

Mestrado em Gestão de Informação
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Tacit Knowledge in IT Consulting Companies
Practical and Ethical Problems in Portugal

Halley Nazareth de Souza

Dissertation presented as partial requirement for obtaining the Master's degree in Information Management with a specialization in Business Intelligence.

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DEDICATION

I would like to dedicate this paper to my beloved wife, that always incentivate and push me to new changellenges.

This is for you, Aneta.

ABSTRACT

The prime aim of this thesis is to establish to what extent can companies prevent knowledge loss due to the change of personnel and the loss of employees. In order to answer to this question, firstly the concept of knowledge and its various definitions and classifications are looked into, with the most significant distinction between tacit and explicit knowledge at its spearhead. The literature review including classical texts of Ikujiro Nonaka, who coined the concept of knowledge creating companies at the beginning of 1990s, has been conducted. Hence, the literature review dates back to the beginning of the 1990s demonstrating the development of ideas and concepts throughout almost three decades up to today. Subsequently, the thesis analyzes different classical approaches to the process of knowledge creation, conducting the in-depth analysis of Nonaka's approach, known as model SECI, elaborating on concept of Ba and knowledge conversion taking place in corresponding Ba's such as socialization, externalization, combination and internalization. It is Nonaka's theory that became the base for further consideration of the problem from theoretical and practical viewpoints, giving rise to the concept of knowledge creating companies, as well as the discipline of Knowledge Management. The further part of this thesis aims to assess the current situation in Portuguese IT consulting companies by analyzing the survey, previously prepared and conducted in the above-mentioned type of companies in Portugal. Basing on the data gathered, the final conclusions and recommendations are drawn, presenting the current situation in Portuguese IT consulting companies, by looking into the following three main categories of information: (1) the check-up of skills and knowledge level on the stage of recruitment to the company, as well as after probationary period, (2) providing employees with training of various type, including training courses related to their discipline as well as other skills, e.g. foreign languages or soft skills, and, more importantly for this thesis, (3) the openness of information and knowledge flow in the organization. The latter proves to be of the utmost importance for this thesis since it demonstrates if the organization is prepared and encouraging for its employees to socialize, and hence, to share their thoughts in an informal way, which is the only way of tacit knowledge to be passed on.

KEYWORDS

Tacit knowledge; Knowledge Creation; Knowledge Retention; Portuguese IT consulting companies.

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1. INTRODUCTION

Human beings have always passed onto future generations their accumulated knowledge whether in a form of stories describing their experiences or by demonstration and modelling. This way the “know-how” could cross the generations, and not being forgotten. Furthermore, some form of a written language has been used throughout the history in order to codify the “know-what”, or explicit knowledge. Therefore, it may be stated after Elizabeth A. Smith that “pursuits of tacit, explicit and self-knowledge, self-renewal and innovation are timeless, endless and relentless” (Smith, 2001). However, only in the modern world of business knowledge has been recognized as a strategic factor in knowledge management implementation (Mohajan, 2016) rendering it the only source of lasting competitive advantage, this way giving rise to knowledge-creating companies whose sole business is a continuous innovation (Harvard Business Review July-August 2007; 162. Mohajan, 2016). Prior to that the capital, raw materials and labour had been considered more valuable resources than creating and applying knowledge (Smith, 2001). Together with the development of societies, possible due to knowledge accumulation through centuries, expansion of technology, and therefore, bigger than ever amount of knowledge constructed on the daily basis, people started facing the need to find a way not only to store knowledge and protect it, but above all, to select it effectively so as to use it when and where it is needed. Thus, the demand for imaginative and intuitive leaders who can manage human intellect and convert it in order to achieve innovation, is constantly increasing.

Since the technology is evolving continuously, new ideas, concepts and techniques emerge, and hence more knowledge is being created, it is impossible for one institution to cater for all its needs and to be entirely self-sufficient. For this reason, the practice of outsourcing emerged giving rise by its development to the emergence of Integration Competency Centre (ICC), specializing in hiring their skills and knowledge. In fact, this way knowledge has become a commodity and providing it has become a service that different companies are willing to pay for.

It is widely recognized that new knowledge commences and comes from individuals (Nonaka, 1991, 1998; Smith, 2001, Mohajan, 2016), subsequently being transformed into organizational knowledge valuable to the company as a whole. Thus, making personal knowledge available to others becomes a central activity of a knowledge creating company as the process of knowledge creation occurs at all times on all levels of the organization (Harvard Business Review July-August 2007; 164).

Having said that, and given that every member of the organization is involved at all times in a knowledge creation process, an essential question arises – what happens with the knowledge contribution of an individual who decides to leave the organization? The ownership of the created knowledge may be seen as being held in the collective space belonging to people working together, as Brown and Druguid (1998) put it, or might be granted to an individual – the actual creator of knowledge. According to Brown and Druguid, a great deal of knowledge is lost when people leave their workplaces and/or do not feel sufficiently incentivized to share their knowledge. It appears to be a vital problem for institutions, particularly companies, which invest in their employees' development and lose part of knowledge together with the employees' leaving their structure.

In this light knowledge can be and perhaps should be treated as an essential asset of each company – an asset no institution can afford to lose. For this reason, companies actively seeking the augment of competitive advantage over other companies in the market, must recognize the importance and relevance of what they have in house – the knowledge residing in their personnel. However, even more importantly the institutions must understand the differences in relevance of various types of knowledge. Therefore, a clear distinction between formal, or explicit, and informal or tacit knowledge is drawn and explored throughout the thesis, previously being tested in the field, by means of the survey.

Having said that, the main goals of this thesis can be presented. Namely, these are: (1) to establish to what extent companies are able to recognize and distinguish knowledge types, and hence, their relevance to company's core business and development, (2) if and in what ways IT companies in Portugal encourage and facilitate knowledge and skills transfer between employees, and, lastly (3) how knowledge loss due to the change of personnel and the loss of employees can be prevented, or at least minimized.

The above-mentioned issues have been looked into with the special attention devoted to Portuguese IT Consulting Companies as a particular type of institutions dealing with knowledge creation as well as knowledge and skills distribution. Furthermore, existing measures that companies can take in order to prevent and minimize their losses related to losing organizational knowledge have been analyzed followed by the assessment of the effectiveness of utilized measures. Among others, these are precautions applied in case employees leave the company. Particularly, the survey has analyzed aspects such as the notice period and the moment of passing on duties, skills and knowledge on colleagues or new employees of the company.

The relevance of the above objectives is high in the modern world of business since nowadays knowledge is the prime capital an organization can have, as it will be explored further in this thesis. Knowledge, or rather the ability to create it and retain it, is the essential factor leading to innovation, which in turn is the source of competitive advantage. Companies losing personnel, and therefore, their knowledge and experience, lose the potential opportunity to gain advantage over their competitors. It is commonly known that training new staff takes time, while as the old saying goes “time is money”. However, not only does the financial cost matter here, but also the fact that knowledge resides in individuals. Hence, losing an employee, inevitably leads an organization to some knowledge loss. The question at stake is what kind of preventive measures a company can apply in order to minimize the unavoidable loss as well as which measures are actually applied.

With this purpose in mind, after conducting a thorough literature review, this thesis aims to establish the current situation in Portuguese IT consulting companies, looking into the ways organizations check the knowledge and skills of their employees on the stage of recruitment and after probationary period, as well as develop their knowledge and skills in the course of their time working for the organization. Nevertheless, for the objectives of this thesis, the more important goal of the survey was to establish how organizations in question act in order to encourage their employees to share their knowledge with colleagues and superiors while working for an organization, and, above all, in the notice period prior to leaving the company. In order to accomplish this goal, the third part of the survey focuses on investigating the openness of information flow and the system of incentives encouraging people to share their thoughts, ideas, knowledge and skills with others.

2. THE CONCEPT OF KNOWLEDGE

Knowledge constitutes a multidisciplinary concept that has been fascinating the human kind since the emergence of civilization, being concurrently the principal reason for the civilizations and societies to have emerged. Looking back at the history of development of thought, whether in philosophy, sociology, political thought or economics, knowledge as a concept has always played an important role. For this reason, various areas of science developed the disciplines considering and investigating the concept of knowledge from practical and ethical or philosophical points of view. The recognition of the importance of the concept, as well as its multidisciplinary character appears to be confirmed by the development of such branches of sociology, as “sociology of knowledge”, psychology as “cognitive psychology”, or management as “knowledge management”.

The pursuit of understanding the nature of knowledge dates back to Ancient Greece and its most renowned philosophers – Socrates, Plato and Aristotle, who laid foundation of knowledge understanding and its applications. It is believed that the first brief but how significant definition of knowledge was created by the student of Socrates and master of Aristotle – Plato, who defined knowledge as “justified true belief” (Kakabadse and Kouzmin, 2001). All above mentioned founders of philosophy the way we know it, used different methods to accomplish their goals to establish what knowledge is. While Socrates spent his days walking around ‘agora’ – the town’s main square, provoking people to seek answers to existential questions with him through dialog, Aristotle applied the method of storytelling. These two methods were neglected for long centuries, subsequently to be reinvented in knowledge-creating institutions in the second half of twentieth century with Japanese companies being pioneers of it (Nonaka, 1991).

However, as a rather abstract notion, knowledge has never developed unanimous definition. Therefore, many authors – representatives of various areas of knowledge, have proposed their own definitions. Hence, referring after Kakabadse and Kouzmin (Kakabadse and Kouzmin, 2001: 141), knowledge can be defined as “organized information applicable to problem solving” (Woolf, 1990) “or decision making” (Turban, 1992). It is considered to consist of “truths and beliefs, perspective and concepts, judgments and expectations, methodologies and know-how” (Wiig, 1993), being the whole set of insights, experiences and procedures which guide the thoughts, behaviours and people’s communication (Van der Spek and Spijkervet, 1997). Consequently, organizational knowledge can be defined as “processed information embedded in routine and processes that enable action”, being concurrently captured knowledge by the organization’s systems, processes, products, rules and culture

(Myers, 1996), or “the collective sum of human-centred assets, intellectual property assets, infrastructure and market assets (Brooking, 1996).

According to Kakabadse et al. due to the lack of consistent definition of knowledge, despite the recognition of importance of Knowledge Management (KM), it still appears to be rare in the companies. There is little clarity of what constitutes knowledge management in the organization, which stems from the lack of coherent framework for implementing it (Kakabadse et al, 2001). Furthermore, KM is frequently mistaken with the Information Management (IM).

3. CLASSIFICATION OF KNOWLEDGE

As Elizabeth A. Smith (2001) states “knowledge is a human, highly personal asset” and although it seems invisible, it is crucial for establishing the competitive advantage over competitors. There are many working definitions of knowledge. In fact, since the emergence of consideration of this issue, various classifications of types of knowledge have appeared. Hence, for instance the Greek philosophers distinguished *mythos* and *logos*. The former referred to beliefs of early Greeks seeing the events of the world as a result of divine acts represented by the pantheon of gods, goddesses and heroes, whereas the latter consisted of what in ancient times could be seen as *scientific knowledge* based on rational thought and logics (Szacki, 2005). Based in modern times, Schank and Abelson (1977) distinguished *general knowledge* from *specific knowledge* seeing it as a *script*. The latter would be equal to *expert knowledge* for cognitive psychologists, with an assumption that the analysis of protocols permits the access to the content and structure of knowledge in a domain (Kakabadse et al, 2001, after Ericsson and Simon, 1984). Consequently, specific knowledge is parallel to Greek *logos*, which treats knowledge as “derived from gathering, reading and coming to connote counting, reckoning, explanation, rules or principles and, finally, reason” (Kakabadse et al, 2001), hence rendering knowledge purely mechanical and deductively certain. The expert knowledge is considered to be based on factual knowledge and procedural knowledge. The former assumes the existence of long-term memory, having a form of an extensive “database”, whereas procedural knowledge consists of mental procedures used to select, order and manipulate information in the above-mentioned database, utilized for decision making process and planning purposes. It can be conceptually linked to Greek epistemology – ancient theory of knowledge, while procedural knowledge as a pool of procedures, mental process and heuristics, being

this way “craft-knowledge” can be conceptually linked to “know-how”. As such it can only be taught through interaction and relationships.

However, not only do definitions differ from discipline to discipline and author to author. What is even more significant than the definition of the concept of knowledge itself, are stemming from its various classifications of types of knowledge. Thus, it is possible to set out many different classifications of knowledge such as personal, internal and external, practical and theoretical, shared and public, hard and soft or foreground and background (Mohajan, 2016). Nevertheless, out of numerous classifications it is the distinction for *explicit* and *implicit* knowledge that constitutes the essential classification for this thesis, being the starting point of Nonaka’s theory of knowledge creation and insights into the concept of *tacit knowledge* and explicit knowledge, taken up further by Haradhan Kumar Mohajan (Mohajan, 2016)

While explicit knowledge is easily codified and shared, tacit knowledge is ‘knowledge that is not explicated’ (Mohajan, 2016), or in other words, referring after Smith (2001) it is “for which we do not have words”. It is automatic, requiring little or no time or thought, being highly personal, context-specific, informal and subjective, hence, possible to be inferred from the statements of others. Contrary to tacit knowledge, explicit knowledge refers to “technical or academic data or information that is described in formal language, like manuals, mathematical expressions, copyrights and patents” (Smith, 2001). It is easily communicated and shared in writing, as it is carefully codified and stored, and therefore can be reused when necessary.

According to Suliman Al-Hawamdeh (2002), not all types of knowledge can be codified and captured. The type of knowledge easy to codify is the knowledge embodied in books and journals, therefore – knowledge in a form of information. Information management is the discipline that deals with knowledge in this form – capturing information, storing it in databases and analyzing it according to the needs. However, this kind of knowledge not necessarily translates into any useful and practical skill, unless it is read, followed and put in practice. As Smith (2001) points out “knowledge databases add value only when employees have direct access to knowledge repositories and actually use them”. Much more interesting and creative type of knowledge is the one that cannot be transferred from one person to another in any other way than through interaction (Suliman Al-Hawamdeh, 2002), observing behavior, communicating or coordinating among employees (Mohajan, 2016). Thus, it cannot be codified in a form of a piece of information, or just to a limited extent. The example of limited codification of know-how is the culinary recipe that informs about ingredients, times and partly the

techniques necessary to prepare the desired dish. Nevertheless, it all depends on the cook if and how he will follow the instruction, the result of which a well or not well-made dish will be.

From the point of view of this thesis, the crucial type of knowledge playing a vital role in knowledge creation process, simultaneously making a significant difference in a company, is tacit knowledge. The term refers to “the valuable and highly subjective insights and intuitions that are difficult to capture and share because people carry them in their heads” (Harvard Business Review, July-August 2007). The term itself was popularized by Nonaka in his article *The Knowledge-Creating Company* (1991). The process of creating knowledge will be looked into in the chapter *Knowledge Creation Process – Classical Approach* below.

According to Ikujiro Nonaka there are two main types of knowledge – *explicit knowledge* and *tacit knowledge*. In the later works conducted with other authors, he adds the third type of knowledge – *phronesis*, defined as “practical wisdom” (Nonaka, Kodama, Hirose, Kohlbacher, 2014). The role of *phronesis* in knowledge creation process will be discussed in-depth in the chapter *Knowledge Creating Process – Revisited Approach*.

The *explicit knowledge*, being emphasized and particularly valued in the Western world, can be expressed in words or numbers and therefore shared in various forms, such as data, manuals and others, hence, it is public and its users are aware of using it (Alwis and Hartman, 2008). This type of knowledge is formal and systematic, hence allowing to be measured in a form of quantifiable data, codified procedures and universal principles. It goes without saying that the key metrics measuring the value of knowledge is quantifiable as well, as such those are increased efficiency, lower costs or improved return (Nonaka, 1991). On the other hand, the *tacit knowledge* refers to valuable and highly subjective insights, intuitions and hunches, being difficult or even impossible to formalize, communicate and share with others (Nonaka, 1998). This is type of knowledge that is believed by many to be existing only in the minds of people, being a product of interactions between people and the environment (Suliman Al-Hawamdeh, 2002). Polyni (1958, 1966, after Suliman Al-Hawamdeh, 2002) adds that people are frequently unaware of the existence of tacit knowledge. It consists of things people do, not being able to express it in any way. It includes mental models and beliefs. It is deeply rooted in an individual’s actions, experience, ideals and values.

Ikujiro Nonaka in his considerations went even further, distinguishing two dimensions of tacit knowledge – technical and cognitive dimensions. The technical tacit knowledge is highly practical, designated as “know-how”, includes informal personal skills and crafts. It is demonstrated when people master some part of the body of knowledge or manage to use some skill. Cognitive tacit knowledge

consists of beliefs, ideals, values, schemata and mental models, that are usually taken for granted (Nonaka, Konno, 1998: 42; Nonaka and Takeuchi, 1995). Those cognitive models affect the way we make sense of the events in our world (Smith, 2001).

It is important to point out that tacit knowledge is based on the cultural norms and beliefs which by definition are contextually imbedded (Kakabadse et al, 2001: 139). According to a philosopher Michael Polanyi (1966) tacit knowledge has as its base the subjective insights, intuitions and hunches, being deeply rooted in individual's actions, experiences and ideals, values and emotions, therefore, it is personal, context-specific, and as such not easily visible and expressible. In order to acquire it people must actively create and organize their own experience which Polanyi refers to as *indwelling* while Kakabadse calls it *reflection*. Furthermore, Polanyi claims that clear distinction between tacit and explicit knowledge does not exist. In fact, everything we know to some extent is tacit or at least it is rooted in tacit knowledge since "tacit thought" constitutes an inherent part of all the knowledge. He argues that even if knowledge has been explicitly articulated into words, it relies on being understood tacitly. In fact, it 'is made visible through its application and can be then utilized in the innovation process' (Mohajan, 2016). As Nonaka et al. conclude "knowledge is information in context and once we add context we add tacitness" (Nonaka, Kodama, Hirose, Kohlbacher, 2014).

Zander and Zander (1993) provide us with slightly different definition of tacit knowledge as the one that has not been formalized and made explicit. According to other authors, tacit knowledge is knowledge that cannot be made explicit (Popper, 1972; Nonaka and Takeuchi, 1995). These alternative definitions give rise to another classification of tacit knowledge – "knowledge not yet formalized", and "knowledge impossible to formalize" (Kakabadse et al, 2001: 140). Among the first category there is know-how, or at least the part of know-how that under certain circumstances can be simplified to basic interactions, and in this form, transferred to others. However, not all know-how can be codified, as it contains significant amount of tacit knowledge – intuitions and hunches impossible to express in words, thus, impossible to codify.

Taking the above-mentioned into consideration, it needs to be pointed out that tacit knowledge is highly situated in the context, whether cultural, mental or technical. As Alwis and Hartman (2008) points out basing on Kikoski and Kikoski (2004) "tacit knowledge embodies an individual's education, natural talent, experience and judgment". For this reason, the attempt to abstract tacit knowledge from its context means losing some part of its meaning. The mere fact of being *tacit* makes it impossible to imitate, and therefore, it cannot be an important resource for securing competitive advantage. On the other hand, the explicit knowledge can be easily transmitted in a systemic language, however, it can also

easily be manipulated and stored. It is embedded in the past events and is oriented towards a context-free theory (Polanyi, 1996). For this reason it can be acquired from books, databases or any other source. In theory of cognitive psychology, explicit knowledge is equivalent to declarative knowledge.

4. INTEGRATION COMPETENCY CENTRE (ICC)

Integration Competency Center (ICC) as a term was popularized by Roy Schulte from Gartner in 2001, however, it had been used for the first time in the Gartner's report on integration. In order to comprehend the term better it is advisable to look into each of the three words comprising the acronym. *Integration* conveys the objective of the ICC to take a holistic perspective and optimize certain qualities such as cost efficiency, organizational agility and effectiveness, operational risk and/or internal or external customers' experience. *Competency* refers to the expertise, knowledge or capability that the ICC offers as services. *Center* means that the service is managed or coordinated from a central point independently from the functional areas that it supports. Therefore, ICC can serve as a form of an outsourcing of near or offshore type or for internal purposes of the maternal organization. Throughout the decade the concept evolved so as the terms referring to it. Consequently, ICC commenced to be called integration center of excellence, SOA center of excellence or the data management centers of excellence.

Integration Competency Centres constitute an excellent case study to analyze in terms of various types of knowledge creation and the ways they are prevented from being lost. Particularly interesting seems to be the approach of ICCs towards creation, sharing and preservation of tacit knowledge and know-how. ICCs as institutions existing due to and for gathering specialized skills and knowledge, subsequently "hiring" it to companies and other entities, needed to develop ways to keep the know-how and tacit knowledge in house, regardless of personnel changes.

5. KNOWLEDGE CREATION PROCESS – CLASSICAL APPROACH

The development of the society is a result of knowledge accumulation throughout centuries. In fact, as Suliman Al-Hawamdeh (2002) states the process of knowledge creation is dependent on existing knowledge since the new knowledge comes down to value addition to previously existing knowledge through innovation. Following these logics, the more knowledge we possess, the more knowledge we are able to create and transfer to others. In a nutshell, knowledge creates knowledge.

Together with the evolution of technology this transfer can take place faster, more efficiently and with larger quantities of information at once. Therefore, the knowledge transfer was much slower in the ancient times, when information was shared on the wet clay (3000BC), papyrus (2800BC), parchment (200BC) or even paper (100AD) (Kakabadse and Kouzmin, 2001). Although knowledge has existed since the emergence of the mankind, only recently it has become the factor of production, altering the attitude towards the role of information, technology and learning in economic performance. It is worth pointing out that this shift in attitude coincided with the significant development of information technologies.

According to Ikurijo Nonaka and Ryoko Toyama (2003) nowadays a company's sustainable competitive advantage is based on knowledge and capability to create it and utilize it. According to Wagner and Sternberg (1987), it is the ability to acquire and manage tacit knowledge that constitutes the hallmark to the success (after Smith, 2001). The establishment of the competitive advantage has become a desire of every company in a knowledge-based economy. However, in order to understand the sources of it, it is vital to understand how and where the knowledge is actually created.

As Nonaka explains in one of his first articles, "new knowledge always begins with the individual", becoming transformed into organizational knowledge valuable to the entire organization (Nonaka, 1991). The knowledge creation process is based on the distinction between explicit and tacit knowledge, while knowledge itself is created through interactions between human agency and social structure (Nonaka, 2003). According to Nonaka (2003), who reflected on structuration theory of an American sociologist Anthony Giddens, "our actions and interactions with the environment create and enlarge knowledge through the conversion process of tacit and explicit knowledge". He further refers to two levels of consciousness mentioned by Giddens – practical and discursive consciousness, so as to conclude that "tacit knowledge is produced by our practical consciousness and explicit knowledge is produced by our discursive consciousness" (Nonaka, 2003). As Alwis and Hartman (2008) notice "tacit

and explicit knowledge are complementary, which means both types are essential to knowledge creation”, as knowledge is created through interactions of both its types equally. That leads to conceptualization of four basic conversion patterns for creating knowledge in an organization – creating tacit knowledge based on tacit knowledge of another individual, creating explicit knowledge from a piece of explicit knowledge, creating explicit knowledge basing on tacit knowledge and creating tacit knowledge basing on explicit knowledge (Nonaka, 1991; Nonaka, Kodama, Hirose, Kohlbacher, 2014). As he states further (1998), knowledge creation is a spiraling process of interactions between two types of knowledge that can be understood as processes of self-transcendence, giving rise to theoretical SECI.

According to the SECI model, each conversion pattern corresponds to different activity within the institution. As such, the first mode of new knowledge creation – from tacit knowledge to tacit knowledge, relies on the activity of *socialization* which is essential for sharing knowledge between individuals. Therefore, tacit knowledge can only be shared when “the self is freed to become the larger self that includes the tacit knowledge of the other” (Nonaka, 1998). It is only possible in the situation when individuals are with each other and do things together since socialization assumes capturing knowledge through physical proximity. Another aspect of socialization is knowledge dissemination which leads to the creation of a common place, known as *Ba*.

While socialization is associated with interaction of tacit knowledge, *externalization* corresponds to the translation of tacit into explicit knowledge. It requires expression of the tacit knowledge giving it a comprehensible form understood by others. As in the previous stage the individuals were required to stay in a close proximity, in the externalization process an individual needs to be committed to the group, hence the group integration is vital. This process is supported by two key factors – articulation of tacit knowledge and translation of tacit knowledge of stakeholders into readily understandable forms.

The subsequent mode of knowledge creation is related to the activity of *combination*, which involves the conversion of explicit knowledge into more complex sets of explicit knowledge. The key issues of this stage are related to communication and diffusion, as well as the systematization of knowledge. Combination revolves around three processes – collecting externalized knowledge and integrating new explicit knowledge, disseminating it and editing or processing it in order to make it more usable and useful, allowing the company to take the concrete steps.

The final stage is the *internalization* of newly created knowledge coming down to conversion of explicit knowledge into the organization's tacit knowledge. It requires from the individual to identify the relevant knowledge within the organizational knowledge. The process relies on two dimensions. Firstly, the explicit knowledge needs to be embodied in action and practice, which can be achieved by training within the organization or learning-by-doing. Secondly, there is a process of embodying the explicit knowledge by using simulations or experiments, allowing to practice in virtual situations.

The aim of SECI model is to describe a dynamic process in which the tacit and explicit knowledge are exchanged and transformed. It is worth pointing out that the crucial practice within the model is the translation of the highly personal or professional knowledge into explicit forms that are easy to understand and visualize, for instance in a form of tables, graphs or presentations. That only confirms that the new knowledge before having become the institutional knowledge, resides in individuals, who might have a difficulty to express it, since, as Nonaka said after Michael Polanyi, usually "we can know more than we can say" (Nonaka, 1991, Smith, 2001, Alwis and Hartman, 2008). Therefore, a dynamic conversion of knowledge is necessary.

It is conceivable that the movement through the four modes of knowledge conversion does not form a simple circle, but rather a spiral. The interaction between tacit and explicit knowledge is amplified by all four modes of conversion, and simultaneously with moving up the organizational structure, it becomes larger in scale, frequently triggering the new spiral of knowledge leading to creation of innovation.

However, since knowledge is context-specific, it depends on particular time and space, as well as relationships among individuals and the environment. For this reason, knowledge calls for a physical context to be created since it is created in situated actions. In order to comprehend it better, Nonaka (1998, 2003) has introduced a concept of *Ba*, stemming from Japanese philosophy, inherently connected to the SECI model. The metaphor of *Ba*, which refers to a place where "real time knowledge creation is achieved through self-transcendence", can also be defined as "shared context in motion, in which knowledge is shared, created and utilized" (Nonaka, 2003). The prime role of *Ba* is to provide "energy, quality and places to perform the individual knowledge conversions" (Nonaka, 2003). Therefore, it can be perceived as a phenomenological time and space where knowledge emerges from, as new knowledge is created basing on existing knowledge through the change of meanings and contexts. Hence, *Ba* refers to an existential place where participants can share their contexts and create new meanings as a result of their interactions that change the participants, the contexts and the

environment. For this reason, *Ba* can be understood as a multiple interacting mechanism explaining tendencies for interactions occurring at a particular time and space. It is a continuously created generative mechanism that explains the tendencies that hinder or stimulate knowledge creation activities. Its boundaries are fluid and quickly changeable, membership of *Ba* is not fixed either – participants come and go since *Ba* is created and functions according to need.

There are four types of *Ba* corresponding to four stages of SECI model, hence each *Ba* supports different knowledge conversion mode in the spiral of knowledge, accelerating the knowledge creation process. Among the types of *Ba* there are originating *Ba*, interacting *Ba*, Cyber *Ba* and exercising *Ba*.

Originating *Ba* is the primary *Ba* where the knowledge creation process commences, being represented by the socialization phase of the SECI model. It is the time-space when and where individuals share feelings, emotions, experiences and mental models, leading to emergence of care, love, trust and commitment. Being based on face-to-face contact and physical proximity, it becomes the key to conversion and transfer of tacit knowledge. It is also a phase in which knowledge vision and culture of organization emerge.

Interacting *Ba* is a place where tacit knowledge is made explicit, being represented by the activity of externalization of the SECI model. It is characterized by the dialog, being the key for the knowledge conversion, as well as extensive use of metaphors. It is through dialog that not only do individuals share their mental models converting them into common terms and concepts, but also they reflect and analyze their own mental models. Interacting *Ba* is consciously constructed, in practice the critical activity of this time-space is selection of the right people, with the balanced mix of specific knowledge and capabilities.

Cyber *Ba* refers to interactions in a virtual world, rather than in a real time-space, being represented by combination phase of the SECI model. This *Ba* allows for combining new existing knowledge with existing information, generating and systematizing explicit knowledge throughout the organization. This process has been much facilitated since the emergence and development of information technologies.

Exercising *Ba* is the place where the cycle of the knowledge creation process finishes, being represented by the internalization phase of the SECI model. It facilitates the process of converting explicit knowledge into tacit knowledge. The practical application of knowledge through active participation with the use of formal knowledge are stressed.

In order to create knowledge, and therefore become active, *Ba* requires energy. The source of this energy are contradictions, dialectic thinking and acting to synthesize the contradictions that, by definition, are involved in *Ba*, since it demands various contexts simultaneously needing a shared context essential for its existence. A good *Ba* consists of participants with various viewpoints, bringing in various contexts, while the common grounds among them – the shared context needs to be fostered. It is the shared context that continuously evolves, as it depends on the participants who bring in and take away their own contexts, altering the shared one.

Having said that, it is possible to come to a conclusion that *Ba* itself is based on a dissonance. On the one hand, it is completely open place where new contexts are let in. On the other hand, it creates boundaries protecting *Ba* from the outside influence, setting also boundaries for interactions of individuals within it. *Ba* permits and assists forming of a common language among participants which in turn permits to have a dialectic dialog, being content-based. In *Ba* participants reflect over their own views and share them, achieving trans-subjectivity. Dialectical interactions occur also among various *Ba* – existential, physical and virtual. Therefore, *Ba*, above all, provides the institution with a capacity to synthesize various contexts, spaces, times and interactions, leading to new knowledge creation, which will bring the competitive advantage. Knowledge creation is a dynamic human process, in which participants grow as professionals and human beings. Moreover, it is a never-ending process that upgrades itself continuously, while the innovation emerges from the spiraling continuity of this conversion process.

6. KNOWLEDGE CREATION PROCESS – REVISITED APPROACH

Achieving and maintaining competitive and sustainable growth requires from a company to constantly create new knowledge and pursue practical wisdom, leading to innovation which stems from the creation and exploitation of knowledge. These two activities – creation of new knowledge and exploitation of extant knowledge, occur concurrently, and are inseparable (Nonaka, Kodama, Hirose, Kohlbacher, 2014), while their relationship stays dynamic. That observation led the researchers, including Ikujiro Nonaka, to revisit the knowledge creation theory, suggesting that the essential in order to establish and sustain a competitive advantage by an organization is to achieve a dynamic synthesis of knowledge *exploration* and *exploitation*. That in turn led to proposing the “dynamic fractal organization based on dynamic *Ba*” (Nonaka, Kodama, Hirose, Kohlbacher, 2014). The theory builds on a triad

relationship of knowledge that synthesizes tacit and explicit knowledge, creating a third type of knowledge – *phronesis*.

Phronesis can be defined as a “practical wisdom” which makes it in practice the factor that promotes the spiraling process of synthesis of explicit and tacit knowledge, while the synthesis of those three types of knowledge is referred to as “the knowledge triad relationship” (Nonaka, Kodama, Hirose, Kohlbacher, 2014). It is worth pointing out that within this triad tacit knowledge is closely related to ontology, explicit knowledge to epistemology while *phronesis* introduces axiology – value stemming from people’s beliefs, commitment, passion and judgment. For this reason, the latter can be seen as leadership capabilities that must be distributed on all levels of the organization. Therefore, in the triad of knowledge it is *phronesis* that allows to incorporate value judgments into the knowledge creation process.

However, in order to obtain the synthesis of three types of knowledge, there is a need for a common platform, where this synthesis can occur. It is the concept of *Ba* that can explain the relationship between the parts – types of knowledge, and the whole – the environment. As it has been defined before, *Ba* refers to “a shared context in motion”, hence, “the actions in *Ba* or relationships between *Ba* also form the environment, structures and actions by actors”, which means that “synthesis and convergence occur between people, and between people and the environment based on their knowledge and the meanings they generate” (Nonaka, Kodama, Hirose, Kohlbacher, 2014). Nonaka et al. add to the four types of *Ba* referred to before, two more types – exploration *Ba* and exploitation *Ba*. While the former drives the explorative activities to create knowledge for innovation, the latter drives the exploitative activities in which explicit knowledge is combined and embodied in individuals through personal experiences (Nonaka, Kodama, Hirose, Kohlbacher, 2014). These two *Ba*-s differ from each other by the level of type of knowledge involved – in exploration *Ba* tacit knowledge outweighs explicit, whereas in exploitative *Ba* the balance is opposite – it is explicit knowledge that prevails. Simultaneously, both *Ba*-s, as well as both types of knowledge co-exist and are synthesized in a spiraling process, which leads to emergence of *phronesis* that drives the spiraling process. In a nutshell, it can be stated that the nature of the relationship between exploration and exploitation is closely related to the relationship of tacit and explicit knowledge, while both relationships are inseparable.

Thus, it is clear that knowledge creation is a self-regulatory complex process inherently involving classical SECI model, being supported by the concept of *Ba*, concurrently giving rise to innovation in

organizational model theories, leading to the emergence of “dynamic fractal organization based on dynamic *Ba*”.

7. INNOVATIVE COMPANIES – KNOWLEDGE-CREATING COMPANIES

It goes without saying that in the modern times more than ever companies are forced to constantly come up with new products and solutions, or at least keep upgrading the existing ones, as it is the only opportunity to sustain competitive advantage. As many authors mention, it is tacit knowledge that is the foundation and source of competitive advantage. For this reason, as Raga Seider-de Alwis and Evi Hartmant (2008) claim, the key to success of an organization lies in the creation, transfer and utilization of the tacit knowledge, which in turn leads to innovation, vital for the survival of the company in a dynamic market environment of information economy. As many authors agree nowadays learning the already known is necessary but not sufficient in order to gain and maintain the competitive advantage, hence, explicit knowledge is not the source of it, nor of innovation. It is the tacit knowledge that just “like creativity, (it) knows no direction or boundaries. It simply ‘is’” (Smith, 2001).

It has been recognized both by researchers and managers that “knowledge is a potentially significant resource to the firm as it may possess valuable, rare, inimitable and non-substitutable characteristics particularly if it has a tacit dimension” (Alwis and Hartman, 2008; Polanyi, 1966). In order to be successful an organization needs to be able not only to gain existing knowledge from ‘the outside’, but also to create new knowledge, store it and, above all, to transfer it. As long as creation, utilization and transfer are done successfully, it leads to innovation. Innovation cannot be sufficiently defined in terms of information processing or problem solving. Alwis and Hartman (2008) suggest to perceive innovation as a process in which the organization creates and defines problems and then actively develops new knowledge to solve them. There are authors who define innovation as a “process of many discrete decisions and behaviours that unfold slowly over time” (Tornatsky et al.1983), while others stress the “novelty of the idea”, referring to “subjective recognition of novelty” or “the first introduction of the novelty” (after Alwis and Hartman, 2008). Innovation can also be analyzed as a combination of invention and exploitation. Additionally, it may be perceived and understood in terms of the

combination and integration of different knowledge components, or, more recently, in terms of the transfer of knowledge.

It is worth pointing out that a knowledge-creating organization is based on various layers of knowledge used within its structures. In this terms, knowledge can be classified as conscious knowledge – explicit knowledge held by individuals, objectified knowledge – explicit knowledge held by organization, automatic knowledge – preconscious individual knowledge and collective knowledge, revealing itself in the practices of the organization (Mohajan, 2016). This classification has important consequences for Knowledge Management, as each type of knowledge calls for various ways of coding and saving it, as well as sharing it.

8. KNOWLEDGE MANAGEMENT

Undeniably knowledge constitutes an asset basing on which improvements and innovation occur. In the information economy and knowledge-based society the “hard” assets such as real estate, machinery, or land, are no longer as important as they used to be, since the value of those depreciate rapidly, concurrently not leaving much room for innovation – the key for creating sustainable competitive advantage. As a result, what matters more these days are “soft” assets, among which knowledge, particularly tacit knowledge, is the most valuable, not to say priceless, for an organization. As Kakabadse et al. (2001) claims “knowledge is a genome of the corporation”. For this reason, managing the most valuable assets of the organization requires special procedures, strategies and the right people in charge of it. Recognizing the importance and complexity of the issue, new discipline of Knowledge Management, both in academic and practical terms, emerged.

Knowledge management is “a formal, directed process of determining what information a company has that could benefit others in the company and then devising ways to making it easily available” (Smith, 2001, after Liss, 1999). This holistic process consists of various steps, giving an insight into how knowledge is captured, evaluated, cleansed, stored, provided and used. According to empirical research conducted among managers in US companies, knowledge management includes four main areas: (1) managing tangible intellectual capital, such as patents, (2) gathering, organizing and sharing the company’s information and knowledge assets, (3) creating work environments to share and transfer knowledge among workers, and finally, (4) leveraging knowledge from all stakeholders to build

innovative corporate strategies (Smith, 2001, after Wah, 1999). It is easily noticeable that a significant part of knowledge management is devoted to managing tacit rather than explicit knowledge, or creating conditions inside and outside of the company to facilitate knowledge transfer. On the whole, knowledge management aims at “leveraging and reusing the organization’s existing resources to help people seek best practices, not reinventing the wheel” (Smith, 2001).

In order to achieve the goals, various methods are used to manage different knowledge types. It is common to use codification for managing explicit knowledge, whereas personalization is utilized for tacit knowledge management. The organization can be successful when management of codified and personalized knowledge contributes to and is aligned with its competitive strategy (Smith, 2001). Yet, many organizations still do not handle knowledge management efficiently, particularly when it comes to management of the tacit knowledge. It may be explained by the fact that it is far more difficult to manage tacit knowledge than explicit one as by definition tacit knowledge is difficult to capture, hard to formalize, and therefore to communicate to others. It is less familiar and subconscious, which makes it rather an unconventional type of knowledge. However, more and more companies seeking to create and innovate are recognizing that “tacit knowledge is critical to the key organizational tasks of creating new knowledge” (Alwis and Hartman, 2008). After all, as Alwis and Hartman (2008) conclude, it is “tacit knowledge that creates the learning curve for others to follow and provides competitive advantage for future successful companies”.

The difficulty of the task of tacit knowledge management appears to be conceivable as soon as we reflect on the bare definition of this type of knowledge. According to Kikoski and Kikoski (2004) tacit knowledge refers to “personal knowledge that each individual possesses that is unique and once unlocked can be a creative contribution in an organization” (Alwis and Hartman, 2008). However, in order to “unlock” it, the right circumstances need to be created in the company, overcoming the barriers typical for new knowledge creation, hindering the innovation process. This is where the knowledge management’s role commences. Knowledge management, both as a discipline and practice, is pretty complex, involving various aspects, embracing handling with all types of knowledge. As such, it involves information management, thus, explicit knowledge management. Nevertheless, it goes beyond that. It carries out two different tasks – “to facilitate the creation of new knowledge and to manage the way people share and apply it” (Davenport and Marchand, 1999, after Alwis and Hartman, 2008).

In order to create new knowledge within a company, and further facilitate its evolution, some basic conditions need to be met. A prerequisite for tacit knowledge evolution, and thus, innovation is an

open culture of the organization supporting innovation (Alwis and Hartman, 2008). The prime condition revolves around setting the environment in which all members of the organization feel safe to exchange their ideas in creative conversations, hence, a climate of openness and trust among them needs to be established (White, 2001). That is understandable that interactions with others constitute a crucial condition for tacit knowledge to be created, shared and used, given the fact that tacit knowledge can only be recognized through personal contacts inside of the organization or with external organizations. For this reason, the interaction style within the organization needs to be constructive rather than aggressive, enhancing this way task performance, promoting knowledge sharing. All above-mentioned aspects belong to a widely understood company culture, which either facilitates or impedes the innovation.

As mentioned before, knowledge always comes from an individual, therefore, it may be assumed that people possess slightly different types of both, tacit and explicit knowledge, even though they might have the same origin or even formal education. Consequently, individuals use various perspectives to think about problems and devise solutions (White, 2001). All those different perspectives introduce a kernel of ambiguity, sometimes even conflict, inside of the company. However, as Nonaka (1991) points out a knowledge-creating company must be ambiguous to some extent, otherwise it resembles an order which does not foster any innovation. According to him those discrepancies in approaches and perspectives can be a rich source of new knowledge, particularly vital in the times of a crisis, when the company's traditional categories cease to work, and there is a need to reexamine the old, while creating the new.

Knowledge management is a very complex discipline consisting of many stages. Not only does it involve managing the tacit, explicit or both types of knowledge, but also it needs to examine the level of knowledge inside of the company, manage the sources of knowledge, stimulate the creation of knowledge, teach it, transfer it, stimulate and promote its use and guard it so that it does not get lost, nor used or imitated by the competitor.

It has been pointed out in this thesis that it is the tacit knowledge that is the prime type of knowledge, as all explicit knowledge is rooted and depends to some extent on tacit knowledge, while tacit knowledge simply exists.

9. METHODOLOGY

The methodology applied in this thesis comes down to thorough documentary analysis, followed by a survey prepared and conducted in order to establish the current situation in Portuguese IT Consulting Companies, specializing in outsourcing information services. The target group of interest constituted IT consulting companies in Portugal.

This thesis derives its theoretical base from the core papers related to knowledge management and knowledge creation are among others classical works of Ikujiro Nonaka, as well as the supplementary articles and comments of other recognized authors of the discipline. With regard to Integration Competency Centre, the theoretical base constitutes *Integration Competency Center. An Implementation Methodology* by John Schmidt and David Lyle, accompanied with numerous articles from journals. The full list of literature utilized in the course of preparation of this thesis is available in the Bibliography section.

In terms of the survey conducted for the need of this thesis, the questionnaire was prepared, piloted and then conducted in 26 companies based in Portugal. This number is a result of sending questionnaires to 50 selected IT Consulting Companies operating in Portugal. The selection was made after a thorough research conducted on LinkedIn.¹

In order to reach the sufficient number of respondents, public online forms were used, giving rise to the database utilized while conducting the analysis and drawing conclusions. The questionnaire at its full length is available in the Annex.

The survey conducted has had three main objectives. Firstly, it aimed to establish what is actually perceived by employers as valuable knowledge in Portuguese IT companies. There have been two obvious choices – formal knowledge represented by formal qualifications acquired at universities and other training institutions, or informal but more practical knowledge, represented by skills and experience. In fact, the question comes down to the issue of recognition of tacit knowledge over explicit, or in other words, treating it as minimum ‘as important and relevant’ or ‘even more important and relevant than’ explicit knowledge. Secondly, the survey attempted to get an insight into the current situation regarding the knowledge creation and sharing. More specifically, the aim was to establish if there are any practices applied to facilitate the above-mentioned knowledge related issues. Finally, the

¹ <http://www.linkedin.com/pt>

survey has looked into the issue of knowledge retention in the company, particularly in case of personnel change. This aim is highly relevant and practical, taking into account the fact that nowadays there is a high rate of mobility among IT specialists, hence the volatility of knowledge is higher than ever. The survey has attempted to establish whether IT companies in Portugal share any common practices, such as encouraging, incentivizing and rewarding the leaving personnel to share skills and knowledge with their current colleagues and newcomers to the company. That kind of practices, if they existed, would suggest that knowledge and skills are shared in a natural open sphere and thus the knowledge loss is minimal, particularly in case of personnel change.

The survey was prepared in a form of an online questionnaire and delivered to respondents in Google Forms². This form has been selected due to the facility of survey delivery, possibility of fast completion by the respondents and, last but not least, the ease to export the gathered data in order to create the data base. It is absolutely anonymous, therefore the option of email addresses gathering was disabled for this questionnaire.

The questionnaire contains 30 questions of three main types: multiple choice with one possible answer, multiple choice with the option to choose more than one option (so-called “checkboxes”), and linear scale. The first two types of questions provide respondents with a possibility to add their own answer, not included in the options listed.

The questions are organized in 5 main blocks: (1) recruitment and in-company training, (2*) in-company training courses (*dependent section), (3) flow of information and knowledge in the company, (4) information on the company, excluding its name, and (5) respondent’s information. The aim of the first section is to understand how the employer establishes the qualifications and practical knowledge of its employees at the time of recruitment and how it develops the knowledge and skills of its employees. The second section is dependent on the answer given to the final question of the first question. In case of a negative answer, the questionnaire skips to the third sections. Otherwise, it directs the respondent to the second section, which aims to establish the details related to training offered by the employer. The aim of the third section is to identify how open the company is to share the knowledge and information between the employees. The fourth section identifies the crucial details of the company, such as the average time of a qualified employee to stay working in the company. The last section aims

² <http://docs.google.com>

at obtaining details of the respondent, such as his/her position in the company and time spent working there.

The survey was delivered to respondents working in selected fifty IT consulting companies operating in Portugal. The short list of companies was prepared after thorough research conducted on LinkedIn. The assumption was to receive one filled in survey from each of the companies from the list. The reason for getting just one questionnaire from a company is related to the need of getting an overview of many different companies and their practices, rather than gathering opinions of the employees about their employers. Furthermore, this assumption simplifies the data gathering, as getting many answers from each company, might have been complicated due to lack of responses from the respondents.

The first request for filling in the survey was sent to 30 potential respondents on 29th May 2018, the reminder was sent on 5th June. On the same day, 30 new potential respondents were contacted and requested for filling in the questionnaire. The reminder was sent on 11th June, together with the last 30 new contacts made. On 18th of June, last reminders were sent.

10. SURVEY RESULTS

As a result of contacting 90 potential respondents on three different days: 29th May, 5th June and 12th June, 26 responses have been collected. The responses obtained were mostly given by technical managers (60%) and human resources professionals (30%), working in their current companies for relatively long time. As the results of the survey revealed 41,7% of respondents have worked for more than 10 years, while 33,3% for at least 8 years. Even though the responsiveness was slightly below 30%, the results obtained are rather consistent, which allows to make valid conclusions, at least on the level of the analyzed sample.

According to respondents most of employers check the formal qualifications at the stage of recruitment basing on information from the candidate's CV (22 respondents which constitutes 91,7% confirmed it), while practical skills are verified during the technical interview (22 respondents, 91,7%, respectively), as demonstrated in the graphs below.

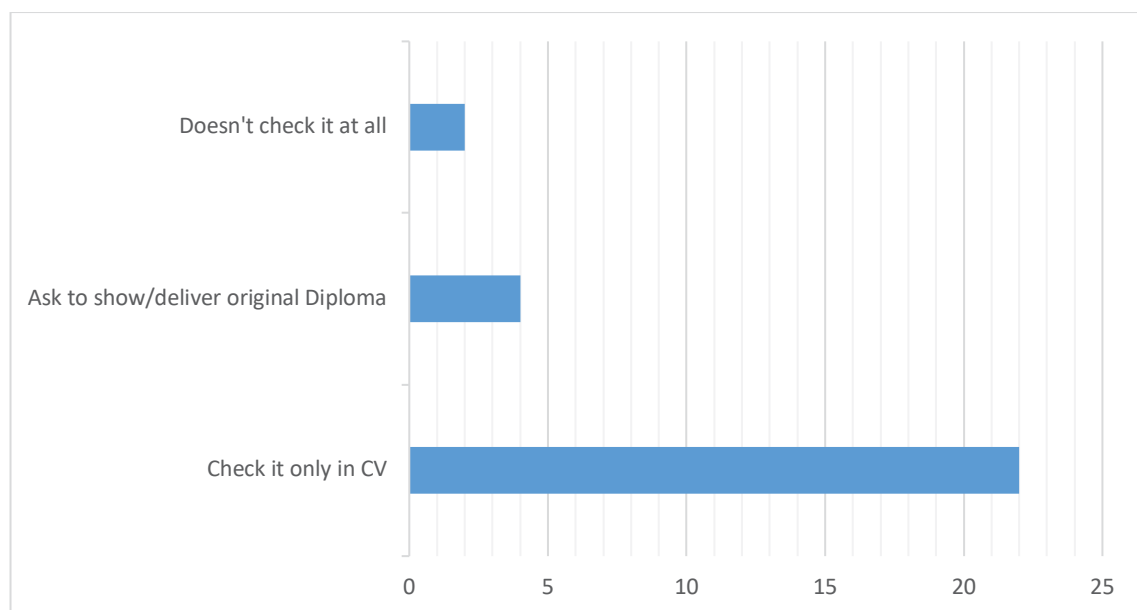


Chart 1 - How does the employer check the formal qualifications during the recruitment?

The presented results suggest that on the stage of recruitment employers recognize the importance of formal knowledge reflected in a form of official qualifications. A significant point to notice is that employers in Portugal hardly ever verify the content of CVs of potential employees by for

instance checking on the certificates and diplomas, which may lead to a conclusion that perhaps formal knowledge, at least in the area of IT is less valued than practical, thus, more tacit knowledge.

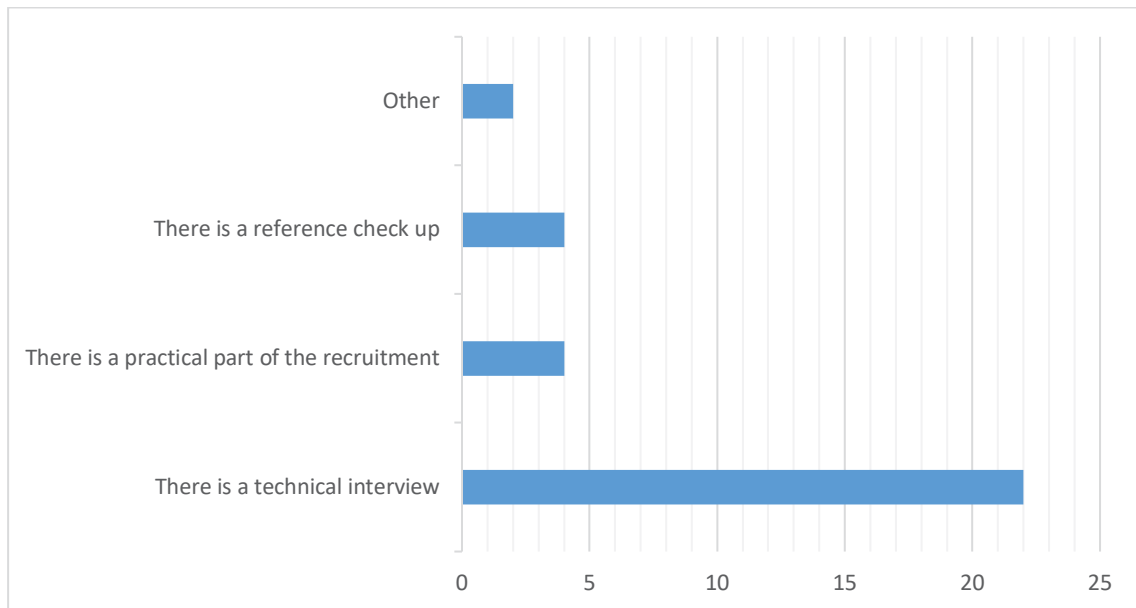


Chart 2 - How does the employer check the practical knowledge during the recruitment?

As the survey revealed, skills and abilities presented during the more technical, therefore, practical interview, giving the candidate an opportunity to present tacit knowledge are valued with the same frequency, which may lead to a partial conclusion that both types of knowledge, formal and informal, is perceived as equally important for Portuguese IT companies. However, hardly ever are the references checked (4 respondents, constituting 16,7%) or there is any other practical part of the recruitment (4 respondents, 16,7%).

Concurrently, the survey has revealed that only in rare cases (4 respondents, 17%) there is any knowledge check after probationary period as depicted below.

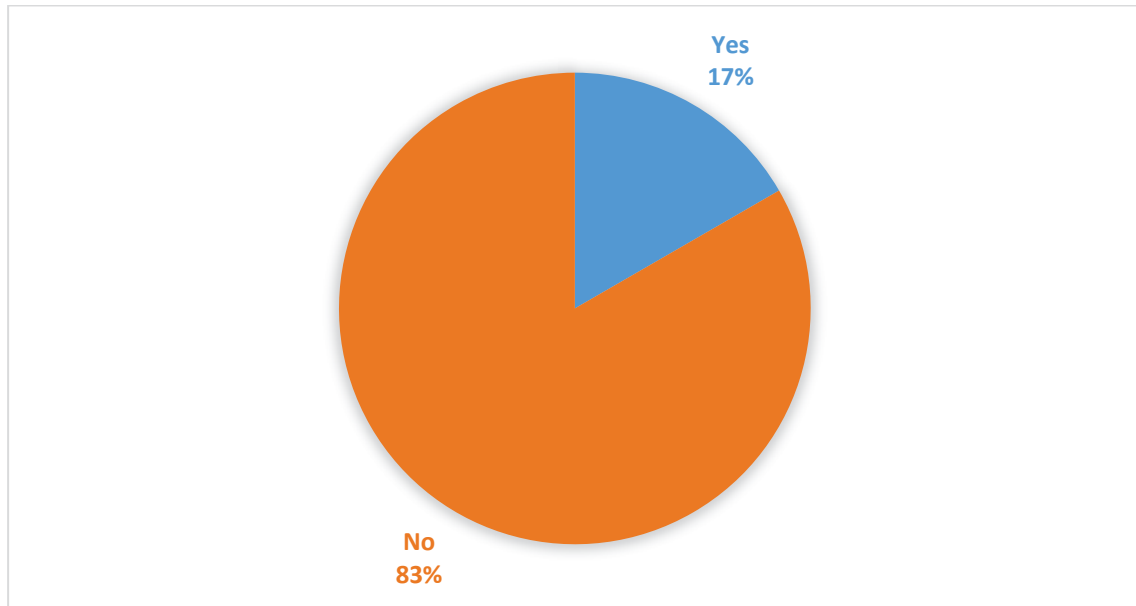


Chart 3 - Is there any skills and knowledge check after the probationary period has come to an end?

It should be pointed out that even though not perfect, yet comprehensive knowledge check-up on the stage of the recruitment, suggests as Elizabeth A. Smith (2001) put it, that IT companies in Portugal are aware of the fact that both, formal qualifications and practical knowledge matter. The fact that formal qualifications are hardly ever verified, perhaps suggests that practical knowledge is more valued, the claim that can be reinforced by information that according to 91% the knowledge and skill check-up has an informal character, being rather a practical task to solve or other form of a practical task, as demonstrated below.

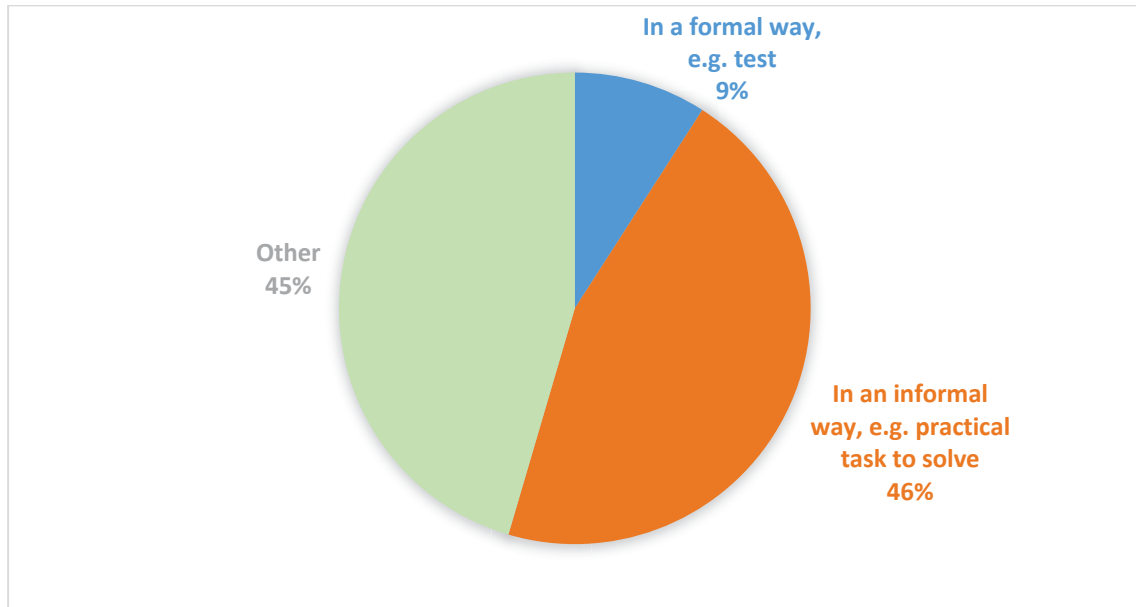


Chart 4 - In what form does the employer check them?

Concerning the training provided by the employer, 100% of respondents indicate that their employers provide them with various training courses that take place with reasonable frequency, occurring “often” and “sometimes”, according to 50% (12 respondents) and 33,3% (8 people) of respondents, respectively, as demonstrated below.

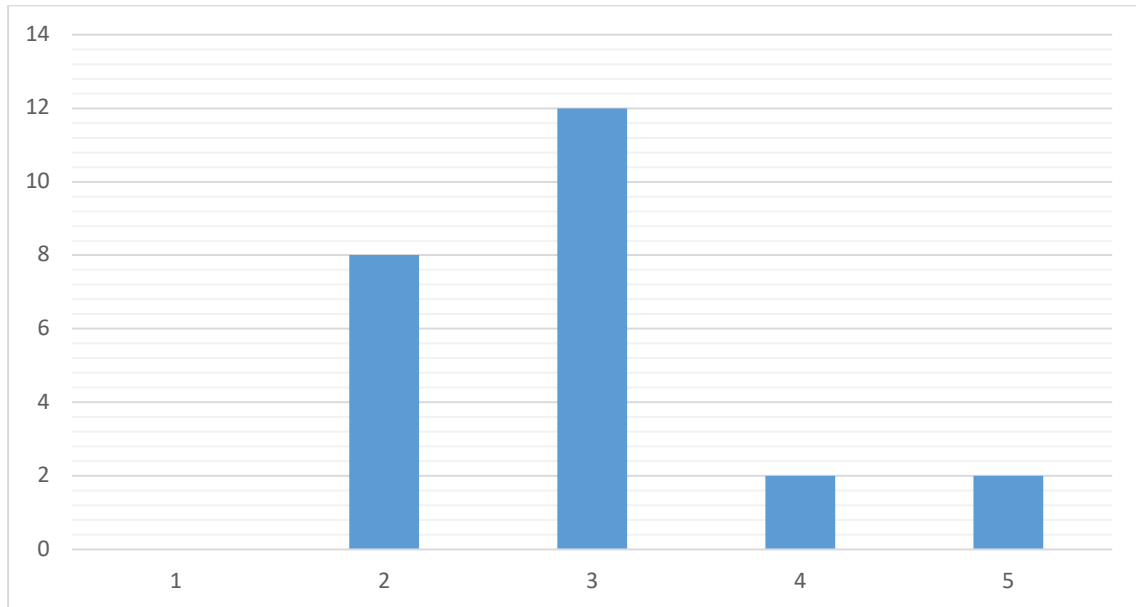


Chart 5 - How frequently do the training courses take place?

These results may lead to a conclusion that IT companies recognize the importance of continuous training of their personnel, directly or indirectly, contributing to the process of increasing and in turn creating new knowledge. This assertion aligns with Ikurijo Nonaka and Ryoko Toyama's claim (2003) that nowadays a company's sustainable competitive advantage is based on knowledge and capability to create it and utilize it. Providing employees with the opportunity to expand and complete their knowledge undoubtedly contributes to this process, being an investment in an individual. It is particularly true if the problem is analyzed from Nonaka's point of view (1991) who claims that "new knowledge always begins with the individual", becoming transformed into organizational knowledge valuable to the entire organization.

The training courses mentioned in the survey are frequently strictly related to technical and professional skills directly related to daily professional tasks (57%), however, in some cases, respondents indicated also soft skills training (24%) and practical skills, such as foreign languages (19%). This range of training courses may suggest that employers are aware of the importance of general knowledge expansion as beneficial for the company as a whole. Taking Suliman Al-Hawamdeh's claim (2002) the process of knowledge creation is dependent on existing knowledge, hence increasing the general knowledge of the organization is a step towards new knowledge creation which comes down to value addition to previously existing knowledge through innovation.

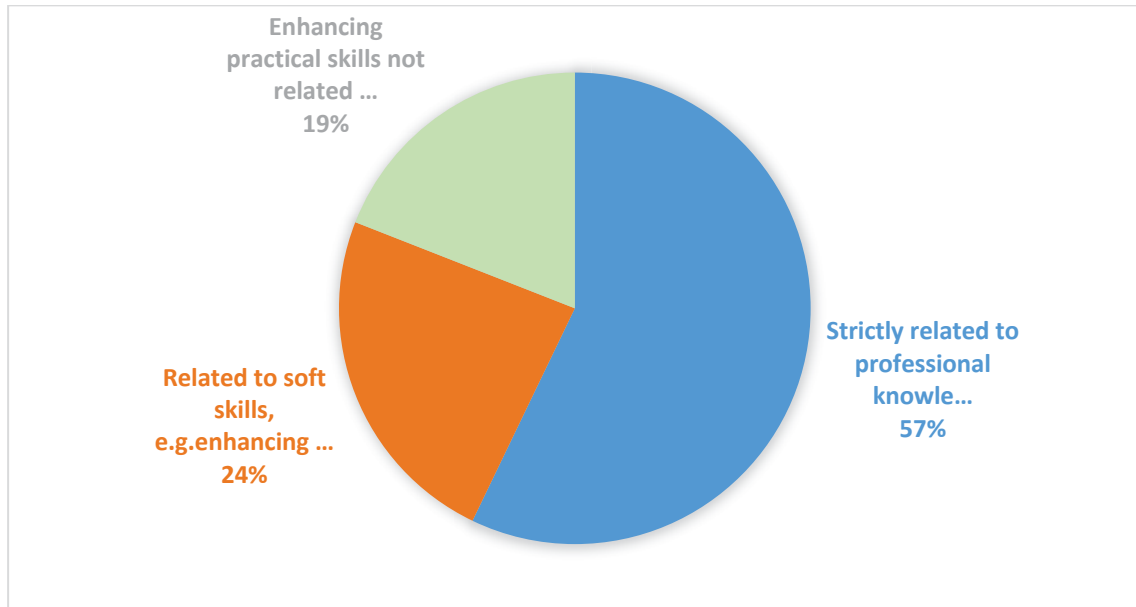


Chart 6 - What kind of training courses are these?

Respondents see the training courses as generally useful for their professional development, placing themselves in substantial majority of cases (90,9%) in the second half of the scale, with the rank most frequently chosen six points in the scale to eight (36,4%), as the graph below demonstrates.

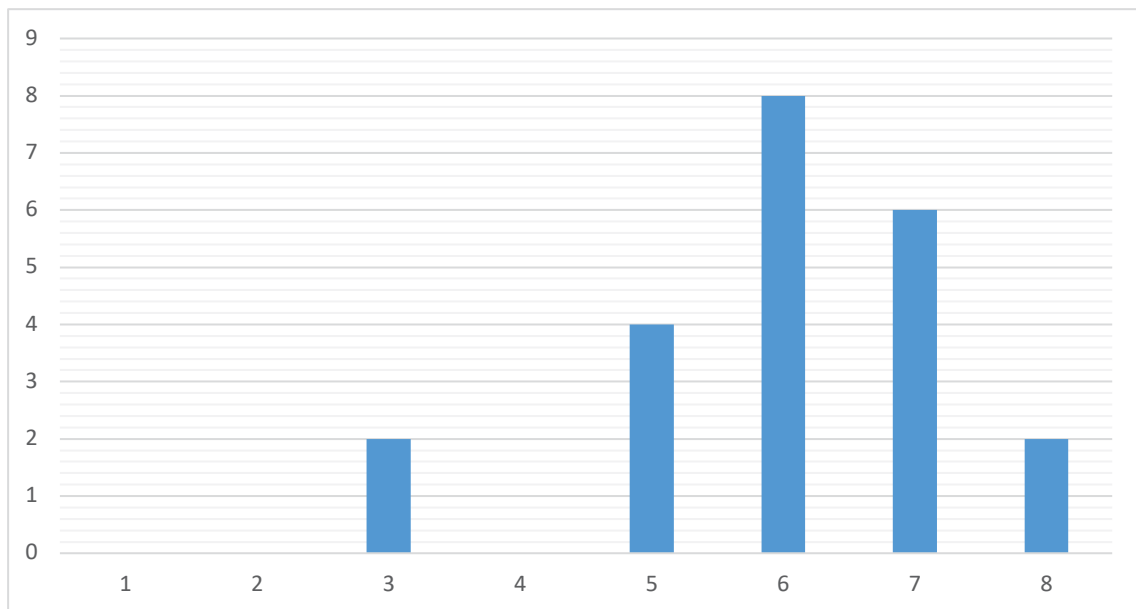


Chart 7 - How are the training courses useful for gaining knowledge necessary at work?

These results show that employees themselves recognize the importance of gaining new knowledge process.

However, respondents do not see the training courses as very useful for team building, as 25% of respondents located themselves in the lowest part of the scale, while 33,3%, the highest indication, ranked the courses at five out of eight. The issue of team building will be looked into further in this chapter.

With regard to the flow of information and openness of an employer for suggestions made by employees, there is relative freedom of expression with 91,7% claiming that it is widely acceptable to express opinions and suggestions for solutions regarding work related issues, as well as personal opinions and sharing points of view (91,7%). Concerning organizational issues, the situation is similar, however, only 83,3% state it is widely acceptable to express opinions in this terms. It is worth pointing out that the easiest way of expressing opinions are informal ways and situations, such as an informal email or an exchange of thoughts (42%) or an informal meeting (33%) as shown below.

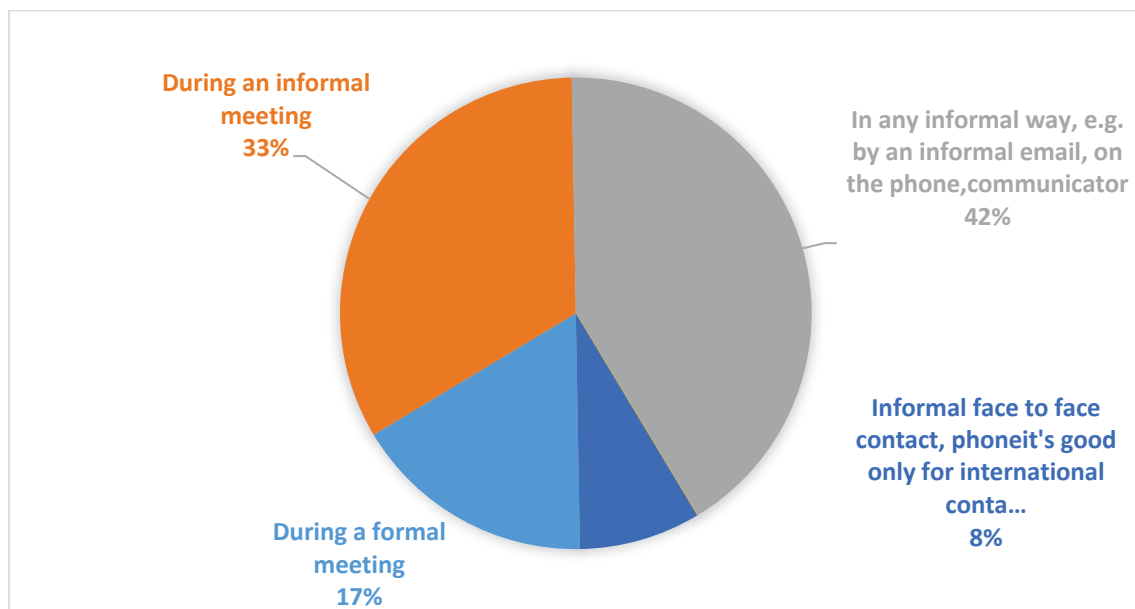


Chart 8 - In what way is it easiest to express your opinion?

These results indicate that the culture of IT companies are rather informal, which facilitates communication and interaction between employees and their superiors. This aspect of IT companies culture is very positive for tacit knowledge creation as according to Suliman Al-Hawamdeh (2002) this is knowledge that exists only in the minds of people, being a product of interactions between people and the environment. Therefore, only interactions, for instance in a form of a dialog, can lead to tacit knowledge creation, and that in turn, to innovation.

As the survey reveals only 8,3% of respondents mention the existence of a ‘suggestion box’, allowing to make anonymous suggestions. According to 75% of respondents, there is a policy of the open door with their direct managers, whereas 58,3% claim the same about top management of the company, which is illustrated by the graph below. Needless to say, the proportions are reversed when it comes to the need of booking a meeting in advance, with 17% respondents pointing it out with relation to direct manager, and 25% in case of top management.

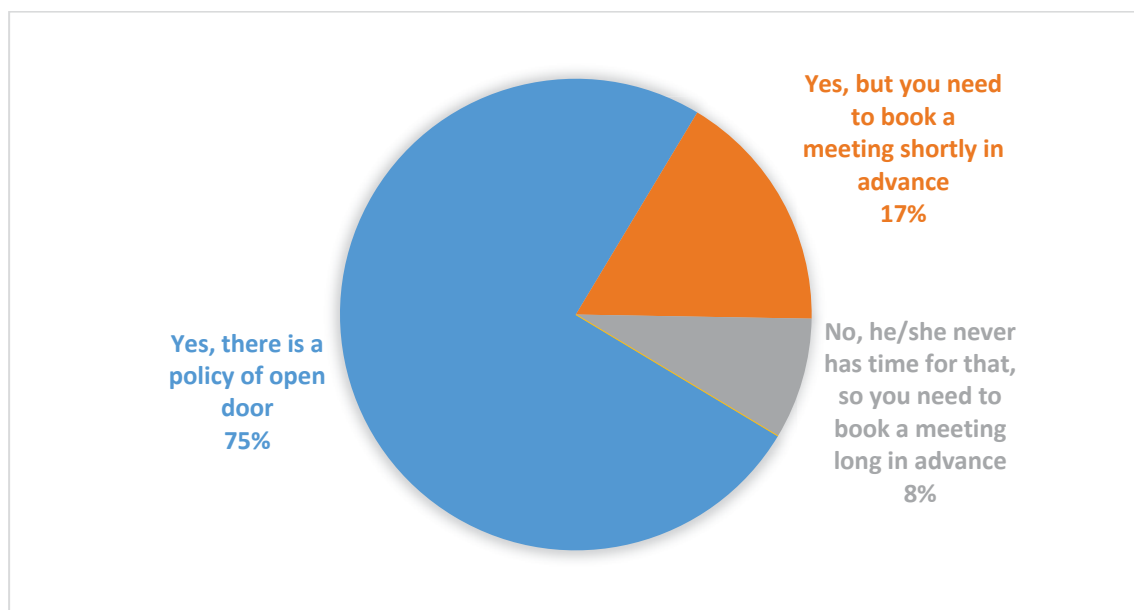


Chart 9 - Is it easy to talk to the top management?

The results presented suggest that both structure and atmosphere in Portuguese IT companies are rather open and relaxed, particularly in the nearest surrounding of employees, namely, it is easy to communicate with a direct superior and relatively more difficult to communicate with the higher levels of company structure.

The subsequent part of the survey aimed at establishing if the companies facilitate and encourage sharing knowledge and ideas inside of the company. This characteristic of a company culture is vital for tacit knowledge transfer between the employees, since as Nonaka (1998) put it the *tacit knowledge* refers to valuable and highly subjective insights, intuitions and hunches, being difficult or even impossible to formalize, communicate and share with others. Therefore, the only way to enable this practical and subjective knowledge between employees, is to provide them with the facility and encouragement to at least attempt to share it. According to the data obtained in the survey, companies do not reward employees for ideas leading to innovation (91,7%), not even incentivize employees to share ideas and knowledge with colleagues (91,7%) as demonstrated below.

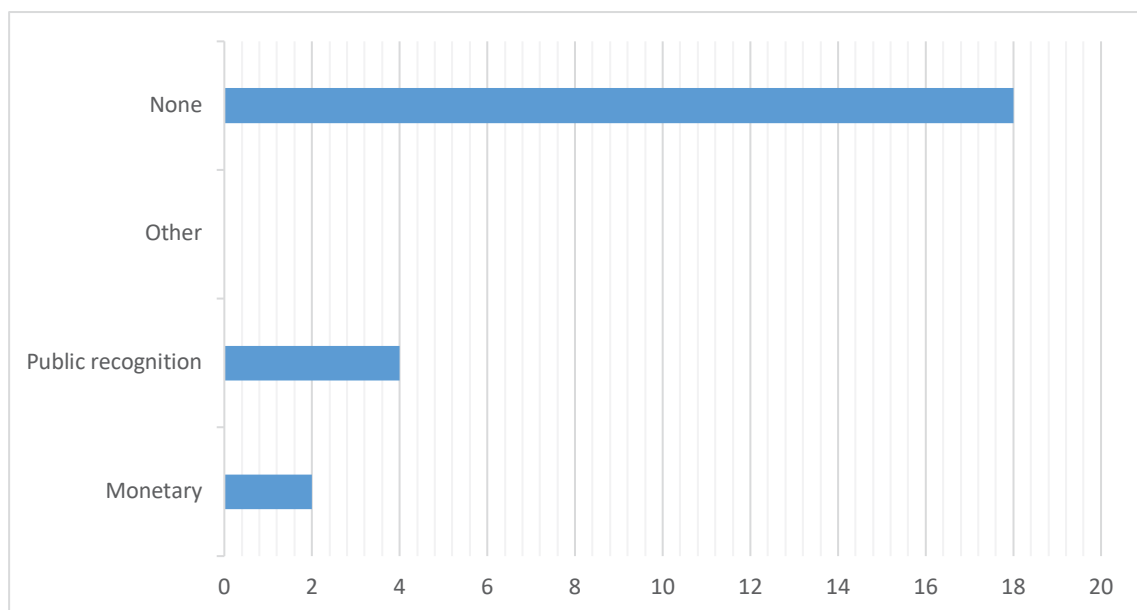


Chart 10 - What are the incentives to do so?

These results do not shed positive light on the current situation in IT companies in Portugal as the matter of sharing good practices and practical ways of resolving problems is left to the goodwill of employees who may voluntarily share, or not, their practical skills.

According to 83,3% there is no reward whatsoever for sharing knowledge and ideas, while 18,7% claim public recognition is a form of reward. On the other hand, 91,7% employees indicate that their employers facilitate making bonds between employees, with 66,7% claiming that the workplace amenities allow and facilitate team building. The results are shown below.

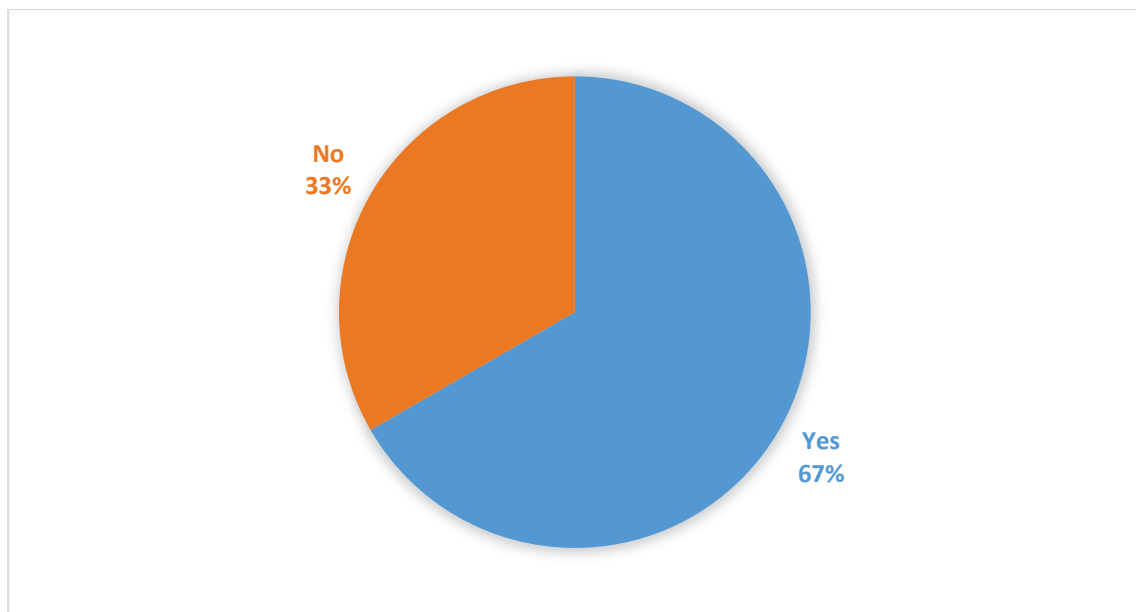


Chart 11 - Is the workplace organized this way that it is easy to create bonds (team building) and therefore share thoughts? E.g. place for employees to 'hang out' (cafeteria, coffee sofas etc.)?

Providing employees with physical place to spend time together, in an informal way, yet at work, may stimulate the knowledge sharing between colleagues. However, if, as indicated by the previous graph, employees do not feel encouraged to share with others, they may opt for not contributing to the discussions with their skills and ideas, hence, not assisting innovation. According to Suliman Al-Hawamdeh (2002) the type of knowledge necessary for innovation is the one that exists only in the minds of people, being a product of interactions between people and the environment. In this light, proving employees with the physical place facilitating interactions appears to be of even higher importance.

Nevertheless, only 41,7% of respondents claim they do some out-of-work activities with their colleagues. 58,3% do not engage in any activities of this type, as demonstrated below.

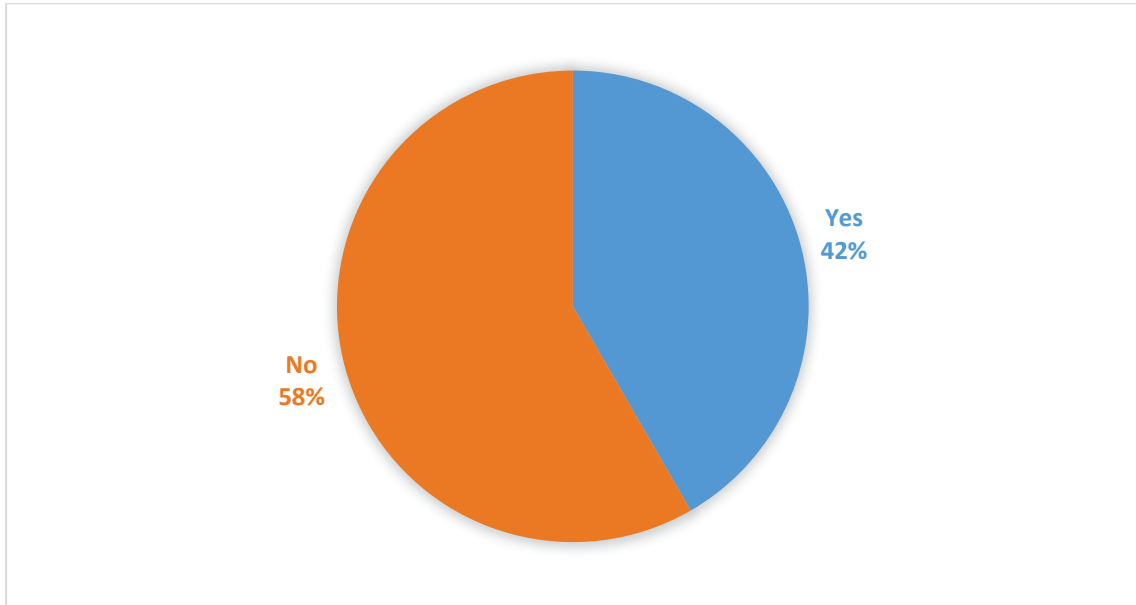


Chart 12 - Are there any after work activities organized by the company/group of employees? E.g. weekly lunch out, celebrating birthdays of employees, doing sport together etc.

At the same time, 14 respondents indicated that the management does not facilitate the organization of such events, compared to two respondents stating their managers help to organize events and actively participate in them, as the graph below presents.

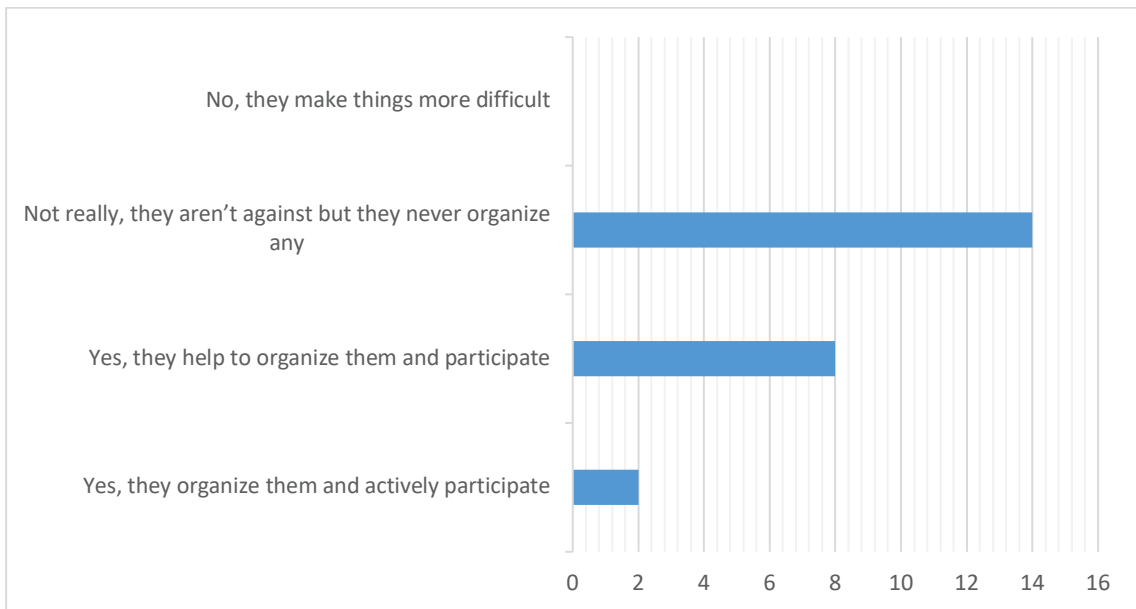


Chart 13 - Does the management encourage team-building activities?

If we assume that these are solely informal interactive situations in which the creative type of knowledge can be transferred from one person to another (Suliman Al-Hawamdeh, 2002), or by observing behavior, communicating or coordinating among employees as Mohajan put it (2016), it becomes clear that Portuguese IT companies should invest more in increasing the informal contacts colleagues have at work and after hours. Inability to provide employees with these opportunities affect negatively acquisition and subsequently management of tacit knowledge which according to Wagner and Sternberg (1987), constitute the hallmark to company's success.

Among the companies where the respondents work, a skilled employee works for the same organization for a medium length period, between 5 and 10 years, (75% of responses) as illustrated below.

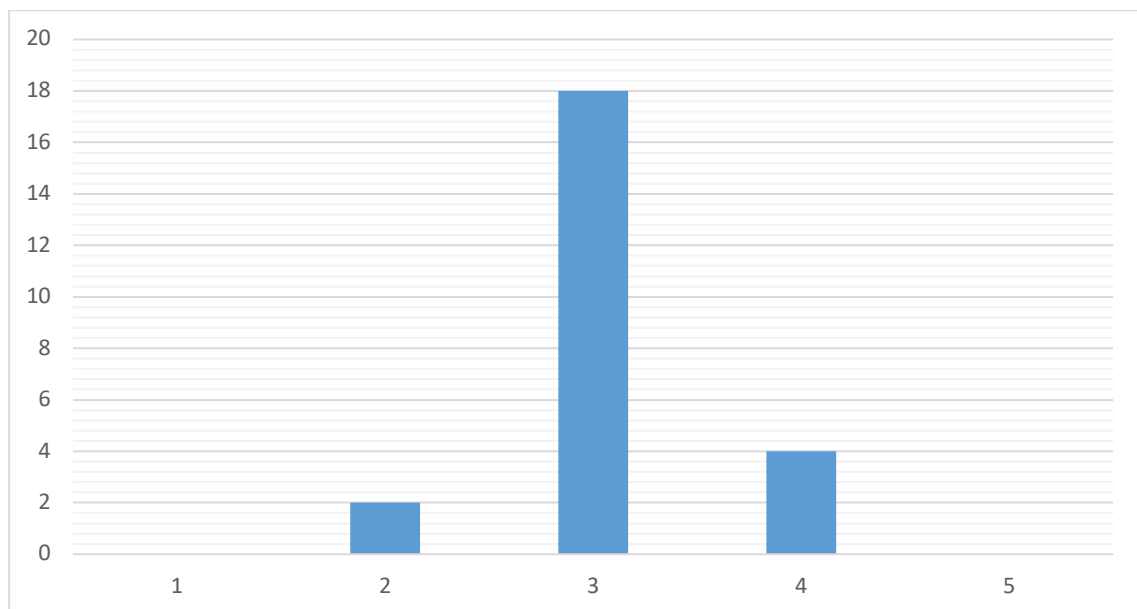


Chart 14 - What is an average time for a skilled employee to stay in the organization?

According to 75% of respondents, in case of handing in a notice, the employee is asked to pass on knowledge on a new employee or a colleague who is taking over the duties. However, 67% confirm that the management encourages the employee to do so, whereas 58% feel incentivized to do it as shown below.

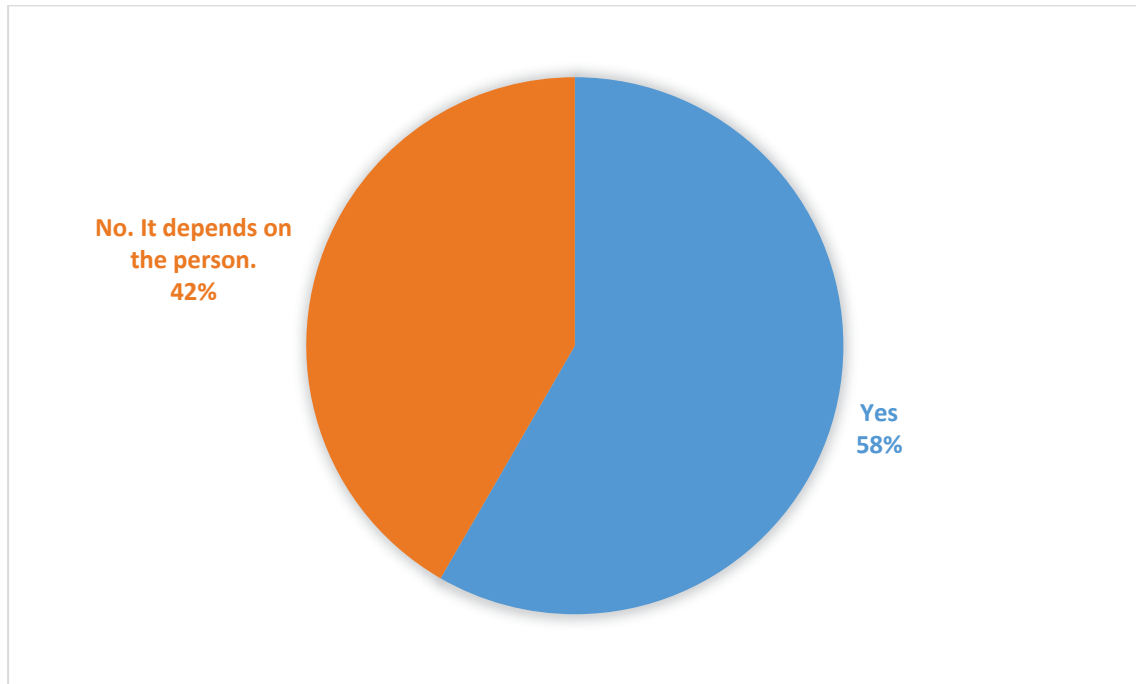


Chart 15 - Is the person incentivized to do it?

These results are particularly important for the analysis conducted as a great deal of knowledge is lost when people leave their workplaces and/or do not feel sufficiently incentivized to share their knowledge, according to Brown and Druguid. The questions at stake, however, are whether employees leaving the organization make sufficient effort to pass their knowledge and which type of knowledge is being passed – formalized knowledge that can be documented, or rather practical knowledge, having more a form of practical tips. The latter type of knowledge – tacit knowledge, constitutes ‘valuable and highly subjective insights and intuitions that are difficult to capture and share because people carry them in their heads’ as can be read in Harvard Business Review (2007). This type of knowledge, if not passed on deliberately and with care, will stay concealed where it resides – in people’s minds.

As the survey reveals the most common way of passing on knowledge is in a rather informal way, occurring in person (67%) or through documentation (25%), which is illustrated by the following graph.

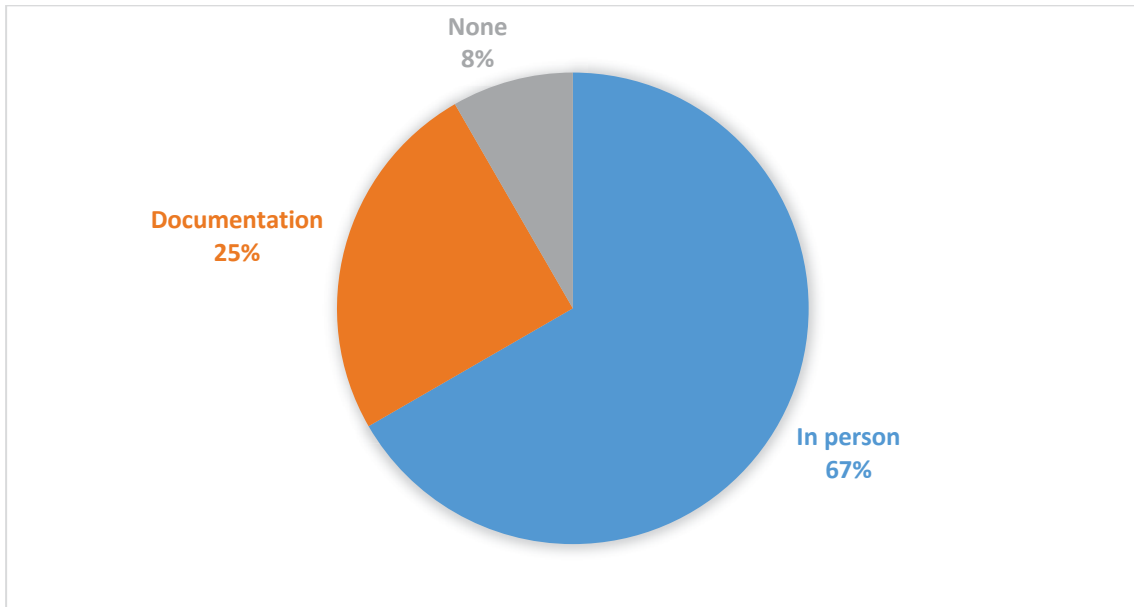


Chart 16 - What are the common ways of passing on the knowledge?

The personal form of passing on knowledge raises hope that not only official information that may as well be codified, is shared as this way more practical tips and ways of 'doing things' can be passed, concurrently declining the time of training of the new employee.

11. FINAL CONCLUSIONS AND RECOMMENDATIONS

Basing on the results of the survey conducted, the following conclusions about the current situation in Portuguese IT Consulting Companies can be drawn:

1. There is rather high retention of employees, who work for their companies on average 8-10 years.
2. Employers do not check the formal qualification in any other way but basing on information provided in the CV, which obviously is prepared by a potential employee. Simultaneously, technical knowledge seems to be more important, as majority of respondents indicated a technical interview as an integral part of the recruitment. This in turn suggests that IT companies recognize and value higher forms of tacit knowledge over explicit and documented knowledge, in the form of formal qualifications.
3. Companies provide in-company training courses to their employees, mostly related to their technical skills necessary on the daily basis, however, other skills are sometimes trained as well. These conclusions allow us to believe that IT companies recognize the importance of general skills and knowledge building in individual employees, and therefore, benefit from them as an organization.
4. Respondents perceive the courses more useful for professional development rather than a team building opportunity, which in turn suggests that IT companies do not pay sufficient attention to encouraging and promoting sufficient interaction and contact between colleagues, which in turn may be influencing negatively the process of knowledge, thoughts and ideas sharing.
5. Expressing opinions and sharing ideas have a rather informal character, and take place mostly in person or informal means such as an informal email or a phone conversation. It is acceptable to express opinions freely, particularly in relation to work related issues. However, employees do not feel encouraged and are not incentivized to do so, which might lead to resignation from taking voice and contributing. As a result, valued ideas and thoughts may never leave the minds of their creators, rendering a potential loss for the organization as a whole.
6. Generally, employers facilitate bonding between employees, providing them with space for informal work and conversations, not disturbing, or in many cases, assisting to organize

after work activities. However, these employees who do not participate in activities, do not feel encouraged.

7. In case of personnel change, the leaving employee is generally requested to pass on knowledge and duties on a new employee, which usually takes place in person or through documentation. The employer encourages passing the knowledge, however, employees do not feel incentivized to do so and therefore, it is possible they opt for sharing the necessary minimum.

In a nutshell, the survey proved that Portuguese IT companies clearly distinguish two main types of knowledge – theoretical, or explicit, and practical, rendering them equally important at the stage of recruitment, valuing more the practical skills or tacit knowledge in the course of work. Furthermore, IT companies in Portugal clearly cater for rather informal atmosphere at workplace, providing employees with places to spend time with colleague in a relaxed upbeat manner, such as cafeteria. Employers usually also do not impede after work activities, facilitating their organization at times. However, it appears to be irregular, therefore, I would claim that the employers do not fully recognize the importance and value of events like that as potential knowledge sharing, and thus, innovation creation. Finally, the companies that do not incentivize employees to speak their minds freely, sharing thoughts and ideas, while they work for organizations, may face bigger problems in retaining knowledge in the organization the moment their employees are leaving the company. It is true that most companies request their employees to pass their duties and knowledge on their colleagues, however, it is not verified in any specific way, therefore, depends on the employee's goodwill to do so. That might be harmful to the organization as a whole.

Taking into account these conclusions, it becomes clear that IT Consulting Companies have potential to become knowledge creating, innovative companies with the characteristics of such organizations outlined by Ikujiro Nonaka in his numerous publications. From the moment of recruitment, practical skills rather than theoretical knowledge and qualifications, play vital role. There is generally open environment allowing employees for free expression of their ideas and thoughts. Furthermore, in many cases, according to respondents, the companies facilitate team building and bonding, therefore, providing employees with potentially more opportunities for free thought exchange.

However, many employees do not feel encouraged, incentivized and rewarded for contributing to the company's pool of knowledge, which in the long run may lead to frustration and in the end, deliberate keeping knowledge to themselves, with special threat of not passing all the knowledge and

information the moment of leaving the company. Moreover, it is worth noticing that potentially there are more opportunities not explored by companies, such as using training courses not only to increase technical skills, but also to enhance the feeling of belonging and trust between employees and towards an employer. That in turn will lead to better relation of the organization with its members, preventing the feelings of resentment and frustration, and hence, taking away knowledge at the time of leaving the organization. As stated before in the course of this thesis, it is tacit knowledge that is the most valuable for each organization. Simultaneously, this type of knowledge is subjective and belongs to an individual as long as he does not share it voluntarily with others, which he will not do unless he is encouraged to do so, rewarded and recognized for that.

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13. APPENDICES

Tacit knowledge inside the Portuguese IT Consulting Companies

Recruitment and in-company training

This section aims to establish how the employer establishes the qualifications and practical knowledge of its employees at the time of recruitment and how it develops the knowledge and skills of its employees.

1. How does the employer check the formal qualifications during the recruitment?

- Checks it only in the CV
- Asks to show/deliver the original diplomas/copies
- Doesn't check it at all
- Other: _____

2. How does the employer check the practical knowledge during the recruitment?

- There is a technical interview
- There is a practical part of the recruitment – practical task to pass
- There is a reference check up
- Other

3. Is there any skills and knowledge check after the probationary period has come to an end?

- Yes
- No

4. In what form does the employer check them?

- In a formal way, e.g. test
- In an informal way, e.g. practical task to solve
- Other

5. Are employees provided with any training courses?

- Yes
- No

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Tacit knowledge inside the Portuguese IT Consulting Companies

In-company training courses

This section aims to establish the details related to training offered by the employer.

6. How frequently do the training courses take place?

1 2 3 4 5

Not often Very often

7. What kind of training courses are these?

- Strictly related to professional knowledge and skills
- Related to soft skills, e.g. enhancing communication skills
- Enhancing practical skills not related directly with professional skills, e.g. foreign languages
- Other: _____

8. How are the training courses useful for gaining knowledge necessary at work?

1 2 3 4 5 6 7 8

Waste of time Very useful

9. How are the training courses useful for team building?

1 2 3 4 5 6 7 8

Waste of time Very useful

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Tacit knowledge inside the Portuguese IT Consulting Companies

Flow of information and knowledge in the company

This sections aims to identify how open the company is to share the knowledge and information between the employees.

10. Is it easy and acceptable to express your own opinion about work related issues, e.g. suggest your own way of dealing with a problem?

- Yes
- No

11. Is it easy and acceptable to express personal opinions and share points of view?

- Yes
- No

12. Is it easy and acceptable to express your own opinion about organizational issues, e.g. suggest new procedures facilitating work?

- Yes
- No

13. In what way is it easiest to express your opinion?

- During a formal meeting
- During an informal meeting
- In any informal way, e.g. by an informal email, on the phone, communicator
- In any formal way, e.g. by a formal email to your manager, other written form that starts a formal course of communication
- Other: _____

14. Is it easy to talk to your direct manager?

- Yes, there is a policy of open door
- Yes, but you need to book a meeting shortly in advance
- No, he/she never has time for that, so you need to book a meeting long in advance
- No, he/she is always out on business/meetings

15. Is it easy to talk to the top management?

- Yes, there is a policy of open door
- Yes, but you need to book a meeting shortly in advance
- No, he/she never has time for that, so you need to book a meeting long in advance
- No, he/she is always out on business/meetings

16. Is there a policy of a "suggestion box" where you can anonymously suggest an improvement to be introduced?

- Yes
- No

17. Is the employee rewarded for sharing an idea that led to innovation?

- Yes
- No

18. Are employees incentivized with a reward for sharing their ideas and knowledge with colleagues?

- Yes
- No

19. What are the incentives to do so?

- Monetary
- Public recognition
- Other
- None

20. Does the company facilitate making bonds between employees?

- Yes
- No

21. Is the workplace organized this way that it is easy to create bonds (team building) and therefore share thoughts? E.g. place for employees to 'hang out' (cafeteria, coffee sofas etc.)?

- Yes
- No

22. Are there any after work activities organized by the company/group of employees? E.g. weekly lunch out, celebrating birthdays of employees, doing sport together etc.

- Yes
- No

23. Does the management encourage team building activities?

- Yes, they organize them and actively participate
- Yes, they help to organize them and participate
- Not really, they aren't against but they never organize any and normally do not participate
- No, they make things more difficult

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Tacit knowledge inside the Portuguese IT Consulting Companies

Information on the company

This section aims to establish some basic information on the company of a respondent.

24. What is an average time for a skilled employee to stay in the organization?

1 2 3 4 5

Short time Long time

25. Is the person who is intending to leave asked to pass on the knowledge on a new employee/colleague taking over the duties?

- Yes
- No

26. Are employees encouraged to do it by the management?

- Yes
- No

27. Is the person incentivized to do it?

- Yes
- No, it depends on the person.

28. What are the common ways of passing on the knowledge?

- In person
- Documentation
- None

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Tacit knowledge inside the Portuguese IT Consulting Companies

Respondent information

This section aims to identify some basic, yet anonymous information, on the respondent.

29. What is your current position?

- Technical Management
- Human Resources
- Other: _____

30. How long have you been working for your current employer?

	1	2	3	4	5	
Less than 1 year	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	More than 10 years

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