to identify what did clients value the most in management consultants and in the service of consultancy firms. The author considers that clients can have three types of uncertainty towards the consultant, namely performance uncertainty, relational uncertainty, and psychosocial uncertainty. The first one refers to the existing doubt of how to identify a qualified consultant while relational uncertainty is related to the fact that there is the possibility of a consultant to place his/her interests before the company's. The last one is linked with how workers feel about an external person implementing changes in the organization.

Findings from Tokár-Szadai (2020)'s research concluded that clients are more satisfied in cases in which they have a tailored making service for the specific challenge they are facing at the moment, this means, when consultants try to have a closer and customized relationship with them. Tokár-Szadai (2020), listed some abilities and competencies which are a must have for consultants to succeed in their work, such as knowledge associated with the profession such as experience, methodological knowledge, pioneering thinking, and solutions making; being flexible; being a team player; know how to persuade and adapt; and having legitimacy and empathy.

This author states that clients are more likely to be satisfied with the service if the consultants invest in relationship building, namely in small business consulting. However, this research was focused on Hungary's market, which can skew the results when generalized across all management consulting.

1.3.5. Larsson et al. (2020) model

Larsson et al. (2020) considers a management consulting process based on four phases: the pre-analysis phase, in which the consultant understands why is the intervention needed and gets to know the organization and its workers and processes; the problem identification phase when he/she finds out the root of the client's problem by gathering and analyzing some data; followed by the analysis phase in which the consultant creates a plan to solve the problem based on the previously assessed resources and client's expectations; and lastly the implementation phase when he/she puts the plan into practice. In addition, he considers that both internal and external consultants have advantages, and it is up to the company to understand which one is the best solution in each situation.

Following the author, the evolution of technologies will bring an impactful change in Management Consulting, involving all its types and phases. Nevertheless, the authors consider it will remain to be a needed profession in companies, albeit management consultants will have to adapt to the new reality. Thus, a consultant will deal with complex problems and a greater amount of data as information will be easily accessed and consequently it will be required a different effort from consultants. The authors, highlight collaboration with other experts, namely data-driven one, and domain of technology tools and new innovative systems, in order to achieve sustainable change in their clients' organizations.

Yet, most of the traditional management consultants' competencies will still be an added value that will encourage clients to hire service professionals, such as problem formulation, problem-solving, solution making, experienced knowledge, change management skills, strategic thinking and interaction competencies. The novelty remains related with the familiarization with technology and some complementary subjects, for example, data privacy and cyber security, and the flexibility in terms of time and space, as there is no need for face-to-face meeting anymore. This brings up other important aspect, which concerns the relationship with the client. The authors consider it is influenced by the flexibility and it is something that is affected in a negative way by it, what should bring some cautious to the future management consultants.

Lastly, Larsson et al. (2020) consider management consultants as pioneers of digital transformation in companies as it is the major change companies will suffer, and that requires guidance and management.

1.3.6. On the proposed models: towards an integrative view

Overall, the models reviewed comprise a vast array of competencies, or what the authors proposed as being so, that have some points of convergence but are likewise divergent. Interestingly, from a cross reference analysis, it is noteworthy mentioning that among the five frameworks reviewed, only one of the papers cites one of the remaining authors. Although the papers are quite recent and this could explain the absent cross-citations, our attention focused on author citation and not paper citation, to avoid this bias. This is compelling evidence about how fragmented and disconnected this literature is. Also interesting is the absence of digital focus amongst the competencies identified in most of the papers, which is rather surprising when one considers how recent these papers are. It is thus no surprise that this field of research is needing integration and systemization e.g., as regards what is and isn't a competency.

From a critical stance, this can be attributed also to the lack of theoretical background such proposals have, especially as the validation criterion seems to be more of a facial validity from experts rather than standard psychometric validity studies (Rust et al., 2020). Such is not favorable to the often-proposed importance of competencies as a key topic in Human Resources Management.

There are three propositions that must be observed to validate an integrative model:

Proposition 1: There is a set of competencies that gathers consensus from judges on its importance for management consultancy.

Proposition 2: Different groups of judges converge on the most important competency within each big competency.

Proposition 3: Different groups of judges converge on the full rank order of competencies within each set of the 5 big competencies.

As a first step towards an integration of the proposed management consulting skills models, we designed two empirical studies that are intended to contribute sequentially to such objective.

Chapter II - Methodological design

As stated, it is our contention that extant consulting competencies models are in disarray and do not truly converge in a discernible way. To test if this convergence is possible, we devised a qualitative analysis that sequentially aggregates data and critically analyses it to produce a common ground. For this purpose, we designed two empirical studies.

The first study is intended to make a comprehensive collection of proposed competencies, organize them according to the original dimensional structure, and integrate all proposals into a wider categorization. Afterwards, we intend to do a critical analysis of each construct proposed as not all of them will match the nature of competencies but may rather be what Roe (2014) classified as traits, aptitudes, knowledge, skills, or attitudes (which are deemed to operate at a lower level, as subsidiary of the competencies). The outcome of this study is expected to be a parsimonious list of competencies that cover the most central issues in consulting. Because this list is *per se* insufficient to judge on the reasonability and relative importance of these proposed competencies, we deploy a second study.

The second study is designed to identify consensus about how important such competencies are. For that purpose, we apply the Delphi analysis and introduce a novel technique, based on Swarm Analysis, to collect shared views on the sets of competencies.

For clarity's sake we opted to separate each study in a chapter to offer a detailed description of its methods and findings. The following chapters thus serve that purpose.

Chapter III - Study #1: Comparative qualitative analysis

3.1. Critical comparative analysis

This qualitative study is based on a content analysis of the above-mentioned models proposed by Larsson and Teigland (2020), Nissen et al. (2019), Silacheva (2019), Tkaczyk (2017), and Tokár-Szadai (2020). This specific technique has been successfully deployed to explore competencies (e.g., Krippendorff, 1980; Roberts et al., 2006) and is thus suitable for our purposes and to provide an answer to our leading question. Namely: what are the management consultant's competencies that integrate extant models?

3.2. Content analysis

According to Krippendorff (1980) content analysis is a technique that intends to systematically describe and quantify phenomena for which an interpretative approach is used. It is suitable to chunk arrays of words based on its semantical identity, as new categories can be made that integrate words or sentences that convey the same meaning (Neundorf, 2002). As a process, content analysis departs from guiding questions and a set of decisions as regards how categories are identified (*a priori* vs. *a posteriori*), the corpus, the unit of analysis, and the unit of context (Bardin, 2018).

Categorization: Categories can be pre-existing when there is a theory or framework that has already established a set of dimensions or concepts that can be adopted to classify all data analyzed. This is called *a priori* categorization (Bardin, 2018). Conversely, when such theory is lacking, one can opt for an inductive process where categories are sequentially extracted, in an iterative fashion, from the meanings identified as the analysis proceeds. This is called *a posteriori* categorization. As a practical necessity, it is always possible to adopt a mixed approach where both *a priori* categories exist as well as the researcher is open to identify new categories.

Corpus: This interpretative process requires an object of analysis. This object can be a text, pictures, sounds or any other stimuli that can be interpreted and transformed into concepts. In this study, the corpus is the set of articles and book chapters that were identified in a literature review as having an explicit proposal of management consulting competencies. Therefore, this study focuses on documental analysis.

Units of Analysis and Context: Within the documental corpus it is important to decide what is the unit of analysis, i.e., what amount of data is targeted to extract meaning. This unit of analysis varies from a single word to whole paragraphs. The larger its scope, the more difficult the task of extracting precise meaning (Graneheim & Lundman 2004) but conversely, if the unit of analysis is too narrow, there might be biases due to the polysemic nature of words (i.e., the same word conveys different meanings, depending on the sentence it is embedded) or modulations it may suffer from previously conveyed information or the information that immediately follows. For this reason, it is important to define the unit of context (Bardin, 2018). If one is targeting words as unit of analysis, then sentences will most likely be the unit of context that will provide clarity as regards the words' meaning. Likewise, if one is targeting sentences, then paragraphs may serve that purpose.

Coding is the act of interpreting the data and registering the information under the form of categories and eventually counting how often they emerge in the analysis. These frequencies can offer insight about the degree of centrality of each category within the documents that compose the corpus. Likewise, it can inform on the tacit consensus among the sources because any given category that is mentioned by all sources will most likely be commonly agreed as being important. However, content analysis is not forcefully supported on frequency counting since the qualitative nature itself of the concepts may be the main target of the analysis without much consideration for its saturation in the corpus.

3.3. Data analysis strategy

To answer the leading question, we devised a sequence of activities that contribute to the elaboration of a table that synthesizes all findings. The process is sequences as follows:

1st we analyzed the consulting competencies models to list proposed competencies,

2nd we pitched these models against each other to identify shared and unique competencies,

3rd we related these competencies with Meriac et al. (2014) and Kurz and Bartram (2002) frameworks to validate the proposed competencies with the larger factors,

4th we applied Roe's (2014) criteria to differentiate competencies from KSA-APOs and to filter out all of the proposed competencies that are not strictly competencies according to this author, and

5th we trimmed the original list to identify competencies combining them into the larger factors.

Results will be shown in a parsimonious way according to the above-mentioned process.

3.4. Results – Study #1

As stated, the corpus analyzed consisted in the following five documental sources: Larsson and Teigland (2020), Nissen et al. (2019); Silacheva (2019), Tkaczyk (2017), and Tokár-Szadai (2020). As a first step, we extracted from each document the list of competencies the authors proposed. They cumulated 79 entries varying from 9 (Larsson & Teigland, 2020; Nissen et al., 2019) up to 27 (Tkaczyk, 2017). Table 3.1 shows these entries separated by documental source (column) and aligned by semantic similarity (line).

This list of competencies requires a systematization into larger set of competencies. For this purpose, we adopted Meriac et al. (2014) six-factor model that aggregates at a comprehensive level (but neither overly detailed nor overly general) the competencies. Likewise, we considered Bartram (2005) great eight competencies. We gave priority to Meriac et al. (2014) model because it was generated for assessment centers both comprehending professional selection as well as developmental processes. Both greatly converge and thus we trust that this option is not biasing further analyses. Table 3.2 lists the competencies shown in the previous table but now organized by Meriac et al. (2014) six-factors: Influencing others, Consideration / Awareness of others, Communication, Drive, Planning and Organization, and Problem-solving. As reviews by Meriac et al. (2014) stress tolerance was not considered also in this study. Whenever a competency falls outside this *priori* categorization, we inserted it in “other” category.

Table 0.1. List of competencies proposed by authors

Tkaczyk (2017)	Silacheva (2019)	Nissen et al. (2019)	Tokár-Szadai (2020)	Larsson & Teigland (2020)
Ability to deal w/ complexity & ambiguity				
Managing difficult conversations				
Negotiation	Negotiation			
	Persuasion	Convincing other	Persuasion	
	Teamwork	Collaborative skills		Collaborative skills
			Empathy	
Integrity		Being reliable		
Authentic			Having authenticity	
Good people skills	Relationship building	Social skills & relationship management	Relationship building	Interpersonal skills
Humble attitude				
Adherence to the professional conduct	Professional behavior	Professional skills		
Ethical decision-making	Ethical behavior			
Emotional resiliency				
Accountable		Credibility		
Learning Agility				
		Flexibility	Adaptability	Flexibility
			Legitimacy	
Positive attitude in communications	Effective communication	Communication skills		
Curiosity		Instinct		
Risk management	Risk management			
Change management				Change Management
Project Management	Project Management	Project Management		
Analytical skills	Analytical skills			
Task Organization				
Time-conscious				
	Planning			
	Problem-solving skills	Problem-solving skills		Problem-solving
	Solution developing	Creating solutions	Solutions making	Solutions making
		Domain of IT tools		Tech-savviness
			Pioneering thinking	
Research-led practice				
Practice-led research				
Physical Mobility				
Expertise of industry	Expert in the industry / know-how of the sector	Expert Knowledge Industry	Experience / Professional knowledge	Multidisciplinary expert
Strategic thinking	Strategic skills			Strategic thinking
Comprehending the consulting cycle	Knowledge of the consulting process	Methodological knowledge	Methodological knowledge	
Company knowledge	Client knowledge	Organizational knowledge		

Table 0.2. Systematization of the proposed competencies into Meriac et al. (2014) six-factor model

Meriac et al. (2014)	Tkaczyk (2017)	Silacheva (2019)	Nissen et al. (2019)	Tokár-Szadai (2020)	Larsson et al. (2020)
Influencing others	Negotiation	Negotiation			
		Persuasion	Convincing others	Persuasion	
	Accountable		Being reliable		
				Legitimacy	
Consideration / Awareness of others		Teamwork	Collaborative skills		Collaborative skills
				Empathy	
	Integrity		Credibility		
	Authentic			Authenticity	
	Good people skills	Relationship building	Social skills and relationship manag.	Relationship building	Interpersonal skills
	Humble attitude				
Communication	Positive attitude in communications	Effective communication	Communication skills		
	Managing difficult conversations				
Drive	Curiosity				
			Instinct trustee		
	Winning mindset				
Planning	Risk management	Risk management			
	Change management				Change Management
	Project Management	Project Management	Project Management		
	Task Organization				
	Ability to deal w/ complexity and ambiguity				
			Flexibility	Adaptability	Flexibility
	Time-conscious				
		Planning			
	Physical Mobility				
	Comprehending the consulting cycle	Knowledge of the consulting process	Methodological knowledge	Methodological knowledge	
Expertise of industry	Expertise of industry	Expert industry knowledge	Professional Knowledge	Multidisciplinary expertise	
Company knowledge	Client knowledge	Organization knowledge			
Strategic thinking	Strategic skills			Strategic thinking	
Problem-solving		Problem-solving skills	Problem-solving skills		Problem-solving
		Solution developing	Creating solutions	Solutions making	Solutions making
	Analytical skills	Analytical skills			
	Ethical decision-making	Ethical Behavior			
				Pioneering thinking	
Other	Practice-led research				
			Domain of IT tools		Tech-savviness
	Research-led practice				
	Emotional resiliency				
	Adherence to professional conduct code	Professional behavior	Professional skills		
Learning Agility					

One of the most important analyses concerns the validation of the proposed entries and strict competencies, for which we adopted Roe's (2014) criteria. This scholar defined four questions to determine if a given concept is a competency or not, distinguishing it from dispositions, KSAs (knowledge, skills, and attitudes), sub competencies and other characteristics. Following this author, those elements have influence on the development of a competency, but they are not competencies *per se*. To be considered a competency, the answer to the following questions has to be "Yes":

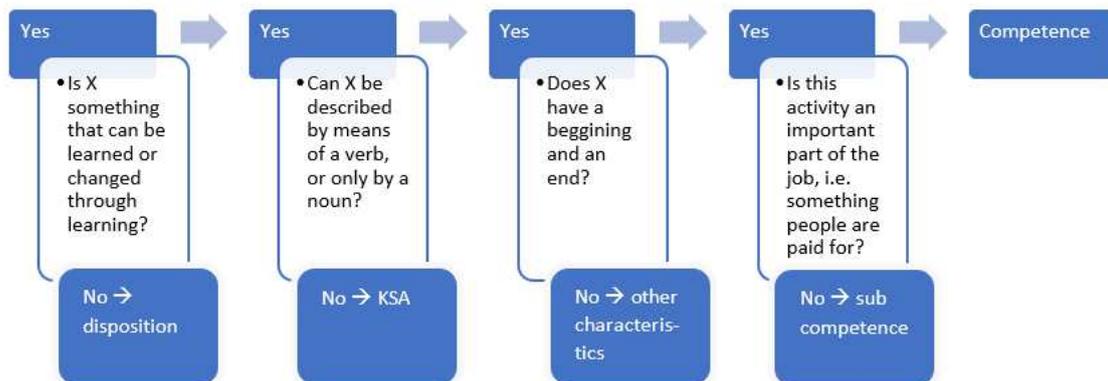


Figure 0.1. Roe's (2014) competency criteria

By applying this method of inquiry, some proposed entries are seemingly not competencies at all. For example, curiosity or learning agility are most suitably taken as dispositions as they are not described as learned or changed, being thus more closely treated as a trait (although it can also be modulated as a state, Silvia, 2008) rather than a competency. Likewise, learning agility is defined as “the willingness and ability to learn new competencies in order to perform under first-time, tough, or different conditions” (Lombardo & Eichinger, 2000: 323). De Meuse et al. (2010: 126) evidences its dispositional nature by sustaining that “The concept of learning agility is intended to address the question: What are the individual traits required for an individual to benefit most from such developmental experiences?”. Additionally, entries such as “professional behavior” proposed by Silacheva (2019) are too broad to be usable in this context. Some other entries are more difficult to ascertain and therefore, the categorization was subjected to an independent coding that led to a discussion and consensus on each entry's conceptual nature. The two independently original coding were contrasted via an interrater agreement index (Cohen's Kappa) and the analysis showed that among the 238 codes (matching a sample 17 excerpts crossed with 14 possible competencies) the raters diverged in 6 only, corresponding to a Kappa of .87 ($p < .001$) which qualifies as almost perfect matching. The Intraclass Correlation Coefficient (ICC) converges with a value of .871 CI95 [.837; .899] ($F=14.480$, $p < .001$). The resulting analysis is depicted in the following Tables that are similar to the

previous one but add a colour code to denote the nature of each entry. Thus, “competencies” are painted light green, “dispositions” light pink, “KSAs” cyan, “other characteristics” light yellow, “sub-competencies” grey, and “unclassifiable” white background. Due to the large amount of data, we opted to show each coding structure separately in Tables 3.3 to 3.9.

Table 0.3. Categorization filtered by Roe’s (2014) criteria – Influencing others competency dimension matching analysis

Meriac et al. (2014)	Tkaczyk (2017)	Silacheva (2019)	Nissen et al. (2019)	Tokár-Szadai (2020)	Larsson et al. (2020)
Influencing others	Negotiation	Negotiation			
		Persuasion	Convincing others	Persuasion	
	Accountable		Being reliable		
				Legitimacy	

Table 0.4. Categorization filtered by Roe’s (2014) criteria – Consideration / Awareness of others competency dimension matching analysis

Meriac et al. (2014)	Tkaczyk (2017)	Silacheva (2019)	Nissen et al. (2019)	Tokár-Szadai (2020)	Larsson et al. (2020)	
Consideration / Awareness of others		Teamwork	Collaborative skills		Collaborative skills	
				Empathy		
		Integrity		Credibility		
		Authentic			Authenticity	
		Good people skills	Relationship building	Social skills and relationship management	Relationship building	Interpersonal skills
		Humble attitude				

Table 0.5. Categorization filtered by Roe’s (2014) criteria – Communication competency dimension matching analysis

Meriac et al. (2014)	Tkaczyk (2017)	Silacheva (2019)	Nissen et al. (2019)	Tokár-Szadai (2020)	Larsson et al. (2020)
Communication	Positive attitude in communications	Effective communication	Communication skills		
	Managing difficult conversations				

Table 0.6. Categorization filtered by Roe’s (2014) criteria – Drive competency dimension matching analysis

Meriac et al. (2014)	Tkaczyk (2017)	Silacheva (2019)	Nissen et al. (2019)	Tokár-Szadai (2020)	Larsson et al. (2020)
Drive	Curiosity				
			Instinct trustee		
	Winning Mindset				

Competency
 Disposition
 KSA
 Other characteristic
 Subcompetency
 Not classified

Table 0.7. Categorization filtered by Roe's (2014) criteria – Planning competency dimension matching analysis

Meriac et al. (2014)	Tkaczyk (2017)	Silacheva (2019)	Nissen et al. (2019)	Tokár-Szadai (2020)	Larsson et al. (2020)	
Planning	Risk management	Risk management				
	Change management				Change management	
	Project Management	Project Management	Project Management			
	Task Organization					
	Ability to deal w/ complexity and ambiguity					
				Flexibility	Adaptability	Flexibility
	Time-conscious					
		Planning				
	Physical Mobility					
	Comprehending the consulting cycle	Knowledge of the consulting process	Methodological knowledge	Methodological knowledge		
	Expertise of industry	Expertise of industry	Expert industry knowledge	Professional knowledge	Multidisciplinary expertise	
	Company knowledge	Client knowledge	Organization knowledge			
Strategic thinking	Strategic skills			Strategic thinking		

Table 0.8. Categorization filtered by Roe's (2014) criteria – Problem-solving competency dimension matching analysis

Meriac et al. (2014)	Tkaczyk (2017)	Silacheva (2019)	Nissen et al. (2019)	Tokár-Szadai (2020)	Larsson et al. (2020)
Problem-solving		Problem-solving skills	Problem-solving skills		Problem-solving skills
		Solution developing	Creating solutions	Solutions making	Solutions making
	Analytical skills	Analytical skills			
	Ethical decision-making				
				Pioneering thinking	

Table 0.9. Categorization filtered by Roe's (2014) criteria – Other competency dimension matching analysis

Meriac et al. (2014)	Tkaczyk (2017)	Silacheva (2019)	Nissen et al. (2019)	Tokár-Szadai (2020)	Larsson et al. (2020)
Other	Practice-led research				
			Domain of IT tools		Tech-saviness
	Research-led practice				
	Emotional resiliency				
	Adherence to the professional conduct code	Professional behavior	Professional skills		
	Learning Agility				

Competency
 Disposition
 KSA
 Other characteristic
 Subcompetency
 Not classified

As Table 3.3 to 3.9 evidence, only thirty-three competencies can be extracted from all the seventy-two entries from the studies. Thus, as the competencies were filtered by Roe's (2014) criteria, Meriac et al.'s (2014) factor Drive was eliminated, as Curiosity and instinct is considered as a disposition and winning mindset a KSA. Moreover, from "Other" dimension, added by us, only remain 2 competencies that became called as digital competency due to its nature. Proposals are neither equally comprehensive nor equally efficient as regards competencies covered. For example, Silacheva (2019) only sets out 16 entries from which we identified twelve competencies (thus a ratio of $\frac{3}{4}$) while Tkaczyk (2017) proposed almost the double number of entries (28) from which eight are true competencies (a ratio a bit greater than $\frac{1}{4}$). With the same number of entries as Silacheva (2019)'s, from Nissen et al. (2019)'s entries we extracted half of them, while from Larsson et al. (2020) we identified 7 competencies (nearly $\frac{3}{4}$ as well). Regarding the remaining proposal, more laconic, has 10 entries, from which we retain 3 competencies. It is worth noticing that albeit Larsson et al. (2020) and Tókar-Szadai (2020) have been restrained in offering a longer list of competencies, one of them was one of the two highlighting digital competencies as a key issue which is, to our knowledge, a timely and relevant emphasis (Oberländer et al., 2020).

Because some competencies extracted are considered as equivalent, the outcome of the content analysis was shortened to 14 competencies, that were grouped in bigger dimensions, called as Big Competencies, division which was inspired on the Meriac et al. (2014)'s proposal. Thus, we considered: Relational Competency (adapted from the association of the dimensions Influencing others and Consideration / Awareness of others), which include Negotiation, Persuasion, Teamwork, and Interpersonal competencies; Communication Competency; Problem-solving Competency; Planning Competency; and Digital Competency.

3.5. Competencies' Dictionary

Once these competencies have been selected, and because this research has a strong emphasis on conceptual definitions, we proceed with defining each of these competencies for which we compiled information from credible scholar and professional sources namely APA (2015) Dictionary of Psychology complemented with several peer reviewed publications (Griffith, 2001; Kirby & Ashman, 1984; Nuntamanop et al., 2013; and Suikki et al., 2006) as well as official institutions such as the US Department of Labour (O'Net) or the EU Commission's European Skills, Competences, Qualifications and Occupations (ESCO). We will show the definitions organized by the large factors (Table 3.10).

Table 0.10. Dictionary of Competencies

Competencies	Definition
Analytical competency	Produce thoughts using logic and reasoning in order to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems. (ESCO) This competency that leads to success in the separation of the studied/explored topic in its elements and evaluation of their details (APA, 2015).
Change Management	“a seductive response to complexity” (Griffith, 2001, p. 299). It is the “Manage development within an organization by anticipating changes and making managerial decisions to ensure that the members involved are as less disturbed as possible.” (ESCO)
Digital competency	“Utilise computers, IT equipment and modern day technology in an efficient way.” (ESCO)
Effective communication	Clear “transmission of information, which may be by verbal (oral or written) or nonverbal means (see nonverbal communication)” (APA, 2015, p. 215). This information can be “ideas, knowledge, feelings, and experiences and for many other interpersonal and social purposes” (APA, 2015, p. 215).
Interpersonal competencies	The capacity “to carry on effective interactions and relationships with others, such as the ability to communicate thought and feeling or to assume appropriate social responsibilities” (APA, 2015, p.554)
Negotiation	“a reciprocal communication process in which two or more parties to a dispute examine specific issues, explain their positions, and exchange offers and counteroffers in an attempt to identify a solution or outcome that is acceptable to all parties.” (APA, 2015, p. 695)
Persuasion	The act of trying to influence others. This can be related with their “attitudes, beliefs, or emotions associated with some issue, person, concept, or object” (APA, 2015, p. 786)
Planning	“Manage one's time schedule and resources in order to finish tasks in a timely manner” (ESCO). It is considered “a mental representation of an intended action [...] that is presumed to guide the individual in carrying it out” (APA, 2015, p.801). To do so in an efficient and successfully way, there must be knowledge about the specific topic (Kirby & Ashman, 1984).
Project Management	This entails the knowledge about the context, the people that is involved and the goals it is proposed to attain (Suikki et al., 2006), as well as other “variables implied in project management such as time, resources, requirements, deadlines, and responding to unexpected events.” (ESCO)
Risk Management	“The process of identifying, assessing, and prioritising of all types of risks and where they could come from, such as natural causes, legal changes, or uncertainty in any given context, and the methods for dealing with risks effectively” (ESCO). There is a risk when is possible that something damaging or adverse to arise (APA, 2015).
Solutions making	“Use systematic processes of collecting, analyzing, and synthesising information to evaluate current practice and generate new understandings about practice.” (ESCO). These struggles and adversities can “arise in planning, prioritising, organising, directing/facilitating action and evaluating performance.” (ESCO)
Teamwork	“The cooperation between people characterised by a unified commitment to achieving a given goal, participating equally, maintaining open communication, facilitating effective usage of ideas etc.” (ESCO)
Problem-solving	“Attempt to overcome difficulties, achieve plans that move them from a starting situation to a desired goal, or reach conclusions through the use of higher mental functions” (APA, 2015, pp. 837)
Strategic thinking	“Competency that impacts strategy formulation and strategic actions leading to business performance, of which characteristics include conceptual thinking ability, visionary thinking, creativity, analytical thinking ability, learning ability, synthesizing ability, and objectivity” (Nuntamanop et al., 2013, pp. 256)

Chapter IV - Study #2: Consensus seeking

As stated, this research is intended to identify a set of management consulting competencies that simultaneously integrate existing divergent proposals, is parsimonious, and targets the most transversal competencies in management consulting. The list identified in the previous study is a starting point that requires further validation. This is achievable via a consensus seeking analysis about the relative importance of these competencies.

We reason that if consensus can be reached, and if the ranking structure is stable, there is strong evidence that individuals accept and have the same interpretation about the saliency of the competencies proposed.

Therefore, we designed an empirical study intended to test the degree of consensus and ranking convergence so to ascertain the degree of validity the list may hold.

4.1. Methodological approach

Consensus seeking has a long history in management and organizational studies. The most popular technique is the Delphi technique (Okoli & Pawlowski, 2004) that has generated thousands of empirical results in the most diverse domains of science (e.g., nursing, Varndell et al., 2021; accounting Worrell et al., 2013; rehabilitation Vazquez-Ramos et al., 2007) as well as studies that are focused on competencies or skills identification (e.g., Geng et al., 2018; Menke et al., 2018; Smith & Simpson, 1995; Wang et al., 2021). A brief search in scholar google identifies over 220 thousand publications from which 43.500 were published in the last three years, therefore representing a percentage of approximately 20%, i.e., a fifth of papers on Delphi (technique or method) was published very recently. This suggests this technique has been gaining importance ever since its inception in the early 1950 in RAND corporation (Yousuf, 2007). However, Delphi has been subjected to many variations such as the modified Delphi, the “policy Delphi”, the “real-time Delphi” (Hasson & Keeney, 2011), and the “decision Delphi”, the “scenario Delphi”, the “policy Delphi” and the “argument Delphi” (Mukherjee et. al, 2015).

Still, it has also been criticized. Keeney et al. (2001) highlights the lack of reliability of the technique when applied to different groups of people as the obtained results can be different, and doubts on its validity, as it could only be verified when the groups are composed by experts on the studied topic. Moreover, it is considered that Delphi’s goal can be blurred as so, people see it as a tool to reach

consensus rather than as mean to do so, i.e., it must be seen as a promotor of discussion (Powel, 2003) in which the participants are not persuaded to a specific conclusion in a normative way, but instead in an informative sense (Murphy et al. 1998). Moreover, it is criticized by authors the time this technique requires and complexity of the process, namely the development of questionnaires and the numerous rounds implanted (Powel, 2003).

A novel approach to consensus seeking has been proposed by researchers based on Swarm Intelligence (Krause, 2010; Milonas, 1993; Zhu & Tang, 2010) and it is applied in various fields likewise (e.g., medicine, Rosenberg et al., 2018; green logistics, Zhang et al., 2015; food industry, Spanaki et al., 2021). Swarm Intelligence first appearance was related to different animal species which had social interaction. Thus, it is defined in APA (2015, pp. 57) Dictionary of Psychology as the “the cumulative problem-solving ability of a group of animals of one species, such as an ant colony or a flock of birds”. More recently, it has been applied in human situations and events. Therefore, Krause et al. (2010, p. 29) considers it happens when “two or more individuals independently, or at least partially independently, acquire information and these different packages of information are combined and processed through social interaction, which provides a solution to a cognitive problem in a way that cannot be implemented by isolated individuals”. Basically, the Swarm analysis is an AI-based method which allows us to find a consensus regarding insights, evaluations, and predictions in an easier way, by having a team or groups synchronously giving their opinions at the same time, instead of “employing traditional asynchronous polling” (Rosenberg, 2015, p. 658). The bigger sample is used in a swarm intelligence technique, the more accurate the answer is (Krause et al., 2010). It can be differentiated between natural (related with biological systems) and artificial swarm intelligence (applied to human artifacts). The main advantages of this analysis techniques are based on its flexibility and versatility, as it can be used in multiple contexts and ways (Chakraborty & Kar, 2017). Currently there are several companies developing this kind of analysis, such as Unanimous.ai.

Both consensus seeking techniques may have their advantages and disadvantages, but we reason that synchronous techniques such as Swarm Intelligence outperform Delphi or at least it will enable to judge on the robustness of the decisions if they converge. We therefore deployed both approaches with the same stimuli.

4.2. Techniques

As stated, two different techniques were deployed: Delphi technique and Swarm Analysis. In this subsection, they will be both detailed.

4.2.1. Delphi technique

The Delphi technique works upon a very simple rationale as the individuals' scores are contrasted with the interval of difference between the mean and the standard deviation and the sum of the same values. The criterion to feedback the aggregated results to the individuals relies on identifying all cases where the individual score falls out of the 1 SD interval around the mean value and send an invitation to those individuals showing the group's responses and asking whether the individual would like to review the previous answers at the light of the new information or if he or she prefers to keep it, justifying the reason to do so.

4.2.2. Swarm Analysis

To perform the Swarm analysis, we used the software Swarm Insight, developed by Unanimous.ai, an US company based in San Francisco (US) and founded in 2014 by Louis Rosenberg, also CEO. This company has kindly agreed to allow us using its platform for free in order to proceed this research. It empowers decision-making and discussions using artificial intelligence algorithms based on the biological principle of Swarm Intelligence, increasing the human intelligence, as different people are in a on live argument about a specific topic and reach together a solution.

The online platform has a moderator and a pre-set number of participants that can enter either via a shared link or through invitation sent by email. The moderator throws the question, and the participants use their device – computer, tablet, or smartphone – to move his/her magnet to is favorite from the given choices.

Using this platform, the moderator can create a script previously with the introduction, notes, images, or videos that he/she wants to share with the participants and the questions to be discussed during the swarm session. During the sessions the moderator can ask different types of questions, namely: yes/no, yes/no/maybe, agree/disagree, rate it (from 1 to 5 stars), buy/sell, predict it (very unlikely to very likely), up/down, estimate it, percent, option A or option B (that can be identified), dollars, multiple choice question with participations suggested answers (where the first 6 suggestions will be the options), or multiple choice questions (with pre-set options by the moderator).

Swarm analysis from Unanimous.ai, show us some specific metrics such as conviction, impulse, and Left and Right Support. The output of conviction illustrates the certainty of each result based on the participants' actions, like time of decision or change of opinion. This mean that a question in which the participants took more time to reflect and changed their choice multiple times would give us a low

conviction score. The impulse reflects the percentage of participants who have chosen each possible answer during the session. Thus, that there are as many impulse scores as the number of possible answers for each question. The impulse 1 is always correspondent to the lower left vertex of the hexagon and the further are counted on clockwise, and all together they are called the factional support. Furthermore, there are other outputs that the Unanimous.ai swarm analysis allow us to interpret such as Left and right support, which is reflects the percentage of participants defending the answers in left side and right side of the hexagon, Interpolated solution, that appears only for ordered questions and represent the optimal solution of the answers, and AB Interpolation which allow us to understand the conviction of a certain answer analyzing the direction to where each magnet is driving to.

In this specific study there was two parts. In the first one, participants were challenged to rate the five groups of competencies extracted from the literature review, namely Relational, Communication, Problem-solving, Planning, and IT. Each competency group was rated separately using a 1-to-5-star scale. It comprised five different questions.

The second section, aimed at within each group, the selection of the most important competency for a management consultant to have. It comprised 3 questions.

4.3. Measuring consensus

Interrater agreement (IRA) measures have been gaining ground in literature as a preferred approach to guarantee information convergence among distinct evaluators, and even as a required information to enable nested models testing in multilevel research (Krasikova & LeBreton, 2019). Its applications have been numerous with examples found for job analysis accuracy testing (Morgeson & Campion, 2000) or for performance appraisal convergent between multiple evaluators (Brutus et al., 1998). Among extant IRA statistics, O'Neill (2017) critically analyzed eight alternatives. Among these, the author states the most popular is James et al. (1984) rwg. Such statistic has been criticized for its assumptions about the appropriateness of uniform distribution to depict random responding as well as linearity (LeBreton et al., 2005), and has thus given place to the use of r*wg proposed by Lindell and Brandt (1997).

The r*wg indicator is computed as the ratio between the observed variance in judges' ratings on a single item and the variance of the maximum dissensus distribution. The formula is:

$$1 - (S_x^2 / \sigma_{mv}^2) \tag{1}$$

Where S_x^2 stands for the variance in judges' ratings, and σ_{mv}^2 stands for the variance in the maximum dissensus distribution which is computed as:

$$0.5(X_u^2 + X_l^2) - [0.5(X_u + X_l)]^2 \quad (2)$$

Where X_u and X_l are the upper and lower extreme in the response scale respectively. The formula, then, expresses the difference between the average sum of squares of the extreme values to the squared of the average extreme. A value of 1 indicates maximum agreement, a value of .50 indicates agreement as observed if the null distribution occurred, and a value of zero indicates absolute disagreement.

Another relevant indicator to gauge convergence of independent ratings on the same subject is the Intraclass Correlation Coefficient (ICC). It measures the amount of the variance in rating attributable to the systematic differences in rating subjects as against the total variance in ratings (Liljequist et al., 2019). This has been considered either as an Interrater Reliability (IRR) measure or as a mix of both IRA and IRR (LeBreton et al., 2008). Among the variations of ICC there is one that measures IRR if the raters were randomly extracted from the possible population of judges (ICC1). Additionally, other ICC measures were developed to indicate the stability of mean ratings done by a group of ratters, such as ICC(k). In the case of this research, this measure would be computed on the difference between the mean square for rows (competencies) and the one-way random effects ANOVA, divided by the mean square for rows. This measure is often named as ICC (2) as stated in Bliese (2000).

Although there is no absolute standard cut off for ICC values (Biemann et al., 2012) most published research adopts rules of thumb such as ICC (1) being at least 0.12 (James, 1982) and ICC (2) being at least attain 0.70 (Klein & Kozlowski, 2000) which should always be higher than ICC (1).

These measures are suitable for rating exercises where the values given to each competency are independent from other given before. However, when the task requires a ranking or such items, Kendal's W statistic is the preferred choice, which indicates the agreement level of evaluations made by different judges.

4.4. Procedure

Postgraduate students with a specialization in Organizational Consultancy or those with postgraduation in Management and applying for a job in management consulting, namely the ones attending Consultancy and Diagnosis Techniques course in the year 2021/22 were invited to participate in class. Students enrolled either in Portuguese or English language classes.

In a first moment, students from each class were invited to participate in a Swarm Software session; and 3 months after, a random subsample of these students was reinvited to participate in a Delphi analysis, which involve two rounds.

Two swarm sessions, that took around thirty minutes each, were conducted based upon eight questions, and were both shared through a link from the platform Swarm produced by Unanimous.ai, that was only given to the participants in each session. Anonymity while participating and afterwards was guaranteed in both, due to software settings and research code of conduct.

Delphi technique was handled on a Qualtrics' questionnaire shared also via a link directly to each participant. The data collected for the first-round totals 238 data entry points corresponding to one request to rate five consulting competencies, and three sets of requests to rank 12 competencies within their respective big competency. The first category (Relational competency) comprised four items, the second category (Problem-solving) comprised three items, and the last category (Planning) comprised five items. The second round was carried after one week, in which we spoke only with the specific participants who had rates and rating outside the interval. This compromised 15 new questions to the participants, which led to 10 changes in previous entries.

4.5. Sample

This study counts on two samples: one for use of Delphi, and another one with a parallel profile to apply Swarm analysis.

Swarm sample comprises 24 participants from the Portuguese class and 17 participants from the English class, which totals 41 contributors. From the overall sample, Swarm session participants who were lacking more than 1 question were not considered. The ones in which there was only one answer missing, we considered an estimated answer attained by the mean of the remaining answers of that same participant. In total, we considered valid 15 participants from each class.

Due to anonymous nature, the sociodemographic are not readily available but overall, the classes comprehend mostly students aged between 21-24 years-old and the majority is female (approximately 61%).

The Delphi counted with 14 of these students, that voluntarily accepted to participate. This subsample has similar age distribution is also mostly feminine (76.9% female).

As the second study is the one that is more central for this research, building upon findings from the first study, we opted to separate results pertaining it in a dedicated chapter.

Chapter V – Results - Study #2

As stated, results from the two different techniques showed the evaluation of each big competency from 1 to 5 star, and the comparative importance of each competency within the big competencies of Relational, Problem-solving, and Planning.

Communication and Problem-solving gather consensus among the 4 judgement events with an evaluation of 5 stars both. Digital also had a harmonious result of 3 stars, getting the lowest evaluation. Regarding Relational Competency, rating differ in Swarm 2 comparing to the remaining judgement events. Lastly, participants from both Swarm sessions considered a 4-star competency, while both rounds of Delphi rated it a 5 star.

The relative ranking within the two rounds of Delphi agreed concerning Relational and Problem-solving Competencies. Thus, Relational competencies order showed the sequential order: interpersonal skills, teamwork, negotiation, and persuasion, while Problem-solving most important competency was considered analyze situations, followed by problem-solving and then solutions' making. Regarding Planning competency ranking was even for just the two most important competencies, namely strategic thinking followed by change management.

Nevertheless, a barely descriptive of the results obtained are not enough for a concrete analysis of this study. To do so, the guiding propositions of this thesis will be structuring the presentation of results. As stated, reported findings concern the measures for consensus used, both agreement and reliability.

Proposition 1: There is a set of competencies that gathers consensus from judges on its importance for management consultancy.

Tests conducted for the rating exercise on the five families of competencies showed high r^*wg values for swarm group 1, ranging from .72 to .95 which are indicative of a strong consensus. For swarm group 2, the r^*wg values range from .73 to .88, slightly below the previous group but still all above the .70 threshold. The Delphi group also reached acceptable levels of consensus for all families of competencies at the first round (r^*wg ranging from .80 to .93) which were, unsurprisingly, slightly stronger in the second round (varying between .82 to .93). Table 5.1. depicts the values found for all tests.

Table 0.1. r^*_{WG} estimates per group and per big competency

The 5 big competencies	Swarm Group 1		Swarm Group 2		Delphi Round 1		Delphi Round 2	
	n	r^*_{WG}	n	r^*_{WG}	n	r^*_{WG}	n	r^*_{WG}
Relational	15	0.90	15	0.86	14	0.82	14	0.90
Communication	15	0.72	15	0.79	14	0.91	14	0.91
Planning	15	0.94	15	0.88	14	0.93	14	0.93
Prob. solving	15	0.79	15	0.73	14	0.90	14	0.82
Digital	15	0.95	15	0.86	14	0.80	14	0.85

Considering the full set of the big competencies' ratings, findings showed strong reliability for all swarm and Delphi groups as showed in Table 5.2. In addition, ICC(1) outcomes revealed that between 28% to 45% of the variance on the participants' ratings was due to the group belonging. Results also support the stability of the mean answer of each judgment event as ICC(2) was always greater than .7 and higher than ICC(1) value.

Table 0.2. Interrater reliability for ratings in swarm and delphi ICC(1) and ICC (2)

Measure	$r_{WG.uniform}$		$r_{WG.measure-specific}$				F ratio	p-value	ICC(1)	ICC(2)
	Mean	SD	Shape	S^2_E	Mean	SD				
Swarm Group 1	0.72	0.20	Moderate skew	0.90	0.43	0.37	13.40	0.000	0.45	0.93
Swarm Group 2	0.65	0.12	Moderate skew	0.90	0.26	0.21	6.80	0.000	0.28	0.85
Delphi round 1	0.74	0.12	Moderate skew	0.90	0.43	0.26	10.41	0.000	0.40	0.90
Delphi round 2	0.76	0.09	Moderate skew	0.90	0.47	0.21	12.49	0.000	0.45	0.92

This renders support to proposition 1 thus indicating that there is wide consensus on the importance of the five proposed families of competencies from study 1 as indicated by a rating exercise measure with IRA and IRR statistics.

Proposition 2: Different groups of judges converge on the most important competency within each big competency.

To test this proposition, we contrasted the mean ranking within each big competency that covers more than one competency, using the four judgment events (Swarm 1, Swarm 2, Delphi round 1, and Delphi round 2) as comparison groups.

Table 5.3 shows findings from a one-way ANOVA with the respective Bonferroni post hoc test results. Differences have been found between groups for 4 out of the 12 competencies under scrutiny,

namely: Analytical skills ($F(3,54)=17.373$, $p\leq.001$, between Swarm1 and both rounds of Delphi, and between Swarm2 and both rounds of Delphi), Solutions making ($F(3,54)=6.258$, $p\leq.001$, between Swarm1 and both rounds of Delphi), Change Management ($F(3,54)=11.376$, $p\leq.001$, between swarm1 and all the remaining group events), and lastly, Strategic Thinking ($F(3,54)=5.617$, $p\leq.01$, between Swarm 1 and Delphi round 2).

Table 0.3. Mean differences and post-hoc tests

Big competencies		Swarm 1	Swarm 2	Delphi round 1	Delphi round 2	F(df1, df2), p-value
Relational	Q21 Teamwork	.0000	.2000	.3571	.3571	$F(3,54)=2.564$, $p=.064$
	Q22 Interpersonal Relations	.8000	.7333	.4286	.5000	$F(3,54)=2.045$, $p=.118$
	Q23 Negotiation	.2000	.0000	.2143	.1429	$F(3,54)=1.182$, $p=.325$
	Q24 Persuasion	.0000	.0667	.0000	.0000	$F(3,54)=0.953$, $p=.422$
Problem solving	Q31 Problem Solving	.4000	.6667	.2143	.1429	$F(3,54)=3.912$, $p=.013$
	Q32 Analytical skills	.0667 ^{a, b}	.1333 ^{c, d}	.7143 ^{a, c}	.8571 ^{b, d}	$F(3,54)=17.373$, $p\leq.001$
	Q33 Solutions making	.5333 ^{a, b}	.2000	.0714 ^a	.0000 ^b	$F(3,54)=6.258$, $p\leq.001$
Planning	Q41 Planning	.0000	.2000	.2143	.0714	$F(3,54)=1.486$, $p=.229$
	Q42 Risk management	.2000	.0000	.0714	.0000	$F(3,54)=2.139$, $p=.106$
	Q43 Change management	.6000 ^{a, b, c}	.0667 ^a	.0000 ^b	.0714 ^c	$F(3,54)=11.376$, $p\leq.001$
	Q44 Project management	.0667	.1333	.0714	.0714	$F(3,54)=0.180$, $p=.910$
	Q45 Strategic thinking	.1333 ^a	.5333	.6429	.7857 ^a	$F(3,54)=5.617$, $p\leq.01$

Note: Letters show paired differences from post hoc (Bonferroni) tests.

Proposition 3: Different groups of judges converge on the full rank order of competencies within each set of the 5 big competencies.

The test of this proposition focused only on the 3 big competencies which involved more than just one competency within it, namely Relational competency, Problem-solving competency, and Planning competency.

Raters from Delphi group were invited to rank order four competencies that fall within the relational competences. Findings showed the rankings largely converged as indicated by Kendall's w statistic ($W=.314$, $X^2(3)=13.2$, $p<.01$). The same occurred when asked to rank order the three competencies within the larger family of problem-solving competency. Findings also showed the rankings converged ($W=.388$, $X^2(2)=10.8$, $p<.01$). Lastly, the five competencies that compose planning competences have also been subjected to the same ranking exercise to find raters also converged

($W=.215$, $X^2(4)=12.1$, $p<.05$). Without surprise, the tests from the second round also indicate strong convergence. Table 6.4. shows the results.

Table 0.4. Interrater agreement for rankings within each big competency

	4 Relational competencies		3 problem-solving competencies		5 planning competencies		
	n=14	Round 1	Round 2	Round 1	Round 2	Round 1	Round 2
Kendall's W ^a		0.314	0.341	0.388	0.571	0.215	0.379
Chi-Square		13.200	14.314	10.857	16.000	12.057	21.200
df		3	3	2	2	4	4
Asymp. Sig.		0.004	0.003	0.004	0.000	0.017	0.000

This supports proposition 3, thus indicating that there is wide consensus on the relative importance of competencies within each set of big competencies.

As a final result from the fortunate finding that the proposed list of competencies gathered wide consensus among the groups that participated in the independently generated evaluations, we can offer an insight on the importance of each big competencies as well as the relative importance of those competencies within each. Table 5.5 shows both indicators.

Based on this, taking the rating values as weights and the ranking values as relative importance, we propose an index to evaluate any consultant based on competency.

Table 0.5. Consultant's competencies index

The 5 big competencies	Rating (1-5)	Competencies	Mean	SD	Standardized ranking	Weighted score
Relational	4.48	Teamwork	0.19	0.30	0.64	2.88
		Interpersonal skills	0.67	0.45	1.49	6.67
		Negotiation	0.11	0.25	0.46	2.05
		Persuasion	0.02	0.09	0.28	1.24
Problem solving	4.43	Problem solving	0.40	0.44	0.90	3.99
		Analytical	0.36	0.32	1.12	4.98
		Creative	0.25	0.30	0.82	3.65
Planning	4.23	Planning	0.10	0.22	0.43	1.81
		Risk management	0.09	0.13	0.67	2.82
		Change management	0.25	0.33	0.74	3.13
		Project management	0.09	0.29	0.33	1.39
		Strategic thinking	0.50	0.42	1.20	5.06
Communication	4.59	Communication	-	-	-	4.59
Digital	3.07	Digital competency	-	-	-	3.07

Discussion and Conclusion

The main purpose of this study is to answer the leading question, motivated by the fragmented literature on the core competencies a management consultant should have. The first and necessary condition for this study to proceed was to identify a set of core competencies that could be systematically integrated against a given competency model. The model chosen was the one proposed by Meriac et al. (2014) and after due adjustment, a content analysis and coding process took place to identify 78 entries from the five studies analyzed. This list was then subjected to filter criteria from Roe (2014), which resulted in a list of 14 different competencies and lastly, subjected to interrater agreement analysis. The independent coding strongly converged with the original coding as indicated technically by Cohen's Kappa and ICC measures. Despite the overall atheoretical approach that has characterized research on competencies and competency models (Goldman & Scott, 2016) the fact that such commonly agreed list of core competencies can be produced suggests a common understanding about the functional responsibilities in management consulting, and eventually an underlying theoretical framework linked to job role and talent development. Still, the simple generation of such a list, with a qualitative background, is not sufficient to gauge its wide acceptance.

For such a reason, the second study is so important for the purposes of this research. Based on an empirical approach and deploying two different techniques of consensus seeking (namely the traditional Delphi, and an up-to-date tool, Swarm), the chances of reaching divergent findings were expected to be quite high. Following Karl Popper's principle of falsifiability (Banerjee et al., 2009), we endeavored to design research in such a way that would most likely go against our theoretical hope that a consensus would be found. So, taking our propositions as the mirror of an alternative hypothesis, we opted to increase the chances of not rejecting the null hypothesis (that individuals do not converge) by deploying more than a single data collection, making it independent, and using two different consensus seeking techniques, as stated.

The use of these separate techniques allowed us to make double verification of the opinion of the sample, composed by people who holds knowledge, not only about consulting field, but also on human resources management. In addition, we made a comparison analysis between both techniques not only to set higher level of rigor but also because this comparative analysis adds value to the thesis by opening doors into methodological considerations that Swarm (as an emerging approach) can bring when compared with a well-established technique such as Delphi.

After all this apparatus, we trust findings do show the validity of the previously proposed list of competencies extracted from the documental analysis of the five competency models proposed by different scholars, namely Silacheva (2019), Tkaczyk (2017), Nissen et al. (2019), Tokár-Szadai (2020),

and Larsson et al. (2020). This list rolled five big competencies, which encompassed an overall of fourteen competencies: Relational Competence (including interpersonal competencies, negotiation, persuasion, and teamwork), Communication Competence, Problem-solving Competence (composed by analytical thinking, solving problems and solutions making), Planning Competence (including change management, planning activities, project management, risk management, and strategy thinking), and Digital competency.

Findings reflect the importance of the 5 Big Competencies in a management consultant and showed an agreement within the different groups of participants, confirming the first preposition. The evaluation of each big competency, from the different techniques vary, ranging from 3 to 5 overall. In a more detailed perspective, it is possible for us to rank these Big Competencies and identify the most and the least impactful one. Digital competency was clearly considered the one to which participants from all the groups considered the least important, what is a surprisingly result due to the fact we live nowadays in a digital era (Larsson, 2020). Such interesting finding led us to two different possible reasons. On one hand Nissen et al. (2019)'s statement can justify the rating, since digital transformation is still something in progress, overall and consequently in the consulting industry too, which means its consequences are still barely visible. On the other hand, this can reflect the aversion to change and consequent resistance to the introduction of new ways of working both by clients and consultants (Larsson et al., 2020). Even though Digital competencies were underrated comparing to the remaining ones, this study contributed to the understanding of its growing importance for the success of a management consultant. Regarding the most important of the Big Competencies, we can identify Communication as the one with highest mean rating and great agreement among participants within each group. Albeit this was the competency with highest mean rating, the importance of the remaining ones cannot be ignored ranging from 4.23 to 4.48.

These findings, gain relevance as it is proved that it is highly probable that these result would be the same if we repeated the study with these same participants ($ICC(2) > .85$ for every judgement event). Furthermore, the level of consensus showed within each group, is a consequence of the high level of membership of the participants regarding each group ($ICC(1)$ between 28% and 45%). Thus, we can undoubtedly state that these competencies deserve our attention and that more specific research should be conducted.

More specific research conducted allowed us to understand the importance of each competency within each big competency and list a ranking of each competency based on the evaluation methods conducted. Thus, all the groups agree that the most relevant competency within Relational Competency is the interpersonal relations as there was no significant difference on the evaluations of the groups. This is clearly related to the foundation of the profession, which is to advise that involves a side related with people (Kubr, 2002). Concerning the Problem-solving Competency's most important

competency there was some controversy among the groups. Each group considered a different one from the others, which can imply the equal importance of the three competencies. Lastly, regarding to Planning Competency, strategic thinking was the one that participants gave more relevance.

Analysis made upon the fourteen competences contribute with an index of the relatively importance of those competencies for a management consultant, which can be used in several fields of human resources such as talent acquisition (Akhuly & Gupta, 2014), performance appraisal (Kalb et al., 2006), career management (Jarvis, 2003) and the digital transformation in HRM (Nankervis & Cameron, 2022).

Although we think this is a relevant conceptual contribution, this research focuses simply on competencies and it is in our understanding that a successful consultant is someone who masters these competencies alongside with other specificities, such as certain dispositions, KSA and sub competencies that we classified based on Roe (2002)'s model. These could be further detailed so to gain a more precise depiction on how to develop these core competencies and what exact profile to look for as regards dispositional dimensions. However, we believe that the extracted list and respectively index can be a starting point for the search of an excellent professional.

As a complementary issue that deserves discussion, the methodological options made (contrasting Delphi with Swarm) seem to be relevant not only to judge on the merits of the empirical findings, but mostly because such consensus seeking techniques can be taken as important tools for management consultants. Acknowledging the limitations of the study, we do realize the contribute of this thesis is modest to the field but still, to our knowledge it deploys Swarm analysis which seems to be unprecedented in this sort of study.

Findings from the first proposition show that there is a great consensus within every each of the four judgement events as r^*wg values are greater than 0.5. It is also interesting to notice that Swarm 1 and the two rounds of Delphi gather a consensus level greater than 90% for three different competencies each. Albeit consensus level is not that high in Swarm 2 session, the values observed were pleasing too. Thus, it is curious to observe that Swarm 2 values of interrater reliability are significantly lower than the remaining judgement events, which reflects a lack of membership of the group and can be a justification to results slightly different from the other groups. Despite the described nuances, the results suggest that both Swarm and Delphi techniques are adequate to find a solution with a high level of consensus in a group. However, it is not possible to specify some characteristics of the groups to whom these techniques are adequate, such as its size. Neither does it give us an input of the best technique to use.

From another point of view, in most of the cases (4 out of 5) the second round of the Delphi increased or kept the level of consensus within the group, as expected. Nevertheless, only in a situation

did such happen, which can raise the question of whether participants were or were not certain of their own opinion.

Outcomes from the comparison of decisions made independently by Swarm 1, Swarm 2 and Delphi 1 and Delphi 2 show that in most of the cases of judgment (8 out of 12) there is convergence between groups. However, the divergent cases are very informative, mostly concerning differences between Swarm and Delphi.

As regards between-groups consistency for swarm (Swarm 1 vs. Swarm 2), only one case out of 12 was identified in which the Swarm 1 differed from Swarm 2 (i.e., Change management, where 60% of participants in swarm 1 elected this competency as the most important within the large planning competency while only 7% did so in Swarm 2). This suggests that Swarm decision is highly convergent across (at least) these two groups. However, it also raises the possibility that it might be prone to bias due to the nature of the group dynamics because in our research design we did not separate swarm participants and thus influence processes may have occurred. Judging by the noise in the moment of decision and because participants were seated together within easy communication reach, this possibility cannot be discarded. This is interesting as Unanimous.ai Swarm insight has a chat where any participant can write and share whatever their opinion is. Will this lead to better results? Or will this in fact create the problems associated with other consensus seeking and forecasting methods such as the focus groups (Acocella, 2012)?

Concerning in between-group consistency for Delphi (round 1 vs. round2), it would be rather surprising if findings diverge at all because the second round is built upon the first-round results and with the specific intervention that favors minor changes. In fact, findings showed no such case. Albeit Delphi rounds are established to increase or achieve consensus, in the case of this task, it was readily achieved with the first round and therefore it is quite expectable to find such results.

Findings related to the ranking of competencies within the three Big competencies showed a lot of association within each round of Delphi, and unsurprisingly, suggested that the association of the evaluation among judges regarding Relational Competence, Problem-solving Competency, and Planning Competency increased from the first round of Delphi to the second one. However, in what concerns Planning Competency there was a stronger association of assessment on the second round and the rankings was slightly different between rounds. Despite the differences, it is also observable an increase on the association of answers from the first to the second round too, which indicates the success of the Delphi technique.

Overall, this study allowed us to make some conclusions about the competencies of a management consultant's profile and its relative importance within more general competencies – the 5 Big Competencies and gave an indicator of competencies by weight which can be applied to different

areas. In addition to this, this research allows us to take some deductions on regarding the techniques used – Swarm Insight and Delphi technique.

Findings suggest that it is possible to obtain consensus within groups using both, and that they both seem to be solid. Despite its reliability, Delphi technique required considerably more time to develop as there was the need to analyze between rounds results and contact multiple times the participants. Consequently, participant's willingness to participate in the study decrease also. In addition, this can result in biased answers because participants in the second and following rounds, that do not want to spend much time thinking about right answer, opt to follow the mean one of the previous rounds.

From the other side, while conducting and analyzing Swarm sessions one challenge was faced: how can we control the participants? A future suggestion of improvement would meet the requirement for participants to answer to all the questions. However, possible malign consequences are identified regarding to such, as the consensus answer could come out to be biased because when they were uncertain about the answer, participants may just follow the majority or randomly answer to the question as they can observe in real-time the choices of the others. So, Swarm may be more prone to social influence processes compared to Delphi. Conversely, Swarm allows for a process analysis that monitors each participant's starting decision and change and movements, that enable a novel dimension pertaining to persuasion and conviction.

For future research it might be interesting to test Delphi vs. Swarm with decisions that have higher level of complexity, to work on cases where consensus is not readily achieved in the first round Delphi, for example, ethical dilemmas.

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Annex A

Annex A – Analysis of Competencies’ dimension models

Meriac et al. (2014)	Kurz and Bartram (2002) - 8 Factors	Kurz and Bartram (2002) - 20 competencies
	1 LEADING & DECIDING	1.1 Deciding & Initiating Action
		1.2 Providing Leadership & Supervision
Consideration and Awareness	2 SUPPORTING & CO-OPERATING	2.1 Team Working & Supporting
		2.2 Serving Customers & Clients
	3 INTERACTING & PRESENTING	3.1 Relating & Networking
Influencing Others		3.2 Persuading & Influencing
Communication		3.3 Communicating & Presenting
	4 ANALYZING & INTERPRETING	4.1 Writing & Reporting
Problem Solving*		4.2 Applying Expertise & Technology
		4.3 Problem Solving
Planning and Organization	5 CREATING & CONCEPTUALISING	5.1 Learning & Researching
		5.2 Creating & Innovating
		5.3 Forming Strategies & Concepts
	6 ORGANISING & EXECUTING	6.1 Planning & Organising
		6.2 Delivering Quality
		6.3 Complying & Persevering
*	7 ADAPTING & COPING	7.1 Adapting & Responding to Change
Stress Tolerance		7.2 Coping with Pressures & Setbacks
	8 ENTERPRISING & PERFORMING	8.1 Achieving Results & Developing Career
		8.2 Enterprising & Commercial Thinking
Drive		

Annex B

Annex B – Interrater agreement index between independent and original coding of competencies from Study 1

		Value	Asymptotic Standard Error ^a	Approximate T ^b	Approximate Significance
Measure of Agreement	Kappa	.870	.052	13.442	<.001
N of Valid Cases		238			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

	Intraclass Correlation ^b	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.871 ^a	.837	.899	14.480	237	237	<.001
Average Measures	.931 ^c	.911	.947	14.480	237	237	<.001

Two-way mixed effects model where people effects are random and measures effects are fixed.

a. The estimator is the same, whether the interaction effect is present or not.

b. Type A intraclass correlation coefficients using an absolute agreement definition.

c. This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.