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Disentangling the 'talent' concept as applied to the world of work

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by

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Invictus

Out of the night that covers me,
Black as the Pit from pole to pole,
I thank whatever gods may be
For my unconquerable soul.

In the fell clutch of circumstance
I have not winced nor cried aloud.
Under the bludgeonings of chance
My head is bloody, but unbowed.

Beyond this place of wrath and tears
Looms but the Horror of the shade,
And yet the menace of the years
Finds, and shall find, me unafraid.

It matters not how strait the gate,
How charged with punishments the scroll.
I am the master of my fate:
I am the captain of my soul.

William Ernest Henley (1849–1903)

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Introduction

During the last few days I have found that attempting to answer the question 'What is talent?' is far more troublesome than you might think. Recently, I accepted an invitation to attend what was described as a 'thinking breakfast' organised by the Talent Foundation (www.talentfoundation.com). We sat at different tables in groups of eight or so drinking coffee (I stuck to water because I've heard it is better for the brain!) and eating croissants. We were asked to put our heads together and do a talent stock-take. Specifically we were asked to think of the pressing issues of the day and to suggest useful themes for the Foundation to focus on in its future work.

Inevitably someone at our table suggested we should start by agreeing what we meant by talent. My heart sank as it always does when I'm invited to partake in some communal defining. Past experience tells me that this sort of activity takes an inordinate amount of time, leads to a strangely inconclusive conversation and results in an uneasy compromise in a desperate bid to accommodate irreconcilable views. I'd much rather skip this cerebral activity (especially at breakfast time!) and look up the word in a dictionary.

So I resisted by saying something dismissive like, 'Let's assume we all know what we mean.' The irony of this is that, in my days as a management consultant, I used to intervene, gently but firmly, whenever I heard a remark like this and caution people about the perils of continuing until they had an agreed understanding. Once, I even had a colleague who used to leap up, write the offending word on a flipchart, and insist it was defined to everyone's satisfaction before allowing them to proceed. If they couldn't agree what they meant by words such as 'strategy', 'quality', 'competencies' and 'paradigm', the words were banned!

Fortunately, I had a few allies on my table and the call for us to spend time defining talent was successfully resisted. Instead, we settled down to swap ideas about talent shortages and the war for talent, how people were undervalued, attrition rates and the challenge to retain talented people, how most organisations are not talent-friendly and so on. All good stuff – and no definition in sight.

Extract from 'What is Talent?' by Dr. Peter Honey (December 2004)

The well-known phrase 'the war for talent' introduced by a group of McKinsey consultants in the late 1990s (Chambers et al., 1998) sparked the current day interest in talent management (TM). Over the last two decades TM has become an increasingly popular topic (Chuai, Preece, & Iles, 2008; Höglund, 2012), and the TM literature has

experienced substantial growth, particularly sizable in recent years (Chabault, Hulin, & Soparnot, 2012; Jones, 2008; Iles, Preece, & Chuai, 2010). Deep in an economic downturn, TM is seen as a high-priority issue for organizations worldwide (Bhatnagar, 2008; Mäkelä, Björkman, & Ehrnrooth, 2010). In fact, TM is considered a critical element for organizational success and sustainability.Nonetheless, TM is subject to intense criticism. Despite the many articles, books, and rhetorical efforts that have been devoted to it over more than a decade, TM suffers from conceptual confusion. In short, and subscribing Honey's words in the previous quotation "all good stuff—and no definition in sight". *Why is it so difficult to define talent management? Why is it so important to have a definition? Why hastalent management become so important? How much do we know about it? Is talent management a new discipline or just 'old wine in new bottles'*[1]*? What is talent? Is it a person? Is it a characteristic of a person? Does it mean the same in every organization? Is that important? How do organizations identify it?*The present study has arisen from the intellectual restlessness these questions have awakened in the author. It is surely not the first time that a researcher has wondered about such issues, although, surprisingly few had dared to tackle them to date. As a consequence, lots of interesting questions are still without answers and the research reported in this dissertation aims to provide some.

The thesis is divided into three main chapters. In the first chapter, we deal with the question that marks the starting point for our research: ***What is meant by talent in the world of work?***We did not come to this question accidentally. Rather, it lies at the heart of a bigger question: *What is meant by talent management?*In 2009, when starting

[1] Chuai, Preece and Iles (2008) used a similar question as the main title for one of the first seminal articles on this topic.

reviewing the literature we facedthe seminal work of Lewis and Heckman (2006). In this work, these authors argued that,

> *"the term 'talent management'has no clear meaning. It is used in too many ways and is often to means to highlight the 'strategic' importance of a HR specialty (recruiting, selection, development, etc.) without adding to the theory or practice of that specialty. Or, it is employed to pitch a compelling anecdote regarding the importance of managing talent. 'Talent' is essentially a euphemism for 'people' and because the perspectives regarding how people can and should be managed varies so greatly the TM literature can recommend contradictory advice" (p. 141).*

But, *was talent always used as a euphemism for people? How can TM research advance without clearly stating what was understood by talent?* So, it became logical to focus on clarifying the meaning of talent. According to Maxwell and MacLean (2008) "whatever the meaning/s of TM, it is a concept that centres on 'talent', which in turn needs to be defined" (p. 822).It really became a challenge. In reviewing the literature a cornucopia of talent definitions and opinions emerged, highly influenced by the type of industry, organization, and the nature of its work dynamic (cf. Iles, Chuai & Preece, 2010; Tansley *et al.*, 2007). Organizations prefer 'local definitions' over universal or prescribed ones, because of the their ability to fit and tailor the talent concept around organizational goals (Scott & Revis, 2008; Tansley *et al.*, 2007). Ironically, in spite of the enormous number of articles and books addressing talent from a managerial point of view, we found little evidence of concern about truly understanding the talent concept[2]. Moreover, even in some reference works, this term is not delimited but it is simply

[2] In 2000, Williams included in his book a chapter called What is 'Talent'? It is the first reference we have found that try to clarify the concept before talking about TM. One year later, Michaels, Handfield-Jones, and Axelrod inserted a '*What is talent?*' section in the preface of their seminal book, *The war for talent*, where they define talent and managerial talent. Also in 2001, Pilar Jericó—a Spanish pioneer of TM—published her first book (*Gestión del Talento: Del profesional con talento al talento organizativo*), and an article (*La gestión del talento: enfoque conceptual y empírico*) where she defined, not only the talent concept, but also the TM one. Since then, it was not until 2007 that few works give to this question the importance that it deserves. These works can be group by articles (Beechler & Woodward, 2009; Chabault *et al.*, 2012; González Cruz, Martínez-Fuentes, & Pardo-del-Val, 2009; Iles, Chuai, & Preece, 2010) and books (Davies & Kourdi, 2010; Silzer & Dowell, 2010; Tansley *et al.,* 2007; Thorne & Pellant, 2007; Weiss & MacKay, 2009). Moreover, Eddie Blass (2009) in his book *Talent Management: Cases and commentary*, although he does not give any concrete definition of the concept, he dedicates its third chapter entirely to discuss six of the dimensions related to the issue of defining talent. In spite of these recent attempts of clarification, there is still not a consensus.

taken for granted[3]. The truth of the matter is that the ongoing confusion about the meaning of 'talent' within the world of work is hindering the establishment of widely accepted talent management theories and practices. Hence, the aim of this first chapter is to contribute to the literature on talent management by offering an in-depth review of the talent concept within the specific context of the world of work, and proposing a framework for its conceptualization. We group different theoretical approaches to talent into 'object' (i.e., talent as natural ability; talent as mastery; talent as commitment; talent as fit) and 'subject' approaches (i.e., talent as all people; talent as some people) and identify dynamics existing within and between them, as well as implications for talent management theory and practice. Finally, we discuss different avenues for further research aimed at developing the talent—and consequently, the talent management—construct further.

Chapter 2 goes on to deal with the next challenging question: ***How is talent identified?*** Despite all the talk about talent and its importance for achieving new sources of competitive advantages, most companies havenot yet capitalized on the opportunity for strategic success that effective talent identification can provide. Significant investments to 'win the war for talent' are made (even in recession times) but the big question, within the HRM domain,remains largely unaddressed in the academic literature: *How can organizations identify talent?* In fact, organizations report great difficulty in operationalizing and measuring talent accurately, reflecting the lack of theoretical foundations for talent identification. Building on from insights from different literature streams (giftenedness literature, vocational psychology, and positive psychology), this

[3] Representative cases are Axelrod, Handfield-Jones, & Welsh, 2001; Bodden, Glucksman, & Lasky, 2000; Cappelli, 2008; Chambers *et al.,* 1998; Effron & Ort, 2010; Gardner, 2002; Hamel, 1999; Hiltrop, 1999; Hooghiemstra, 1990; Lawler III, 2008; O'Reilly & Pfeffer, 2000; Schiemann, 2009, Sturman *et al.*, 2003. Note that some influential works, like those from the McKinsey consultancy, are among these publications. Moreover, neither the Dictionary of Business and Management (Oxford University Press, 2009) nor the Dictionary of Human Resource Management (Oxford University Press, 2008) contain an entry for talent.

chapter aims to contribute to the establishment of a stronger theoretical basis for talent management by discussing two components of talent (an ability and an affective component) that are complementary. Moreover, we identify three central characteristics of talent (manifestation in excellent performance, developed innate abilities and passion) that will help us to distinguish between talent, competence and potential; terms, that are usually misused as interchangeable within TM field. In addition, we argue how this distinction will help in talent identification. We also provide a summary with different discussed measures and methods to identify talent. By discussing managerial implications in terms of measures and methods, we provide practical guidelines for designing talent identification practices grounded in sound theory.

Finally, in Chapter 3, we go back to the origins and broaden the scope of our questions toconcentrate our efforts on the talent management construct. We decided to approach the conceptualization of TM in the literaturethrough a proxy research question: ***How much do we know about talent management?***As mentioned before, despite its growing popularity and the specific academic attention to TM during the past years, it remains in its infancy since there is a lack of clarity regarding its definition, scope and overall goals (Collings & Mellahi, 2009; Garrow & Hirsh, 2008; Lewis & Heckman, 2006). The lack of theoretical foundations and conceptual development in TM literature can be attributed in part to the fact that most of the literature in this field is practitioner or consultancy based (Iles, Chuai et al., 2010; Preece, Iles, & Chuai, 2011). Recently, some authors concluded that TM as a discipline has made some progress towards adolescence mainly due to the contribution of many scholars using North American thinking and research (Collings, Scullion & Vaiman, 2011). In fact, Thunnissen, Boselie and Fruytier (2013) in their literature review confirmed that the majority of scholars

publishing about TM are from the United States. Although Thunnissen *et al.* (2013) made an attempt to provide a critical review of the academic literature on TM, there has been no full review study of the scientific production about it. Hence, in this last chapter, we aim to offer objective data that describe the reality of TM research by analyzing the contributions to the field at three levels. First, we focus on productivity (e.g., number of papers published by each author, the country of origin, and each author's affiliation). Second, we analyze visibility and impact of the publications (e.g., ranking of documents according to citations, documents published in indexed journals, ranking of authors according to number of papers published and its citations). Third, we study collaboration in TM research (i.e., co-authorship). The results of this bibliometric research will allow us not only to analyze the structure of the TM research (e.g., most prominent authors, leading journals, countries and institutions involved), but also to define its boundaries and trends. Our study will allow us to reveal underlying patterns in scientific outputs and academic collaborations and may serve as an alternative and innovative way of revealing global research trends in TM. It should be noted that this bibliometric analysis is the first to address a complete and in-depth analysis of the structure of the field of TM as an academic discipline. It will allow new researchers into the field to be fully aware of seminal authors and must-read articles, as well as identifying those journals and institutions most closely related to this subject.

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Chapter 1.

What Is the Meaning of 'Talent' in the World of Work?

What Is the Meaning of 'Talent' in the World of Work?*

"What's in a name? That which we call a rose

By any other name would smell as sweet"

William Shakespeare

[Romeo and Juliet, Act II, Scene 2]

* An adaptation of this chapter has already been published in the *Human Resource Management Review*. Moreover, it has been presented at different international conferences. Full details in Appendix B.

What Is the Meaning of 'Talent' in the World of Work?

1.1 Introduction

Ever since 1998, when a group of McKinsey consultants coined the expression 'war for talent' and posited that a fundamental belief in the importance of talent is needed to achieve organizational excellence (Michaels, Handfield-Jones, & Axelrod, 2001), talent management (TM) has been an increasingly popular topic (Chuai, Preece, & Iles, 2008). In recent years, a notable increase in the number of articles and books relating to TM is observed as it is seen more and more as a high-priority issue for organizations worldwide (Iles, Preece, & Chuai, 2010). Proper talent management is considered a critical determinant of organizational success (Beechler & Woodward, 2009; Iles, Chuai, & Preece, 2010), and imperative for the livelihood and sustainability of organizations (Lawler, 2008).

In spite of its growing popularity and more than a decade of debate, however, the construct of TM suffers from conceptual confusion in that there is a serious lack of clarity regarding its definition, scope and overall goals (Lewis & Heckman, 2006; Tansley *et al.*, 2007). The lack of theoretical foundations and conceptual development in the TM literature can be attributed in part to the fact that most of the literature in this field is practitioner- or consultancy-based (Iles, Chuai *et al.*, 2010; Preece, Iles, & Chuai, 2011). This latter finding also accounts for the literature's focus on practices (the 'how') rather than on 'who' is considered talented and 'why'.

An increasing number of authors (e.g., Garrow & Hirsh, 2008; Lewis & Heckman, 2006; Reilly, 2008; Tansley *et al.*, 2007) attribute the ambiguity inherent to the TM construct to the inadequate operationalization of the underlying construct talent. Quite surprisingly, TM scholars are rarely precise about what exactly they mean by talent, probably because there are widely held implicit theories about what talent is (Barab & Plucker, 2002). In fact, in many articles (e.g., Collings & Mellahi, 2009; O'Reilly & Pfeffer, 2000) and books (e.g., Cappelli, 2008; Lawler, 2008) about TM, talent as an underlying construct is taken for granted and thus not defined explicitly.

It appears that talent can mean whatever a business leader or writer wants it to mean, since everyone has his or her own idea of what the construct does and does not encompass (Ulrich, 2011). In fact, many different definitions of talent can be found in the academic human resource management (HRM) literature (see Table 1). In addition, in the HR practitioner literature we find a great deal of organizationally specific definitions of talent, highly influenced by the type of industry or occupational field (Tansley *et al.*, 2007). As we will discuss throughout this chapter, a number of important discussions arise from the wide variation found in the literature about the meaning of talent—does talent refers to people (subject) or to the characteristics of people (object)? Is talent more about performance, potential, competence, or commitment? Is talent a natural ability or does it relates more to mastery through practice? Is it better to take an inclusive or an exclusive approach to talent management?

Table 1.1

Different definitions of talent in the world of work

Source	**Definition of Talent**
Gagné (2000)	"(…) superior mastery of systematically developed abilities or skills" (p. 67)
Williams (2000)	"describe those people who do one or other of the following: regularly demonstrate exceptional ability-and achievement- either over a range of activities and situations, or within a specialized and narrow field of expertise; consistently indicate high competence in areas of activity that strongly suggest transferable, comparable ability in situations where they have yet to be tested and proved to be highly effective, i.e. potential." (p. 35)
Buckingham & Vosburgh (2001)	"Talent should refer to a person's recurring patterns of thought, feeling, or behavior that can be productively applied." (p. 21)
Jericó (2001)	"The implemented capacity of a committed professional or group of professionals that achieve superior results in a particular environment and organization." (p. 428; *translation ours*)
Michaels *et al.* (2001)	"(…) the sum of a person's abilities -his or her intrinsic gifts, skills, knowledge, experience, intelligence, judgment, attitude, character and drive. It also includes his or her ability to learn and grow." (p. xii)
Lewis & Heckman (2006)	"(…) is essentially a euphemism for 'people'" (p. 141)
Tansley *et al.* (2006)	"Talent can be considered as a complex amalgam of employees' skills, knowledge, cognitive ability and potential. Employees' values and work preferences are also of major importance." (p. 2)
Stahl *et al.* (2007)	"a select group of employees- those that rank at the top in terms of capability and performance- rather than the entire workforce". (p. 4)
Tansley *et al.* (2007)	"Talent consists of those individuals who can make a difference to organizational performance, either through their immediate contribution or in the longer-term by demonstrating the highest levels of potential." (p. 8)
Ulrich (2007)	"Talent equals competence [able to do the job] times commitment [willing to do the job] times contribution [finding meaning and purpose in their work]" (p. 3)
Cheese, Thomas, & Craig (2008)	"Essentially, talent means the total of all the experience, knowledge, skills, and behaviours that a person has and brings to work." (p. 46)
González-Cruz *et al.* (2009)	"A set of competencies that, being developed and applied, allow the person to perform a certain role in an excellent way." (p 22; *translation ours*)
Silzer & Dowell (2010)	"(…) in some cases, 'the talent' might refer to the entire employee population." (p. 14)
Silzer & Dowell (2010)	"In groups talent can refer to a pool of employees who are exceptional in their skills and abilities either in a specific technical area (such as software graphics skills) or a competency (such a consumer marketing talent), or a more general area (such as general managers or high-potential talent). And in some cases, "the talent" might refer to the entire employee population." (pp. 13-14)
Silzer & Dowell (2010)	"An individual's skills and abilities (talents) and what the person is capable of doing or contributing to the organization." (p. 14)

Table 1.1. Continued

Source	Definition of Talent
Bethke-Langenegger (2012)	"we understand talent to be one of those worker who ensures the competitiveness and future of a company (as specialist or leader) through his organisational/job specific qualification and knowledge, his social and methodical competencies, and his characteristic attributes such as eager to learn or achievement oriented" (p. 3)
Ulrich & Smallwood (2012)	"Talent = competence [knowledge, skills and values required for todays' and tomorrows' job; right skills, right place, right job, right time] x commitment [willing to do the job] x contribution [finding meaning and purpose in their job]" (p. 60)

The ongoing confusion about the meaning of talent is hindering the establishment of widely acknowledged TM theories and practices, thus stalling scholarly advancement. In addition, the lack of construct clarity might lead to a lack of confidence in the conclusions that can be drawn from the existing literature. Therefore, the aim of the current chapter is to contribute to the theoretical literature on TM by offering an in-depth review of the talent concept within the specific context of the world of work, and proposing a framework for its conceptualization that organizes and dissects the different viewpoints found in the existing literature in a straightforward manner. In order to accomplish this aim, we have carried outan in-depth review of the literature on talent and TM.

An online search was conducted across several databases—i.e., Science Direct, Business Source Complete, Emerald, and Google Scholar. 'Talent' and 'talent management' were the keywords used. Although our focus was on scholarly peer-reviewed articles, we also included some HR practitioner publications that are frequently cited in the academic literature. Ultimately, our review included 170 peer-reviewed articles, 9 doctoral dissertations, 3 conference papers, 40 books, 6 working papers, and 20 HR practitioner reports. We supplemented our review of the academic

literature with a search into the linguistic origins of the term talent, using 10 different reference books published by Oxford University Press (see further down).

In what follows, we first offer a discussion of the etymology of the term 'talent' and its linguistic evolution over time, with the purpose of shedding light on contemporary usage of the term in organizational settings. Subsequently, we discuss different approaches to the conceptualization of talent within the world of work, organizing these within a basic framework (i.e., 'object' versus 'subject'). We then move on to discuss the implications of these different approaches for talent management theory and practice. We conclude this chapter with avenues for future research, aimed at developing the talent—and consequently, the talent *management*—construct further.

1.2The etymological history of the term 'talent'

The term talent is everywhere. One needs only to take a look at the headlines of newspapers, journals, and magazines, to see how often the term is actually used—a Google search reveals nearly six hundred million hits. Moreover, there is a growing number of shows on television that showcase talent, such as "Britain's Got Talent" and its international counterparts (Pruis, 2011). In everyday parlance, talent is typically associated with athletes (e.g. Olympians, exceptional coaches, extraordinary teams), musicians of extraordinary ability, singers with incredible voices, and gifted children. Asking for a clear definition, however, is like "opening a can of worms" (Honey, 2004, p. 11). As for talent in the work context, the situation is quite the same. One possible explanation for this conceptual ambiguity is the history of the word talent—considering the different meanings it has had throughout its over one thousand years of existence.

The term talent in Old English (used up until 1149) was *talente*, whichdeveloped from the Latin term *talenta*, plural of *talentum* (Knowles, 2005; Stevenson, 2010). The Latin term, in turn, originated from the Greek word tálanton [τάλαντον], which means "balance, weight, sum of money" (Hoad, 1996). Originally, a talent denoted a unit of weight used by the Babylonians, Assyrians, Greeks and Romans (Cresswell, 2009). In Ancient Greece, one talent was the equivalent of 25.86 kg (Darvill, 2008; Howatson, 2011). According to Howatson (2011), before proper coinage, Greek units of money carried the same name as units of weight since the weights of precious metals (mostly silver, occasionally gold) were used to represent a sum of money (Knowles, 2005; Howatson, 2011). This is how, ultimately, a 'talent' became a coin. One talent corresponded to 60 minas or 6,000 drachmas (Howatson, 2011). This was an enormous amount of money at that time as 3.5 drachmas was the normal wage for a week's work (Darvill, 2008), and 50 minas (i.e., less than one talent) was seen as the amount one would pay for a very large house—an ordinary dwelling could be bought for three minas (Howatson, 2011). Hence, talents were exclusive; only rich people had them.

The Parable of the Talents in the Gospel of Matthew in the New Testament (25: 14-30) attests to the value attributed to talent. The parable talks about a wealthy man who, before going on a long journey, gives his three servants one, two, and five talents respectively—based on his perception of each of their abilities—for safekeeping. The servants who received five and two talents both use their coins well, doubling their value through hard work and trading. The servant who was given only one talent, however—afraid to lose his coin and anger his master—buries his coin in the ground. After an extended absence, the master returns, commending the two servants who doubled their talents as good and faithful (and rewarding them by letting them keep

their profits), whilst calling the servant who had buried his coin wicked and slothful, and ordering him to hand over his one talent to the servant who has most. According to Tansley (2011), since the New English Bible translates the Greek word *talent* into the word *capital,* this parable can be seen as one of the causes for HRM scholars using the term *human capital* as synonymous to *talent*.

In the thirteenth century, talent was seen either as the feeling that makes a person want to do something (i.e., an inclination), or the natural qualities of a person's character (i.e., a disposition). Similarly, in Old French talent was seen as *will* or *desire*. Although Hoad (1996) considers this latter definition of talent obsolete, this type of operationalization highlights the behavioral aspect of talent, which is becoming increasingly important again in today's business environment—as we will discuss in more detail later.

In contrast, in the Late Middle Ages (i.e., the fifteenth and sixteenth century), talent came to mean a person's mental ability or particular abilities, divinely entrusted to them for their personal use and improvement (Hoad, 1996; Knowles, 2005). This meaning of talent was strongly influenced by Christian interpretations of the Parable of the Talents, which did not only stress the innate nature of talent, but also the fact that it is a person's duty to use and improve the talents gifted to them by God. As Michaels *et al.* (2001) assert, "talent is a gift that must be cultivated, not left to languish" (p. xiii). Since only few people were believed to be divinely entrusted with specific talents, the Parable, as well, contributed to exclusive interpretations of the term talent. In this interpretation lies the origin of talent being conceptualized as an inborn gift or natural aptitude (e.g., Gagné, 2000). A similar view of talent was held throughout the seventeenth century—

i.e., talent as inborn aptitudes and skills possessed by special people—but without referring to divinity (Knowles, 2005).

By the nineteenth century, according to Tansley (2011), talent "was viewed as embodied in the talented—hence, a person of talent and ability" (p. 267). Here, we encounter for the first time a 'subject' approach to talent (i.e., talent as people), rather than an 'object' approach, which conceptualizes talent as characteristics of people. Over the course of the twentieth century some new terms arose. For instance, since the 1930s, 'talent scout' (or spotter) is used to designate a person searching for new talent (Cresswell, 2009). The emergence of this term might explain why up until today many people connect talent to sports or music. Another use of the term talent can be situated in the 1940s among British servicemen, who quite commonly used the term 'local talent' to refer to the good-looking people of a certain area (Cresswell, 2009). In modern British English, talent is still used (be it informally) to refer to people regarded as sexually attractive. One might say that, even in this form, talent refers to the segmentation of the population in 'haves' and have-nots'.

When looking up 'talent' in Contemporary English Dictionaries we see that in this day and age 'object' and 'subject' approaches to the conceptualization of talent coincide (see Table 2), which possibly contributes to the confusion about what talent is, exactly. In English, as well as in other European languages, talent is typically first described as an innate ability that manifests in a particular field (Tansley, 2011). It is commonly understood as above-average ability for a specific function or range or functions. Rather than corresponding to 'normal' ability, talent is considered a special ability that makes the people who possess, develop, and use it rise out above the rest of their age peers in

the specific area of their talent (Gagné, 2000). Consequently, talent is often equated to excellent performance in a given performance domain.

Table 1.2

Definitions of talent in contemporary English dictionaries

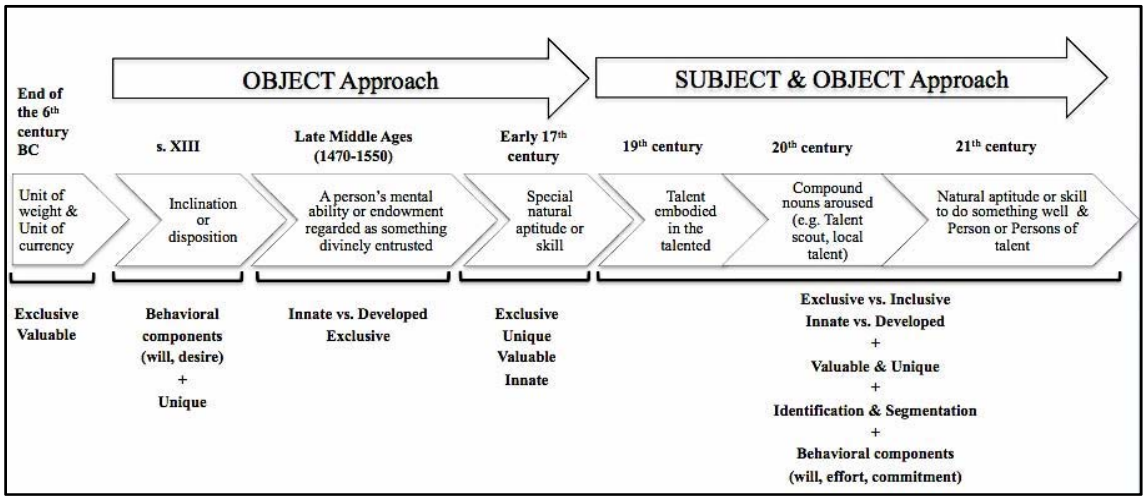
Dictionary	First meaning	Second meaning
Stevenson (2010); Stevenson & Lindberg (2010)	Natural aptitude or skill	People possessing talent [natural aptitude or skill]
Adrian-Vallance et al. (2009)	A natural ability to do something well	A person or people with a natural ability or skill
Barber (2004)	Special aptitude or faculty	A person possessing exceptional skill or ability; people of talent or ability collectively
Deverson & Kennedy (2005)	Special aptitude or faculty; high mental ability	A person or persons of talent

The second meaning of talent found in contemporary English Dictionaries refers to a person or persons of talent *(talent as subject)*—i.e., people possessing special skills or abilities. In fact, it is very common to see job advertisements in which talent refers to potential applicants (e.g., "talent wanted"). Likewise, managers frequently refer to their workforce as the talent of the organization, so as to stress the fact that people are the organization's most important assets (Ashton & Morton, 2005).

Taking into account the linguistic evolution of the term talent we infer that the original meaning of the term talent refers to personal characteristics *(talent as object)*. However, the subject approach to talent—which is historically 'newer' than the object approach (see also Tansley, 2011)—currently coexists with the object approach. In Figure 1 we provide asummary of the etymology of the world talent as described earlier.

Figure 1.1

'Talent' meanings over time



1.3 Approaches to Talent in the World of Work

This present dual conceptualization of talent can also be found in HRM literature. In what follows, we discuss the tensions between these two approaches to the conceptualization of talent within the business realm.

1.3.1 Object Approach: Talent as Characteristics of People

Many peer-reviewed publications conceptualize talent as exceptional characteristics demonstrated by individual employees. In fact, talent is usually defined as an accumulation of related terms. For example, Michaels *et al.* (2001) in their book considered a seminal piece in the TM field, consider talent to be "the sum of a person's abilities—his or her intrinsic gifts, skills, knowledge, experience, intelligence, judgment, attitude, character and drive. It also includes his or her ability to learn and grow." (p. xii). Likewise, Tansley *et al*. (2006) define talent as "a complex amalgam of employees' skills, knowledge, cognitive ability and potential" (p.2), whereas Goffee and Jones (2007) indirectly refers to talent as those ideas, knowledge and skills that give

those who possess them the potential to produce disproportionate value from the resources their organizations makes available to them. Similarly, Cheese *et al*. (2008) consider talent as "the total of all the experience, knowledge, skills, and behaviours that a person has and brings to work" (p. 46). It is worth recalling that some authors (Buckingham & Coffman, 2005; Buckingham & Vosburgh, 2001) emphasized the importance of differentiating between *skills*, *knowledge* and *talents* when describing human behavior since could lead managers astray. According to them, *skills* can be seen as the *how-to's* of a job, i.e. specific techniques or methods with a programmed sequence of steps that can be transferred from one person to another; whilst, *knowledge* (factual or experiential) should refer to what one is aware of. Finally, Buckingham and Vosburgh (2001) argue that talent should refer to "a person's recurring pattern of thought, feeling or behavior that can be productively applied" (p. 21). In Table 3, we provide an overview of the different terms commonly associated with the notion of 'talent-as-object' in the academic literature.

Within the object approach to talent, we further distinguish between approaches that conceptualize talent as natural ability; approaches operationalizing talent as the mastery of systematically developed skills; approaches that associate talent with commitment and motivation; and approaches that stress the importance of fit between an individual's talent and the context within which he or she works (i.e., in terms of organization and/or position).

Table 1.3

Terms commonly associated with 'talent-as-object' in the literature

Associated terms	Sources
Ability	Gagné (2000); Hinrichs (1966); Michaels *et al.* (2001); Silzer & Dowell (2010); Tansley *et al.* (2006); Williams (2000)
Capacity	Jericó (2001)
Capability	Stahl *et al.* (2007)
Commitment	Ulrich (2007)
Competence/competency	Bethke-Langenegger (2012); González-Cruz *et al.* (2009); Silzer & Dowell (2010); Ulrich (2007); Williams (2000)
Contribution	Ulrich (2007)
Experience	Cheese, Thomas, & Craig (2008)
Knowledge	Bethke-Langenegger (2012); Cheese, Thomas, & Craig (2008); Michaels *et al.* (2001); Tansley *et al.* (2006)
Performance	Stahl *et al.* (2007); Tansley *et al.* (2007)
Potential	Tansley *et al.* (2006); Tansley *et al.* (2007); Williams (2000)
Patterns of thought, feeling or behavior	Buckingham & Vosburgh (2001); Cheese, Thomas, & Craig (2008)
Skills	Cheese, Thomas, & Craig (2008); Gagné (2000); Hinrichs (1966); Michaels *et al.* (2001); Silzer & Dowell (2010); Tansley *et al.* (2006)

1.3.1.1 Talent as natural ability

The nature-nurture debate is a longstanding one when it comes to individual differences, and it is pertinent to discussions about talent as well. (For a more in-depth discussion of the nature-nurture debate in talent management, see Meyers, van Woerkom, & Dries, *in press*). Most HRM scholars and practitioners seem to believe that talent is innate, at least to some extent. Hinrichs (1966), for instance, defines talent as a native ability: "(…) a unique mix of innate intelligence or brain power, plus a certain degree of creativity or the capacity to go beyond established stereotypes and provide innovative solutions to problems in his everyday world, plus personal skills which make him effective in his relationships with his peers, his superiors, and his subordinates" (p. 11). Conceptualizing talent as a natural ability has important repercussions for how talent can (and cannot) be managed. Buckingham and Vosburgh (2001), for instance, assert that whilst skills and knowledge are relatively 'easy' to teach, talent pertains to characteristics much more enduring and unique. Therefore, according to these authors,

talent is quasi-impossible to learn or teach. Similarly, Davies and Davies (2010) conclude that, given its innate nature, talent cannot really be managed—and suggest that organizations should focus on the *enablement* of talent instead. In spite of the important implications of the nature-nurture debate in talent management, however, Silzer and Dowell (2010) claim that the distinction between innate and malleable components of talent is seldom made in HR practice—which tends to take a more pragmatic approach to managing talent.

1.3.1.2Talent as mastery

In contrast to the natural ability approach are conceptualizations of talent that focus on deliberate practice and learning from experience. Ericsson, Prietula, and Cokely (2007), for instance, conclude from their research across a wide range of performance domains (i.e., chess, medicine, auditing, programming, dance, and music) that talent—which they operationalize as expert performance—is nearly always made, not born. According to Pfeffer and Sutton (2006), in spite of all the myth, talent is always a function of experience and effort. Although, clearly, not all people have the same amount of ultimate potential, there seems to be some agreement in the literature on deliberate practice (e.g., Ericsson, 2006) and learning from experience (e.g., Briscoe & Hall, 1999) that at least 10,000 h of focused and deliberate practice are required for reaching 'talented' levels of performance.

The mastery approach to talent also implies a need for evidence. According to Ericsson *et al.* (2007), talent should be "demonstrated by measurable, consistently superior performance" (p. 117). In other words, mastery implicitly involves extraordinary performance in the task in which the employee applies those abilities. De Haro (2010)

states that if no evidence for exceptional achievements is available, we are not talking about talent but about giftedness. Talent, then, refers to the mastery of systematically developed gifts (Gagné, 2000). Here, we detect an overlap with the literature on competence (e.g., Boyatzis, 1982; Spencer & Spencer, 1993). In fact, recent definitions incorporate the term competence commonly defined as the ability to do something well, i.e. the ability required for effective performance (e.g. González-Cruz, Martínez-Fuentes, & Pardo-del-Val,2009; Ulrich, 2007; Ulrich & Smallwood, 2012). According to Gagné (2000), the difference between competence and talent is that competence corresponds to levels of mastery ranging from minimally acceptable to well above average—i.e., below the threshold for 'talented' or 'expert' behavior, which he operationalizes as belonging to the top 10% of performers in a certain domain. The need for behavioral evidence for talent is also witnessed in HR practice. In their study of the talent management programs of 13 organizations, Dries and Pepermans (2008) found that most of them were unwilling to label employees as talented before they had two or three years of organizational experience, because they wanted to observe how people performed within the specific setting of the organization first. A possible issue with this type of approach is that it defines talent *by its outcomes*, which can be seen as creating a tautological problem (i.e., a conceptual loop; see Priem & Butler, 2001).

1.3.1.3 Talent as commitment

A third approach to talent focuses on commitment, operationalized both as commitment to one's work, and to one's employing organization. In the former meaning, talent is conceptualized as something intrinsic to a person that directs focus, attention, and dedication (Pruis, 2011). Nieto, Hernández-Maestro, and Muñoz-Gallego (2011), for instance, state that talent is determined mainly by perseverance in that it implies the

successful completion of projects that most others would abandon or never even start. In addition, the talent construct is seen as being related to will, perseverance, motivation, interest, and passion (e.g., Weiss & MacKay, 2009). In the second meaning, talent as commitment refers to employees' willingness to invest discretionary energy into their organization's success—thus aligning personal with organizational goals (e.g., Ulrich, 2007). As Jericó (2001) posits, commitment implies not only giving one's best to the organization, but also functions as a barrier to leaving the organization (i.e., as a negative predictor of turnover).

The conceptualization of talent as commitment is to be seen as a complementary, rather than a supplementary approach to talent (i.e., in addition to the natural ability and/or mastery approach). In our review, there were no publications stating that talent equals commitment. Rather, different elements of talent are seen as multiplicative—e.g., "talent = competence × commitment × contribution"—such that high scores on one element (e.g., commitment) cannot compensate for low scores on another (e.g., competence) (Ulrich & Smallwood, 2012).

1.3.1.4 Talent as fit

A final 'object' approach to talent refers to the fit between an individual's talent and the context within which he or she works—i.e., the right place, the right position, and/or the right time. The fit approach is essential to the discussion of talent management as it emphasizes the importance of context, implying that the meaning of talent is relative rather than absolute, and subjective rather than objective (González-Cruz *et al.*, 2009; Jericó, 2001). It is said that in a given organizational setting, talent should be defined and operationalized in light of the organization's culture, environment (i.e., industry,

sector, labor market), and type of work (Pfeffer, 2001). The organizational context is critical since people can be expected to perform above or below their normal level depending on their immediate environment, the leadership they receive, and the team they work with (Iles, 2008). As Coulson-Thomas (2012) puts it, "individuals who shine in one context may struggle in another" (p. 431). Research on the transferability of star performance (e.g., Groysberg, McLean, & Nohria, 2006) has demonstrated that talent, indeed, is not always transferable from one organizational context to another—in some cases, performance might even 'plummet' when a so-called star performer changes organizations.

Fit plays a prominent role in the AMO (Ability-Motivation-Opportunity) framework, which posits that in addition to skills and motivation, employees also need opportunities to perform (Boselie, Dietz, & Boon, 2005). Therefore, talent is not just about the quality of an individual's skill set—it also depends on the quality of his or her *job*. In this respect, some authors in the talent management literature stress the importance of matching people to positions (e.g., Collings & Mellahi, 2009). The allocation of the most talented employees to the positions of highest strategic value in the organization (i.e., 'A positions') whilst placing good performers in support positions (i.e., 'B positions') and eliminating bad performers is called the portfolio approach to workforce management (Becker, Huselid, & Beatty, 2009). Approaches such as these, advocate the identification of 'pivotal positions'—i.e., positions of above-average impact on organizational outcomes—rather than the identification of talented individuals *in se* (e.g., Ashton & Morton, 2005; Boudreau & Ramstad, 2005*a*, 2005*b*). Or as Boudreau and Ramstad (2004) put it, "Rather than asking, 'who is our A talent?' we should ask, 'in which talent pools does A talent matter most?'" (p. 4).

1.3.2 Subject Approach: Talent as People

Within the subject approach, we find both inclusive (i.e., talent understood as all employees of an organization), and exclusive approaches to talent (i.e., talent understood as an elite subset of an organization's population) (Iles, Preece *et al.,* 2010).

1.3.2.1 Inclusive subject interpretation: Talent as all people.

The inclusive approach to talent-as-subject sees the term talent as including everyone in the organization. According to this approach, every employee has his or her own strengths and thus, can potentially create added value for the organization (Buckingham & Vosburgh, 2001). In a study reported by Leigh (2009), almost half of the companies interviewed defined talent this way. According to Peters (2006) there is no reason not to consider each employee as talented. Similarly, O'Reilly and Pfeffer (2000) posit that organizational success stems from "capturing the value of the entire workforce, not just a few superstars" (p. 52). Despite being quite vague, the inclusive approach to talent is commonly justified in the literature using the argument that in knowledge-based economies companies cannot achieve profits (or succeed otherwise) without their people (Tulgan, 2002). In today's business environment, it is mostly employees—i.e., not technology, not factories, not capital—that are believed to create value for organizations, in that they are now the main determinant of organizational performance (Crain, 2009).

Especially in the services industry, the whole business model is defined by and around the people employed—and thus, defining talent as the entire workforce is not such a far stretch. In companies such as luxury hotels, for instance, frontline and behind-the-scenes employees play an equally important role in delivering the high-quality service

expected of this type of company (Boudreau & Ramstad, 2005b). Acknowledging the importance of context, Silzer and Dowell (2010) state that, "*in some cases*, talent might refer to the entire employee population" (p. 14).

An inclusive definition of talent is typically found in strength-based approaches to talent management—i.e., "the art of recognizing where each employee's areas of natural talent lie, and figuring out how to help each employee develop the job-specific skills and knowledge to turn those talents into real performance"—rather than in gap-based approaches focused on the remediation of 'development needs' (i.e., weaknesses) (Buckingham & Vosburgh, 2001, p. 22). Inclusive, strength-based approaches to talent are believed to benefit from what is called the 'Mark Effect'—i.e., by treating everyone in the organization as equals, a more pleasant, collegial, and motivating work climate is created (Bothner, Podolny, & Smith, 2011). An inclusive approach guarantees an egalitarian distribution of resources across all employees in an organization rather than a focus on a small subset of elite performers, this way avoiding a drop in the morale of loyal employees who are not considered 'superstars' (Groysberg, Nanda, & Nohria, 2004). Yost and Chang (2009), for instance, argue that organizations should try to help all of their employees fulfill their fullest potential since focusing investments (in terms of time, money, and energy) on only a few people, within a limited set of roles is a risky strategy looking at projected labor market scarcities.

The main criticism of the inclusive subject approach to talent is that it makes differentiation between talent management and strategic human resource management (SHRM) more difficult. If talent refers to the whole of the workforce, managing talent 'simply' implies proper workforce management and development of all the

organization's people, which is not particularly helpful in specifying how TM is different from SHRM (Garrow & Hirsh, 2008). In fact, according to this approach, TM is a collection of typical HR processes such as recruitment, selection, development, training, performance appraisal, and retention (Iles, Chuai *et al.*, 2010; Silzer & Dowell, 2010)—although some authors might add that TM refers to doing them faster and/or better (Lewis & Heckman, 2006). Lin (2006) argues that adopting an inclusive approach to TM might create unnecessarily high costs in terms of HR investments. In that sense, the assumption of the strength-based approach creating a win-win for both individuals and organizations may be flawed, in that gap-based and exclusive approaches to talent management are often the more cost-effective and efficient solution (Collings & Mellahi, 2009).

1.3.2.2 Exclusive subject interpretation: Talent as some people.

In stark contrast to the inclusive approach to talent,the exclusive approach is based on the notion of segmentation of the workforce, and understands talent as an elite subset of the organization's population—i.e. "(…) those individuals who can make a difference to organizational performance, either through their immediate contribution or in the longer-term by demonstrating the highest levels of potential" (Tansley *et al.*, 2007, p. 8).

Talent as high performers: More often than not, the subject approach to talent equates the term talent to high performers—i.e., "the best of class" (Smart, 2005). Stahl *et al.* (2007), for instance, define talent as a select group of employees who rank at the top in terms of capability and performance; Silzer and Dowell (2010) as a group of employees within an organization who are exceptional in terms of skills and abilities either in a

specific technical area, a specific competency, or a more general area; and Williams (2000) as those people who demonstrate exceptional ability and achievement in an array of activities and situations, or within a specialized field of expertise, on a regular basis. The threshold for being considered an 'exceptional' performer, across studies, seems to lie at belonging to the top 10 percent of age peers in one's specific area of expertise (e.g., Gagné, 2000; Ulrich & Smallwood, 2012). As mentioned earlier (in the discussion of A and B positions in the section on 'Talent as fit'), this category of employees is commonly referred to as 'A players' (e.g., Becker *et al.*, 2009).

According to Smart (2005), high performers are the single most important driver of organizational performance, since they "contribute more, innovate more, work smarter, earn more trust, display more resourcefulness, take more initiative, develop better business strategies, articulate their vision more passionately, implement change more effectively, deliver higher-quality work, demonstrate greater teamwork, and find ways to get the job done in less time and at less cost" (pp. 5-6). Advocates of *topgrading*—i.e., the practice of trying to fill 75% (and preferably 90%) of all positions in the organization with high performers—argue that the best way to outperform competitors is to hire top performers at all levels in the organization (e.g., Michaels *et al.*, 2001).

Talent as high potentials: Some authors operationalize talent as a select group of employees who demonstrate high levels of *potential*. According to Silzer and Church (2009), potential can be defined as "the modifiability of unobservable structures that have not as yet become actual, or exist in possibility, capable of development in actuality (…) the possibility that individuals can become something more than what they currently are (…) it implies further growth and development to reach some desired

end state (…) In work environments, potential is typically used to suggest that an individual has the qualities (e.g., characteristics, motivation, skills, abilities, and experiences) to effectively perform and contribute in broader or different roles in the organization at some point in the future" (p. 379). High potential employees, then, are those employees believed to have the potential to advance at a faster pace than their peers, whilst demonstrating different needs, motivations, and behaviors than 'regular' employees (Pepermans, Vloeberghs, & Perkisas, 2003). In practice, we find that the high potential label is often given based on past performance data, which might be seen as a form of Halo bias—i.e., the invalid generalization of certain personal characteristics to other characteristics that might not be as highly correlated as they appear at first glance (e.g., Martin & Schmidt, 2010).

Either way, both the high performer and the high potential approach to talent imply exclusiveness. No matter how appealing the inclusive approach to TM may sound—i.e., "TM should be aimed at developing all employees to the best of their abilities" (Buckingham & Vosburgh, 2001)—more arguments are found in the literature in favor of the exclusive approach (Iles, Chuai *et al.*, 2010). In fact, the exclusive approach is not only defended widely in the literature; it is also the most prevalent approach to talent management found in HR practice (Ready, Conger, & Hill, 2010). Specifically, the exclusive approach to TM is said to benefit from what is called the 'Matthew Effect'—i.e., the effect whereby the allocation of more resources to the better performers in the organization leads to higher return on investment, since more resources are allocated there where more returns can be expected (i.e., in improving the performance of the best-performing employees even further; Bothner *et al.*, 2011). According to Netessine and Yakubovich (2012), as long as employees' performances

can be accurately evaluated and ranked, the fact that better workers get better assignments and more privileges may in fact encourage low performers to quit or to do better, leading to a higher-performing workforce overall. Similarly, Höglund (2012) argues that differential treatment of employees based on their differential talents can create a 'continuous tournament' in which employees are motivated to develop and apply the skills and qualities the organization requires.

The allocation of resources according to merit, sometimes referred to as 'winner-take-all', works particularly well in industries populated by low-wage workers, such as restaurants, retail companies, and call centers. An individual employee's contribution to organizational performance is not necessarily related to his or her position in the hierarchy, however. For instance, a lower-level sales representative can be of pivotal importance to the profits of a retail company (Boudreau & Ramstad, 2005b).

The literature identifies a number of critiques on the exclusive approach, as well. First of all, evaluations of performance and potential are usually not based on objective indicators alone, but rather reflect judgments made by top and line management (Pepermans *et al.*, 2003). Hence, the process of identifying talented employees is inherently subjective, and thus susceptible to bias (Silzer & Church, 2010; Walker & LaRocco, 2002). Second, the assumption that talented employees are inherently different from less talented employees might be flawed in that it fails to take into account the fact that 'A players' might look like 'B players' under certain conditions and vice versa (Netessine & Yakubovich, 2012; Pfeffer & Sutton, 2006). Third, the assumption that past performance predicts future performance, which often underlies the identification of talented employees, is a controversial point (Martin & Schmidt,

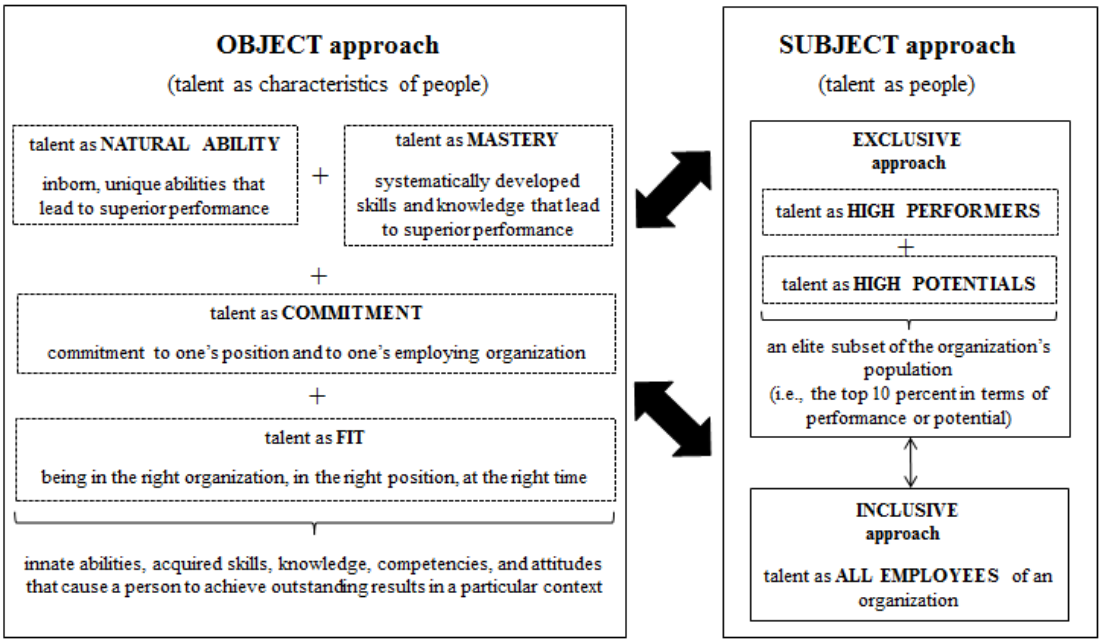
2010). In addition, the causal relationship between performance levels before and after being identified as a talent is distorted by the fact that identification, in itself, leads to increased support for performance improvement (Walker & LaRocco, 2002). Fourth, identifying an elite subset of the organization as talents can lead to self-fulfilling prophecies such as the Pygmalion effect—i.e., the effect whereby expectations of performance (high or low) determine actual performance (in a positive or negative way) in that they impact on motivation and self-esteem (e.g., McNatt, 2000). This raises questions as to the validity and utility of identifying only a small number of employees as talented since Pygmalion effects have the potential to be beneficial to all employees—also mediocre performers (Eden, 1992). Fifth, labeling a small group of employees as talented has also been demonstrated to lead to negative effects as it can lead to increased sensitivity to feedback and fear of failure among those identified as 'exceptionally promising' (e.g., Kotlyar & Karakowsky, 2012). And sixth, allocating a large proportion of the organization's resources to a small number of 'superstars' might damage organizational morale, embittering loyal employees and causing resentment among peers (DeLong & Vijayaraghavan, 2003). It is said that an overemphasis on individual performance discourages personal development organization-wide, undermines teamwork as a result of the zero-sum reward practices (i.e., practices whereby only some team members are rewarded, causing an overall negative or neutral effect whereby the positive effects of some receiving a reward do not outweigh the negative effects of most not receiving a reward), and runs the risk of creating an atmosphere of destructive internal competition that retards learning and the spread of best practices across the organization (Pfeffer, 2001; Walker & LaRocco, 2002).

1.4 Discussion

Based on our in-depth historical review of the literature on talent management, we can only conclude that there is a fundamental lack of consensus as to the meaning of 'talent' in the world of work. However, a clear framework for the conceptualization of talent within the business realm can be established (see Figure 2.2).

Figure1. 2

Framework for the conceptualization of talent within the world of work



As we have discussed throughout this chapter, within the world of work talent is conceptualized in two broad ways—i.e., talent as object versus talent as subject—which can, in turn, be further subdivided. Within the object approach, talent is conceptualized as exceptional abilities and attitudes demonstrated by an individual. It should be noted that throughout the years talent definitions within this approach have been simplified at the same time that behavioral components have been added. Although, outstanding results are the common denominator within this approach, first definitions were a mere

accumulation of intangible terms such as gifts, knowledge, skills, and abilities. However, recent definitions (cf. González-Cruz *et al.*, 2009; Ulrich, 2007; Ulrich & Smallwood, 2012) refer to competence, since it can be argued that most of the terms associated with talent can be subsumed under this concept(see Table 2.3). According to Nordhaug and Gronhaug (1994) competencies as individual characteristics are labeled as SKAs (Skills, Knowledge and ability). Talent as competence, then, could replace talent as the sum of individual's skills, abilities and knowledge. Moreover, it is interesting to note that the suitability for describing talent in terms of competencies can be endorsed by the fact that the foremost exponents of research on competencies at work (Boyatzis, 1982; Spencer & Spencer, 1993) usually describe competence as an underlying characteristic of a person with an effective and/or superior performance in a job or situation. *Thus, what is the added value of the talent concept above and beyond existing concepts that have a much longer academic history and are more established (e.g. competence)?* Even though some authors (Boyatzis, 1982; Spencer & Spencer, 1993) try to differentiate levels of performance among competences (threshold competencies were basic requirements to carry out the job, whereas performance or differentiate competencies imply above average performance), talent is supposed to lead to a superior level of performance than a competence. According to Gagné (2004), "competence corresponds to levels of mastery ranging from minimally acceptable to well above average, yet below the defined threshold for 'talented' or 'expert' behavior" (Gagné, 2004). Probably, because as we have seen before, talent also implies commitment to do the job, i.e. willingness to work hard and give a discretionary effort in what is doing. According to our literature review, talent cannot only be defined in terms of competence but also by some behavioral (e.g. commitment, motivation) and contingency (e.g. opportunity, action) components. Hence, it is important to note that

the different sub-approaches of the object approach identified in the present review (i.e., talent as natural ability, talent as mastery, talent as commitment, and talent as fit) are to be seen as complementary, rather than supplementary. Commitment and fit, specifically—no matter how high—will never be used as sole indicators of talent, but always as complimentary to measures of ability (Ulrich & Smallwood, 2012).

Within the subject approach talent, talent is understood as people of an organization (all the people or some of them). It is interesting to note that this approach to talent can perfectly complement the object one. Simply put, applying the object approach to (all or just some) people in the organization. Consequently, both approaches can coexist in the same organization, as it really happens at present in some cases. How this can be implemented? If the organization has an inclusive interpretation of talent as subject, by using a universalistic perspective to competency management, HR managers or TM managers just only need to adapt preexisting competency codebooks and standard profiles to those at their organization. However, the effectiveness of this approach has often been questioned due to several and practical limitations (cf. Capaldo, Iandoli & Zollo, 2006). A situationalist perspective to competency management in which "competencies are deeply influenced by organizational culture, social interaction and the unique way people make sense of their jobs within organizations" (Capaldo *et al*., 2006, p. 430) might be a good option in order to take into consideration the contingencies. Nevertheless, it would generate also problems to differentiate TM from Competency Models due to its inclusive orientation. In addition, if the organization has an exclusive interpretation of talent as subject, and as mentioned before, TM managers will only focus on organizational élites that are high performers and/or high potentials. Nevertheless, as seen before, TM within this approach focuses on structural

differentiation (Becker & Huselid, 2006; Becker et al., 2009), and not all strategic jobs of an organization are going to be leadership ones. So, we argue that the principal differentiation between TM and Succession Planning is that TM focuses on assuring the adequate flow of employees in those strategic jobs. This will reinforce the statement that TM is not egalitarian by nature, since it is only interested in a group of employees where additional investments generate high additional returns.

Finally, we can also conclude that the literature on talent management, although diverse in terms of underlying concepts, is rather normative. In fact, the assumptions underlying the different approaches to talent discussed in this chapter are often 'sold' as objective facts, even though little empirical evidence of their accuracy has been provided by academics and/or HR practitioners to date.

1.5 Implications for HR practice

As discussed earlier, organizations will not commonly distinguish between innate and acquired elements of talent, but rather, focus on proven achievements in their assessments of talent (Silzer & Dowell, 2010). Pragmatists might even argue that the nature-nurture debate comes down to semantics (Tansley, 2011). Implicit beliefs held by organizational decision makers about the degree to which individual characteristics are fixed as opposed to malleable, have repeatedly been demonstrated to have a very strong impact on their assessments of talent, however (Heslin, Latham, & Vandewalle, 2005). Therefore, it seems pivotal for organizations to explicitly take a position as to the extent to which they want to focus their talent management efforts on talent

identification (i.e., 'buying' talent), versus talent development (i.e., 'building' talent) (see also Meyers *et al., in press*).

Although the object approach to talent exhibits better fit with the etymological meaning of talent (Tansley, 2011), the subject approach (i.e., talent as people) seems to be much more prevalent in organizational practice (Iles, Preece *et al.*, 2010). More specifically, a talent management strategy grounded in workforce segmentation (Becker *et al.*, 2009), based on the identification of select pools of high performers and/or high potentials, seems to be the most common approach (Dries & Pepermans, 2008). Although many advocates can be found for a more inclusive, strength-based approach to talent management, as well (e.g., Buckingham & Vosburgh, 2001), it remains unclear to what extent an inclusive approach to talent makes sense, considering that the term 'talent', inherently—considering its etymology—implies above-average ability or performance (e.g. Gagné, 2000). As discussed in our review, the inclusive and the exclusive subject approach to talent each both have their own merits and drawbacks. Which approach is 'better' is likely to be determined by an organization's mission and culture (Garrow & Hirsch, 2008)—see the examples of the luxury hotel industry versus the call center industry, discussed earlier in this chapter.

Importantly, we propose that the subject and the object approach to talent can inform each other in that the object approach specifies which personal characteristics to look for in identifications of talent, whereas the subject approach provokes important discussions about cut-offs and norms (e.g., Gagné, 2000; Ulrich & Smallwood, 2012).

1.6 Further avenues for research

One of the aims of the current chapter was to offer specific suggestions for what we see as the most pressing topics for future research on the topic of talent in the context of the workplace. Below, we discuss different avenues for future research aimed at developing the talent—and consequently, the talent management—construct further.

What the field needs first and foremost is more theory (Collings & Mellahi, 2009; Lewis & Heckman, 2006), both in the way of in-depth literature reviews (that might borrow from a range of disciplines—see also Dries, *in press*) and conceptual development. More theory development is a necessity if we ever want to come to a nomological network for talent, and demonstrate 'once and for all' that talent is a construct in its own right that adds value over related constructs such as strengths (e.g., Buckingham & Vosburgh, 2001), gifts (e.g., Gagné, 2000), ability (e.g., Michaels et al., 2001), and competence (e.g., Boyatzis, 1982; Spencer & Spencer, 1993). This, in turn, will help the field pinpoint the specific added value of talent management above and beyond more established concepts such as SHRM, succession planning, and workforce differentiation (Chuai et al., 2008). Findings from the literature might be complemented with findings from critical discourse analysis of interview data or HR practitioner publications (Huang & Tansley, 2012), and by in-depth case studies (Preece et al., 2011). In addition to a nomological network, we need process models describing the antecedents and outcomes of talent, both in the way of the 'actual' emergence of talent and the 'perception' of talent by relevant others in the work setting (Silzer & Church, 2009). Consequently, more research is needed on how talent is identified.

A second avenue for further research is to examine differences in the conceptualization and implementation of talent management. Differences might be examined at the organizational, departmental, sectoral, country, and/or cultural level, using multilevel designs. In doing so, researchers would respond to calls for more evidence of how talent management is implemented across different contexts (see also Thunnissen, Boselie, and Fruytier, in press), and which approaches are more prevalent. Interviews with HR managers and CEOs complemented by organizational-level surveys across a range of contexts might help unveil the organizational rationale underlying specific talent management decisions (Dries & Pepermans, 2008; Iles, Chuai et al., 2010). In addition, comparative research designs such as these will allow for a critical examination of the TM frameworks dominating the existing literature, which is very US-/UK-centric (Tansley, 2011).

Third, future research might aim to contribute to the discussion about the link between talent management and specific employee- and organizational-level outcomes (see also Gelens, Dries, Hofmans, & Pepermans, in press). Although there is a strong level of conviction in the literature that strategic talent management decisions predict important outcomes such as organizational performance, productivity, profits, and market position (e.g., Ashton & Morton, 2005), empirical evidence of such relationships is lacking (Boudreau & Ramstad, 2004, 2005a, 2005b). Multilevel research designs, possibly combined with pre-and post-intervention measurement (e.g., in organizations implementing a change in their approach to talent) are well suited to tackle this particular research gap, as are comparative case studies.

A fourth and final topic for further research is the reliability and validity of various approaches to the identification of talent in organizational settings (Silzer & Church, 2009). Although HR practitioners look to the academic world for guidelines as to how to validly assess talent—especially seeking evidence for the long-term predictive validity of different types of measures—hardly any empirical evidence can be found. The literature on the identification of gifted children (e.g., Gagné, 2000), as well as the literature on personnel selection (e.g., Cappelli, 2009), offer interesting points of departure, however. In order to advance talent management as an academic field of research, it seems imperative to explore what we can learn from other disciplines first, before we attempt to 'reinvent the wheel' (e.g., Höglund, 2012).

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Chapter 2.

How is talent identified? A multidisciplinary review

How is talent identified? A multidisciplinary review*

"The only thing worse than being blind is having sight, but no vision."

Helen Keller

[Cited in K. Larkan (2009).*Winning the talent war: The 8 essentials*, Singapore: Marshall Cavendish International (Asia) Private Limited; p. 57]

*An adaptation of this chapter has been submitted to the *Journal of World Business*. Full details in Appendix B.

How talent is identified? A multidisciplinary review of different components

2.1 Introduction

Over the course of the last decade, organizations seem to have become increasingly convinced that the deliberate identification of talent and its subsequent management is crucial for maximizing organizational performance and achieve sustained competitive advantage (Collings & Mellahi, 2009; Lewis & Heckman, 2006). Interestingly, however, we still know very little about how organizations identify talent (Wiblen, Dery & Grant, 2012). In fact, HR practitioners report great difficulty defining what talent is, let alone measuring it accurately for identification purposes (Tansley, 2011). Theoretical foundations for talent management based on a clear conceptualization of talent—necessary for supporting HR practitioners in designing and implementing talent identification practices in terms of methods and measures—appear largely absent in the academic literature (Silzer & Church, 2010). Although HRM scholars appear to be convinced that no adequate theoretical frameworks for talent management are currently available, in fact a whole body of literature exists outside of the HRM domain with the potential of offering interesting insights for talent management since it deals with the conceptualization and measurement of talent. Accordingly, the present chapter aims to contribute to the establishment of a stronger theoretical basis for talent management by integrating insights fragmented across different disciplines outside of the broader HRM domain. Three literature streams were identified as being of particular relevance: the giftedness literature; vocational psychology; and positive psychology. Building

on insights from these different literature streams, we identify two components of talent, i.e. an ability component and an affective component. We systematically discuss how each component is defined and identified in terms of measures and methods.

Throughout our discussion, a comparison is drawn between talent on the one hand and competence and potential on the other—constructs that are frequently misused as interchangeable. In addition, we identify tensions between the different literature streams discussed. This comparative approach provides us with the input needed to discuss implications for designing theoretically sound talent identification practices in organizations. We conclude with future research directions, shedding light on how talent management scholars might further capitalize on the cross-fertilization between insights from different disciplines, so as to gradually establish the theoretical foundations needed to transform talent management into a legitimate field of study.

2.2Talent identification within HRM literature

From the late nineties onwards, the topic of talent management has aroused a great deal of interest within the HRM literature, which is mainly concerned with strategic investments in terms of talent identification, selection, development, planning and retention. However, as mentioned in the previous chapter, this topic remains underdeveloped (Collings & Mellahi, 2009; Lewis & Heckman, 2006) mainly due to the multiplicity of views about what constitutes talent within organizations (McDonnell, Lamare, Gunnigle & Lavelle, 2010; Gallardo-Gallardo, Dries & González-Cruz, *in press*; Tansley, 2011). Accordingly, talent is operationalized in many different ways. So, it is its identification. Wiblen et al. (2012) offer three conceptual categories of talent management that lead to different ways of understanding

talent identification. The first assume a subject approach to talent (i.e. recognizes individuals as talent) and involves its identification. So, basically, talent identification is based onlooking for high performers or 'stars', i.e. their top 10-20% of performers. The second category views talent as a set of particular skills and capabilities identified and evaluated by the organizations as being critical for the organization success. Hence, talent identification includes the search for not only specific individuals with outstanding levels of performance, but also cohorts of employees who are seen to possess attributes and skills valuable for the organization and hard to replace. This idea recalls the HR architecture modeldeveloped by Lepak and Snell (1999), in which human capital (term sometimes used as synonym for talent)can be assessed in terms of value and uniqueness. Value refers to the potential to contribute to an organization's core competences and advance its competitive position. Uniqueness refers to the extent to which human capital is difficult to replace due to unique job or organization requirements and labor market scarcities. Employees who possess human capital that is simultaneously high on value and uniqueness are identified as the 'talent' of an organization (Lepak & Snell, 2002). Becker and Huselid (2006) argue that the value of talented employees depends on the specific positions they occupy, which is closely related to the third TM category proposed by Wiblen *et al.* (2009) and that equates talent with particular functions or roles in the organization that are critical for its success. So, TM involves the identification of resources, roles and capabilities that are extremely important for the organization. Specifically, those positions for which small increments in improvement in quality or quantity result in an above average returns on strategic measures are seen as pivotal (Boudreau & Ramstad, 2005). Boudreau and Ramstad refer to those positions as "pivotal talent pools- where human capital makes the biggest difference to strategic success" (p. 129). According to Wiblen, Grant and Dery (2010) in order to identify such pivotal roles or functions organizations should undertake systematic analysis of their business, which will be the critical foundation for a strategic talent

management system (Collings & Mellahi, 2009). As mentioned before, the systematic identification and subsequent management of talent is seen as the principles that will allow organizations to achieve improved performance and sustained competitive advantage (Collings & Mellahi, 2009).A match between people and positions can be obtained by adopting a *portfolio approach to workforce management* in which the most talented employees (i.e., 'A players') are allocated to the positions highest in strategic value (i.e., 'A positions'), good performers (i.e., 'B players') are matched to support positions (i.e., 'B positions'), and bad performers (i.e., 'C players') and jobs that don't add value are removed from the organization (Becker, Huselid & Beatty, 2009, Huselid, Beatty & Becker, 2005).

In general, scholars adhering to the human capital approach to talent management believe that the relative contribution of people or positions to their organizations legitimizes disproportionate investment in certain employees or jobs (Becker & Huselid, 2006; Lepak & Snell, 1999). In short, we are talking about exclusive driven approaches to talent identification and management. This is reflected in the principle of workforce differentiation that is fundamental to discussions held in the talent management literature. Workforce differentiation refers to the investment of disproportionate resources where one expects disproportionate returns, resulting in segmentation of the workforce on the basis of the strategic contribution a specific job or a specific employee can produce (Huselid & Becker, 2011). To this end, employees are frequently differentiated based on their past and current performance in terms of predefined competences seen as pivotal by their organizations (Silzer & Church, 2010, 2009). Organizations focus mainly on competences associated with the capacity to take on senior jobs, so as to detect the leaders of the future (Guo, 2003; Sharma & Bhatnagar; 2009; Roberts, Kossek & Ozeki, 1998; Smith & Victorson, 2012). Performance on these competences is typically assessed against the performance of other individuals (i.e.,

according to relative cut off point: performing better than peers) or against a certain threshold (i.e., according to an absolute cut off point: scoring at least 4 out of 5 on 7 out of 10 competences). So called, performance-potential matrices are frequently used for talent identification. Only employees who demonstrate a high level of competence and simultaneously show high potential will then be considered as talented (Chamorro-Premuzic & Furnham, 2010). Organizations sometimes opt to predefine the number of employees who can be granted the label of 'talented'(e.g., 5 percent of the organization's population), resulting in forced rankings or classifications (Silzer & Church, 2010).

The human capital perspective on talent described above typically draws inspiration from a resource-based view on humans, in which employees are directed towards creating added value for their organizations (Dries, *in press*). Inkson (2008) warns us for the potential pitfalls of labeling employees as 'human capital', who are manageable towards certain outcomes in the same way other resources are. By characterizing humans as capital the changing and highly unpredictable nature of individual attitudes and behaviors is not taken into consideration adequately (De Vos & Dries, 2013). Consequently, investigating talent management purely from a resource-based view seems insufficient to capture psychological mechanisms that come into play when managing individuals.

In addition, organizations voice concern about applying workforce differentiation for three main reasons. Firstly, organizations are not convinced that workforce differentiation will positively affect the attainment of strategic goals due to the potentially negative impact unequal treatment can exert on the motivation and performance level of employees not identified as talented (Gelens, Dries, Hofmans & Pepermans, *in press*). Secondly, certain organizations adopt a reluctant attitude towards differentiation because such an elitist

interpretation of talent clashes with their culture (Iles, Chuai & Preece, 2010). Thirdly, talent management is characterized by a disturbing lack of lucidity regarding definition, scope and aims (Lewis & Heckman, 2006), partly driven by the limited clarity the human capital perspective offers about the precise meaning of the underlying construct 'talent' (Gallardo-Gallardo*et al.*, in press; Tansley, 2011), leaving organizations with only minimal theoretical foundations to base their differentiation decisions on (Thunnissen, Boselie & Fruytier, *in press*). In fact, McDonnell *et al.* (2010) argue that organizations identify and develop talent via informal and *ad hoc* means.

2.3 Methodology

We conducted an online literature search for our multidisciplinary review, and for doing so we took four different steps to establish our final body of peer-reviewed, academic articles considered in this review.

Step 1: Clarifying the talent construct

Both in everyday parlance and in the workplace, talent is used in a number of different ways, which leads to conceptual ambiguity. With the review at hand, we want to contribute to more conceptual clarity about the term talent. To find those articles that would be most informative for this purpose, we first developed a general working definition of talent based on the meaning contemporary English dictionaries ascribe to the term (Gallardo-Gallardo *et al.*, in press). In English, talent is commonly understood as corresponding to an above-average ability that makes the individuals who possess, detect, develop, and deploy it, perform excellently in a given performance domain (Gagné, 2004; Tansley, 2011).

Step 2: Selecting search method

To achieve an extensive overview of talent identification that can account for evolution in the field, we used 1993 as the starting point of the search, covering insights developed over the last twenty years. As we were interested in talent identification in the context of the business world, specifically, we selected Business Source Premier (BSP) as the database of departure.

We started our search by tracking articles that had talent in their title, whichresulted in a large number of hits across a wide range of journals. A preliminary analysis of these articles showed that talent was sometimes associated with 'gifts' and 'strengths'. Consequently, we decided to incorporate these two terms to the online literature search. This decision wasfundamentally based on two reasons. Firstly, both strengths and gifts refer to attributes that generate excellence, just as talent does. Strengths are frequently used to denote positive characteristics of individuals that make them thrive in work and/or leisure contexts (Luthans, 2002). Gifts are most frequently used in an educational context to describe the specific innate aptitudes of schoolchildren as a necessary condition for achieving an excellent performance (Gagné, 2004). Secondly, the conceptual nature of gifts and strengths, contrary to that of talent, has received considerable attention in the academic literature. Because our aim is to establish a stronger theoretical basis for talent identification informed by a clearer conceptualization of talent, we were particularly interested in articles with strong theoretical foundations in our literature search. Given the focus of the present review, each of our main search terms (i.e., talents, gifts, and strengths) was combined with search terms representing identification in terms of measurement.

Step 3: Establishing exclusion criteria

Our search in BSP resulted in a large number of hits. From a first analysis, we concluded that the majority of articles corresponding to our search terms were not relevant to our topic of interest. Therefore, we chose to work with explicit exclusion criteria with the goal of selecting only those articles that would be truly informative to our systematic literature review. We selected articles based on three exclusion criteria, in accordance with our working definition of talent: (a) articles that do not refer to human attributes[1]; (b) articles using talent as interchangeable with people or employees[2]; and (c) articles that do not mention their vision on, or definition of the concept of talent[3] (or gifts, or strengths).

Step 4: Expanding the search

Because our aim was to contribute to better theoretical foundations for talent management by considering academic domains outside the HRM field, we expanded our search to the PsycINFO database. The same criteria for exclusion were applied. The searches conducted across both databases resulted in a final set of 161 articles withheld for this review (see Figure 2.1). In AppendixA (Table A.1, p. 197), more detailed information is provided on the nature of the selected articles (i.e., if they were empirical or theoretical). Although the obtained article list may not be exhaustive, we are confident it is at least representative of the work published within the field.

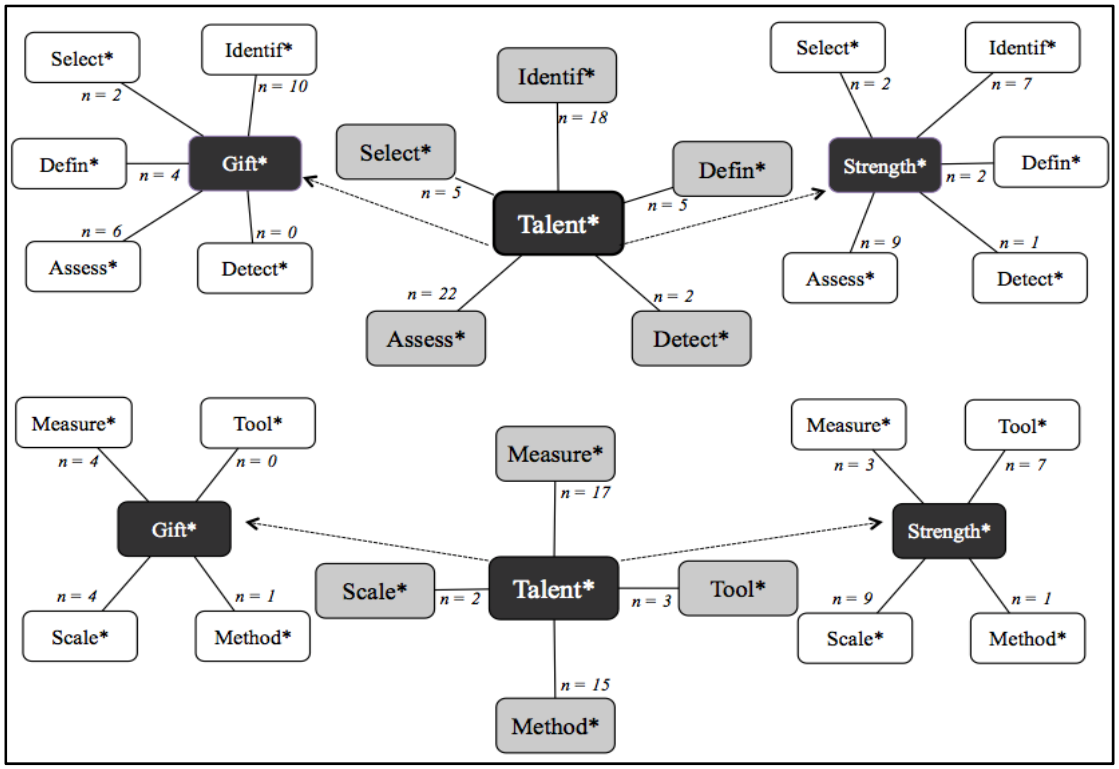
[1] We for example excluded: Florano, E. R. (2003). Assessment of the strengths of the new ASEAN agreement on transboundary haze pollution. *International Review for Environmental Strategies*, *14*, 127-147.

[2] We for example excluded: Milton, L. P. (2003). An identity perspective on the propensity of high-tech talent to unionize. *Journal of labor research*, *24*(1), 31-53.

[3] We for example excluded: Ng, E. S., & Burke, R. J. (2005). Person–organization fit and the war for talent: does diversity management make a difference?. *The International Journal of Human Resource Management*, *16*(7), 1195-1210.

Figure 2.1

Number of articles selected from BSP and PsycINFO according to keywords used



2.4 Subdivision of talent into two main components

From our literature review two components were identified as necessary conditions for achieving excellence—i.e., be talented. These were: an ability and an affective component (further subdivided into motivation to invest and interests). Without the necessary abilities, employees can never achieve excellence, even when interests and motivations are strong. In contrast, when employees do possess the necessary abilities, but currently do not display a high level of interest or motivation in that specific ability domain, excellence—although currently not achieved—might be reached in the future by stimulating employees to discover and undertake activities that (better) match their motivation and interest areas.

Although most people agree that talent manifests itself in observable excellence, and one could thus argue that excellent performance is the best measure of talent—a view often subscribed to by HR practitioners—we posit that it is crucial to detect the two underlying components of talent, as well. Only by assessing both components, employees who are currently not performing excellently, but have the capacity (i.e., ability) to do so in the future, can be managed towards excellence by directing them towards activities that they like, find important (i.e., interests), and want to invest energy in (i.e., motivation). In accordance with Silzer & Church (2010), we posit that talent identification practices should not only aim to detect the talent already manifested in an organization, but also those employees who have the potential to be excellent in different (larger) roles or activities in the future.

The ability component is discussed in most depth in the giftedness literature, while the affective component resonates through the giftedness literature, the vocational psychology literature, and the positive psychology literature. The giftedness literature will be the point of departure in this review, because it is the most established with respect to the conceptualization of talent, therefore directly countering the main limitation of the talent management literature.

2.4.1 The ability component of talent

2.4.1.1 Definition

Across all relevant literature streams talent is frequently associated with, and even equated to, excellent performance, which is adequately illustrated in the federal definition widely used in educational settings in the United States: *"Talented individuals are those identified by professionally qualified persons who by virtue of outstanding abilities are capable of high*

performance" (Periathiruvadi & Rinn, 2012, p. 153). Because the focus lies on the utilization of outstanding abilities, we label this the ability component of talent. Insights into this component are mainly found in the giftedness literature, situated in the educational field (Brown *et al*., 2005; Heller, 2004; Mayer, 2005; Sternberg & Davidson, 2005). Primarily based on the work of Gagné (1998a, 1998b, 2004), we propose the following definition of the ability component of talent:

> *Talent refers to systematically developed innate abilities that drive excellent performance, in comparison to other individuals of the same age or experience, in one or more domains of human functioning.*

First element: Excellent performance in a specific domain of human functioning. At the onset of the giftedness literature in 1920, talented children were defined as children who achieved high IQ scores due to a fixed innate trait. This was reflected in psychometric definitions of talent that focused on achieving a certain score, typically on an IQ test tapping into intellectual giftedness (Preckel & Thiemann, 2003; Robinson & Clinkenbeard, 1998).

It turned out, however, that the correlation between a single IQ score and exceptional performance later in life was rather weak (Baldwin, 2005; Ericsson, Krampe & Tesch-Römer, 1993; Ruban & Reis, 2005). Informed by this finding, scholars in the giftedness literature currently tend to advocate a multidimensional conception of talent building on domain-specific theories of intelligence referring to different areas of human functioning (Bailey & Morley, 2006; Major, Johnson & Deary, 2012; Robinson, Zigler & Gallagher, 2000; Robinson & Clinkenbeard, 1998). Within this perspective, the conceptualization of talent that Gagné (2004) developed in his Differentiated Model of Giftedness and Talent (DMTG) is

frequently cited. Based on Gardner's theory of Multiple Intelligences (1983, in Bailey & Morley, 2006; Baldwin, 2005), in which nine forms of intelligence were incorporated (i.e., linguistic intelligence, logical-mathematical intelligence, spatial intelligence, bodily-kinesthetic intelligence, musical intelligence, intrapersonal intelligence, naturalistic intelligence, existential intelligence, and spiritual intelligence), Gagné distinguished between four ability domains (i.e., intellectual, creative, socio-affective,and sensori-motor) that can lead to extraordinary performances in seven domains of human functioning (i.e., academics, arts, business, leisure, social action, sports, and technology). Other conceptualizations of talent closely resemble that of Gagné, but differ slightly in terms of categorization and specificity of the ability domains, and the human functioning domains considered (Feldhusen, 1994). Gagné's explicit distinction between ability domains and human functioning domains, referring respectively to innate gifts and developed talents, is a particular strength of his definition of talent.

Second element: Systematically developed innate abilities. Scholars situated in the giftedness literature are generally convinced that the aptitudes necessary to develop talent in a specific domain are only present in a small proportion of the population because they are genetically inherited. Although many people believe that genius is created purely through genetics—known as the 'Amadeus Myth'—innate dispositions are, although necessary, not sufficient to ensure high-level achievement (Robinson *et al.*, 2000). Innate abilities, referred to by Gagné (1998a) as gifts, must be nurtured into talents in order to deliver excellent performance in at least one domain of human functioning (Baldwin, 2005). Hence, extended practice is a necessary condition for the manifestation of talents. This can be attained by engaging in formal, non-formal, or informal learning activities inside or outside of the school- or workplace (Gagné; 2004; Ericsson *et al.*, 1993). Accordingly, individuals who are

detected as talented are frequently given special (educational) provisions to further enhance the development of their rare talents (Pfeiffer, 2009, Robinson & Clinkenbeard, 1998).

2.4.1.2Identification

The main criterion used to detect the ability component of talent is (excellent) performance. To this end, cut-off points, either with a relative (e.g., the top 10 percent of performers of a certain group) or an absolute norm (e.g., those individuals that perform above a certain score)are frequently applied for distinguishing between the 'haves' and the 'have nots' (Bélanger & Gagné, 2006; Pfeiffer, 2009). This principle is often installed in the HRM practice, as well. The issue of cut-off points is closely related to discussions of prevalence, wildly held in the giftedness literature. Prevalence expresses the percentage of individuals within a given population that can be considered talented (Gagné, 1998b; Gagné, 2004). Typically, cut-offs range from the top 0.001 to 10 percent of performers, representing extremely to mildly talented individuals in comparison to their peers (Gagné, 1998a; Pfeiffer, 2009).

Informed by theories about multiple intelligence, multifaceted and domain-specific ability tests capable of capturing excellence are advised for talent identification (Bailey & Morley, 2006; Bianco, 2010; Preckel & Thiemann, 2003; Robinson *et al.*, 2009). Because detection is conducted at an (early) age at which talent is not yet fully manifested, ability tests are often applied to detect gifts, rather than talents. Examples of frequently mentioned tests for detecting giftedness are the WISC-R and the Wechsler Individual Achievement Test, Standard Ravens Progressive Matrices (SPM), Advanced Ravens Progressive Matrices (APM), Torrance Tests of Creativity, SAGES, Scholastic Aptitude Test (TAP), Defining Issue Test (DIT) and also online tests such as the Self-Regulation and Concentration Test

(Achter, Lubinski & Benbow, 1996; Baldwin, 2005; Periathiruvadi & Rinn, 2012; Preckel & Tiemann, 2003; Saccuzzo & Johnson, 1995;Sanders, Lubinski & Benbow, 1995).

Cognitive ability tests, such as the WISC-R, SPM and DIT are the most investigated tests in this area of research. These tests are at the level of standardized tests in terms of reliability and objectivity. However, it is argued that the predictive validity of ability tests for performance later in life decreases drastically over time, resulting in a relative low predictive power for early job performance and occupational success (Ericsson *et al.*, 1993). Therefore, ability tests are frequently combined with subjective judgments through supervisor, peer, and self-evaluation (Bailey & Morley, 2006; Baldwin, 2005). A distinction is being made between ratings scales and nomination forms as evaluation tools. Supervisor (or teacher) rating scales are the second most frequently applied instruments, following IQ tests, to assess giftedness. The Gifted Rating Scales-School Form (GRS-S) is a teacher rating scale that shows satisfactory reliability and validity across five different cultures (Jarosewich, Pfeiffer & Morris, 2002; Li, Lee, Pfeiffer, Kamata & Kumtepe, 2009; Pfeiffer, 2009). It is used to measure domain-specific abilities with the help of six scales that measure intellectual ability, academic ability, artistic ability, creative ability, leadership, and motivation. Other frequently applied supervisor rating scales are the Scales for Rating the Behavioral Characteristics of Superior Students, Marker's DISCOVER model, and the Iowa Acceleration Scale (Pfeiffer, 2009). When slightly adjusted, these scales can also be applied for self- and peer evaluations. A supervisor-nomination form provides brief descriptions of a number of aptitudes and talents on which teachers can nominate the students they perceive as the best performers of the class/group in that particular domain (Gagné, 1998a). The descriptions were also modified in order to adequately function as peer and self-nomination tools.

2.4.2 The affective component of talent

2.4.2.1 Definition

Since the eighties a wide range of studies have discussed what we label 'affective' factors as vital to excellent performance (Bailey & Morley, 2006; Gagné; 2010; Robinson & Clinkenbeard, 1998). Kane (1986, in Bailey & Morley, 2006, p. 222) summarizes the main point of these studies adequately by stating that the ultimate factors accounting for achievement are likely to be the unique personal and behavioral dispositions that the individual brings to the actual performance. Attention for the affective component of talent resonates through different literature streams, more specifically the giftedness literature, the positive psychology literature, and the vocational psychology literature. The multiple insights we collected from these different streams are summarized in the following definition of talent, in which the ability component and the affective component of talent are integrated:

> *Talent refers to systematically developed innate abilities of individuals that are deployed in activitiesthey like, find important, and in which they want to invest energy. It enables individuals to perform excellently in one or more domains of human functioning, operationalized as performing better than other individuals of the same age or experience, or as performing consistently at their personal best.*

While the definition of the ability component of talent focused primarily on multiple intellectual abilities, the affective component considers non-intellectual attributes and how these differentially affect the performance of individuals: *"To predict which environments an individual is likely to enter, work in, and thrive in, you must not only know what they can do (their abilities, capabilities), you must also know what they want (their interests, needs, or motives)"*(Lubinski & Benbow, 2000, p. 146). As illustrated by this fragment and by the

above definition of talent, the affective component is made up of two main elements: 'motivation to invest' (i.e., activities in which one wants to invest energy) and 'interest areas' (i.e., activities one likes and finds important). These two aspects operate, next to ability, as necessary preconditions to excellent performance.

First element: Motivation to invest. In the literature focusing on the affective component of talent mainly the concept of motivation, in relation to investments, has received attention. The three-band talent definition of Renzulli (1986) is an adequate illustration. Renzulli's definition, frequently applied in educational settings, states that talent is the combination of three clusters, namely general or specific high ability, task commitment, and motivation. In sync, numerous other authors argue that motivation plays a central role in achieving excellence in that it exerts a positive influence on the willingness, capacity and preference to engage in deliberate practice (Bailey & Morley, 2006; Ericsson *et al.*, 1993; Feldhusen, 1994). Deliberate practice refers to activities that are structured, goal-orientated, require effort and are not always inherently enjoyable, with an average of ten years elapsing between first work and best work. According to Ericsson et al. (1993) and subscribed by the majority of scholars in the giftedness literature, the motivation to engage in lifelong deliberate practice differs among individuals, making high-level performance (i.e., achieving considerably better than others) not feasible for everyone (Milgram & Hong, 1999).

Although this rather 'elitist' interpretation of the three-band definition of Renzulli (1986) remains, to a large extent, intact in the giftedness literature today, Renzulli advocated a more 'democratic' conception of talent in 2005. He stated that everyone has a role to play in societal improvement and, as a result, we should provide all students with the opportunities, resources, and encouragement necessary to achieve their full talent through maximizing their

involvement and motivation. Renzulli's (2005) approach to talent, which is quite uncommon in the giftedness literature, is closely related to the approach adopted by authors situated in the positive psychology field due to the 'non-selective' stance it takes, which results in an emphasis on performing to the maximum of one's capacity (i.e., at one's personal best).

In the positive psychology literature the term strengths, instead of talents, is used to denote positive characteristics that allow individuals to thrive and prosper (i.e., perform at one's personal best) (Luthans, 2002). Buckingham and Clifton (2001) state that each individual possesses a certain set of strengths (e.g., adaptability, focus, and discipline) and that it is the specific constellation of strengths that makes everyone unique. According to these authors, innate factors purely determine which set of strengths can be developed and not whether or not you can develop strengths, as assumed in the giftedness literature. The key is to detect one's unique strengths in order to deploy them in activities one is passionate about. The assumption is that only in activities that are conducted with passion, peak performances (i.e., episodes of superior functioning; Privette, 1983) can be achieved (Seligman & Csikszentmihalyi, 2000). With the concept of 'passion', described as the inclination towards an activity one likes, finds important and in which one wants to invest energy (Vallerand *et al*., 2003), the essential role of motivation and interests in attaining excellence is highlighted.

The literature on positive organizational behavior (POB), which has the positive psychology movement as a point of departure, translated these findings to today's workplace. Next to 'developable', POB added 'measurable', and 'manageable' towards performance improvement in a work atmosphere as definitional criteria for strengths (Luthans, 2002). Hope (i.e., believing you can set goals, figure out how to achieve them, and motivate yourself to accomplish them), optimism (i.e., positive outcome expectancy and/or positive causal

attribution), happiness (i.e., the affective and cognitive evaluations of people's lives), and emotional intelligence (i.e., the capacity to perceive, express, and regulate one's own emotions and those of others), are frequently mentioned as strengths that meet the inclusion criteria set out by POB (Luthans, 2002). Those strengths are believed to relate to positive physical and psychological health outcomes, which in turn leads to increased performance (Wood, Linley, Maltby, Kashdan & Hurling, 2011).

Second element: Interest. Next to motivation to invest, interests are widely discussed in the giftedness literature and the vocational psychology literature and assumed to have a positive influence on excellent performance (Bailey & Morley, 2006). Gagné (2004) traditionally addressed this factor in his Differentiated Model of Giftedness and Talent (DMGT) as an interpersonal catalyst that influenced the development of gifts into talents. In 2008, Gagné revised his DMGT and replaced the seven domains of human functioning (i.e., academics, arts, business, leisure, social action, sports, and technology) he initially distinguished by six major occupational groups (i.e., technical, science and technology, arts, social service, administration and sales, and business operations) based on Holland's work on vocational interests (Gagné, 2008). This shift reflects the increasing attention given to interest areas when investigating talented children, adolescents and adults—also referred to as 'preferences' and 'orientations' (Milgram & Hong, 1999). Identification of interest areas is believed to be crucial in order to locate activities in which interests can be reinforced and actualized, leading ideally to the delivery of excellent performance (Lubinski & Benbow, 2000).

Accordingly, vocational psychologists assess interests as a key component of talent with the goal of supporting individuals in finding a fit between the person they are and the job or

career they aspire to so that extraordinary performance, operationalized as performance at one's personal best, might be achieved (Arnold & Cohen, 2008; Greenhaus & Callagan, 2006). From the 1990s onwards, several authors in the giftedness literature, as well, have addressed this issue by advocating that person-environment fit is crucial for obtaining optimal achievement. This is predicted by a match between personal abilities and ability requirements of the environment on the one hand, and a match between personal preferences and reinforces available from the environment on the other (Achter *et al*., 1996; Achter, Lubinski, Benbow & Eftekhari-Sajani, 1999).

2.4.2.2Identification

Scholars interested in the affective component of talent have suggested a number of instruments capable of detecting motivation to invest and interests. These instruments are seen as a necessary extension to ability measures, because talent is believed to be a complex constellation in which abilities, motivations and interests interact in determining excellence.Because motivation to invest and interests are seen as closely linked, the majority of the proposed instruments measure both aspects simultaneously. We distinguish two large groups of measures, i.e. assessments tools and reflection exercises.

Assessment tools. Super (1984; in Milgram & Hong, 1999) stated that the performance of children in challenging extracurricular activities might function as an early indicator of vocational interests (Migram & Hong, 1999). Accordingly, the *Tel-Aviv Activities and Accomplishment Inventory* was developed to shed light on challenging leisure activities and accomplishments in seven specific activity types (i.e., science, social leadership, dance, music, art, creative writing, and drama). In the educational context, portfolios are advised within which the broad development of children on teacher assigned tasks and student

selected tasks could be integrated. By leaving room for self-selection supervisors can diagnose students' interests and motivations. By means of portfolios a multidimensional approach to talent identification could be adopted by incorporating observations and interviews in addition to ability tests (Bianco, 2010; Ruban & Reis, 2005). Concerning the former, observations related to open-ended, real-life, and challenging tasks are suggested because these can account for a wide variety of early expressed interests and motives (Callahan, 2005).

Vocational psychologists mainly developed and validated self-assessment instruments to (re)orient individuals towards an occupation that cultivates their motivations and interests. In this regard, questionnaires to detect the occupational themes Holland theorized in his hexagonal model, such as the Strong Interest Inventory, are of particular value (Feldhusen, 1994; Lubinski & Benbow, 2000; Larson & Borgen, 2002). This questionnaire supports individuals in gaining insight into six vocational interests denoted with the acronym RIASEC: Realistic, Investigative, Artistic, Social, Enterprising and Conventional.

The Study of Values is a similar self-report questionnaire that assesses the relative prominence of six values, informed by the six theoretical types of Spranger (1928, in Schmidt, Lubinski & Benbow, 1998): Theoretical, Economic, Political, Aesthetic, Social and Religious. Closely related to this is the Career Anchors Inventory as developed by Schein (1996), that can be used as a self-assessment tool to discover one's self-concept concerning one's basic motives, interests, and needs. These elements are incorporated in 7 distinct anchors: technical/functional competence, managerial competence, security and stability, autonomy and independence, entrepreneurial creativity, service and dedication to a cause, and pure challenge (Schein, 1996).

In the positive psychology literature, as well, a number of instruments are proposed to identify talent as operationalized in strengths. The StrengthsFinder is a validated self-assessment tool that detects areas one loves investing energy in and in which one has the ability to deliver consistent near-perfect performances (Buckingham & Clifton, 2001). The Values in Action Inventory of Strengths (VIA-IS), developed by Peterson and Seligman (2006), is frequently cited, and demonstrates good psychometric properties in different languages (Brdar & Kashdan, 2010; Furnham & Lester, 2012; Linley *et al*., 2007; Littman-Ovadia & Lavy, 2012; Money, Hillenbrand & da Camara, 2008; Rust, Diessner & Reade, 2009). The VIA-IS is a 240-item standardized self-report questionnaire which provides a classification of six overarching and culturally independent virtues, defined as characteristics that promote collective and individual greatness (i.e., wisdom and knowledge, courage, humanity, justice, temperance, and transcendence), subdivided into 24 strengths (Money *et al*., 2008; Seligman, Steen, Park & Peterson, 2005). The Inventory of Interpersonal Strengths (IIS) is a similar measure that discovers characteristics that enable human flourishing (Hatcher & Rogers, 2009). The IIS consists of 64 items classified into eight validated subscales, which represent a broad range of interpersonal domains: Connect, Engage, Lead, Direct, Balance, Restrain, Cooperate, and Consider.

Reflection exercises.From the eighties onwards vocational psychologists and positive psychologists have been developing more open-ended methods for talent identification. These are believed to offer a valuable addition to (standardized) assessment tools, because they are deemed more suitable to grasp the subjective and dynamic nature of motivations and interests, seen as components of talent (Young & Collin, 2000). Consequently, the advised exercises focus on the unique and continually evolving meaning individuals ascribe to talent,

which is shaped by the interplay between personal and environmental influences experienced over the lifespan. In order to detect these evolving perceptions it is advocated that identification should be conducted repeatedly throughout the life and career span (Ibarra, 1999). This represents a shift towards approaching careers as a process that is subjectively experienced across the lifespan (i.e., a focus on the subjective career) rather than a product that is objectively measured at one point in the career span (i.e., a focus on the objective career). Parker (2002, p. 86) states that, "…*the subjective career reflects a dynamic unfolding process that emerges from the individual perception of the career actor*". Recommended exercises support individuals in identifying their individually constructed and evolving definition of talent by reflecting on meaningful life and work experiences and on how talent plays a role in them.

The biographical method (Kelchtermans, 1993) is an interviewing technique in which individuals tell the story of their lives and simultaneously attribute meaning to it. Successful moments experienced over the course of life, such as the discovery or deployment of certain talents, are probed during the interview.Another more general approach for identifying talent is suggested within the appreciative inquiry (AI) field, which is closely related to the positive psychology movement. Although AI originally referred to a research perspective applied for establishing and facilitating collective change in social arrangements and processes, it can be translated to a more individual level valuable for detecting talent (Cooperrider & Srivasta, 1987). The basic idea underlying AI is that the exploration of perceived positive aspects related to the self (e.g., talents) and the current situation (e.g., availability of learning opportunities), results in the formation of ideas of what might and could become in the future on the basis of which individuals can (re)shape their life/career in a positive way.

Besides general methods, more specific exercises capable of eliciting the dynamic and subjective meaning of talent are proposed. The Intelligent Career Card Sort (ICCS) is a tool for career exploration in that it stimulates individuals in clarifying, reflecting on, and evaluating their knowing-how (i.e., an individual's repertoire of career-relevant skills and expertise that supports current work behavior), knowing-why (i.e., a mixture of an individual's personality, aptitudes, values, and interests), and knowing-whom (i.e., an individual's work relationships that supports a person's unfolding career) (Amundson, Parker & Arthur, 2002; Parker, 2002). ICCS consists of three sets of cards, responding to the three described types of knowing. Individuals select the 7 most applicable cards in each set and rank them according to importance. This results in 21 themes that can function as input for journal writing and/or listening activities. The main goal of autobiographical journal writing is the development of an in-depth personal narrative that draws on specific career and leisure experiences. The listening activities provide individuals with opportunities to discuss their knowing-how, knowing-why and knowing-whom in a group setting. In general, ICCS assists individuals in acquiring self-knowledge on three different aspects of the self, resulting in a holistic sense of who they currently are and who they thrive to be in the future, which might support them in making more effective career investments. By extensively elaborating on knowing-how and knowing-why, this exercise not only guides individuals in reflection on their ability, but also on their motivations and interests. By integrating aspects associated with knowing-whom, the role context plays in sculpting life according to perceived talents is emphasized.

The exercise on 'possible selves'—defined as people's ideas of what they might, would like, or fear to become— is a similar exercise in that it helps people reflect on their interests, values and aspirations by letting them create a personal narrative in which hopes and fears are

expressed (Markus & Nurius, 1986). This can be applied to help shape the future in the desired direction and identify barriers to talent development (Whitty, 2002). The reflected best self-exercise supports individuals in gaining insight into their unique talents by surveying people in their surroundings about moments where they were at their personal best (Meyers, van Woerkom & Bakker, 2012; Roberts, Dutton, Spreitzer, Heaphy & Quinn, 2005).

2.5 Discussion

Our discussion of insights originating from different literature streams resulted in a general definition of talent in which the ability component is complemented with the affective component. Based on this definition we conclude that talent consists of three central characteristics, which embody the specificity of talent: manifestation in excellent performance, developed innate abilities, and passion—with the latter further subdivided into 'motivation to invest' (i.e., activities one wants to invest energy in) and 'interests' (i.e., activities one likes and finds important).

2.5.1 Tensions between talent and related concepts

The three central characteristics listed above can help distinguish between talent, competence, and potential. Competence and potential are frequently misused as interchangeable with talent in the talent management field, leaving HR-practitioners interested in implementing talent identification with a great deal of confusion.

Difference 1: Talent versus competence. Scholars in the giftednessliterature posit that theinnatecomponents necessary to develop talent are not present in everyone (Gagné, 1998a; 1998b). Positive psychologistsandvocationalpsychologists, on the other hand, state that

everyone can develop talents. However, they assume that innate components determine which unique talents individuals can develop, implying that individuals cannot acquire talents in all domains of human functioning (Buckingham & Clifton, 2001). In contrast, almost everyone and in nearly every domain, can develop a competence, if the environmental conditions are favorable. The deployment ofcompetencesresults in effective performance, but not necessarily in excellentperformance. The difficulty in distinguishing between talent and competence can be brought back to 'manifestation issues'. Talent manifests itself in extremely good competences. Consequently, someone whois talentedin a particular fieldwillalso possess the competences thatarerelated to this talent. However, atalented personwill rank amongthe top1to 10 percent bestperformers on this competence ascomparedto peers or to his or her personal best (Gagné, 1998a; Buckingham & Clifton, 2001). Thisemphasizesthe rarity of talent, which is not a prerequisite for competence(Gagné, 2004). Ifwe translate this totalentidentification, this implies that competence measures can be applied to detect the ability component of talent, as is frequently done in organizations. The focus, however, should be on individuals who achieve exceptionally high scores as an expression of talent and not merely competence. To this end, organizations should develop and apply measures in which ceiling effects can be avoided so that individuals ranging from mildly to extremely talented—who might fall outside of the norms of standard tests—can be adequately identified (Bianco, 2010).

In addition, the conceptualization of talent, in comparison with that of competence, pays more attention to passion as a necessary condition for achieving excellence. Confusion often arisesbecausethe definition ofcompetence (i.e., a group ofinterrelatedknowledge, skills and attitudes that enables the delivery of effective performance) includesattitudinal aspects, such as motivation, which is an important element of passion (Draganidis & Mentzas, 2006;

Jackson & Schuler, 2003). In the definition of competence, however, motivation is not operationalized as 'passionately investing'. Having the (intrinsic or extrinsic) motivation to conduct a certain activitydoes necessarily imply that one likes to invest time and energy in it. The latter refers to the aspect of passion, which is a specific element of talent that is not associated with competence, and should be explicitly measured—in addition to ability—to identify talent. Since talent is associated with passion it is frequently argued that 'playing your talents' generates feelings of fulfillment and has an energizing effect, making it the ideal way to cope with high work demands caused by the increasing complexity of the knowledge economy (White, Hill, McGovern, Mills & Smeaton, 2003).

Difference 2: Talent versus potential. Potentialrefers tofuture opportunities, to the capacity tobesomethingmorethan one presently is:

> *"In work environments, potential is typically used to suggest that an individual has the qualities (e.g., characteristics, motivation, skills, abilities, and experiences) to effectively perform and contribute in broader or different roles in the organization at some point in the future (Silzer & Church, 2009, p. 379)".*

Potential thus denotes something that has not yet manifested, but is latently present (Robinson, Fetters, Riester & Bracco, 2009). Talent, as opposed topotential, has a here-and-now character, reflected in the ultimate goal of talent management that is the sustainable deployment of detected talents in light of the strategic aims of an organization (Lepak & Snell, 2002). Althoughlatent(innate) factorsunderlie talent, the emphasis is onthe manifestation oftalent into excellence. Consequently, the manifestation in excellence could be described as the distinguishing factor between talent and potential.

2.5.2 Tensions between different literaturestreams

Although scholars situated in different literature streams seem to agree on the central characteristics of talent, a closer analysis shows that the specific interpretation of those characteristics varies between different literature streams, resulting in specific talent definitions, as visualized in Table 3.1. The differences between literature strands can be explained by a general tension between equity and equality issues.

Table 2.1

Talent definition and its components by different literature streams

Literature stream	Talent component	Talent definition
HRM	Human capital	Talent refers to the stock of competences, knowledge, social and personality attributes which is embodied in the ability to perform labor so as to produce economic value
Giftedness	Ability component + motivational component + interest component	Talent refers to systematically developed innate abilities of individuals that are deployed in activities they like, find important, and want to invest energy in, resulting in excellent performance in comparison to other individuals of the same ager or experience, in one or more domains of human functioning
Positive psychology and vocational psychology	Ability component + motivational component + interest component	Talent refers to systematically developed innate abilities of individuals that are deployed in activities they like, find important and want to invest energy in, resulting in consistently performing at their personal best

The use of standardized instruments to detect rare talents has been contested due to the ensuing underrepresentation of minority groups (Callahan, 2005; Pfeiffer, 2009; Milgram &

Hong, 1999; Reis & Ruban, 2005; Robinson *et al.*, 2000). Consequently, researchers situated in the giftedness literature have sought valid ways to detect talents regardless of the social, ethnic, or cultural background one has or the specific (non-traditional) talents one displays (Preckel & Thiemann, 2003; Saccuzzo & Johnson, 1995; Sanders *et al*., 1995). In so doing, scholars want to guarantee that all individuals have an equal chance to obtain the talent label. However, the underlying assumption is held that not all individuals are talented, which legitimizes an unequal treatment under the condition of unbiased identification. Although Gagné (2011) claims that the giftedness literature has become increasingly democratic due to the inclusion of different backgrounds and a wide variety of talents, it has held onto its elitist view on talent, in that it is concerned mostly with issues of equity (i.e., everyone should have an equal opportunity to earn the rare label of talent, which in turn leads to an unequal treatment between the identified and the non-identified) rather than with issues of equality (i.e., everyone is talented and should get the 'same' tailored treatment on the basis of the identification of their specific talents).

In contrast, vocational psychologists and positive psychologists pursue equality. They posit that talent identification should lead to an individualized treatment of all individuals, given that everyone possesses a unique constellation of talents that needs to be deployed in order to consistently reach the maximum of one's capacity (Seligman *et al*., 2005). Adherents of such 'strengths-based approach' believe that the productivity and satisfaction of employees will substantially increase if they are given the opportunity to do the work in which they can reach their personal best, which in turnpositivelyaffects the organization (Buckingham &Clifton, 2001).

2.6 Managerial relevance

Range of possible measures and methods for talent identification. Organizations seem to frequently base their talent investments solely on performance scores, fact that is deemed insufficient to capture talent (Rea, 2000). In order to obtain a holistic view of the talents of employees, combining instruments that measure ability, motivation, and interests is advisable (Parker, 2002). In Table 3.2 an overview of the discussed measures and methods and their characteristics is provided. The presented measures and methods emphasize different components (i.e., ability, interests, and motivation) of the construct of talent and vary in terms of the measurement approach taken (i.e., standardized versus open-ended).

Each measurement approach has its own specific possibilities and limitations, which pleads for a mixture of different measures and methods. Standardized measures are extensively validated which seems to guarantee the quality of the measure. Furthermore, these measures are easy to use within an organizational context because they can be applied to a large number of people and this in a standardized and non-time consuming way. However, due to the standardization it is not possible to capture the complex nature of motivations and interests as differentially experienced by individuals. Rather, these can be detected by applying open-ended exercises in which individuals narratively reflect on the subjective meaning they ascribe to talent. Since the focus is on detecting the unique perception individuals have of talent, we can describe these as extremely individual exercises. Such individual methods might be difficult to manage in organizations that have limited resources in terms of time and money and must therefore closely monitor the added value of every investment. In addition, in order to adequately conduct these open-ended methods a certain expertise is required, which might need to be sought externally.

Characteristics of the Measures & Methods								
What?			Who?				How?	
ity	Motivation	Interests	Tests	Self	Peer	Supervisor	Standardized	Open-ended[a]
			X				X	
			X				X	
			X				X	
			X				X	
			X				X	
			X				X	
			X				X	
			X				X	
			X				X	
	X					X	X	
						X	X	
						X	X	
						X	X	

Characteristics of the Measures & Methods								
What?			Who?				How?	
ty	Motivation	Interests	Tests	Self	Peer	Supervisor	Standardized	Open-ended[a]
				X	X		X	
				X	X		X	
						X	X	
				X			X	
					X		X	
		X				X	X	
	X	X		X		X		X
	X	X				X		X

Characteristics of the Measures & Methods								
What?			Who?				How?	
ty	Motivation	Interests	Tests	Self	Peer	Supervisor	Standardized	Open-ended[a]
		X		X			X	
		X		X			X	
	X	X		X			X	
	X	X		X	X	X		X
	X	X		X		X		X
	X	X		X			X	
	X	X		X			X	
	X	X		X			X	
	X	X		X				X
	X	X		X	X	X		X
	X	X		X		X		X

ents and methods that can generate a wide variety of not predefined results

Choosing between the different methods and measures. We are aware that talent identification is conducted within the restrictions of a specific organizational setting. Although the combination of various measures and methods is advised, choices betweena wide range of possibilities will need to be made in practice. We offer some guidelines to facilitate this choice.

Strategic alignment. As previously shown, the interpretation of the three central components of talent varies depending on the literature stream one considers. Similarly, the specific talent definition organizations adhere to can differ. In this light, strategic alignment of talent identification practices, especially in terms of measures and methods used, with the specific talent definition (e.g., emphasizing performance at one's personal best or emphasizing performance superior to others) an organization subscribes to is advised (Zhao & Du, 2011). This accentuates not only the importance of the alignment of the specific talent definition with the strategic aims of the organization but also, the alignment of talent identification practices with the specific talent definition.

Psychometric qualities. Besides strategically aligned, measures and methods should also possess satisfactory psychometric qualities. In the reviewed literature, however, only limited information was available on the specific psychometric qualities of the measures and methods. Informed by this, insights stemming from the personnel selection literature and the social psychology literature were considered as being of particular value, because they can complement the presented insights rather nicely by focusing on the quality of the identification process. More specifically, those insights could help unravel the process underlying talent identification in that they shed light on how talent assessments are potentially influenced by all sorts of biases inherent to the

way in which, and by whom measures and methods are applied. Within these literatures, the mechanisms behind different sorts of biases, such as the leniency effect (i.e., attributing more importance to the positive traits of a person than to the negative traits, resulting in favorable evaluations) and the halo effect (i.e., the presence of certain qualities makes the rater believe that other qualities are also present in the ratee), have been investigated in order to improve the validity and effectiveness of judgments of performance.

A great deal of research has examined how characteristics of raters and ratees dynamically interact in shaping or potentially biasing assessments conducted in a given context (Dominik & Gabriel, 2009; Tormala, Jia & Norton, 2012; Tsay & Banaji, 2011). Landy and Farr's (1980) literature review on the effects of rater and ratee characteristics on appraisals has shown mixed results for demographic (e.g., sex, age, race, education), psychological (e.g., self-confidence), job-related (e.g., performance level), and attitudinal variables (e.g., values, preferences), indicating that no uniform conclusions could be drawn. When focusing on the interaction between raters and ratees, the authors suggest that similarity between raters and ratees on background and attitudinal variables may affect, and potentially bias, ratings. Similarly, it is advocated that the 'likeability' and familiarity between raters and ratees might influence ratings in a positive way.

As concerns the characteristics of raters, implicit person theories have gained attention because these might directly influence beliefs about and appraisals of talent, regardless of the actual behavior of the ratee. Implicit person theories are cognitive assumptions held about the extent to which attributes of individuals, such as, are fixed (i.e.,

fixed/entity mindset) or developable over time due to experience (i.e., growth/incremental mindset) (Heslin, Latham & Vandewalle, 2005). A so-called 'entity theorist' will be in favor of conducting a singular assessment in order to identify talent because the odds of individuals changing over time are believed to be low. An 'incremental theorist', on the other hand, will advocate multiple assessments spread over time, driven by the belief that talent can be developed throughout the life course.

When considering the context within which evaluations are conducted, leniency is found to be lower in situations in which the importance of rating accuracy is explicitly stressed. Furthermore, in situations were high performance is expected, raters are more lenient in their judgments, which is captured by the phenomenon of self-fulfilling prophecy (Landy & Farr, 1980). It appears, however, that the accuracy of ratings is higher for favorable than for unfavorable behavior, which has been termed the 'differential accuracy' phenomenon (Landy & Farr, 1980). Because talent identification is concerned with detecting excellent performance, talent appraisals thus might be more accurate than general appraisals. Interestingly, scholars in the giftedness literature report opposing phenomena—i.e., high IQ scores show less reliability than average or low IQ scores (Lubinski & Benbow, 2000; Robinson *et al.*, 2000). The psychometric qualities of different measurement approaches (i.e., other ratings versus standardized tests) to talent identification thus seem to differ widely and could vary depending on the context in which they are conducted (Landy & Farr, 1980). Informed by these insights we advise practitioners to evaluate the psychometric qualities of each measure within the contextual boundaries in which it is executed. This should be a main concern when conducting talent identification in order to avoid 'false hits' or 'false misses'.

The personnel selection literature and the social psychology literature show that talent assessments are subjective in nature due to the influence of characteristics of raters, ratees and the context in which they are embedded. We could state that talent is only detected when it is individually and socially perceived as being present by evaluators. Therefore, we advise using multisource assessments in order to reduce bias that could result from using only one assessor (Smither, London & Reilly, 2005). Comparisons between the effectiveness of ratings of different types of raters (i.e., self, peer, supervisor) suggest that no solid statements can be made about the higher validity of one type of rater (Landy & Farr, 1980). A general rule of thumb is that assessments are accurate when multiple evaluations correspond, making interrater reliability the main criteria to assess the accuracy of talent judgments. In sync, we suggest combining tests, self, peer and supervisor instruments that are included in Table 3.2.We strongly advise organizations to incorporate self-assessment tools in the identification process, because those could help shed light on motivation and interests areas, components of talent that are not always completely visible to other parties. Because motivation and interests are approached as dynamically influenced by personal and environmental factors (Ibarra, 1999), we emphasize that talent identification should be a continuous endeavor. Within this perspective, life-long interventions for talent identification are deemed suitable, not just early-career interventions what is the usual case today (Savickas *et al*., 2009).

2.7Further avenues for research

In the literature the concept of talent and the identification of talent are often addressed separately, both within and between different disciplines. With this review we aimed to connect ‘conceptualization’ and ‘identification’ by discussing identification issues

stemming from a particular conceptualization of talent comprising two main components (i.e., ability and affective).Our review showed that there is still a lack of clarity about certain issues in regard to talent identification, which opens up several interesting avenues for further research.

2.7.1 Contextualizing talent

Contextual factors are recognized as sorting an influence on competence, potential, and talent. The mastery of each construct depends on a fruitful mixture of personal characteristics (i.e., intellectually and physically capable to master it)and a facilitating environment (i.e., environment which stimulates learning) (Capaldo, Iandoli & Zollo, 2006; Thunnissen *et al*., in press). The situational embeddedness of talent is accentuated by highlighting that innate abilities (i.e., ability component) need to be fostered in an environment whereby a wide variety of abilities are appreciated and readily demonstrated(Bailey & Morley, 2006). By extension, the context partly determines which interests and motives (i.e., affective component) are socially and individually perceived as valuable which, in turn, affects the talents that are being developed and identified (Robinson & Clinkenbeard, 1998). Because contextual factors do not account for the particularity of talent, we explicitly chose not to incorporate 'context' in our general talent definition. However, it seems valuable to investigate how the influence of these factors can be exactly assessedin measures and methods for talent identification—which remains unclear to a certain extent.

2.7.2From theindividual to theteam level

As discussed, the social psychology literature is not primarily concerned with the quality of specific measures and methods, but rather, with the quality of the judgment

process underlying talent identification (Landy & Farr, 1980). From a social psychology point of view, it would be relevant to examine how talent can be manifested and identified in team settings (Edwards & Sproull, 1985). By focusing on this more aggregate level, opportunities arise for studying effects of group climate and social beliefs on assessments of talent(Oltra & Vivas-López, 2013), which we consider extremely valuable given the widespread use of teams in organizations (Guzzo & Dickson, 1996).Because insights on the measurement of talent should be based on theoretical considerations on the construct of talent, clarifying what a 'talented team'— as a separate entity— entails exactly is a first essential step that needs to be established.

2.7.3 In search of a healthy balance between self- and other-identification

A closer examination of the proposed instruments demonstrates that both self and supervisor assessments could be applied for talent identification. This seems to reflect issues of accountability for identification, which can be brought back to a wider discussion held on the self-versus organizational management of the career. Vocational psychologists and positive psychologists essentially place the accountability for talent identification with the individual career actor. According to these scholars, assisted self-reflection can support individuals in taking responsibility in designing their careers in light of their talents, which stresses the importance of self-directedness and personal agency throughout the enactment of the career (Arnold & Cohen, 2008; Dries, 2011).

This self-management approach stands in stark contrast to the organizational management approach subscribed to by the HRM field. By detecting talent 'top-down',it is accentuated that talent identification is essentially an organizational concern in that it has to serve strategic purposes (de Vos & Dries, 2013). We posit that, when it

comes to talent identification, it is advisable to search for a balancebetween self- and organizational management, resulting in a combination of different measures and methods for identification as previously discussed (i.e., self-, peer-, and supervisor assessment). Overall, what seems to be clear is that in order to achieve such a balance, a reciprocal exchange between knowledge created in different disciplines needs to be further established.

2.7.4 Inserting employees into the equation

In the present review, we mainly addressed the importance of, and the implications for talent identification from a managerial point of view. Little attention was paid to how identification processesare experiencedby employees. Within the rathersegmented views on talent (i.e., the giftedness literature, and the HRM literature) insufficient consideration is given to the extent in which the label talent, and the resulting expectations, matches the aspirations of the identified individual. In addition, feelings ofinjustice experiencedamong those whowere not identified are often ignored. In this regard, research that explicitlylinks perceived organizational justice to talentdecisions forms a valuable contribution to the field (Gelens *et al.*, in press).

Both the giftedness literature and the HRM literature are concerned with the 'profile' of the identified individual. Research in the giftedness literature seems to indicate that gifted and talented students, who deviate from the norm in an extremely positive way, experience more difficulties fitting in socially and emotionally (Robinson & Clinkenbeard, 1998). In the HRM literature, talented employees are frequently described as 'special' in terms of leadership and social skills (Roberts*et al.,*1998; Smith & Victorson, 2012). Consequently, we could question whether both strands refer to the

same individuals. Within this regard, longitudinal research that monitors individuals whowereidentifiedearly throughout their life, to determine whether gifted children are more likely to be consideredastalented in a work environment as well, would be valuable. Such research might examine the effectivenessofearlydetection by shedding light on what early measurement can and cannot predict in terms of outcomes in the workplace. Multidisciplinary research collaborations are seen as extremely suited for empirically testing the applicabilityof knowledgeoriginating fromthe giftedness literatureto organizational talent identification. By exchanging knowledge between disciplines that traditionally operate separately, it becomes possible to overcome the limitations, whilst exploiting the specific strengths of each discipline (Khapova & Arthur, 2010).

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Chapter 3.

Exploring the talent management literature: A bibliometric analysis (1990-2013)

Exploring the talent management literature: a bibliometric analysis (1990-2013)*

"(...) la única posibilidad de hacer que nuestra historia sea otra cosa que un vagabundeo ciego en un laberinto lleno de ruido y de furor, es recomponer el hilo de Ariadna de las metamorphosis sucesivas de nuestras categorías mentales para reconstruir su génesis (...)"

André Burguière

[Burguière, A. (1991).*Diccionario Akal de ciencias históricas*, Madrid: Ediciones Akal, S.A.; p. 51]

*The content of this chapter has been accepted as a competitive paper in two different international conferences. Full details in Appendix B.

Exploring talent management literature: a bibliometric analysis (1990-2013)

3.1 Introduction

The well-known phrase 'the war for talent' introduced by a group of McKinsey consultants in late 1990s (Chambers *et al.*, 1998) sparked off the interest for talent management (TM) so much so, over the last two decades, it has become an increasingly popular topic (Chuai, Preece, & Iles, 2008; Höglund, 2012). In fact, TM literature has experienced substantial growth during this time, especially in recent years (Jones, 2008; Iles, Preece, & Chuai, 2010) as it is seen more and more as a high-priority issue for organizations worldwide (Bhatnagar, 2008; Mäkelä, Björkman, & Ehrnrooth, 2010). Indeed, TM is considered as a key management topic (Hatum, 2010), managing talent is the top priority in Europe overall (Strack *et al.*, 2011), and finding talented people is the most important managerial preoccupation for this decade (Guthridge, Komm & Lawson, 2008).

Despite its growing popularityfew years ago some academics posited that TM was still in its infancy since there was a lack of clarity regarding its definition, scope and overall goals (Collings & Mellahi, 2009; Garrow & Hirsh, 2008; Lewis & Heckman, 2006). At present, TM is seen as a discipline that has made some progress towards adolescence due to the specific academic attention to this topic during the past ten years and, consequently, the increment of contributions (Collings, Scullion & Vaiman, 2011;

Thunnissen, Boselie & Fruytier, 2013).If TM was a well-established discipline we would expect it to follow similar patterns to well consolidated disciplines and, thus, comply with some of the classical bibliometric principles. Indeed, a well-established field of work would be characterized by a high number of contributions with a sustained pace in time. Similarly, we would expect these contributions to be published in a given set of well-known journals to the discipline (Bradford's Law). As regards authorship we would expect documents published by authors coming from all over the world, with a fair representation of countries and cultures. In addition, there is an inverse relationship between the number of publications and the number of authors producing these publications (Lotka's Law), and the major centres of authors' affiliation would be academic institutions or Research centers adscribed to the academia. Similarly, a well-established discipline is characterized by an increase over time of collaborative research. Finally, one would expect increased number of citations (number of times a published article is cited after publication) as the discipline grows and consolidates. So, how far is TM from these escenarios?

Although Thunnissen et al. (2013) made an attempt to provide a critical review of the academic literature on TM, there has been no full review study of the scientific production about it. In this chapter, we aim to offer objective data that describe the reality of TM researchby carrying out a bibliometric analysis of the existing literature published in peer-reviewed journals since 1990. Our analysis will contribute to a better understanding of TM's academic progress. Indeed, bibliometric techniques are well-established and efficient tools for scanning and interpreting the activity, structure and evolution of a research field (cf. Íñiguez-Rueda *et al.*, 2008; Noguer-Carmona *et al.*, 2006; Prévot *et al.*, 2010; Ramos-Rodríguez & Ruíz-Navarro, 2004; Wang, Liu, Hong

& Zhuang, 2013). According to Verbeek, Debackere, Luwel and Zimmermann (2002), 'bibliometrics' (usually considered as synonym for 'scientometrics' and 'infometrics), refers to "the collection, the handling and the analysis of quantitative bibliographic data, derived from scientific publication" (p. 181). It is important to mention that bibliometrics has not a homogeneous orientation, i.e., one could differentiate between descriptive (purely quantitative aspects such as productivity or geographical, documental and thematic distribution), and evaluative areas (e.g. application of specific criteria to assess scientific activity) (Íniguez-Rueda *et al.*, 2008). Several recent articles report the use of bibliometric techniques to study some areas of management research[1], however, the paper at hands is the first one to address this analysis of TM.

The remainder of the chapter is structured as follows. First, we define the objective and hypotheses of the study. Second, we address the description of the methodology employed to obtain and analyze the data. Then, the findings are presented and discussed. Finally, we posit the conclusions and limitations of the study, and an agenda for future research.

3.2 Objectives and hypotheses

In this study we yield useful information about the nature and evolution of the TM field by analyzing the contributions to the field at three levels. First, we focus on **productivity**, since it is one of the basic dimensions of descriptive bibliometric studies.We here pay attention to the size, growth and distribution of the scientific documents published during the frame of time studied. Productivity indicators are

[1]Some examples of indexed bibliometric studies are: Gundolf and Filser (2013), Hülle, Kaspar and Möller (2011), Ramos-Rodríguez andRuíz-Navarro (2004), Samiee and Chabowski (2012), Talukdar (2011), Vogel (2012), and Wallin (2012).

fundamentally addressing the quantity, i.e., number of papers published by each author, by each country, and each institution. In short, productivity shows us who, which journals, which countriesand institutions are more active in publishing about TM. Second, we analyze **visibility and impact** of TM publications. Although, the number of articles published by an author is one of the most used indicators in bibliometric studies, one should take in account that *quantity* is not always synonym of *quality*[2]. Indicators such as impact factor and citations usually measure a publication's quality.On one hand, the impact factor is ascribable to the journal and year of publication of a concrete paper. On the other hand, the quantification and analysis of citations try to reflect the impact of an article or document on another research and publications. However, both indicators have limitations and have caused controversy amongst researchers. This will be addressed in section 3.4.2.Third, we analyze**collaboration**within TM research throughout a long period of time (i.e., the level of co-authorship in the studies analyzed and the average signatures per paper). According to Peters (1991) collaboration is the unanimous pattern in nowadays research.

Hence, as specific objectives we can highlight these ones:

a. To describe the size of TM research, its growth and distribution starting 1990.
b. To analyze authors' productivity
c. To rank journals, centres (i.e., academic institutions or companies), and countries according to their contribution to the overall TM scientific production.
d. To get to know the type of centres that publishes about TM.
e. To analyzepublications' impact.
f. To describe the level of collaboration on TM research

[2]'Quality' can refer both to quality of the journal in which the paper is published, and quality of the article itself (Noguer-Carmona *et al.*, 2006)

Our hypotheses are the following:

Referring production:

Hypothesis 1: *The number of documents published is going to grow during the period 1990-2013.*

Hypothesis 2: *The increment in publications is going to be particularly intense within the last decade.*

Hypothesis 3: *Since TM is considered an incipient discipline, it is going to be a lot of dispersion when talking about journals.*

Hypothesis 4: *There is going to be an inverse relation between the number of publications and the number of authors producing these publications (following Lotka's Law).*

Hypothesis 5: *Much of the work on TM is going to be from United States, followed by other English speaking countries.*

Hypothesis 6: *Affiliations are expected largely to be non-academic.*

Hypothesis 7: *Little work on TM is going to be from Spanish authors.*

As regards impact and visibility:

Hypothesis 8: *The number of documents published in journals with impact factor has grown during the last decade.*

Hypothesis 9: *It can be established an association between impact factor and citations according to number of authors.*

Concerning collaboration:

Hypothesis 10: *Collaboration is frequent, as it is the norm among the research community.*

Hypothesis 11: *Collaboration (i.e., co-authorship) increases over time.*

Hypothesis 12: *International collaboration has not always being present in TM research, and it is quite recent in time.*

Hypothesis 13: *Collaboration within the same organization (i.e., due to author's proximity) will be the rule in TM research.*

Hypothesis 14: *The number of Spanish collaborations is going to grow during the last decade.*

Hypothesis 15: *Spanish coauthors are going to ocupy secondary positions*

Hypothesis 16: *The number of Spanish collaborations is going to grow during the last decade.*

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The results of this study will allow us to both analyze the structure of the TM research (e.g., most prominent authors, leading journals, countries and institutions involved), and to define its boundaries and trends. Our study will allow us to reveal underlying patterns

in scientific outputs and academic collaborations and may serve as an alternative and innovative way of revealing global research trends in TM.

3.3Methodology

This bibliometric analysis takes scientific articles written in English about TM and published in peer-reviewed journals from 1990 onwards as the unit of analysis. We followed a sequential three-step approach so as to establish and analyse the final number of included peer-reviewed articles in the study.

Step 1: Data retrieval

We performed series of searches on Talent Management in the Social Sciences Citation Index (SSCI)—accessed through the Web of Science (Thomson Reuters)—and Scopus (Elsevier) databases to retrieve the material of study for the present work.

More specifically, we conducted searches using 'talent' and 'management' as keywords, and located publications that contained these searching words in their titles, abstracts (or topic) or keywords. In order to be as inclusive as possible and analyze the evolution of TM throughout time,the span of time considered was from 1990 (seven years before the dawn of the 'war for talent') until May of 2013. We consider that more than 20 years can give a proper picture of TM evolution.

In order to assure all articles were compared using the same standards, we limited the retrieved articles to only those published in English, in peer-reviewed journals of Social Sciences disciplines,and those that have the full text available. So, interviews, reports,

review of books, conference proceedings, editorials or guest editor's notes, chapter of books, reply to other articles and documents published by a corporation as author, were not included. We also rejected those articles with the author's name not available. It should be say that we performed the same searches in two different periods of time in order to have the database as updated as possible. For that reason, we also included articles in press. In Table 3.1 we detail the search equations executed and the number of documents obtained from each search in each period of time.

Table 3.1

Searches executed and number of documents obtained

Database	**Search executed**	**Date 1st search**	**Number of results**	**Date 2nd search**	**Number of results**
Web of Science (WoS)	Title = "talent" AND "management"	27/03/13	62	10/05/13	63
	Topic = "talent" AND "management"	30/03/13	427	10/05/13	470
Scopus	Title = "talent" AND "management"	30/03/13	93	12/05/13	103
	Keywords = "talent" AND "management"	30/03/13	103	12/05/13	116
	Abstract = "talent" AND "management"	30/03/13	455	12/05/13	490

As mentioned by Pinto, Escalona-Fernández and Pulgarín (2013) one major difficulty of trying to make the searches in WoS and Scopus as similar to each other as possible was the fact that each database have their own specific query language and document structure. For that reason, in WoS we could make searches by topic and title, meanwhile in Scopus we could be more specific and do the searches by title, abstract and keywords. However, we verify that the results were as little biased as possible by limiting and refining the searches following the same criteria regardless the construction of the records in each database (see Table 3.2).

Table 3.2

Search criteria established in each database

Web of Science (WoS)	**Scopus**
Timespan = 1990-2013	From 1990-2013
Language = English	Language = English
Document type = Peer-reviewed articles	Type of documents = Articles + Articles in press
Search Domain = Social Sciences	Subject area = Social Sciences & Humanities

Step 2: Refinement of the results

The lists of articles retrieved from each search were exported to Microsoft Excel 2011 (version 14.3.4). According to Escalona, Lagar and Pulgarín (2010) a major overlap between WoS and Scopus databases was expected, so once all duplicates were removeda total of 735 publications were selected for the period 1990-2013.

In order to obtain maximum information of each publication, and consequently do a better exploitation of its data (key variables), articles' full text was obtained by one of these means: (a) directly downloading them from the database (i.e., when our university subscription allow that); (b) asking the library to acquire the article[3]; (3) directly asking the author[4]. However, 32 papers out of these 735 were impossible to acquire or find, so, the final number of documents analyzed in this study is 703.

Step 3: Analysis of the publications

The data from those 703 documents was introduced in an excel sheet. The main reason for using Microsoft Excel software, instead other software such as, Microsoft Access, was the possibility to work with*pivot tables*. Pivot tables are great tools for sorting,

[3]We need to explicitly thank the help from the librarians at the Universitat Oberta de Catalunya (UOC) since they were of critical help in order to acquire more than 100 documents from other Spanish and foreign libraries.

[4]Few were the authors contacted and all of them respond positively to our demand. We are grateful to Prof. Anthony McDonnell to send us all the articles from the special issue in which he was a guest editor, and Jonathan M. Graham, regional managing partner at Heidrick & Struggles, to send us his paper.

counting and summarizing a great amount of data in a worksheet or database file. Indeed, they are dynamic tools that allow you to quickly re-sort the data and look at it from a totally different perspective. In addition, working directly in Microsoft Excel simplified the creation of figures and tables once the data was sorted.

We codified each item (i.e., the information in or about each publication or unit of analysis) according to 42 different fields. In Table 3.3 are detailed not only the fields we had created but the way we had operationalized them.

Table 3.3

Database's fields and its operationalization

Column Name	**How it was operationalized (the way data is treated in Excel)**
Article ID	Correlatives numbers where each number identifies one publication (number)
Number of authors	Total number of authors or signatures in a publication (text)
Author's position in the article	A single number that indicates the ordinal position of the author in the publication (text)
Family Name	Surname of one author (text)
Name	Name of one author (text)
Author	This field results from concatenate the 'Family name' and the 'Name' fields (formula)
Affiliation(University or Company)	The center as to which is ascribed the author. In case, no affiliation appeared we decided to leave the cell empty and, after, called these ones as "non-affiliated"(text)
Extra information on affiliation (e.g. school)	Extra information referring to the authors' affiliation or position. For example, if he/she belongs to a research center, or if he/she is dean, visiting professor, chief, owner, founder,or vice-president. We copied the information that was detailed in the article about the author (text)
Country	Name of the country (text)
E-mail / Web	E-mail or web address in case it was facilitated (text)
Co-authored?	YES or NO (text)
International collaboration	YES or NO (text)
Collaborations within the same institution	YES or NO (text)
Collaborations with Spanish institutions	YES or NO (text)
Year	Year of the publication (treated as text)
Title	Title of the document (text)
Journal Title	Journal name (text)

Table 3.3 (Continued)

Column Name	How it was operationalized (the way data is treated in Excel)
IF Data?	YES or NO (text)
Vol.	Volume of the journal (text)
Issue	Issue of the journal (text)
Month_Day	Month or Day of publishing (text)
Impact Factor	Number of IF obtained from the Journal Citation Report (Thomson Reuters) of the publication year. It should be said that we were only able to find JCR lists from 1997 to 2011 (number)
Initial page	Initial page of the document (number)
Final page	Initial page of the document (number)
Pages	Number of pages of the document (formula)
References	Number of references the paper has (number)
Citations in Google Scholar (GS)	Number of citations that the paper has in GS (number)
Date of search in GS	The date when the number of citations was retrieved (date)
Citations in Scopus	Number of citations that the paper has in Scopus (number)
Date of search in Scopus	The date when the number of citations was retrieved (date)
Citations in WoS	Number of citations that the paper has in WoS (number)
Date of search in WoS	The date when the number of citations was retrieved (date)
Abstract	Abstract of the document (text)
Keyword 1	Keyword defined in first place (text)
Keyword 2	Keyword defined in second place (text)
Keyword 3	Keyword defined in third place (text)
Keyword 4	Keyword defined in fourth place (text)
Keyword 5	Keyword defined in fifth place (text)
Keyword 6[a]	Keyword defined in sixth place (text)
Special issue on TM?	YES or NO (text)
Type of article	Empirical, Theoretical or Teaching case (text)
Methodology	Qualitative, Quantitative or Mixed (text)

Notes:
[a] We decided to only include the first 6 keywords defined by the authors of the publication. It should be noted that only less tan 10% of them have more.
[b] The shaded area correspond to those fields that are already tabulated in our database but that are not going to be analyzed in this study, since they are going to help us in forthcoming content analysis.

As one could have noticed from the detailed table, we introduced each article as many times as number of authors had, i.e., if a paper was written by three authors we are going to have three rows for this publication. In these three rows the only fields that are going to be different are those related to the author information (Authors' position in the article, Family name, Name, Author, Affiliation and Extra information on affiliation). This way of classify the information will allow us to analyze the data in more depth.

Once we had entered all the data, we then proceeded to analyze it at those three levels mentioned above (productivity, impact and visibility, and collaboration), using adequate commands included in the Excel software.

3.4 Results

As mentioned before, we analyzed our database at three levels: productivity, impact and visibility and collaboration. These levels of analysis are going to define the structure of this section. In Table 3.4 we summarize the general data of the study.

Table 3.4

General data of the bibliometric study

Number of documents analyzed		703
Number of journals		353
Number of authors[a]		1276
Number of affiliations		710
Type of affiliation	*Academic*	465
	Non-academic	245

Note: [a] Auhors' identification has been done taking into account the different ways of signatures that can identify the same author. So we had tabulated the different signatures of the same author as just one way (the criteria was to opt for adopting the most complete form of his/her signature).

3.4.1 Productivity

Productivity indicators in bibliometric analysis pretend to show the size, growth and distribution of the scientific documents published. So, they fundamentally measured the quantity.

3.4.1.1 Time evolution of the scientific production

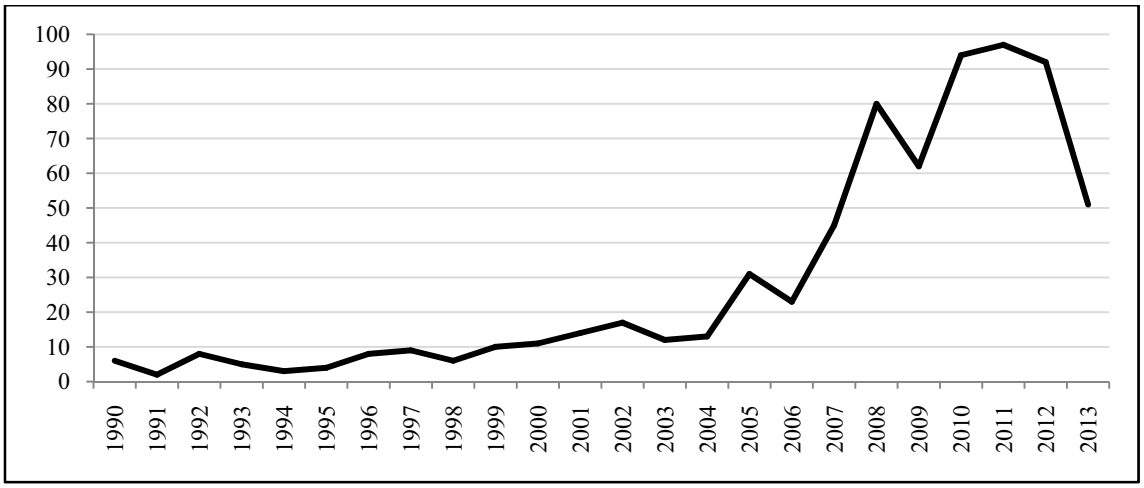
As we mentioned above, we worked with 703 papers about TM published in the period 1990-2013. Throughout this time,scientific production on TM enjoyed a continuous growth. Indeed, scientific production on TM has been multiplied by over 15 times in the last twenty years, and by 7 times in the last 8 years[5] (for further details, see Appendix A, Section A.2, p. 198).

The development of TM research can be divided into three stages (see Figure 3.1): (a) the ***initial development stage*** (1990-2003). In this stage, the related research advanced very slowly, with the average annual number of papers being only 8,84. The average annual growth rate within this period is 7.69 documents per year. (b) The ***rapid development stage*** (2004-2008). Here, the annual rate of papers reached 38.4. The average annual growth rate within this period is 103.08 documents per year. (c) The ***plateau development stage*** (2009-2012). In this stage, the numbers of papers, although with some fluctuations, maintain high levels (345 documents in 5 years). The annual rate of papers reached 86.4, and the average annual growth rate within this period is 12.09 documents per year. In summary: the evidence tells that TM has been a hot research topic within the last 8 years, and that it has a growing tendency so far, it is developing. Although, 2011 had been the most prolific year with 97 documents (13.80% of the total documents published during the period studied), presumably 2013 is going to be the most prolific year since in only 5 months there are 51 documents published (to date, two publications per month more than in 2011).

[5] 2012 is the final year considered to make these affirmations, since it is the last complete year with data.

Figure 3.1

Volume of TM publications from 1990 to 2013



Note: In 2013 the number of documents subsumesnot only those published between January and May (46 articles), but also those articles that appear as 'in press' (5 documents).

3.4.1.2 Dispersion of the scientific literature

The number of journals publishing TM related research increased from 6 in 1990 to 62 in 2012. A total of 703 articles were retrieved distributed among a total of 353 journals, for an average of 1.99 papers per journal. Table3.5 shows the distribution of journals and papers published within the period studied. Before 2001, i.e., before the publication of Michaels, Handfield-Jones and Axelrod's book publication (the one that provoked a great diffusion of their previous research on the 'war for talent'), the number of documents practically corresponds to the number of journals.

Table 3.5

Distribution of publications among years

Year	Number of Different Journals	Number of documents	Ratio Journals/Document[b]
1990	6	6	1
1991	2	2	1
1992	6	8	0.75
1993	5	5	1
1994	3	3	1
1995	4	4	1
1996	8	8	1
1997	9	9	1
1998	5	6	0.83
1999	9	10	0.90
2000	9	11	0.82
2001	13	14	0.93
2002	11	17	0.65
2003	9	12	0.75
2004	9	13	0.69
2005	25	31	0.81
2006	20	23	0.87
2007	31	45	0.69
2008	50	80	0.63
2009	46	62	0.74
2010	78	94	0.83
2011	65	97	0.67
2012	62	92	0.67
2013[a]	37	51	0.73

Note: [a] As in previous tables, totals in 2013 correspond to already published and "in press" articles.[b]In this column, 1 represents the maximum degree of dispersion.

As Table 3.5 shows there is a steady increase in the number of publications throughout the period studied (1990-2013), although the annual rate of growth varies from period to period as we have seen above (7.69% for the initial development stage; 103.08% for the rapid development stage, and 12.09% for the plateau development stage). So, the volume of documents progressively increased during the period studied as Prince (1963) concluded from his seminal work: *Little Science, Big Science*.

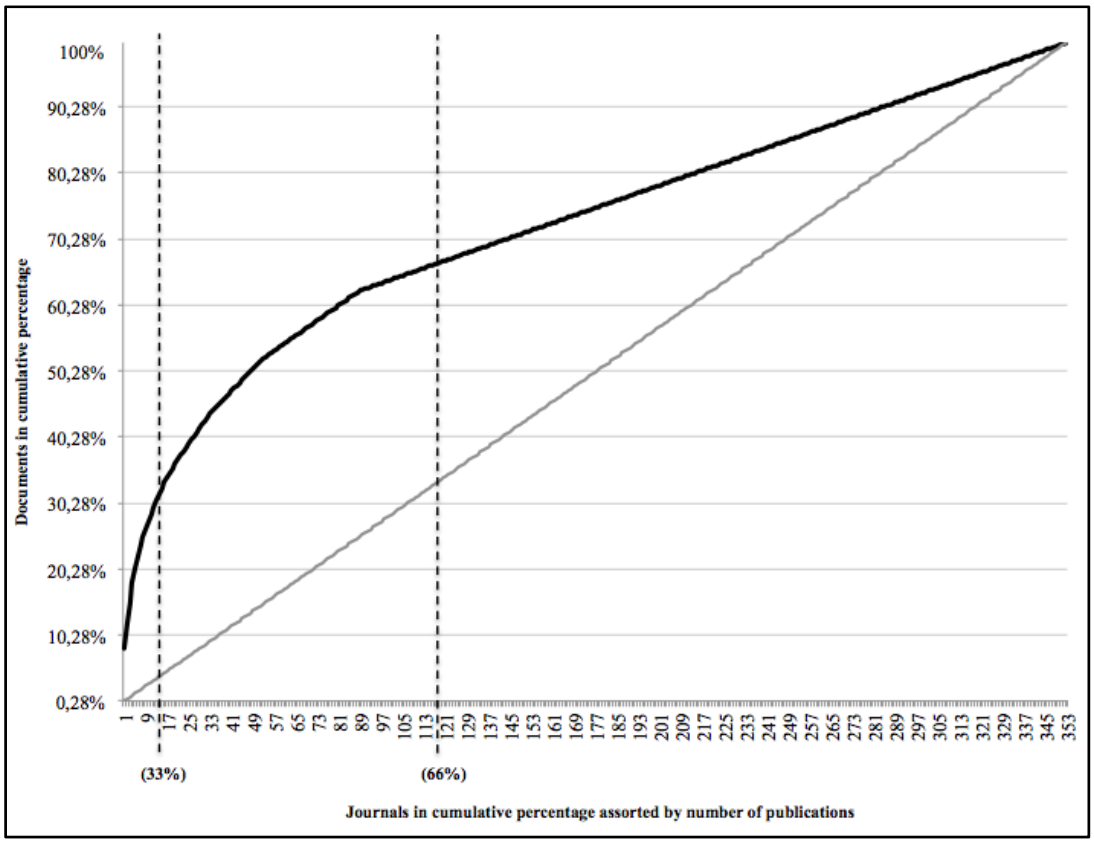
Referring to the number of journals, it also progressively increases over time (for further details, see Appendix A, Section A.3, pp. 199-212). However, we observed how during the first years of the period studied, a maximum grade of dispersion existed (i.e., each document was published in a different journal). As time goes by, we see how it is slightly dimishing this dispersion although it is still very high (0.73 in 2013). Probably this wide variety of journals (also noted by Thunnissen *et al.*, 2013) in the last eight years is due to the 'fight' for consolidating TM as a field of research from a wide audience. It is worthy to note that despite the great variety of journals they can be subsumed under three wide areas: HRM, Knowledge Management, and Health Management.

However, the documents published do not follow an equal distribution among the journals. According to the Bradford's Law (also known as *Bradford's law of scattering* or *Bradford distribution*), in a specific scientific field or topic, the majority of the contributions published will be found in a small amount of journals, i.e., the more particularly devoted to the subject also known as the core or first zone (Bradford, 1948). From this core zone, if we want to retrieve the same amount of documents we will need a higher number of journals, and so on (this progression is going to be geometrical). In short, this law reveals a pattern of how literature about a specific topic is distributed in journals, and it tells that it would be enough to identify "the core publications" for that field in order to have a *big picture* of the discipline since very rarely will researchers need to go outside that set. According to Figure 3.2, a third of the documents in TM research are published in less than 5% of the journals, (i.e., 235 documents were retrieved from 16 journals), other third of documents are published in 114 journals (with

a total of 464 documents), and the remaining third of documents are published in 239 journals.

Figure 3.2

Concentration curve of documents according to journals



Following Bradford's law, if after ranking the results in decreasing order with the most prolific journal given rank 1, we can arbitrarly select a core of journals (*j*). The number of articles found in the core *j* journals is denoted as *a*, and this first grouping will be called *Zone 0*. Therefore, in our case, we consider *j* = 16, and a = 235, since 16 journals are the ones that concentrates the 33% of the total publications. We should divide the remaining data into "Bradford Zones" such that each zone contains *a* articles (see, Table 3.6).

Table 3.6

Bradford's zones for TM literature distribution

Zone (a = 235 articles)	Number of journals	Cumulative of journals	Number of articles	Total of Articles	Cumulative or articles
	1	1	58	58	58
	1	2	26	26	84
	1	3	22	22	106
	1	4	21	21	127
	1	5	16	16	143
0	1	6	13	13	156
	1	7	12	12	168
	1	8	9	9	177
	3	11	8	24	201
	4	15	7	28	229
	1	**16**	6	6	**235**
	5	5	5	25	25
	12	17	4	48	73
1	19	36	3	57	130
	37	73	2	74	204
	31	**104**	1	31	**235**
2	233	**233**	1	233	**233**

*Note:*Since the total number of documents is 703, which is an odd number, the third zone has only 233 instead 235. We decided to group journals by dividing in thirds the total number of contributions (i.e., each zone represents approximately, the 33% of the total amount of documents).

According to Bradford's law, there is some constant (*k,* also known as *Bradford multiplier*) such that *z*th zone containing a articles consists of $k^z j$ journals[6]. Another view of the same phenomenon is: $k^0:k^1:k^2 \ldots k^z$. In the present case, Zone 0 contains 16 journals, Zone 1 contains 104 journals, and Zone 2 contains 233. So, the proportion is 16:104:233 = 1:6.5:14.56. Therefore, it is difficult to establish *k* that is the multiplier that allows to exactly finding the same amount of journals in each zone. So, this distribution does not fit exactly with the suggested by Bradford, since the theoretical number of journals for Zone 2 should be 676 ($k^z j$ = 6.5^2*16) instead of 233.However, the number of journals needed to provide multiples of the core zone articles quickly grows to very large numbers, as a classic example of the *scattering effect*. There is a great dispersion as it was expected due to the incipient condition of TM.

[6]cf. http://people.lis.illinois.edu/~jdownie/biblio/bradford.html

Despite this great dispersion, three are the journals responsible for the 15% of the total number of publications. These are: *Harvard Business Review, The International Journal of Human Resource Management,* and *T and D* (see, Table 3.7). Indeed, *Harvard Business Review* is responsible for the publication of 8.25 % (23 documents) of the total amount of documents on TM. Moreover, it is the only journal that has more than 3 papers published from 1990 to 1998 when TM had not even emerged as a hot topic, and more than 10 papers in each of the other periods of time analyzed. So, it is undeniable *Harvard Business Review*leadership in TM research. Apart from this one, the preferred journals for publishing about TM are (see Table 3.7):*The International Journal of Human Resource Management* (with 26 documents), *T and D* (with 22 documents), *Industrial and Commercial Training* (with 21 documents), *Human Resource Management Digest* (with 16 documents), *Journal of World Business* (with 13 documents) and *Human Resource management* (with 12 documents).As expected from the previous mentioned, the second, third and fourth most prolific journals started to publish about TM from 2004 onwards, being the last period (2009-2013) the most prolific one for all of them. Sometimes top positions are explained by the publication of special issues (e.g., a recent special issue on TM with 8 articles can explain the second position of*The International Journal of Human Resource Management*). In summary, TM literature is basically built on the traditions and approaches of the HRM field (5 out of the top ten journals belong to this field). In addition, in recent years conceptual journals within this field (e.g., Human Resource Management Review) have published theoretical articles on the topic in order to improve TM theoretical foundations.

Table 3.7

Ranking of journals ordered by productivity (n≥ 3)

Journal	Number of papers	%	Cumulative %	1990 - 1998	1999 - 2003	2004 - 2008	2009 - 2013
Harvard Business Review	58	8.25	8.25	4	15	28	11
The International Journal of Human Resource Management	26	3.70	11.95	0	0	3	23
T and D	22	3.13	15.08	0	0	9	13
Industrial and Commercial Training	21	2.99	18.07	0	0	5	16
Human Resource Management International Digest	16	2.28	20.34	0	0	0	16
Journal of World Business	13	1.85	22.19	0	1	0	12
Human Resource Management	12	1.71	23.90	0	3	2	7
Public Personnel Management	9	1.28	25.18	1	2	6	0
Journal of Management Development	8	1.14	26.32	0	0	4	4
Human Resource Management Review	8	1.14	27.45	0	1	3	4
Asia Pacific Journal of Human Resources	8	1.14	28.59	1	0	0	7
Organization Development Journal	7	1	29.59	0	0	7	0
International Journal of Contemporary Hospitality Management	7	1	30.58	0	0	6	1
Global Business and Organizational Excellence	7	1	31.58	0	0	2	5
European Journal of International Management	7	1	32.57	0	0	0	7
MIT Sloan Management Review	6	0.85	33.43	0	0	4	2
The Journal of medical practice management	5	0.71	34.14	0	0	3	2
Journal of Business Strategy	5	0.71	34.85	0	0	1	4
Healthcare financial management	5	0.71	35.56	0	0	1	4
Asia Pacific Business Review	5	0.71	36.27	0	0	2	3
African Journal of Business Management	5	0.71	36.98	0	0	0	5
Research Technology Management	4	0.57	37.55	0	1	1	2
Psychologist-Manager Journal	4	0.57	38.12	0	0	0	4
Personnel Review	4	0.57	38.69	0	0	0	4
Journal of Product Innovation Management	4	0.57	39.26	1	0	1	2
Journal of Knowledge Management	4	0.57	39.83	0	0	1	3
Journal of International Management	4	0.57	40.40	0	1	0	3
Journal of Financial Economics	4	0.57	40.97	0	1	0	3
Human Resource Management Journal	4	0.57	41.54	0	0	0	4
European Management Journal	4	0.57	42.11	1	1	0	2
Business Horizons	4	0.57	42.67	0	0	1	3
Academy of Management Journal	4	0.57	43.24	1	2	1	0
Academic Medicine	4	0.57	43.81	0	1	1	2
Transportation Journal	3	0.43	44.24	0	0	1	2
Training & Development	3	0.43	44.67	1	2	0	0
Strategy and Leadership	3	0.43	45.09	0	0	2	1
Sport Management Review	3	0.43	45.52	0	0	1	2
Small Business Economics	3	0.43	45.95	0	0	1	2
Scandinavian Journal of Management	3	0.43	46.37	0	0	0	3
Organizational Dynamics	3	0.43	46.80	1	0	0	2
McKinsey Quarterly	3	0.43	47.23	0	0	3	0
Management Decision	3	0.43	47.65	0	0	1	2
Journal of Organizational Excellence	3	0.43	48.08	0	0	3	0
Journal of Management	3	0.43	48.51	0	0	0	3
Journal of Business Ethics	3	0.43	48.93	0	0	2	1
International Journal of Technology Management	3	0.43	49.36	1	0	2	0

Table 3.7 (Continued)

Journal	Number of papers	%	Cumulative %	1990 - 1998	1999 - 2003	2004 - 2008	2009 - 2013
Innovation: Management, Policy and Practice	3	0.43	49.79	0	0	2	1
Employee Relations	3	0.43	50.21	0	0	2	1
Cross Cultural Management	3	0.43	50.64	0	0	0	3
Benefits Quarterly	3	0.43	51.07	0	0	2	1
Asian Social Science	3	0.43	51.49	0	0	0	3
Advances in Developing Human Resources	3	0.43	51.92	0	0	0	3

3.4.1.3 Authors' productivity

In TM a small group of authors contribute to a significant number of publications - which does not lead to a significant share of the total number of publications (see, Table 3.8). Indeed, 1,173 authors have a single paper and 76 have two, and only one author has 10 published papers.

Table 3.8

Authors' productivity

Number of documents	Number of authors	Cumulative of authors
1	1173	91.93%
2	76	5.96%
3	16	1.25%
4	7	0.55%
5	1	0.08%
6	2	0.16%
7	0	0.00%
8	0	0.00%
9	0	0.00%
10	1	0.08%
Total	1276	100%

The distribution seems to follow a pyramidal pattern: on one hand, top of the pyramid, few authors publish lots of articles about TM, and on the other hand, base of the

pyramid, a great amount of authors publish few articles. According to Lotka's law[7], one of the three-bibliometric power laws, the total number of authors (*y*) in a given subject, each producing *x* publications, is inversely proportional to some exponential function *n* of *x*.After examining the validy of Lotka's law, we can conclude that this generalized inverse square law is not applicable to talent management literature, considering K-S statistics at 1% level of significance. However, Lotka's law holds when considering K-S statistic at 0.1% level of significance. Further details will be found in Appendix A (Section A.4, pp. 213-219). Probably, this non-fitting of Lotka's Law of scientific productivity can be due to the fact that there is a huge difference in levels of production of number of authors, specifically, between the first one and the others. Indeed, Lotka's law argues that 60,8% out of all the authors publish only one article, 15.2% publish two, 6.8% publish three, and so on, following the ratio $\frac{1}{n^2}$. In the present case, the 91.93% of the literature production on TM is devoted to only one author, which means that there is only 8.07% left of production to be distributed 'somehow proportionately' among the other levels[8]. In short, TM field is still very young to accomplish with one of the classical laws of bibliometrics at usual levels of significance.

[7]Lotka's Law describes the publication frequency distribution in a given subject or field. It is summarized by the equation: $a_n = a_1/n^2$where a_n is the number of authors publishing n papers, a_1 the number of authors publishing one paper, and n= 1, 2, 3, … In 1926, Alfred J. Lotka analyzed scientific production in order to identify those great contributors to the development of science. He developed a mathematical model from data of two samples [*Chemical Abstract (1907-196)* and *Auerbach Geschichtstafeln der Physic (until 1900)*] and discovered that there was an inverse relation between the number of publications in a field and the number of authors producing these publications. In fact, he named his model the '*inverse square law'* since it indicated that there was a concentration of articles among a few authors, while the remaining articles were distributed among a great amount of authors. He observed that the number of authors making *n* publication contributions is about $1/n^2$of those making one, and the proportion of all contributors that make a one one contribution is about 60%. Since then, many studies have investigated the validity of Lotka's Law in different academic disciplines and lots of contradictory results have been found. This made researchers wonder if other kind of distributions could have best fit, which lead to the introduction of different statistical models (cf. Urbizagástegui, 2005). A consensus has been reached in admitting that the exponent value of Lotka law (n) is variable, so the constant (C) will also be different for each distribution of authors (cf. Martín, Pestana & Pulgarín, 2008; Urbizagástegui, 2005). Since the introduction of statistics tests to reinforce the value of the analysis of distributions, the test of Kolmogorov-Smirnov is assumed as the most appropriate non-parametric test for this kind of analysis since it does not distort the data, mainly of the *mostprolific authors* (Martín et al., 2008).

[8]In 2009, Talukdar tested the Lotka's Law of scientific productivity in business ethics using all research publications in two leading journals since their respective launch years to a recent date. This author presented data about how the generalized Lotka's Law holds not only in natural science disciplines but also in various social science areas. This study findings present strong evidence that the so-called Generalized Lotka's Law of scientific productivity pattern

In general, productivity was low (an average of 1.12 papers/author). Only 2.12% of the authors published more than 2 papers, and just 0.86% of the authors published more than 4 articles. Table 3.9 lists the authors with the greatest scientific production, together with the site of their affiliation[9]. The top four authors are: H. Scullion with 10 articles, J. Bhatnagar andD. G. Collings with 6 articles, and V. Vaiman with 5 articles. Except J. Bhatnagar all of them belong to academia. In addition, if we check the years of their publications we will see that they correspond to the period 2005-2013. In short, a small group of authors, mainly from academia, contribute to a significant recent number of papers (although, it only means the 1.89% of the amount of documents). Morevoer, only 23 authors (1.8%) are from Spanish and published 11 articles on TM. It can be said that Spanish contribution to TM literature is almost 0.9% and that is recent (particularly in 2010). Among them the norm is to publish one article. To date, the most prolific Spanish author is S. Vivas-López from University of Valencia, who had published two articles on TM. Spanish scientific production concentrates from 2009 to present, being 2010 and beginning 2013 the most prolific time with 3 articles.

exists in business ethics discipline (being the estimated value of the exponent 2,59, not 2 as proposed by Lotka). This positive result surprised the author given the "relatively young, evolving nature of this academic discipline" (p. 147). So, why does not hold in TM? We observed that the ratio of number of distinct authors per number of papers published in business ethics is about 1,09, whilst in TM discipline is almost doubled (1,81). This fact, which also indicates the great dispersion of authors in TM discipline (i.e., lots of papers of one author), corroborates our previous reasoning for the non-fit of Lotka's Law in TM literature: the inmaturity of TM as a research discipline.

[9]It should be noticed that when tabulating the data we made sure of writing the author name equal each time, i.e., we detected that sometimes some authors use different forms of signature (e.g. D. Collings and D. G. Collings) and we just decided to choose the most complete signature to identify that author, which usually coincide with the most recently used (following with the previous example, we tabulated D. G. Collings).

Table 3.9

Top 10 most productive authors(n >3)

Author	Affiliation	Number of articles	%	Cumulative %
Scullion, H.	National University of Ireland (NUI)	10	0.7003	0.7003
Bhatnagar, J.	Management Development Institute	6	0.4202	1.1204
Collings, D. G.	National University of Ireland (NUI) Dublin City University	6	0.4202	1.5406
Vaiman, V.	FH Joanneum Reykjavik University	5	0.3501	1.8908
Coulson-Thomas, C.	Adaptation Ltd University of Greenwich	4	0.2801	2.1709
Dries, N.	KU Leuven	4	0.2801	2.4510
Galagan, P.	American Society for Training & Development (ASTD)	4	0.2801	2.7311
Groves, K. S.	California State University Pepperdine University	4	0.2801	3.0112
Iles, P.	Leeds Metropolitan University University of Salford	4	0.2801	3.2913
McDonnell, A.	University of Newcastle University of South Australia	4	0.2801	3.5714
Stumpf, S. A.	Villanova University	4	0.2801	3.8515
Björkman, I.	Aalto University Hanken School of Economics	3	0.2101	4.0616
Cappelli, P.	University of Pennsylvania	3	0.2101	4.2717
Chuai, X.	Belzona Polymerics Ltd University of Teesside	3	0.2101	4.4818
Conger, J. A.	Claremont Graduate University London Business School University of Souther California	3	0.2101	4.6919
Doh, J. P.	Villanova University	3	0.2101	4.9020
Farndale, E.	Pennsylvania State University Tilburg University	3	0.2101	5.1120
Groysberg, B.	Harvard University	3	0.2101	5.3221
Harris, J. G.	Accenture	3	0.2101	5.5322
Lieb, R. C.	Northeastern University	3	0.2101	5.7423
Liu, Y.	Changchun University of Science and Technology International Business Machines Corporation (IBM) Renmin University of China	3	0.2101	5.9524
Preece, D.	University of Teesside	3	0.2101	6.1625
Rhodes, C.	University of Birmingham	3	0.2101	6.3725
Sparrow, P.	Lancaster University Management School (LUMS) Manchester Business School	3	0.2101	6.5826
Tymon Jr., W. G.	Villanova University	3	0.2101	6.7927
Vance, C. M.	Loyola Marymount University	3	0.2101	7.0028
Whelan, E.	University of Limerick	3	0.2101	7.2129

3.4.1.4 Institutional distribution of publications

In contrast with other studies (e.g. Wang *et al.*, 2013) where the contribution of different countries was estimated by the location of the affiliated institutions of at least one author, in this study we have taken into account the affiliation of all authors in each paper[10]. As shown in Table 4.9 the most productive institution was *Harvard University* with 26 papers, followed by the *National University of Ireland (NUI)* with 17 articles, the *International Business Machines Corporation (IBM)* with 16, *Accenture* with 15, and *McKinsey & Company* with 14 publications. It is interesting to see how among the top 5 institutions more than half are companies or consultancies. So, the common saying that TM literature is mainly practitioner oriented is making evident in here. Looking a little bit close among this top 2 academic institutions, although *Harvard University* has a long tradition in TM research (the first article published was in 1992 and the last one in 2013), The National University of Ireland (NUI) has a better ratio of publications per year (3.4 meanwhile the ratio for Harvard University is 2.36). In fact, the two most prolific academics (H. Scullion and D. G. Collings) are from the National University of Ireland. We could posit that this university, along with Harvard University, is leading TM research.

The role of *McKinsey & Company* is unquestionable in TM research since it was a report made from consultants from this company the one that ignited a general worldwide interest for this topic. However, one would expect that this company have a better position in the rank. It is surprising that this company occupies the fifth position after Accenture and IBM. It is worthy to note that from 2009 onwards, the Accenture Institute for High Performance Business is paying great attention to the TM phenomena.

[10]If an author has more than one affiliation we considered all of them to do the analysis of centers. However, if some of them were from the same country, in the country analysis we deleted duplicates. It is should be said that 13 documents were written by freelance writers, so we coded them as 'Not affiliated'.

Table 3.10

Top 10 most productive institutions

Affiliation	Year of publication	Number of publications
Harvard University		26
	1992	1
	2002	1
	2003	4
	2004	1
	2005	2
	2006	3
	2007	3
	2008	8
	2012	2
	2013	1
National University of Ireland (NUI)		17
	2009	1
	2010	7
	2011	3
	2012	2
	2013	4
International Business Machines Corporation (IBM)		16
	2006	1
	2008	3
	2011	12
Accenture		15
	2009	3
	2010	7
	2011	4
	2012	1
Mckinsey & Company		14
	2002	3
	2008	8
	2013	3
Monash University		11
	2001	3
	2009	3
	2010	3
	2011	1
	2012	1
University of Limerick		10
	2007	1
	2010	4
	2011	4
	2012	1
Villanova University		10
	2010	4
	2011	6
Deloitte Consulting LLP		10
	2000	1
	2005	1
	2006	3
	2007	2
	2008	1
	2011	2

Table 3.10 (Continued)

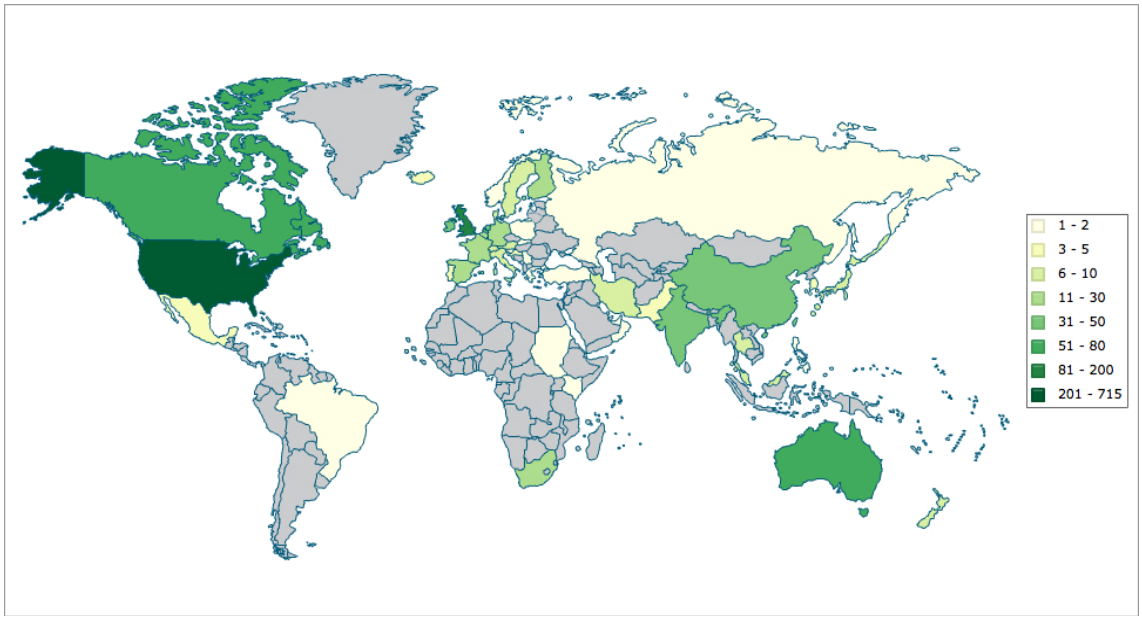
Affiliation	Year of publication	Number of publications
Cornell University		9
	2000	2
	2005	4
	2007	1
	2012	2

3.4.1.5 Geographic distribution of publications

TM research is scattered around the world, concretely in 49 countries (further details in Appendix A, Section A.5, p.220), as shown in Figure 3.3.

Figure 3.3

Geographic distribution of number of publications about TM (1990-2013)



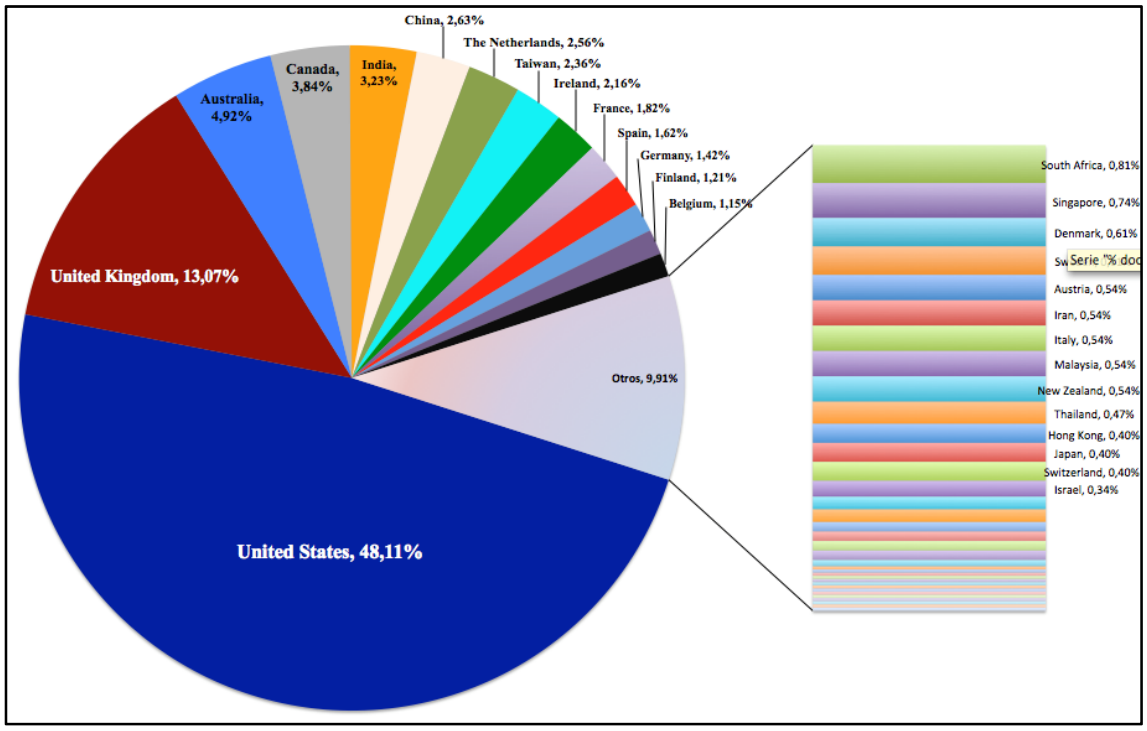
Note: This map was made by means of this web sitehttp://www.indexmundi.com/map/creator/

Figure 3.4 shows a more detailed picture of this geographic distribution of TM research. United States headed the productivity rankings with 714 articles (48.11% of the total scientific production on TM), followed by United Kingdom with 194 (13.07%), Australia with 73 (4.92%) and Canada with 57 (3.84%). So, it is a fact the dominance of

English speaking countries in TM literature as usually mentioned in the literature (cf. Collings *et al.*, 2011; Festing, Schaver & Scullion, 2013; Thunnissen *et al.*, 2013).

Figure 3.4

Percentual distribution of publications per country

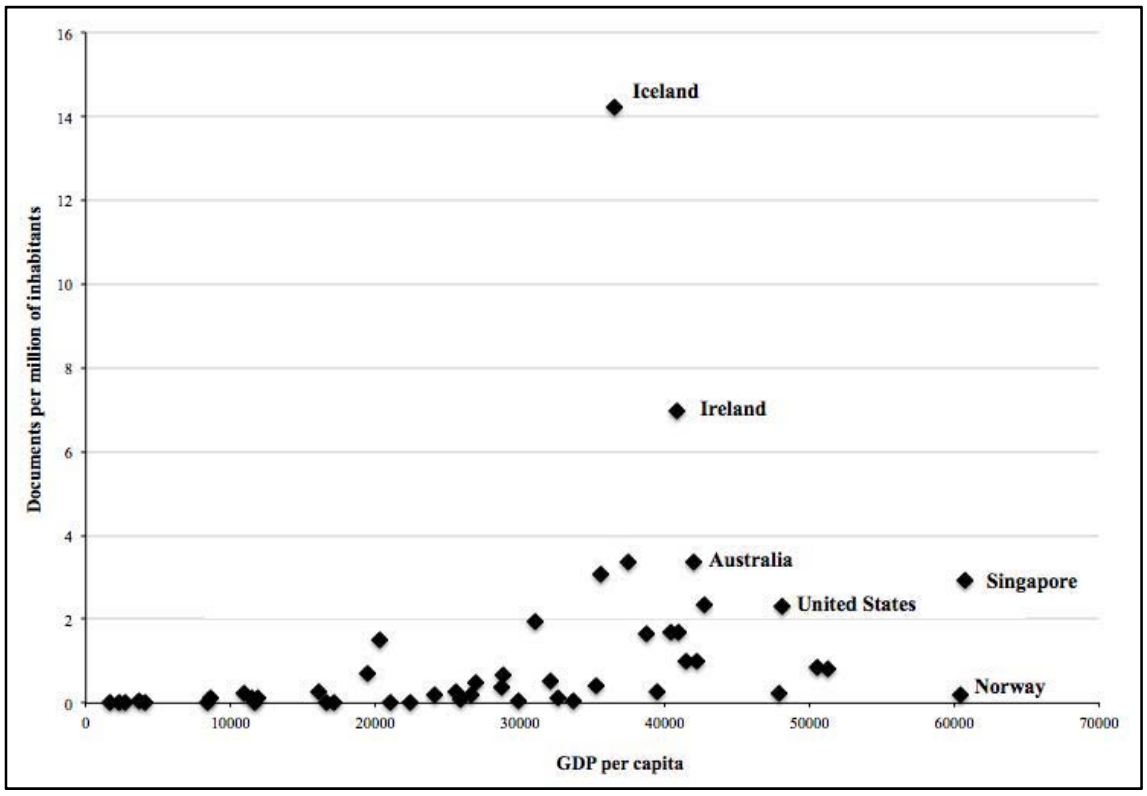


In order to make this data comparable, we adjusted it by country's population and GDP[11]. We know that there could be other proxies to do that but we considered these two effective ones. Figure 3.5 shows the complete distribution of scientific publication on TM taking into account population of the country and GDP per capita. It should be said that there is no clear pattern of distribution if we look at this data globally. Since these 49 countries are very different one from each other we decided to analyze the data according to different GDP sections.

[11]Data of GDP per capita of each country was retrieved from the *World Economic Outlook Database* (April, 2013) of the International Monetary Fund. Population data was obtained from the *Population and vital statistics report* (Statisticals papers, series A, Vol. LXV, January 2013) of the United Nations.

Figure 3.5

Scientific production on TM by country and GDP per capita



In Figures 3.6, 3.7 and 3.8, we show how cientific production on TM is distributed reflecting different ranges of GDP per capita in order to make countries more comparable (further details in Appendix A, Section A.6, pp.221-222). In the group of countries with lower GDP per capita, Croatia comes up as the most prolific country.

Taking a closer look at those countries within the medium GDP section, it is interesting to note that Iceland appears as one of the most prolific, probably due to the population adjustment (in fact, Iceland only has published 4 papers). Germany, despite being the richer one, is not shown as productive (21 papers), as Belgium (17 papers), Finland (18 papers) or United Kingdom (194 papers).

Figure 3.6

TM research on countries with low levels of GDP (1,710 – 19,487)

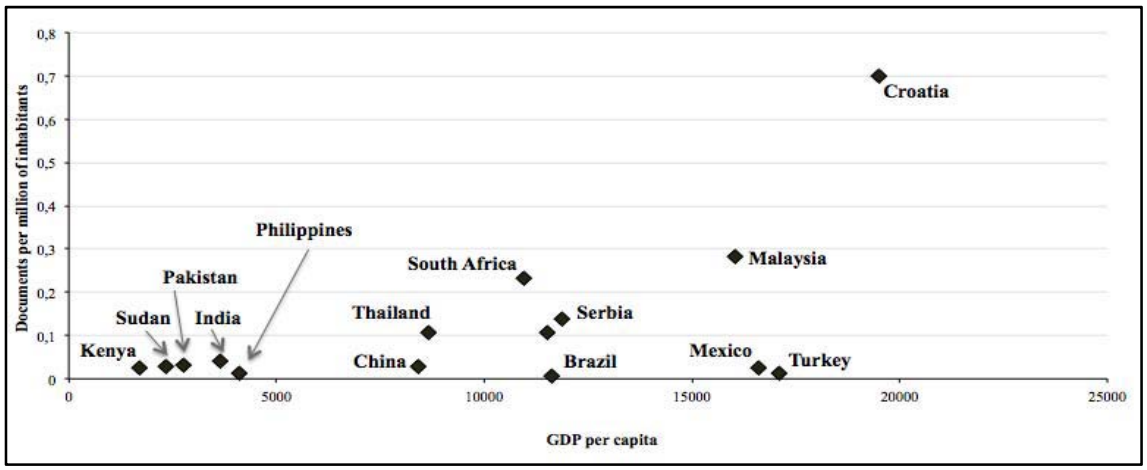


Figure 3.7

TM research on countries with medium levels of GDP (20,328 – 39,456)

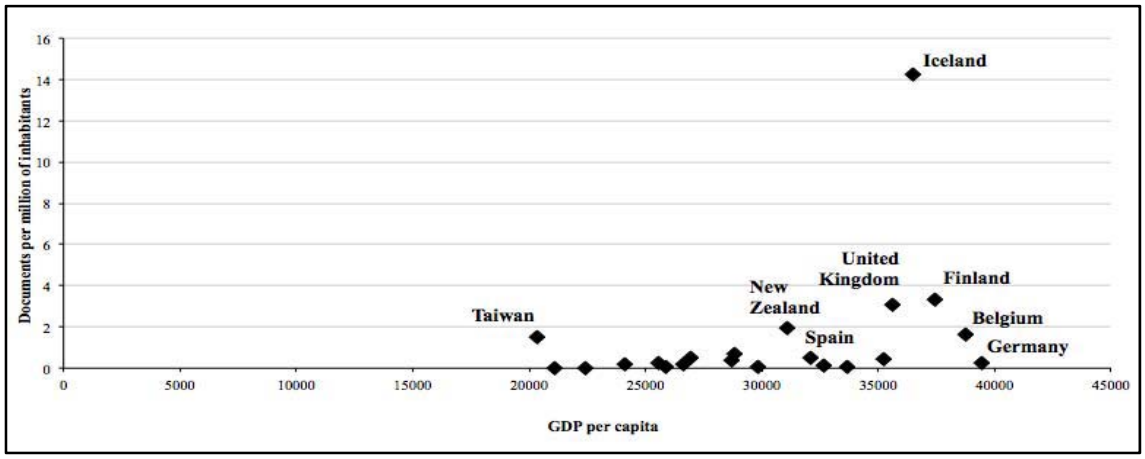
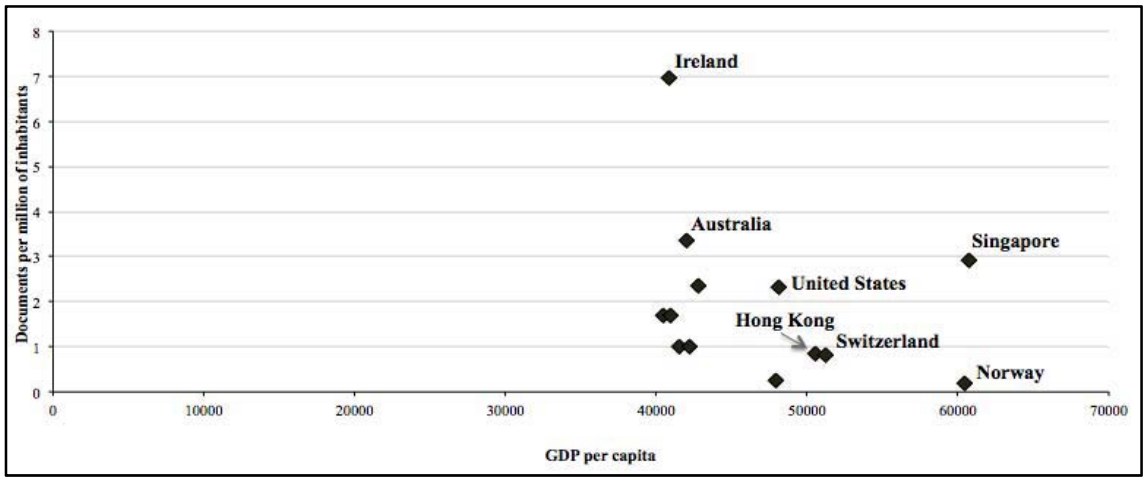


Figure 3.8

TM research on countries with high levels of GDP (40,420 – 60,688)

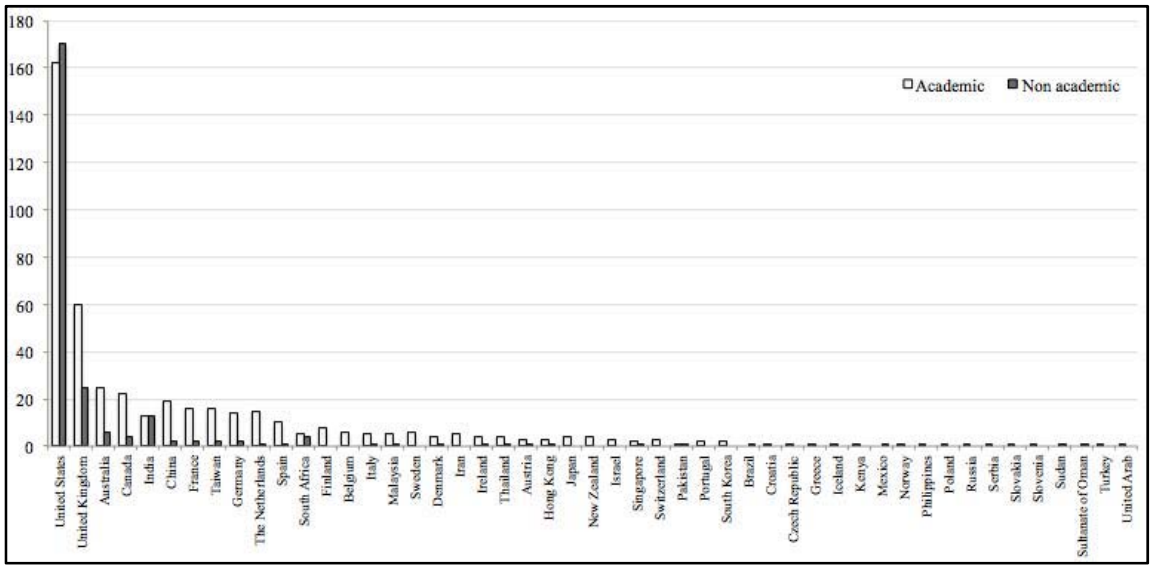


Finally, within the last GDP section of countries, we find Ireland as the most productive country (32 articles) despite being one of the poorest of this group. Followed by Australia (73 documents), Singapore (11 documents) and United States (714 documents). Norway is the more developed country but, in fact, the less productive one (1 document). What this figure tell us is that, although United States appears to be the leading unquestionable country, if we take into account variables as population and GDP per inhabitant, some other countries excel, such as, Ireland, Australia or Singapore.

When describing scientific production on TM per countries, it is also interesting to analyze each country contribution according to their affiliations. Figure 3.9 represents the contribution of those different 49 countries taking into accountthe affiliations (i.e., if the article was written by an academic or non-academic -practitioner or consultant-). Further details and concrete data can be found in Appendix A, Section A.7, p.223.

Figure 3.9

Scientific production and nature of affiliation

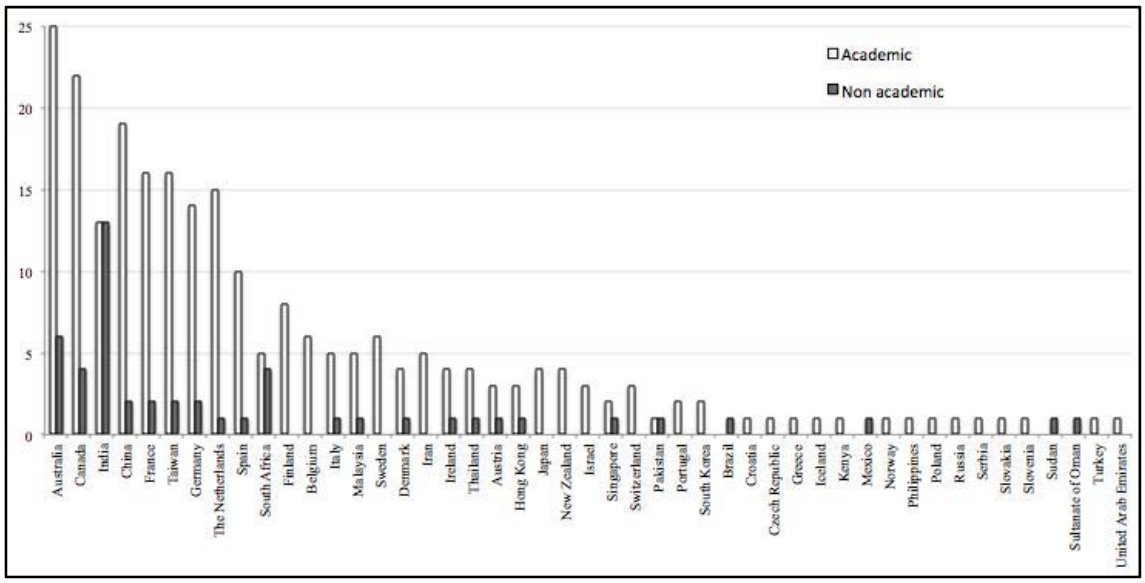


From this figure we can posit that in United States the contributions from Non-academic institutions are more (170 documents) than those from the academy (162 documents). We can also observe how in United Kingdom academic contributions (60 documents) exceed by far non-academic ones (25 documents).

However, due to the great dispersion in quantity of documents among countries, and since this figure does not allow us to differenciate a lot between those with lower levels of scientific outputs, we decided to create another figure without United States and United Kingdom. Hence, in Figure 3.10, we observe how in the rest of the countries related with TM research academic contributions are the norm. So, perhaps the extended belief that TM literature is mainly practitioner oriented is biased by the predominance of American literature. In fact, the total amount of academic publications (465 articles) is almost the double of those from non-academic institutions (245 articles).This new Figure also shows how in India contributions from academic and non-academic institutions are equal. Moreover, in Brazil, México, Oman and Sudan the total amount of contributions (in all of them, just one) come from non-academic institutions. A content analysis of these documents will help us to argue if, for example, they are the result of TM studies in multinational subsidiaries.

Figure 3.10

Scientific production and nature of affiliation (without USA and UK)



3.4.2 Impact and visibility

Although the number of articles published by an author is one of the most used bibliometrics indicators, is not always the best one since it does not reflect the quality of those documents. Quality concept in bibliometrics can refer to the quality of the journal in which the article has been published or the quality of the article itself. Impact Factor (IF) and citations are usually used in bibliometrics as proxy indicators of quality[12]. On one hand, IF is usually used to evaluate the relative importance of a journal among others in the same field (Benavent, Zurian & Gómez, 2004). IF are calculated each year on the basis of published articles in a given journal and citations received by those published articles. On the other hand, citations analysis pretend to explain the document relevance separated from the journal where is published (i.e., the article is the unit of analysis). They correspond to the impact of each document have in the researcher community, since they are measured as the number of times the document is cited in other articles. So, citation's analysis depart from the basis that as higher the influence of

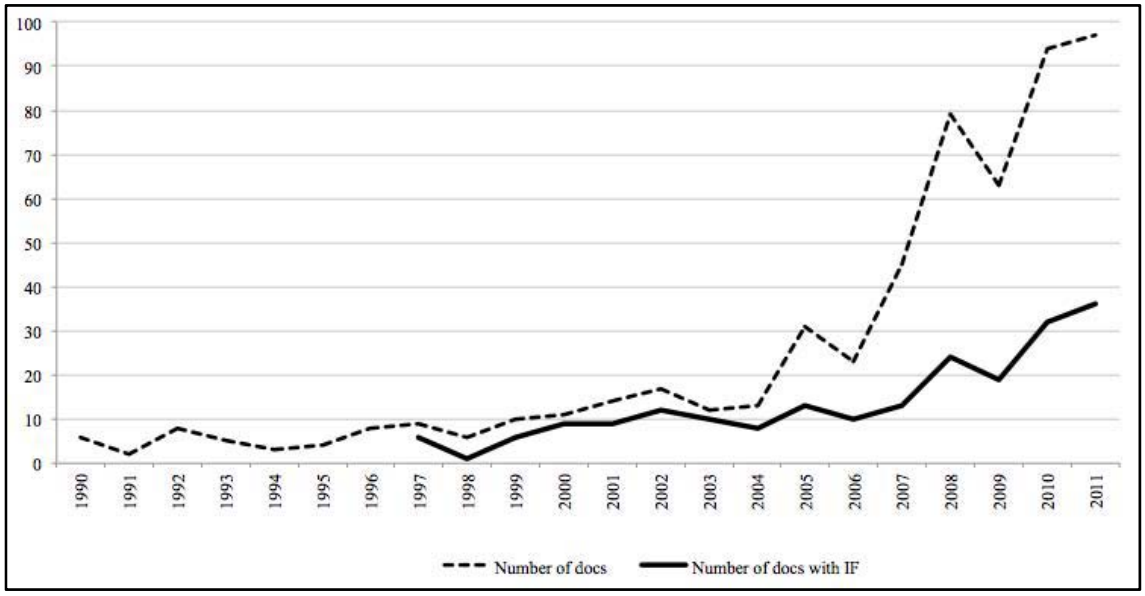
[12] Both have limitations and detractors that advocate for complementing them with qualitative analysis done by experts (López & Terrada, 1992). We are going to discuss this further in the limitations section.

an article, higher the amount of citations it will have throughout the literature, so higher will be its impact.

In this section we are going to approach the 'quality' concept by using both indicators (IF and citations) as proxies. IF data was retrieved from the *Journal Citation Reports* (Thomson-Reuters) the available year and journal in which the article was published. In short, we retrieved the IF for each journal of our database but from the year when the article was published. It should be noticed that only IF data was available from 1997 until 2011. In Figure 3.11 we can see how the number of indexed journals has grown during the last years, particularly from 2004 to present (for further details, see Appendix A, Table A.8, p. 224).

Figure 3.11

Number of documents published in journals with IF



The 29.59% of the documents are published in an indexed journal. Hence, the vast majority of publications about TM are published in non-indexed journals. In Figure 3.11, we present the distribution in time of TM publications according to affiliations. It

clearly shows that from 2004 onwards, and particularly from 2007, academic contributions are always over practitioners' ones, although both flows follow the same trend. Hence, this can be the explanation of this growing trend in number of documents published in journals with IF. In addition, in Figure 3.12 we can also see how mixed publications (i.e., written by academics and practitioners in collaboration) are characterized by their constant flow (not too high, but more or less constant). So, there is little mixed research, which can be an indicator of the few empirical studies on TM.

Figure 3.12

Distribution of TM publications according to authors' affiliation

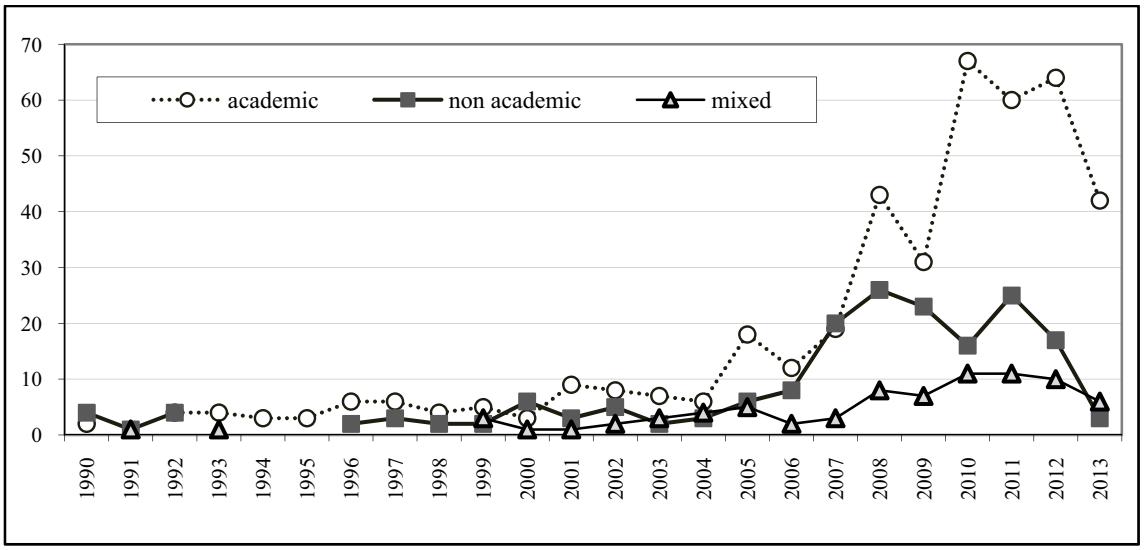


Table 3.11 shows those journals with a cumulative IF higher than 2 (as it is well-known in Social Sciences, and specifically, within the Business and Management field few are the journals with IF higher than 2). It should be noted than in order to calculate this table we added the different IF of those articles published from 1990-2013 in those journals. As was expected, *Harvard Business Review* has the 'pole position'. Although, we previously noted that TM is mainly studied within the HRM field, it is not until the eighth position that we find one HRM journal in this rank. This can be due to the fact

that HRM has lower IF than general Management journals. However, again, we see a lot of dispersion in fields publishing about TM.

Table 3.11

Journals with cumulative IF (n>2) [1997-2011]

Journal	Cumulative IF	Number of documents
Harvard Business Review	79.901	49
Journal of World Business	23.087	12
Journal of Financial Economics	10.112	3
Journal of Management	8.187	2
Journal of Product Innovation Management	7.876	4
Academy of Management Journal	7.119	3
Academy of Management Perspectives	6.22	2
The International Journal of Human Resource Management	5.686	11
Human Resource Management	5.23	9
Journal of Personality and Social Psychology	5.205	1
Journal of Management Studies	4.673	2
MIT Sloan Management Review	4.229	4
Human Resource Management Journal	4.164	3
Corporate Governance	4.136	2
Academy of Strategic Management Journal	3.75	1
Journal of International Management	3.552	3
Transportation Journal	3.377	3
Journal of Finance	3.257	1
Review of Economic Studies	2.904	1
Organizational Behavior and Human Decision Processes	2.74	1
Journal of Business Ethics	2.622	3
Human Resource Management Review	2.375	6
Scandinavian Journal of Management	2.216	2
Leadership Quarterly	2.205	1
Journal of Business and Psychology	2.204	2
Review of Financial Studies	2.2	1
Strategic Entrepreneurship Journal	2.026	2

Referring to citations, as explained in the methodology section, we retrieved information from ISI Web of Science (all of them were retrieved during the first two weeks of May 2013, in order to make data more comparable). We identified 286 documents with citations by WoS. In Table 3.12 is shown the distribution of documents according to citations and year of publication. As expected the number of citations

increased over time, despite the fact that as more recent is the document less opportunities to be cited has.

Table 3.12

Distribution of documents according to citations and year of publication

Range of citations	1990-1998	1999-2003	2004-2008	2009-2013	TOTAL
1-5	13	20	37	92	162
6-10	6	9	21	14	50
11-15	3	4	9	10	26
16-20	1	4	3	2	10
21-25		2	2	2	6
26-30		3	5	3	11
31-35	1	3	2	1	7
36-40		1	2		3
41-45				1	1
51-55		1		1	2
56-60	1	1	1		3
>60 &<80	1	1	1		3
>80 &<200		1			1
>400	1				1
TOTAL	27	50	83	126	286

If we analyze the citations obtained by each author, we find that H. Scullion – as mentioned before, the most prolific author on TM- it occupies the 26th position in the authors' citation rank (see Table 3.13). If we look a little bit closer to this rank we should say that D. Miller and J. Shamsie have the 1st and 2nd position in this rank for their article *The Resource-Based View of the firm in two environments: The Hollywood film studios from 1936 to 1965*, published in the Academy of Management Journal (one of the most prestigious journals in Management) in 1996. So, since that date the obtained 404 citations that pushes them up to the first positions in this list. In spark contrast, D. G. Collings is the 3th author most cited about TM due to five articles published between 2009 and 2012 (both years included). He has not yet any citation for his article of 2013. Finally, K. Mellahi is in 4th position for his two well-known articles,

The barriers of effective global talent management: the example of corporate élites in MNEs and *Strategic talent management: A review and research agenda* published in 2010 and 2009 respectively, and both co-authored with D. G. Collings, although each of them leaded one of these articles (i.e., both are the first author in one of them). As we have explained in the methodology section, we also obtained the articles' citations in Google Scholar and Scopus, also during the first two weeks of May. Let's start saying that Google Scholar is the database from which retrieved the most number of citations (31,729), followed by Scopus (6,941) and ISI WoS (6,883). We created the top 40 most cited authors' ranking and results vary, as was expected (see Appendix A, Section A.9, p. 225). D.G. Collings (4th position) and K. Mellahi (5th position) still have high positions in the Scopus rank (due to the similarity of databases). However, in Google Scholar, D. G. Collings falls until the 13th position and K. Mellahi until the 32nd. H. Scullion appears with the 11th position in the Scopus rank, whereas he does not appear in the top 40 most cited authors' ranking from Google Scholar (GS). Again, a content analysis of the documents will help us to explain in more detail the results obtained in those rankings.

Table 3.13

Top 40 most cited authors by ISI WoS

Position	Author	Number of citations obtained
1	Miller, D.	404
2	Shamsie, J.	404
3	Collings, D. G.	113
4	Mellahi, K.	86
5	Drazin, R.	84
6	Rao, H.	84
7	Bosma, N.	79
8	de Wit, G.	79
9	Thurik, R.	79
10	van Praag, M.	79
11	Cappelli, P.	70
12	Godet, M.	68
13	Darby, M. R.	64
14	Zucker, L. G.	64
15	Macmillan, I. C.	59
16	Siegel, E.	59
17	Siegel, R.	59
18	Banaji, M. R.	58
19	Bazerman, M. H.	58
20	Chugh, D.	58
21	Lyons, S.	58
22	Schweitzer, L.	58
23	Schuler, R. S.	56
24	Tarique, I. C.	56
25	Sparrow, P.	54
26	Scullion, H.	51
27	Bhattacharya, C. B.	40
28	Drucker, P. F.	39
29	Gardner, T. M.	39
30	Marshall, C. R.	38
31	Zenger, T. R.	38
32	McDonnell, A.	36
33	Saleh, S. D.	35
34	Wang, C. K.	35
35	Boswell, W. R.	34
36	Cavanaugh, M. A.	34
37	Gagné, F.	34
38	Moynihan, L. M.	34
39	Roehling, M. V.	34
40	Casciaro, T.	33

Finally, if we analyse the association between IF and citations according to number of authors in the article we cannot establish any kind of correlation[13]. Taking into consideration all the data, although the correlations numbers are very low, we can observe a high correlation between Scopus and ISI citations (as expected, since they share the same journals) and also between these databases and Google Scholar (although a little bit lower, since GS nurtures from not only indexed journals). In addition, we observe a negative correlation between number of authors and citations, i.e., as much number of authors signed an article, the number of citations decreased (see Appendix A, Section A.10, pp. 226-229). If we repeat the analysis for each year of IF data available, we observed a lot of contradictory results. In 1997, a positive correlation between number of authors and IF (0.61) and a negative correlation between number of authors and citations (-0.51) was found. In 2002, there is a negative correlation between number of authors and IF (-0.41) and very high correlations among number of authors and citations (0.8 with GS, 0.86 with Scopus, and 0.84 with ISI WoS). However, in 2003, all the correlations are positive and very high, as it happens in 2010. But, in 2011 all the correlations are negative. We should take into consideration that from these 131 analyzed articles, only one has 12 authors (in 2011), but the norm, as we are going to see in the next section is to not have high number of authors signing an article as it can happen in other fields (e.g. Health Sciences). Indeed the average number of authors in this sample is 2.29. So, the hypothesis of a possible correlation between the number of authors and the IF cannot be proved, since the sample presents little dispersion referring to the number of authors (the majority of articles are signed by two (34.35%) or three authors (32.82%), and only one article has twelve authors). However, we can refute the

[13] For doing that analysis we took those articles for which we have the citation data of the three databases (Google Scholar, Scopus and ISI WoS). A total of 131 articles were analyzed.

possible association between greater number of authors and citations. It is obvious that other factors (e.g. journal prestige, authors' prestige) can influence the results.

3.4.3 Collaboration

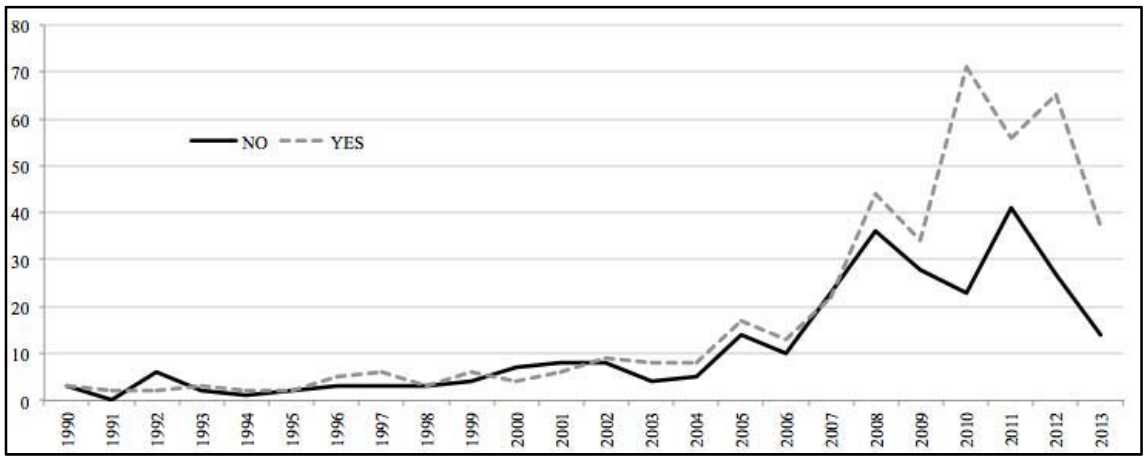
Scientific collaboration is usually defined as the work of two or more researchers within a research common plan. The rythym of collaboration has grown in importance, probably due to the improvement of telecommunications, multidisciplinariety, the increasing mobility of researchers, the complexity of research, economic and financial aspects, and the priority development of projects from different countries (Noguer-Carmona *et al.*, 2006). Collaboration can take different forms, from interpersonal collaboration, to the most sophisticate and complex kind, within research institutions with formal agreeements. However, some authors agree on the fact that the majority of collaborations start in an informal way, as result of informal conversations facilitated by spatial proximity of researchers (cf. Edge, 1979; Stokes & Hartley, 1989). Nowadays, the increasing number of international conferences and mobility possibilities (e.g., research stay, visiting professors) can make international informal interactions possible, which could lead to international collaboration.

In bibliometrics, one of the most frequent used indicators about collaboration is co-authorship, and involve, among other measures, the volume of documents signed by more than one author, co-authorship index (average number of authors per article), ratio of international collaboration.

In TM, 1276 authors, sign 703 articles, which leads to a collaboration index ration of 0.55 authors per document. More specifically, 428 documents out of 703 were written in collaboration, i.e. 60.88% of the documents was co-authored. So, we can conclude that collaboration is the norm in TM research (see Figure 3.13).

Figure 3.13

Is the document co-authored?



In Figure 3.14 we present the number of documents co-authored for each year of the studied period of time. Interestingly the most prolific year (as mentioned before was 2011) the number of collaborations suffered a decrease.

In TM, despite there is one document signed by 12 authors, another one signed by 7 authors, and two documents signed by 7 authors, the most common collaboration is between 2 authors (223 documents), followed by signatures of 3 authors (145 documents). In Table 3.14, the exact number of co-authorship is detailed (for further details, see Appendix A, Section A.11, p. 230).

Figure 3.14

Number of documents co-authored per year

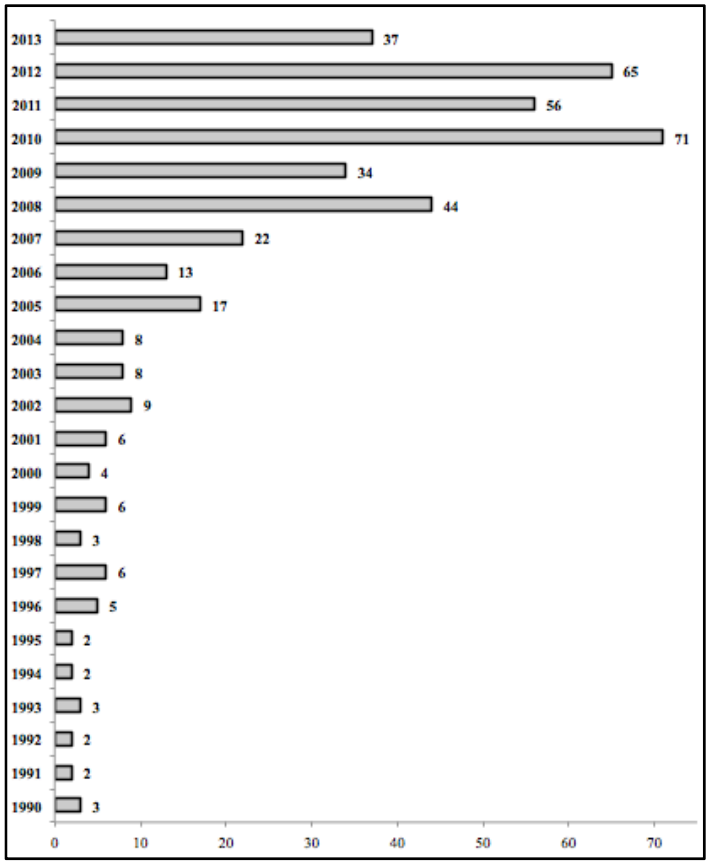


Table3.14

Number of authors per document

Number of authors	Number of publications
1	275
2	223
3	145
4	44
5	12
7	1
8	2
12	1
Total	**428**

In TM, there is 14.22% of international collaboration (i.e., 100 articles were written by people from different countries), and there is 37.98% of collaboration within the same

organization (267 documents). Indeed, collaboration within the same organization is present from 1990 whilst, the first international collaboration occurred in 1996 and it was not until 2005 that it became annually present. In addition, there is a 1.71% of collaboration with Spanish institutions (i.e., the affiliation of, at least, one of the authors is from Spain), concentrated in the last five years. In Appendix A (Section A.12, p. 231),detailed information about collaboration is showed.

Finally, collaboration (co-authorship) is related to a greater number of citations, that is, while papers from one author have 4.83 citations on average, this average increases to 9.19 when is co-author with another researcher, and to 7.02 when more than 2 researchers are involved (see Appendix A, Section A.13, p. 232).

3.5 Discussion

Based on our in-depth bibliometric analysis of the literature on talent management, we can conclude that TM is a quite new field that fights for consolidate, although it is still in its early steps. It is characterized by an initial very moderate start in terms of publications and collaborations followed by a rather intense increase in both dimensions, as it is expected from a discipline that is still developing. Collaborations (i.e., co-authorship) are quite recent in time, particularly when authors come from two or more countries.Further, TM literature still shows a great amount of dispersion in journals. Not having a well-known group of journals of reference could be argued to be an indication of a rather new academic discipline. Let us look however to these and other indicatots with some detail. To this aim we have followed a similar structure as the one lay out in the results section.

Productivity in TM research

Throughout the period studied (1990-2013) scientific production on TM enjoyed a continuos growth. We could thus confirm the first of our hypothesis (*the number of documents published is going to grow during the period 1990-2013)*. Thunnissen *et al.* (2013) in their recent review of the literature, argue that TM has enjoyed great academic attention, particularly, in the past ten years. Indeed, we observed that in the last eight years (from 2004 to 2012) TM literature experienced a huge growth, despite some punctual fluctuations (specifically, in 2006 and 2009). So, our second hypothesis has been confirmed and also refined: *The increment in publications on TM is going to be particularly intense within the last eight years*. In brief, the evolution of TM research production could be characterised by three distinct periods. A first period (1990-2003) in which we could witness a slow but steady increase in published articles, a second period (2004-2008) of rapid progression, and a third period (2009-2012) defined by a rather more moderate increase in production.

In TM literature we found a great number of journals with only one or two publications related to TM in the period, which is an indication of a rather incipient discipline. Our third hypothesis is therefore confirmed: *it is going to be a lot of dispersion when talking about journals*. TM does not hold Bradford's Law. However, during the last eight years (the most prolific ones) a great amount of journals that publish about TM are from HRM field. So, again, we confirm Thunnissen *et al.* (2013) reasoning that wide attention to TM has been given from the HRM field. Indeed, the second journal with more number of articles published on TM is *The International Journal of Human*

Resource Management. Moreover, within the top 10 most prolific journalsn on TM, 4 are from the field of HRM.

When talking about author's productivity, a very few number of authors (2.12%) have published more than 2 articles on TM in the period covered, and just one author (H. Scullion) published 10. In fact, 91.93% of the authors have published only one paper. So, here we find yet another indication of the inmaturity of the field. Although we can conclude that *there is an inverse relation between the number of publications and the number of authors producing these publications* (hypothesis 4), TM literature do not fit Lotka's distribution at usual levels of significance (i.e., 0.01 or 0.05).Why?We assume that this happens because, the vast majority of articles (91.93%),has been published by only one author, i.e., the distribution is already concentrated in one point. In short, TM is still too inmature to have the appropriate level of articles' distribution among the different levels of productivity to fit Lotka's law. Moreover, we should point out that 7 out of the first 10 most prolific authors are from academia and their publications are mainly from 2008 onwards. Taking this together with the fact that the first 5 months of 2013 have been very prolific, presumably, TM will definitely experience a great advance.

North-America influence on the TM literature has been widely proclaimed (cf. Collings *et al.*, 2011; Thunnissen *et al.*, 2013) and in our study we have also confirmed this. As we statedunder hypothesis 5, the majority of the work done on TM comes from the United States (48.11%), followed by the United Kingdom (13.07%), Australia (4.92%) and Canada (3.84%). So, it is certain the dominance of English speaking countries on the TM literature. An interesting point to discuss here is a widely spread belief in

current TM literature about its practitioner-oriented basis and focus (cf. Iles, Chuai et al., 2010; Preece, Iles, & Chuai, 2011). From our study we can confirm that among the top five prolific institutions, three are companies or consultancies. However, two universities occupy the first positions: Harvard University (with a long tradition in TM research, and 26 articles published) and the National University of Ireland (NUI), recently incorporated to the TM research (from 2009 to date) but with 17 published documents. Certainly NIU could be considered as a core institution on TM, not to mention the authors to these papers.

The practitioner-oriented basis and focus of TM is largely derived from the fact that contributions from the United States are half academic and non-academic. A more detailed analysis using content analysis is needed, however, to fully appraise the different approaches and conceptual bases used by academic and non-academic writers to TM literature.From our study we can argue that, with the exception of United States, and some other countries with limited weight in the total amount of publications on TM during the period studied, the vast majority of contributions come from academic institutions. This *refuses our sixth hypothesis* where, perhaps influenced by the idea of a well-known practitioner-oriented focus of TM, we expected to find mostly non-academic institutions among authors' affiliations. In short, the vast majority of TM literature comes from academia, yet a content analysis is needed to identify the type of contributions, the strands of thought behind this discipline and, basically, its theoretical foundations.

Finally, the Spanishcontribution to TM is scarce (1.62%), although not as scarce as we honestly expected. Viewed from a complementary angle, only the 1.8% of all authors

has a Spanish affiliation. We can thus confirm our hypothesis 7: *little work on TM is coming from Spanish institutions.*

Visibility and impact in TM research

We have shown the number of documents published in journals with IF has grown during the last decade. So, we confirm our *hypothesis 8*. This can be reasonably explained by the fact that during the last eight years TM literature, mainly from the academia, has experienced an incredible increase in number.

Our hypothesis 9 stated*It can be established an association between impact factor and citations according to number of authors,* and we have not been able to fully appraise this relationship. We confirm that not a large number of articles have citations (286 out of 703) and these have been largely published in the last 4 years. The fact of finding two authors (Miller & Shamsie) that exceed 400 citations in the period considered it is not rare itself. What becomes particularly ackward is the fact that these citations come form one single study published in 1996 at the *Academy of Management Journal*. In fact, the article that lauch its authors to rank 1 in number of citations has been published for 17 years and in one of the most prestigious journals in management and in its title does not have neither 'talent' nor 'management'. Similarly, the top ranked author in terms of number of publications (H. Scullion), only occupies the 26thposition in the citation list. We could argue these are also characteristics of an incipient field of research.

Collaboration in TM research

As literature science tells us, a well-consolidated field is characterized by collaboration from all over the world. In TM research collaboration (i.e., co-authorship) is the rule

(the 60.88% of the total amount of documents are written in collaboration) and increases over time although with some fluctuations. However, and in stark contrast with well-established fields of study, the level of international collaboration is low (14.22%), and it is quite recent (from 2005 onwards) although it is growing year by year. Probably this can be explained for specific conferences about TM that has beging to taking place (e.g. 1st Workshop on Talent Management organized by EIASM in 2012) and the higher international mobility of scholars. Collaboration within the same organization has been present since 1990 in TM literature, following probably the plausible explanation of its development from informal spatial proximity interactions. Finally, the Spanish number of collaborations is growing but is mainly within the same university. So, we accept our entiregroup of hypothesis about collaboration.

3.6 Limitations of the study

Despite its potential contributions to talent management research, the current study did have a number of limitations. First of all, as was mentioned in the methodology section, the keywords used to retrieve documents for this bibliometric analysis were ‘talent’ and ‘management’. Indeed, we used AND as a boolean operator for the queries in title, abstract or topic, and keywords, since we wanted to be as concrete as possible (e.g., there is plenty of literature about talent/s but not realted to management). However, this way of search could desestimate those articles that do not mention explicitly ‘talent’ but ‘talents’ or any other variations of the term (e.g., talented), and also, those articles that only include one of those keywords instead of both. Althoughdoing the searches within the ‘abstract’ and ‘topic’ fields has minimized the latter effect, the descriptors used looking for specificity may cause to lose in sensibility.

Second, in order to endow the documents studied with uniformity, the present analysis only include articles published in peer-reviewed journals and in English. So, we didn't consider contributions to conferences, editorials, interviews, or books reviews, and all the literature that was not in English. Despite the fact of being non-English literature on TM a small minority, in the last eight years contributions in Spanish, Bulgarian, Chinese and other languages has grown. So, looking for uniformity we may lose sensibility.

Third, when calculting the Bradford's zones, in order to define *n* (i.e., the number of journals of the core or nucleous zone) we used the following criteria: the number of journals that correspond to the first third of articles. In short, we divided the 703 publications about TM into three parts each with 234.33 ≈ 235 papers. The number of journals that accumulated the first 235 papers was 16. So, in the present study n equals 16. However, the rejection of the Bradford's Law in the present case, although it is in sync with the rejection of the Lotka's Law since both laws are related, should be taken with some caution, at least, until with another arbitraty way of calculating *n* is rejected.

Fourth, some other limitations can come from the validity of the indicators of collaboration. In this study we study collaboration through co-authorship, and, according to Ahmed and Rahman (2009) we considered 'full productivity' of authorship, i.e., "authors were given full credit for every publication in which his or her name appears" (p. 96). Although collaboration is conventionally measured through co-authorship, such indicator must be treated with caution (Katz & Martin, 1997): a) there are many cases of collaboration that does not end in a co-authored document, which

make them undetectable; b) There are other cases of, at best, indirect forms of interaction between researchers that yield co-authored publications. It is widely known that sometimes the authors' list respond to social reasons or 'institutional tolls' (La Follette, 1992; Hagstrom, 1965). In addition, not all the collaborations activities are reflected in a joint publication, but each author can publish the results in his/her own research field (cf. Noguer-Carmona *et al.*, 2006).

Fifth, the use of IF and citations as quality indicators of a document has many limitations (cf. Noguer-Carmona *et al.*, 2006), although we wish to stress that are the ones used in bibliometrics. However, it is necessary to associate these indicators to qualitative evaluations, i.e., some expert content analysis of the documents.

3.7 Further avenues for research

The paper at hand is the first to address a complete and in-depth analysis of the structure of the field of TM as an academic discipline. However, it is a preliminary study in which we analyzed the structure of TM as a field and define the trends during the last 20 years. Undoubtedly, there is still a lot to do. First, a systemic overview of the state of the art (i.e., a content analysis of this 703 articles) is also of urgent need to completely understand and draw the big picture of TM research from its inception until present. Specifically, this content analysis wil help to establish and define academic progresses and remaining gaps of analysis. Indeed, this is going to be our next line of research. We are in the process of carrying out an in-depth content analysis of the existing literature from 1990 to 2013, focusing and analyzing publication's abstract, keywords, type of article (i.e., empirical or theoretical) and its methodology (qualitative, quantitative or

mixed). This analysis will contribute to a better understanding of the field and, above all, of its academic progress. Indeed, it will enable researchers new to the field to proceed with their work fully aware of key findings to date, seminal authors and journals and main strands of thought behind this construct. In fact, we plan to deduce fundamental gaps in the existing literature on talent management—which will allow us to be very specific about the most pressing avenues for future research in the field.

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Conclusions

"Students of scientific endeavors note the constraints on progress that are created by established paradigms. Existing frameworks and paradigms create the language that describes the challenges as well as the solutions. (...) Paradigms come undone when they encounter problems that they cannot address. But before the old paradigm is overthrown, there must be an alternative, one that describes new developments better than the old one does."

Peter Cappelli

[Capelli, P. (2008). Talent on demand. Managing talent in an age of uncertainty. Boston: Harvard Business Press, pp. 229-230]

In this dissertation three key questions for TM research were covered within three chapters, defined as three different papers, with the aim to help fill the gap of solid theoretical foundations for TM research. Hence, it can be defined as mainly a conceptual dissertation. In this concluding chapter we will first go over the main findings and conclusions of each of these three chapters. Then, we will address directions for further research.

Overview of findings and summary of main conclusions

'What is the meaning of 'talent' in the world of work?' was the starting research question of this dissertation (Chapter 1). Based on our in-depth historical review of the literature on talent management, we conclude that there is a fundamental lack of

consensus as to the meaning of 'talent' in the world of work which is hindering the establishment of widely accepted talent management theories and practices. As a response to this gap in the literature, we established a clear framework for the conceptualization of talent within the business realm. We argue that talent is conceptualized in two broad ways: a) talent as object, and b) talent as subject. In addition we posit that these views can coexist in the same organization since they can perfectly complement one another. Within the subject approach, talent is conceptualized as people in an organization. Two different interpretations of this can lead to an inclusive or an exclusive approach. On one hand, the inclusive approach defines talent as all employees of an organization, which sounds like the repeated mantra of many leaders since the beginning of this century: *people are our most important asset.*On the other hand, the exclusive approach understands talent as an elite subset of the organization's population. But, how can organizations identify this elite subset? Normally, they reduce this elite to high performers and high potentials. Both groups are characterized by singular characteristics, which lead us to the object approach to talent. Talent understood as characteristics of people is usually related to natural abilities and/or developed skills that lead to superior performance. Moreover, it has been proven that behavioral components need to be present in order to achieve outstanding results, such as: commitment to one's position and to one's employing organization. Also context is very important not only to have the opportunity to show and put in practice your abilities but also, to have the opportunity to evolve and be identified as high potential or a high performer, let alone to define talent. So, being in the right organization, in the right position, and at the right time is fundamental to apply and show your talent. Hence, different definitions of talent can exist, not only in the

business realm but also within the same organization, since different abilities and attitudes are needed.

Once we arrived at the conclusion that there is ongoing confusion and different perspectives about talent within the world of work, but being aware of recent TM studies focusing on practices we wondered ***how is talent identified?*** So, we engaged ourselves in another in-depth review of the literature in order to elucidate a way to operationalize the identification of talent in business. A multidisciplinary review was done, since a whole body of literature about talent exists outside the HRM domain. We identified three literature streams as being of particular relevance: the giftedness literature, vocational psychology, and positive psychology. Building on from insights from these different literature streams, we identified two components of talent: an ability component and an affective component. Both can be subsumed in the object approach to talent. In addition, we argue that these two dimensions are complementary, and that talent consists of three central characteristics: manifestation in excellent performance, developed innate abilities, and passion—with the latter further subdivided into 'motivation to invest' (i.e., activities one wants to invest energy in) and 'interests' (i.e., activities one likes and finds important).

We posit that these three keycharacteristics listed above can help distinguish between talent, competence and potential, usually misused as interchangeable within the TM field, and this distinction will help in talent identification. The difficulty in distinguishing between talent and competence can be brought back to 'manifestation issues'. Talent manifests itself in good competencies that lead to outstandingachievements. Thisemphasizesthe rarity of talent, which is not a prerequisite

for competence(Gagné, 2004). So, competence measures can be applied to detect the ability component of talent, as is frequently done in organizations. The focus, however, should be on individuals who achieve exceptionally high scores as an expression of talent and not merely competence. So, an exclusive approach is necessary. To this end, organizations should develop and apply measures in which ceiling effects can be avoided so that individuals ranging from mildly to extremely talented—who might fall outside of the norms of standard tests—can be adequately identified (Bianco, 2010). In addition, the conceptualization of talent, in comparison with that of competence, pays more attention to passion as a necessary condition for achieving excellence. Having the (intrinsic or extrinsic) motivation to conduct a certain activity, usually linked to competence, does not necessarily imply that one likes to invest time and energy in it. The latter refers to the aspect of passion, which is a specific element of talent that is not associated with competence, and should be explicitly measured—in addition to ability—to identify talent. Finally, potential refers to future opportunities and denotes something that has not yet manifested but is latently present. Talent, as previously exposed, has a here-and-now character. Althoughlatent(innate) factorsunderlie talent, the emphasis is onthe manifestation oftalent into excellence. Consequently, the manifestation in excellence could be described as the distinguishing factor between talent and potential.

A multidisciplinary review of literature enriches the output obtained since one could add different perspectives. However, we want to stress that different strain of thought lead to different treatment of individuals, and to different ways to identify talented individuals. For example, vocational psychologists and positivie psychologists pursue equality and posit that everyone possesses a unique constellation of talents that needs to

be deployed, whilst the gitftedness literature holds onto its elitist view on talent and it is concerned mostly with equity in the sense that everyone should have an equal opportunity to earn the rare label of talent, which in turn leads to an unequal treatment between the identified and the non-identified.

Organizations seem to frequently base their talent investments solely on performance scores, a method insufficient for capturing a holistic view of talent. We managed to summarize in a table an overview of different discussed measures and methods to identify talent, and by doing this highlight some practical implications. Those methods emphasize different components (i.e., ability, interests, and motivation) of the construct of talent and vary in terms of the measurement approach taken (i.e., standardized versus open-ended). Being aware that each measurement has its own specific possibilities and limitations, a mixture of different measures and methods is advisable. However, since talent identification is conducted within the restrictions of a specific organizational setting, we offer some guidelines to facilitate this choice: a) strategic alignment of talent identification practices with the specific talent definition, which also requires its alignment with the strategic aims of the organization; b) besides strategically aligned, measures and methods should also possess satisfactory psychometric qualities. Insights from the personnel selection literature and the social psychology literature are of particular importance at this point since their insights could help unravel the process underlying talent identification and shed light on how talent assessments are potentially influenced by all sorts of biases inherent to the way in which, and by whom measures and methods are applied. The personnel selection literature and the social psychology literature show that talent assessments are subjective in nature due to the influence of characteristics of raters, ratees and the context in which they are embedded. We could

state that talent is only detected when it is individually are socially perceived as being present by evaluators. Therefore, we advise using multi-source assessments in order to reduce bias that could result from using only one assessor (Smither, London & Reilly, 2005). A general rule of thumb is that assessments approach accuracy, when multiple evaluations correspond, making inter-rater reliability the main criteria to assess the accuracy of talent judgments. In sync, we suggest combining tests, self, peer and supervisor instruments that are included in Table 2.2. We strongly advise organizations to incorporate self-assessment tools in the identification process, because those could help shed light on motivation and interest areas, components of talent that are not always completely visible to other parties. Because motivation and interests are approached as dynamically influenced by personal and environmental factors (Ibarra, 1999), we emphasize that talent identification should be a continuous endeavor. Within this perspective, life-long interventions for talent identification are deemed suitable, not just early-career interventions thatit is the usual case today (Savickas *et al*., 2009).

After having questioned talent definition within the business realm and the way in which it is identified, our first initial big question came to our mind:*How is TM operationalized? In short, what is TM?* In order to shed light on these questions, and being coherent with our previous approaches, we startedwith the question: ***How much do we know about TM?***It was still a huge research question but, at least, it was manageable. We conductedan in-depth bibliometric analysis of the literature on TM for the period 1990-2013 and our main conclusion is that TM is a quite new field that fights for consolidation, although it is still in its early steps. In fact, this result corroborates what we found in our previous studies: the confusion around the talent concept, and around its identification. TM literature is characterized by an initially very moderate

start in terms of publications and collaborations followed by a rather intense increase in both dimensions, as it is expected from a discipline that is still developing. In brief, the evolution of TM research production could be characterised by three distinct periods. A first period (1990-2003) in which we could witness a slow but steady increase in published articles, a second period (2004-2008) of rapid progression, and a third period (2009-2012) defined by a steeper increase in production. It should be taken into account that due to our search criteria those articles that do not mention explicitly 'talent' and 'management' were excluded. However, this limitation was minimized by including searches in the 'topic' and 'abstract' fields.

We found a lot of dispersion when talking about journals within the TM literature. Not being able to delineate a well-known group of reference journals could be argued to be an indication of TM being a rather new academic discipline. However, we can confirm Thunnissen *et al.*'s (2013) reasoning that wide attention to TM has been given from the HRM field, since during the last eight years (the most prolific ones) a great amount of journals publishing about TM are from the HRM field. Another interesting finding is that the 91.93% of the authors have published only one paper, which is another unambiguous statement of the immaturity of the field. Due to this fact, TM literature does not conform to two of the most relevant bibliometric laws (Lotka's Law and Bradford's Law).

We can posit that is certain the dominance of English speaking countries on TM literature. In fact, the majority of the work done on TM comes from the United States (48.11%), followed by the United Kingdom (13.07%), Australia (4.92%) and Canada (3.84%). Although, one could question these results since we focused only in articles

published in English and peer-reviewed journals, we should say that the number of articles in English represent 97.4% of the total results retrieved in Scopus and 96.79% of the total results retrieved in WoS. So, at least considering articles published we were working with nearly the whole sample. From our study we can confirm that the widely-spread belief in current TM literature about its practitioner-oriented basis and focus is biased for the great amount of contributions from the United States which are half academic and the other half non-academic. In fact, the vast majority of TM literature mainly comes from academic institutions and from the last eight years, which is also reflected in the increase of number of documents published in journals with IF. It should be said that the Spanish contribution to TM is scarce (1.62%), although not as scarce as we expected. Collaboration (i.e., co-authorship) is quite recent in time, particularly when authors come from two or more countries, which is more clear proof that TM is not a well-established field of study.

This dissertation is one of the first conceptual studies devoted to talent management. We managed to shed light on some obscure and unquestioned topics, although, we cannot claim to have found accurate, unequivocal answers to the questions posed. There is still plenty to do. After more than four years studying talent and talent management I could only say, quoting Socrates, *I know nothing except the fact of my ignorance*.

Directions for future research

In this work we provide a critical review of *talent* and the *talent management* literature. By doing so, we lay solid foundations for future research, since we identify critical topics, trends, changes and omissions in the scientific approach to TM. Indeed, since

TM is an emerging field of study, lots of questions remain unanswered. Below are some research questions thathave arisen from our research and that, at present, are awakening great interest in the author.

Would it be possible to give a more concrete definition of talent within the business realm?Starting from our framework for the conceptualization of talent defined in the first chapter, and the key components identified in the second chapter, we consider it possible to create a generic (but not vague) definition of talent. Obviously, depending on the industry, business and position (i.e., context) this generic definition should be adapted[1]. Having a definition will allow researches to focus on developing practices to identify it, quickly and easily, and also, manage it in a better way (i.e. more effectively). Clearly, and this point was made evident in the second chapter, multidisciplinary research is needed since talent is a very complex construct that can benefit from different theoretical perspectives as we have seen in this study. Complementary views can help to draw a more complete definition of talent, and by doing so can also help to define methods and measures to identify it. We also need more cross-national research on talent. Our literature reviews were mainly focused on documents published in English, but most importantly and as our bibliometric analysis confirmed, our sources were usually from English speaking countries. So, it is possible that the field has a biased picture of the construct. Hence, it is of urgent need to develop research on talent within the world of work in other countries, in order to expand our understanding of this construct. ***Does talent have different meanings across***

[1]In fact, one definition of talent was already proposed in a previous work published as a working paper (see, Appendix B). Although, it needs to be further developed.

countries/cultures? Should multinational companies worry about a 'local' understanding of talent?

What is the best way to implement talent identification practices? How are identification processes experienced by employees? What is the best way to communicate the results of a talent identification process? Although we have mentioned that the exclusive view of talent is the most prevalent in organizations, little attention has been paid not only to how the identification processes are experienced by employees, but also to how the results of this processes are communicated by the organization and what effects have in those employees not labeled as talent. Again, cross-national studies would be necessary. ***Which talent identification measures and methods fit better within a specific culture? Do employees from different countries (although working within the same multinational company) react equally to exact identification practices?***

How TM has been approached in the literature? What are the main streams of thought behind this topic? Is there any solid theoretical foundation? Chapter three helps to put us on the right track to answer these questions. After having drawn a complete descriptive picture of TM literature in terms of productivity, impact and visibility and collaboration, a systemic overview of the state of the art (i.e., a content analysis) is also afundamental to completely understand the big picture of TM research from its inception until present. Specifically, this content analysis will help to establish and define academic progresses and remaining gaps of analysis. Indeed, we are in the process of

carrying out an in-depth content analysis of the existing literature from 1990-2013. Moreover, in a few years time it would be interesting to see if the TM literature will reflect Lotka's and Bradford's Law since, in the present analysis and presumably because of the novelty of the field, these laws do not hold. Similarly, doing an evaluation of different models for Bradford's law with the present data will help us to confirm our assumptions for its non-fitting.

****

This dissertation is among the first to address fundamental questions that should advance the development of the TM research field. We questioned the meaning of talent, since it is critical in order to know how to manage it, and we defined a framework for its conceptualization within the business realm. We also proposed some methods, measures and guidelines to help identify this talent in the organizations. Finally, we offer the first in-depth analysis of the structure of the TM field as an academic discipline. In short, and paraphrasing Prof. Peter Cappelli, we studied existing frameworks and paradigms seeing in them the challenges underneath, and we tried to offer some alternative in order to help describe new developments better than the old ones did.

APPENDIXES

Appendix A: Additional data

A.1 Number and nature of documents selected from BSP and PsycINFO databases

Search equation executed	Selected articles	Nature of Selected articles	
		Empirical	Theoretical
Talent* AND Identif*	18	6	12
Gift* AND Identif*	10	3	7
Strength* AND Identif*	7	1	6
Talent* AND defin*	5	3	2
Gift* AND defin*	4	0	4
Strength* AND defin*	2	1	1
Talent* AND detect*	2	1	1
Gift* AND detect*	0	0	0
Strength* AND detect*	1	0	1
Talent* AND select*	5	3	2
Gift* AND select*	2	1	1
Strength* AND select*	2	0	2
Talent* AND Assess*	22	8	14
Gift* AND Assess*	6	3	3
Strength* AND Assess*	9	3	6
Talent* AND Measure*	17	6	11
Gift* AND Measure*	4	4	0
Strength* AND Measure*	3	2	1
Talent* AND Tool*	3	0	3
Gift* AND Tool*	0	0	0
Strength* AND Tool*	7	2	5
Talent* AND Scale*	2	2	0
Gift* AND Scale*	4	3	1
Strength* AND Scale*	9	9	0
Talent* AND Method*	15	9	6
Gift* AND Method*	1	1	0
Strength* AND Method*	1	1	0
TOTAL	161	72	89

A.2Distribution of publications on TM over time

Year	Number of documents	%	Cumulative % of documents
1990	6	0,85%	0,85%
1991	2	0,28%	1,14%
1992	8	1,14%	2,28%
1993	5	0,71%	2,99%
1994	3	0,43%	3,41%
1995	4	0,57%	3,98%
1996	8	1,14%	5,12%
1997	9	1,28%	6,40%
1998	6	0,85%	7,25%
1999	10	1,42%	8,68%
2000	11	1,56%	10,24%
2001	14	1,99%	12,23%
2002	17	2,42%	14,65%
2003	12	1,71%	16,36%
2004	13	1,85%	18,21%
2005	31	4,41%	22,62%
2006	23	3,27%	25,89%
2007	45	6,40%	32,29%
2008	80	11,38%	43,67%
2009	62	8,82%	52,49%
2010	94	13,37%	65,86%
2011	97	13,80%	79,66%
2012	92	13,09%	92,75%
2013[a]	51	7,25%	100,00%
TOTAL	**703**	**100%**	

Note:
[a] We decided to include within 2013 the documents already published (46 articles) and also the documents "in press" (5 articles). It should be taken into account that data from 2013 goes from 1st January to 31st May.

A.3Dispersion of the scientific literature over time

Year	Journal	Number of documents
1990		6
	Harvard Business Review	1
	European Management Journal	1
	Journal of Dental Practice Administration	1
	American Psychologist	1
	AIDS Care - Psychological and Socio-Medical Aspects of AIDS/HIV	1
	Administrative radiology	1
1991		2
	Medical Journal of Australia	1
	Brain Injury	1
1992		8
	Harvard Business Review	3
	Organizational Dynamics	1
	The Health Care Supervisor	1
	Journal of Post Anesthesia Nursing	1
	Journal of Clinical Engineering	1
	American Journal of Psychotherapy	1
1993		5
	Journal of Business Venturing	1
	The Journal of Biocommunication	1
	Long Range Planning	1
	IEEE Transactions on Engineering Management	1
	Group & Organization Management	1
1994		3
	Organization Science	1
	Nursing Management	1
	European Journal of Operational Research	1
1995		4
	Nursing Management	1
	RAND Journal of Economics	1
	Dental Economics	1
	Creativity Research Journal	1
1996		8
	Asia Pacific Journal of Human Resources	1
	Public Personnel Management	1
	Academy of Management Journal	1
	Physician Executive	1
	World Journal of Surgery	1
	Rehabilitation Nursing: The official Journal of the Association of Rehabilitation Nurses	1
	Library Trends	1
	Home care provider	1

Year	Journal	Number of documents
1997		9
	Research Policy	1
	Journal of Product Innovation Management	1
	Journal of Financial Intermediation	1
	Gender, Work and Organization	1
	International Journal of Technology Management	1
	Training & Development	1
	Medical Group Management Journal	1
	Educational and Psychological Measurement	1
	Corporate environmental strategy	1
1998		6
	Academy of Management Executive	2
	Physician Executive	1
	Perspectives in Psychiatric Care	1
	Nature Biotechnology	1
	International Journal of Health Care Quality Assurance Incorporating Leadership in Health	1
1999		10
	Human Resource Management	2
	European Management Journal	1
	Interfaces	1
	Nursing Times	1
	Public Personnel Management	1
	Forbes	1
	Journal of Health Care Finance	1
	Business History	1
	AAOHN journal	1
2000		11
	Harvard Business Review	2
	Human Resource Management	1
	Human Resource Management Review	1
	Academy of Management Journal	1
	Training & Development	2
	Forbes	1
	Technological Forecasting and Social Change	1
	Journal of Creative Behavior	1
	Hospital Materiel Management Quarterly	1

Year	Journal	Number of documents
2001		14
	Harvard Business Review	2
	Journal of Financial Economics	1
	Journal of International Management	1
	Financial Analysts Journal	1
	International Journal of Manpower	1
	Technovation	1
	Hospitals & Health Networks	1
	The Journal of the Royal Society for the Promotion of Health	1
	Jama-Journal of the American Medical Association	1
	International Journal of Social Welfare	1
	Indian Journal of Social Work	1
	Healthcare financial management	1
	American Journal of Education	1
2002		17
	Harvard Business Review	7
	Journal of World Business	1
	Academic Medicine	1
	Research Technology Management	1
	Journal of Management Studies	1
	Academy of Management Journal	1
	Technology in Society	1
	Production and Operations Management	1
	Local Government Studies	1
	Journal of Applied Social Psychology	1
	Hospital Quarterly	1
2003		12
	Harvard Business Review	4
	Public Personnel Management	1
	Review of Financial Studies	1
	Review of Economics and Statistics	1
	Portal	1
	Journal of Nursing Education	1
	Dyslexia	1
	Developing Economies	1
	Business History Review	1

Year	Journal	Number of documents
2004		13
	Harvard Business Review	5
	Human Resource Management Review	1
	Small Business Economics	1
	Human Relations	1
	T and D	1
	Journal of Management Development	1
	Nursing Administration Quarterly	1
	Medical Teacher	1
	High Ability Studies	1
2005		31
	The International Journal of Human Resource Management	3
	Harvard Business Review	4
	Human Resource Management	1
	T and D	1
	Journal of Management Development	2
	Asia Pacific Business Review	1
	Sport Management Review	1
	Journal of Business Ethics	1
	Benefits Quarterly	1
	Supply Chain Management	1
	Strategy and Leadership	1
	International Journal of Technology Management	1
	Academy of Management Journal	1
	Journal of Organizational Excellence	1
	Hospitals & Health Networks	1
	Journal of Small Business and Enterprise Development	1
	Women in Management Review	1
	Nursing Education Perspectives	1
	Nonlinear Dynamics, Psychology, and Life Sciences	1
	Minnesota medicine	1
	Journal of Nutrition Education and Behavior	1
	Journal of Healthcare Information Management	1
	Healthcare Executive	1
	Gifted Child Quarterly	1
	European Journal of Social Psychology	1
2006		23
	Industrial and Commercial Training	1
	Harvard Business Review	2
	Human Resource Management Review	2
	MIT Sloan Management Review	1
	Journal of Knowledge Management	1
	Management Decision	1

Year	Journal	Number of documents
2006	(Continued)	
	Management Science	1
	The Journal of medical practice management	1
	Public Personnel Management	1
	The Journal of Health Administration Education	1
	Journal of Organizational Excellence	2
	Technology in Society	1
	Journal of Business Venturing	1
	The Learning Organization	1
	Journal of Nursing Administration	1
	Journal of Finance	1
	Econtent	1
	Critical Review	1
	American Behavioral Scientist	1
	AFE Facilities Engineering Journal	1
2007		45
	Harvard Business Review	7
	Global Business and Organizational Excellence	1
	T and D	3
	Healthcare financial management	1
	Employee Relations	2
	Journal of European Industrial Training	1
	Public Personnel Management	1
	Organization Development Journal	6
	International Journal of Technology Management	1
	The Journal of Health Administration Education	1
	Technovation	1
	Projections	1
	Paper360	1
	Newspaper Techniques	1
	Medical Education	1
	Leadership in Health Services	1
	Journal of Management Inquiry	1
	Journal of Management Development	1
	Journal of Labor Economics	1
	Journal of Healthcare Management	1
	Journal of Business Communication	1
	International Journal of Accounting, Auditing and Performance Evaluation	1
	Indian Journal of Medical Research	1
	IET Engineering Management	1
	European Journal of Social Sciences	1
	Current Opinion in Anesthesiology	1
	Cornell Hotel and Restaurant Administration Quarterly	1

Year	Journal	Number of documents
2007	(Continued)	
	Contemporary Nurse	1
	Clinical Leadership & Management Review	1
	Business Process Management Journal	1
	Journal of the American College of Radiology	1
2008		80
	Industrial and Commercial Training	4
	Harvard Business Review	10
	Human Resource Management	1
	Business Horizons	1
	Global Business and Organizational Excellence	1
	T and D	4
	Journal of Management Development	1
	Asia Pacific Business Review	1
	MIT Sloan Management Review	3
	Academic Medicine	1
	Journal of Business Strategy	1
	The Journal of medical practice management	2
	Journal of Product Innovation Management	1
	Transportation Journal	1
	Research Technology Management	1
	International Journal of Contemporary Hospitality Management	6
	Journal of Business Ethics	1
	Benefits Quarterly	1
	International Journal of Physical Distribution and Logistics Management	1
	Innovation: Management, Policy and Practice	2
	Strategy and Leadership	1
	Public Personnel Management	4
	McKinsey Quarterly	3
	Journal of Workplace Learning	2
	Organization Development Journal	1
	Total Quality Management and Business Excellence	1
	Service Oriented Computing and Applications	1
	Scottish Journal of Political Economy	1
	Science and Public Policy	1
	Qualitative Sociology	1
	Personality and Individual Differences	1
	Organizational Behavior and Human Decision Processes	1
	Management Research News	1
	Management in Education	1
	Leadership Quarterly	1
	Leadership and Management in Engineering	1
	Journal of Supply Chain Management	1

Year	Journal	Number of documents
2008	(Continued)	
	Journal of Manufacturing Technology Management	1
	Journal of Health Organization and Management	1
	Journal of Consumer Marketing	1
	Journal of Advanced Manufacturing Systems	1
	International Journal of Sports Psysiology and Performance	1
	International Journal of Management and Enterprise Development	1
	International Journal of Learning and Intellectual Capital	1
	Educational Management Administration and Leadership	1
	Critical Perspectives on International Business	1
	Consulting Psychology Journal	1
	Chinese Management Studies	1
	Asian Case Research Journal	1
	Anthropologist	1
2009		62
	The International Journal of Human Resource Management	3
	Human Resource Management International Digest	3
	Industrial and Commercial Training	5
	Harvard Business Review	1
	Human Resource Management	3
	Human Resource Management Review	1
	Global Business and Organizational Excellence	2
	Journal of Management	1
	Small Business Economics	1
	T and D	3
	Journal of Management Development	1
	Advances in Developing Human Resources	1
	Academic Medicine	1
	Journal of Business Strategy	1
	Healthcare financial management	2
	Research Technology Management	1
	Journal of International Management	1
	Industrial and Organizational Psychology	2
	Corporate Governance	2
	Innovation: Management, Policy and Practice	1
	Strategy and Leadership	1
	International Journal of Manpower	1
	Gender, Work and Organization	1
	The Oklahoma Nurse	1
	Specialty Fabrics Review	1
	Review of Public Personnel Administration	1
	Review of Economic Studies	1
	Research in Personnel and Human Resources Management	1
	Publishing Executive	1

Year	Journal	Number of documents
2009	(Continued)	
	Political Quarterly	1
	Personnel Psychology	1
	Organisation Management Journal	1
	Miss Quarterly Executive	1
	Medicine and Sport Science	1
	Journal of Service Management	1
	Journal of Patient Safety	1
	Journal of Education Policy	1
	Journal of Blood Services Management	1
	International Journal of Human Resources Development and Management	1
	Geoforum	1
	Financial Management	1
	European Business Review	1
	Ergonomics in Design	1
	Development and Learning in Organisations	1
	Current Opinion in Critical Care	1
	Collegium Antropologicum	1
2010		94
	Human Resource Management International Digest	2
	Industrial and Commercial Training	2
	Harvard Business Review	1
	Human Resource Management	1
	Global Business and Organizational Excellence	1
	Journal of World Business	10
	Journal of Financial Economics	1
	Scandinavian Journal of Management	2
	Journal of Management	1
	T and D	1
	Cross Cultural Management	1
	Psychologist-Manager Journal	1
	Journal of Knowledge Management	1
	Advances in Developing Human Resources	1
	Strategic Entrepreneurship Journal	1
	Journal of Nursing Management	1
	African Journal of Business Management	3
	Healthcare financial management	1
	Journal of Product Innovation Management	1
	Transportation Journal	1
	Journal of Business and Psychology	1
	Australian Journal of Basic and Applied Sciences	1
	Academy of Management Perspectives	1
	Knowledge Management Research and Practice	2

Year	Journal	Number of documents
2010	(Continued)	
	Journal of the International Academy for Case Studies	2
	Employee Relations	1
	Journal of European Industrial Training	1
	Journal of Management Studies	1
	Journal of Financial Intermediation	1
	Total Quality Management	1
	Talent Development and Excellence	1
	Strategy and Leadership	1
	Strategic Direction	1
	Sport in Society	1
	Scandinavian Journal of Public Health	1
	Review of Pacific Basin Financial Markets and Policies	1
	Public Organization Review	1
	Professional Development in Education	1
	Personnel Review	1
	Nursing Clinics of North America	1
	Nonprofit Management & Leadership	1
	Management International Review	1
	JPT, Journal of Petroleum Technology	1
	Journal of the South African Institution of Civil Engineering	1
	Journal of Sociology	1
	Journal of Safety Research	1
	Journal of Public Economics	1
	Journal of Personality and Social Psychology	1
	Journal of Human Resources in Hospitality and Tourism	1
	Journal of Electronic Commerce Research	1
	Journal of Business Strategy	1
	Journal of Business Continuity & Emergency Planning	1
	Journal of Asynchronous Learning Network	1
	Internet Reference Services Quarterly	1
	International Review of Retail, Distribution and Consumer Research	1
	International Journal of Sociotechnology and Knowledge Development	1
	International Journal of Organizational Analysis	1
	International Journal of Educational Management	1
	International Journal of Educational Advancement	1
	International Journal of Disclosure and Governance	1
	International Journal of Cultural Policy	1
	International Journal of Arts Management	1
	International Business Management	1
	Industry and Innovation	1
	Industrial Management (Norcross, Georgia)	1
	High Ability Studies	1

Year	Journal	Number of documents
2010	(Continued)	
	Graziadio Business Report	1
	Flexo	1
	Entrepreneurial Executive	1
	Critical Studies in Education	1
	Computers & Mathematics with applications	1
	Career Development International	1
	Canadian Geographer-Geographe Canadien	1
	Bristish Journal of Community Nursing	1
	Australian Journal of Management	1
	Assessment and Evaluation in Higher Education	1
	Asian Studies Review	1
	Asian Journal of Management Cases	1
2011		97
	The International Journal of Human Resource Management	5
	Human Resource Management International Digest	4
	Industrial and Commercial Training	3
	Harvard Business Review	4
	Human Resource Management Review	1
	Journal of World Business	1
	Journal of Financial Economics	1
	Asia Pacific Journal of Management	1
	T and D	6
	Journal of Management Development	1
	Asia Pacific Business Review	1
	Human Resource Management Journal	3
	Psychologist-Manager Journal	2
	Journal of Knowledge Management	1
	Management Decision	1
	Actual Problems of Economics	1
	European Journal of International Management	7
	Journal of Business Strategy	3
	Asian Social Science	3
	African Journal of Business Management	2
	The Journal of medical practice management	2
	Healthcare financial management	1
	Journal of Product Innovation Management	1
	Transportation Journal	1
	Journal of Business and Psychology	1
	Australian Journal of Basic and Applied Sciences	1
	Academy of Management Perspectives	1
	Research Technology Management	1
	Journal of International Management	1
	International Journal of Contemporary Hospitality Management	1

Year	Journal	Number of documents
2011	(Continued)	
	Journal of Business Ethics	1
	Benefits Quarterly	1
	International Journal of Physical Distribution and Logistics Management	1
	Supply Chain Management	1
	Interfaces	1
	Financial Analysts Journal	1
	Nursing Times	1
	U. S. Army Medical Department Journal	1
	The Hague Journal of Diplomacy	1
	Phi Delta Kappan	1
	Measuring Business Excellence	1
	Management Learning	1
	Life Science Journal	1
	Journal of Research in Interactive Marketing	1
	Journal for East European Management Studies	1
	International Journal of Training and Development	1
	International Journal of Construction Education and Research	1
	International Journal for Housing Science and Its Applications	1
	Human Systems Management	1
	Health Care Management Review	1
	Global Business Review	1
	Flexible Services and Manufacturing Journal	1
	European Sport Management Quarterly	1
	European Journal of Marketing	1
	Equality, Diversity and Inclusion	1
	Educational Administration Quarterly	1
	Corporate Reputation Review	1
	Compare	1
	Coaching: An International Journal of Theory, Research and Practice	1
	Chinese Education and Society	1
	China Nonprofit Review	1
	Business Strategy Series	1
	British Journal of Industrial Relations	1
	Asian Academy of Management Journal	1
	Academy of Strategic Management Journal	1
2012		92
	The International Journal of Human Resource Management	5
	Human Resource Management International Digest	4
	Industrial and Commercial Training	3
	Harvard Business Review	3
	Asia Pacific Journal of Human Resources	6

Year	Journal	Number of documents
2012	(Continued)	
	Personnel Review	3
	Human Resource Management	2
	Business Horizons	2
	Human Resource Management Review	1
	Global Business and Organizational Excellence	1
	T and D	3
	Journal of Management Development	2
	Asia Pacific Business Review	2
	Cross Cultural Management	2
	MIT Sloan Management Review	2
	Sport Management Review	2
	Organizational Dynamics	2
	International Food and Agribusiness Management Review	2
	Development and Learning in Organisations	2
	Human Resource Management Journal	1
	Psychologist-Manager Journal	1
	Journal of Knowledge Management	1
	Management Decision	1
	Actual Problems of Economics	1
	Advances in Developing Human Resources	1
	Strategic Entrepreneurship Journal	1
	Journal of Nursing Management	1
	Academic Medicine	1
	Organization Science	1
	Management Science	1
	World Review of Entrepreneurship, Management and Sustainable Development	1
	World Applied Sciences Journal	1
	Thunderbird International Business Review	1
	School Leadership and Management	1
	Risk Management and Insurance Review	1
	Radiology Management	1
	Quality Management in Health Care	1
	Public Money and Management	1
	Panoeconomicus	1
	Nursing Standard	1
	Marketing Theory	1
	Managing Leisure	1
	Library Management	1
	Journal of Vocational Behavior	1
	Journal of Social Psychology	1
	Journal of Risk and Insurance	1
	Journal of Personal Selling and Sales Management	1

Year	Journal	Number of documents
2012	(Continued)	
	Journal of Marketing Theory and Practice	1
	Journal of Economic Behavior and Organization	1
	Journal of Comparative Economics	1
	International Paperworld IPW	1
	International Journal of Logistics Research and Applications: A Leading Journal of Supply Chain Management	1
	International Journal of Logistics Management	1
	International Journal of Information Processing and Management	1
	International Business Management	1
	English Language Teaching	1
	Economic and Social Review	1
	Construction Management and Economics	1
	Canadian Public Administration	1
	British Journal of Sports Medicine	1
	Annals of Regional Science	1
	Advances in Management	1
2013		46
	The International Journal of Human Resource Management	10
	Human Resource Management International Digest	3
	Industrial and Commercial Training	3
	Harvard Business Review	2
	Asia Pacific Journal of Human Resources	1
	Personnel Review	1
	Human Resource Management	1
	Business Horizons	1
	Human Resource Management Review	1
	Global Business and Organizational Excellence	1
	Journal of World Business	1
	Journal of Financial Economics	1
	Asia Pacific Journal of Management	1
	Scandinavian Journal of Management	1
	Journal of Management	1
	Small Business Economics	1
	European Management Journal	1
	Research Policy	1
	Human Relations	1
	Quarterly Journal of Economics	1
	Marine Policy	1
	Learning Organization	1
	Journal of Occupational and Organizational Psychology	1
	International Journal of Strategic Communication	1
	International Journal of Innovation and Learning	1
	International Business Review	1

Year	Journal	Number of documents
2013	(Continued)	
	Industrial Marketing Management	1
	Gender in Management	1
	Economic Inquiry	1
	Critical Perspectives on International Business	1
	Business Ethics: A European Review	1
	Advanced Science Letters	1
in press		5
	European Management Journal	1
	Journal of International Management	1
	Journal of International Migration and Integration	1
	International Journal of Project Management	1
	International Journal of Management Reviews	1

A.4Validity of Lotka's Law by the generalized inverse power method

A.4.1 Brief theoretical explanation

The generalized expression of Lotka's law is:

$$y_x = C \times x^{-n} \qquad (1)$$

where,*y* is the probability than one author publish*x* articles about a topic, and the exponent (n) and the constant (C) are parametres to be estimated from a given set of autor productivity data.

The main elements involved in the model adjustment by the inverse power method are (Urbizagástegui, 2005):

1) Measurement and tabulation: the number of authors contributing to a concrete number of articles should be organized in a table of decreasing frequencies of ***N*** pairs ***x, y***. In constrast with Lotka who only took in account the first signer of an article, co-authors were considered when tabulating the data. Indeed, at present, when collaboration is the rule in research, measurements that do not take into account co-authors are invalid.
2) The adopted model: Here the adopted model is the generalized inverse power one:

$$\gamma_x = C\left(\frac{1}{x^n}\right)$$

3) Estimation of the *n*parameter: The n value is calculated by using the least-squares methodology described by Pao (1985), and by using the following formula:

$$n = \frac{N\sum XY - \sum X \sum Y}{N\sum X^2 - \left(\sum X\right)^2} \qquad (2)$$

Being,***N*** the number of data pairs observed; ***X***the base-10 logarithm of *x*; and, ***Y***the base-10 logarithm of *y*

4) Estimation of the C parameter: In order to estimate it, Pao (1985, 1986) proporcionated this formula:

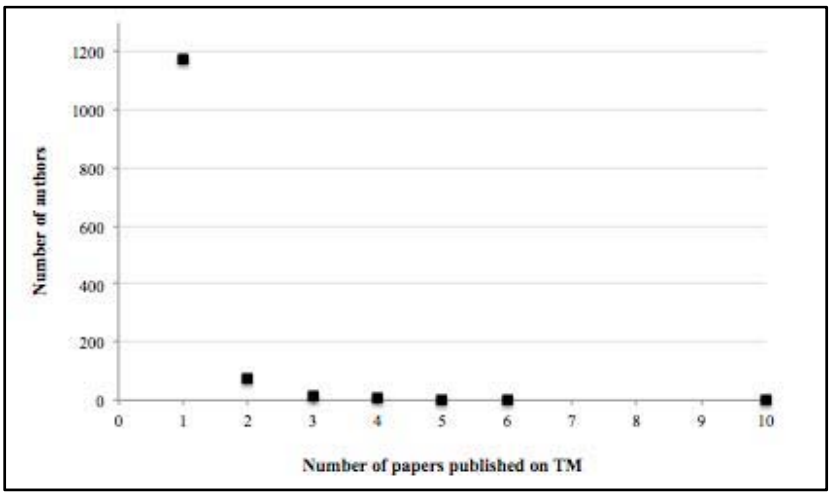
$$C = \frac{1}{\sum_{x=1}^{P-1} \frac{1}{x^n} + \frac{1}{(n-1)\,P^{n-1}} + \frac{1}{2\,P^n} + \frac{n}{24\,(P-1)^{n+1}}} \qquad (3)$$

Being, ***P*** the number of data pairs *xy* observed.

5) The goodness-of fit statistical test: The Kolmogorov-Smirnov (K-S) testis a non-parametric test that asserts that the observed author productivity distribution is not significantly different from a theoretical distribution. It is better than the chi-squared test since it is easier to use and it does not need that the data is grouped in frequencies inferior to 5 (cf. Urbizagástegui, 2005).It is based on the absolute maximum difference (D_{max}) between the observed and theoretical cumulative frequency distributions. If the absolute maximum difference is less than the K-S critical value, then the null hypothesis is accepted (i.e., that the observed and the theoretical distributions are distributed the same).

A.4.2 Results of the study

The observed frequency distribution of our sample is:



From the previous figure we clearly see that few authors published more than two articles on TM. In short, the great majority of articles are written by only one author.

In order to see if this distribution fits the Lotka's Law, let's start calculating ***the exponent n***for talent management literature by using formula (2):

x	y	X	Y	XY	X^2
1	1173	0,0000	3,0693	0,0000	0,0000
2	76	0,3010	1,8808	0,5662	0,0906
3	16	0,4771	1,2041	0,5745	0,2276
4	7	0,6021	0,8451	0,5088	0,3625
5	1	0,6990	0,0000	0,0000	0,4886
6	2	0,7782	0,3010	0,2342	0,6055
10	1	1,0000	0,0000	0,0000	1,0000
TOTAL	1276	3,8573	7,3004	1,8837	2,7748

So, **N** = 7

n = (-14,97)/4,54 = -3,29

The n value in the field of talent management literature (1990-2013) is 3,29 for all author data.

The ***constant C*** for the dataset is calculated using formula (3):

Being **P** = 7

C = 1/(1,1474+0,00507+0,00082+6,2909E-05) = 0,867.

The C value is 0,867 for n=3,29

Now, we should calculate the ***theoretical values*** by using equation (1). Therefore,

For x = 1 (i.e., the number of authors that produced one article)

y_1 = 0,867 × (1/(1^3,29)) =0,867

Now, 0,867× 1276 = 1106,34

For x = 2 (i.e., the number of authors that produced two articles)

y_2 = 0,867 × (1/(2^3,29)) =0,0886

Now, 0,0886× 1276 = 113,11

For x = 3 (i.e., the number of authors that produced three articles)

y_3 = 0,867 × (1/(3^3,29)) =0,0234

Now, 0,0234× 1276 = 29,80

For x = 4 (i.e., the number of authors that produced four articles)

y_4 = 0,867 × (1/(4^3,29)) =0,0091

Now, 0,0091× 1276 = 11,56

For x = 5 (i.e., the number of authors that produced five articles)

y_5 = 0,867 × (1/(5^3,29)) =0,0043

Now, 0,0043× 1276 = 5,55

For x = 6 (i.e., the number of authors that produced six articles)

y_6 = 0,867 × (1/(6^3,29)) =0,0024

Now, 0,0024× 1276 = 3,05

For x = 10 (i.e., the number of authors that produced ten articles)

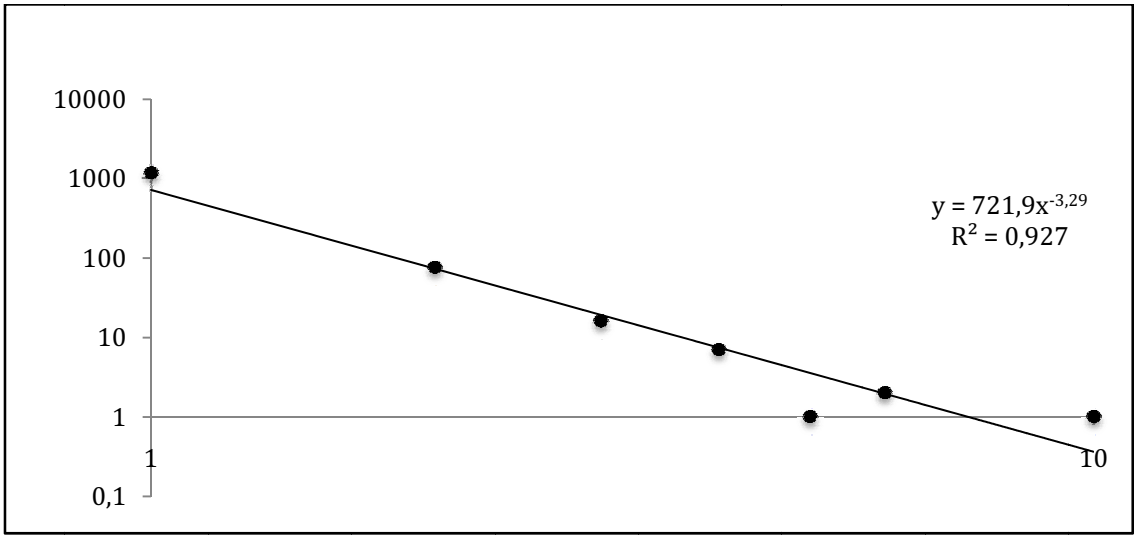
y_{10} = 0,867 × (1/(10^3,29)) =0,0004

Now, 0,0004 × 1276 = 0,57

Hence, the observed and the theoretical frequency of authors are:

x	Observed Frequencies	Theoretical Frequencies
1	1173	1106,34
2	76	113,11
3	16	29,80
4	7	11,56
5	1	5,55
6	2	3,05
10	1	0,57
TOTAL	1276	1269,97

The fitted linear line for authorship distribution in talent management research from 1990 to 2013 results from this log-log plot.



Now, we need to confirm if this distribution fits Lotka's Law. For doing so, we are going to use the K-S test. This non-parametric statistical test quantifies a distance between the empirical (observed) distribution function of the sample and the cumulative distribution function of the theoretical distribution. The K-S test is defined by:

H_0: The observed distribution fits Lotka's Law

H_1: The observed distribution does not fit Lotka's Law

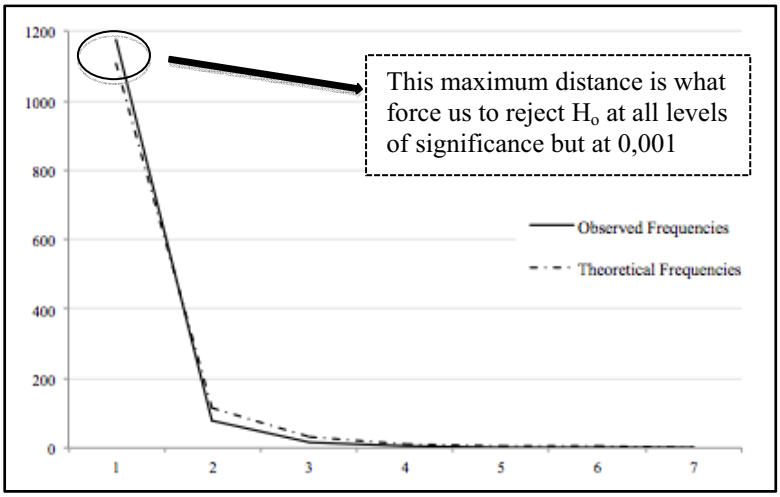
The Kolmogorov-Smirnov statistic (D_{max}) consists in the maximum distance between the observed and expected cumulative distributions. Therefore, we need to build another table that allow us to calculate this statistic.

x	y	$y_x / \Sigma y_x$	$\Sigma (y_x / \Sigma y_x)$	$C (1/x^n)$	$\Sigma [C (1/x^n)]$	D_{max}
1	1173	0,9193	0,9193	0,8670	0,867	**0,0523**
2	76	0,0596	0,9788	0,0886	0,956	0,0232
3	16	0,0125	0,9914	0,0234	0,979	0,0124
4	7	0,0055	0,9969	0,0091	0,988	0,0088
5	1	0,0008	0,9976	0,0043	0,992	0,0052
6	2	0,0016	0,9992	0,0024	0,995	0,0044
10	1	0,0008	1	0,0004	0,995	0,0048

The hypothesis regarding the fit with Lotka's law of the observed distribution is rejected if the statistic $\boldsymbol{D_{max}}$ is greater than the critical value obtained from the distribution table for the K-S test (see, A.4.3). The K-S critical value at 0,01 level of significance is calculated as $\frac{1,63}{\sqrt{\Sigma y}}$, as suggested from the table distribution. So, for this sample the **K-S critical value** is $\frac{1,63}{\sqrt{1276}} = \mathbf{0,04563.}$

For the present case, $\boldsymbol{D_{max}}$ is **0,0523** and the **K-S critical value**for a significance level of 0,01 is **0,0456**. Since the critical value is smaller than the statistic, the null hypothesis that the data fit a Lotka distribution is rejected. **The null hypothesis is only accepted for a significance level of 0,001 (v.c. = 0,05458).**

The dispersion between both distributions can be observed in next figure. In fact, we can observe that except from the first level of productivity, the rest levels have little grade of dispersion.



A.4.3 Kolmogorov-Smirnov distribution table

	Level of significance (α)							
n	**0.20**	**0.10**	**0.05**	**0.02**	**0.01**	**0.005**	**0.002**	**0.001**
40	0.16547	0.18913	0.21012	0.23494	0.25205	0.26803	0.28772	0.30171
41	0.16349	0.18687	0.20760	0.23213	0.24904	0.26482	0.28429	0.29811
42	0.16158	0.18468	0.20517	0.22941	0.24613	0.26173	0.28097	0.29465
43	0.15974	0.18257	0.20283	0.22679	0.24332	0.25875	0.27778	0.29130
44	0.15795	0.18051	0.20056	0.22426	0.24060	0.25587	0.27468	0.28806
45	0.15623	0.17856	0.19837	0.22181	0.23798	0.25308	0.27169	0.28493
46	0.15457	0.17665	0.19625	0.21944	0.23544	0.25038	0.26880	0.28190
47	0.15295	0.17481	0.19420	0.21715	0.23298	0.24776	0.26600	0.27896
48	0.15139	0.17301	0.19221	0.21493	0.23059	0.24523	0.26328	0.27611
49	0.14987	0.17128	0.19028	0.21281	0.22832	0.24281	0.26069	0.27339
50	0.14840	0.16959	0.18841	0.21068	0.22604	0.24039	0.25809	0.27067
n **> 50**	$\frac{1.07}{\sqrt{n}}$	$\frac{1.22}{\sqrt{n}}$	$\frac{1.36}{\sqrt{n}}$	$\frac{1.52}{\sqrt{n}}$	$\frac{1.63}{\sqrt{n}}$	$\frac{1.73}{\sqrt{n}}$	$\frac{1.85}{\sqrt{n}}$	$\frac{1.95}{\sqrt{n}}$

A.5Geographic distribution of TM research (1990-2013)

Country	Number of documents
United States	714
United Kingdom	194
Australia	73
Canada	57
India	48
China	39
The Netherlands	38
Taiwan	35
Ireland	32
France	27
Spain	24
Germany	21
Finland	18
Belgium	17
South Africa	12
Singapore	11
Denmark	9
Sweden	9
Austria	8
Iran	8
Italy	8
Malaysia	8
New Zealand	8
Thailand	7
Hong Kong	6

Country	Number of documents
Japan	6
Switzerland	6
Israel	5
Iceland	4
Pakistan	4
Croatia	3
Mexico	3
Portugal	3
South Korea	3
Czech Republic	2
Brazil	1
Greece	1
Kenya	1
Norway	1
Philippines	1
Poland	1
Russia	1
Serbia	1
Slovakia	1
Slovenia	1
Sudan	1
Sultanate of Oman	1
Turkey	1
United Arab Emirates	1
Total	**1484**

A.6GDP per capita and population data of TM related countries

GDP section from 1,710 to 19,487

Country	GDP per capita	Docs per million population
Kenya	1710	0,026
Sudan	2325	0,029
Pakistan	2745	0,031
India	3650	0,040
Philippines	4119	0,011
China	8400	0,029
Thailand	8646	0,107
South Africa	10960	0,232
Iran	11508	0,106
Brazil	11640	0,005
Serbia	11887	0,139
Malaysia	16051	0,282
Mexico	16588	0,027
Turkey	17110	0,014
Croatia	19487	0,700

GDP section from 20,328 to 39,456

Country	GDP per capita	Docs per million population
Taiwan	20328	1,5187
Poland	21085	0,0260
Russia	22408	0,0070
Slovakia	24095	0,1853
Portugal	25564	0,2840
Greece	25852	0,0925
Czech Republic	26632	0,1916
Slovenia	26943	0,4859
Oman	28684	0,3606
Israel	28809	0,6746
South Korea	29834	0,0618
New Zealand	31082	1,9308
Spain	32087	0,5126
Italy	32672	0,1401
Japan	33668	0,0469
France	35247	0,4235
United Kingdom	35598	3,0705
Iceland	36483	14,2271
Finland	37455	3,3487
Belgium	38723	1,6511
Germany	39456	0,2546

GDP section from 40,420 to 60,688

Country	GDP per capita	Docs per million population
Canada	40420	1,7027
Ireland	40868	6,9743
Denmark	40933	1,6825
Sweden	41484	1,0027
Australia	41974	3,3599
Austria	42172	0,9959
The Netherlands	42779	2,3595
United Arab Emirates	47893	0,2435
United States	48112	2,3126
Hong Kong	50551	0,8486
Switzerland	51227	0,8233
Norway	60392	0,2008
Singapore	60688	2,9164
Canada	40420	1,7027
Ireland	40868	6,9743

A.7Academic and non academic contributions to TM literature per country

Country	Academic	Non academic	Total of Affiliations
United States	162	170	332
United Kingdom	60	25	85
Australia	25	6	31
Canada	22	4	26
India	13	13	26
China	19	2	21
France	16	2	18
Taiwan	16	2	18
Germany	14	2	16
The Netherlands	15	1	16
Spain	10	1	11
South Africa	5	4	9
Finland	8		8
Belgium	6		6
Italy	5	1	6
Malaysia	5	1	6
Sweden	6		6
Denmark	4	1	5
Iran	5		5
Ireland	4	1	5
Thailand	4	1	5
Austria	3	1	4
Hong Kong	3	1	4
Japan	4		4
New Zealand	4		4
Israel	3		3
Singapore	2	1	3
Switzerland	3		3
Pakistan	1	1	2
Portugal	2		2
South Korea	2		2
Brazil		1	1
Croatia	1		1
Czech Republic	1		1
Greece	1		1
Iceland	1		1
Kenya	1		1
Mexico		1	1
Norway	1		1
Philippines	1		1
Poland	1		1
Russia	1		1
Serbia	1		1
Slovakia	1		1
Slovenia	1		1
Sudan		1	1
Sultanate of Oman		1	1
Turkey	1		1
United Arab Emirates	1		1
TOTAL	465	245	710

A.8Number of documents published in journals with IF

Year	Number of docs	Number of docs with IF
1990	6	
1991	2	
1992	8	
1993	5	
1994	3	
1995	4	
1996	8	
1997	9	6
1998	6	1
1999	10	6
2000	11	9
2001	14	9
2002	17	12
2003	12	10
2004	13	8
2005	31	13
2006	23	10
2007	45	13
2008	79	24
2009	63	19
2010	94	32
2011	97	36
2012	92	
2013	51	
2013	51	
TOTAL	703	208

Note: The shaded area means that no data was available.

A.9Top 40 most cited authors by Scopus and Google Scholar

GOOGLE SCHOLAR		
Position	**Author**	**Number of citations obtained**
1	Miller, D.	1228
2	Shamsie, J.	1228
3	Drucker, P. F.	767
4	Conger, J. A.	530
5	Cappelli, P.	385
6	Gagné, F.	350
7	Bosma, N.	335
8	de Wit, G.	335
9	Thurik, R.	335
10	van Praag, M.	335
11	Godet, M.	249
12	Nohria, N.	236
13	Collings, D. G.	230
14	Macmillan, I. C.	223
15	Siegel, E.	223
16	Siegel, R.	223
17	Bhattacharya, C. B.	207
18	Korschun, D.	207
19	Sen, S.	207
20	Heckman, R. J.	206
21	Lewis, R. E.	206
22	Zhao, M.	204
23	Banaji, M. R.	202
24	Bazerman, M. H.	202
25	Chugh, D.	202
26	Bhatnagar, J.	198
27	Drazin, R.	190
28	Fulmer, R. M.	190
29	Rao, H.	190
30	Smallwood, N.	188
31	Ulrich, D.	188
32	Mellahi, K.	183
33	Thomas, D. A.	181
34	Joyce, W. F.	175
35	Roberson, B.	175
36	Sparrow, P.	169
37	Caselli, F.	157
38	Gennaioli, N.	157
39	Rajgopal, S.	148
40	Shevlin, T.	148

SCOPUS		
Position	**Author**	**Number of citations obtained**
1	Cappelli, P.	127
2	Godet, M.	106
3	Conger, J. A.	103
4	Collings, D. G.	102
5	Mellahi, K.	83
6	Bhatnagar, J.	69
7	Heckman, R. J.	67
8	Lewis, R. E.	67
9	Sparrow, P.	67
10	Zhao, M.	67
11	Scullion, H.	66
12	Macmillan, I. C.	64
13	Siegel, E.	64
14	Siegel, R.	64
15	Darby, M. R.	57
16	Zucker, L. G.	57
17	Kossek, E. E.	55
18	Ozeki, C.	55
19	Roberts, K.	55
20	Gagné, F.	52
21	Marshall, C. R.	50
22	Zenger, T. R.	50
23	Smallwood, N.	47
24	Ulrich, D.	47
25	Boswell, W. R.	44
26	Cavanaugh, M. A.	44
27	Joyce, W. F.	44
28	Moynihan, L. M.	44
29	Roehling, M. V.	44
30	Nohria, N.	43
31	Roberson, B.	43
32	Hiltrop, J. M.	42
33	Saleh, S. D.	42
34	Wang, C. K.	42
35	Hayes, R. H.	39
36	Mian, S.	37
37	O'Connor, G. C.	37
38	Ferlie, E.	36
39	Harvey, J.	36
40	Pettigrew, A.	36

A.10 Correlations among number of authors and citations

For doing these correlations analysis, since we are comparing data from three diferent databases (Google Scholar, Scopus, and ISI WoS), we only take into consideration those articles for which we have all the data. So, the total sample of articles was: 131 articles. Next, we are going to detail the different tables of results indicating the period of time or year considered. It should be noted that the analysis was not possible for 1998 and 1999 due to the insufficient number of observations (1 and 2, respectively).

Period of time: 1997-2013. Sample: 131 articles.

	NUMAUTOR	IMPF	NCGSCHOLAR	NCSCOPUS	NCISI
NUMAUTOR	1.00	0.05	-0.12	-0.08	-0.05
IMPF	0.05	1.00	0.13	0.13	0.12
NCGSCHOLAR	-0.12	0.13	1.00	0.88	0.80
NCSCOPUS	-0.08	0.13	0.88	1.00	0.94
NCISI	-0.05	0.12	0.80	0.94	1.00

Year: 1997. Sample: 5 articles.

	NUMAUTOR	IMPF	NCGSCHOLAR	NCSCOPUS	NCISI
NUMAUTOR	1.00	0.61	-0.51	-0.41	-0.37
IMPF	0.61	1.00	-0.21	-0.07	-0.09
NCGSCHOLAR	-0.51	-0.21	1.00	0.98	0.98
NCSCOPUS	-0.41	-0.07	0.98	1.00	1.00
NCISI	-0.37	-0.09	0.98	1.00	1.00

Year: 2000. Sample: 6 articles.

	NUMAUTOR	IMPF	NCGSCHOLAR	NCSCOPUS	NCISI
NUMAUTOR	1.00	-0.45	-0.43	-0.31	-0.30
IMPF	-0.45	1.00	-0.22	-0.35	-0.27
NCGSCHOLAR	-0.43	-0.22	1.00	0.96	0.97
NCSCOPUS	-0.31	-0.35	0.96	1.00	0.99
NCISI	-0.30	-0.27	0.97	0.99	1.00

Year: 2001. Sample: 7 articles.

	NUMAUTOR	IMPF	NCGSCHOLAR	NCSCOPUS	NCISI
NUMAUTOR	1.00	-0.51	-0.20	-0.22	-0.13
IMPF	-0.51	1.00	0.65	0.60	0.57
NCGSCHOLAR	-0.20	0.65	1.00	0.99	0.98
NCSCOPUS	-0.22	0.60	0.99	1.00	0.98
NCISI	-0.13	0.57	0.98	0.98	1.00

Year: 2002. Sample: 5 articles.

	NUMAUTOR	IMPF	NCGSCHOLAR	NCSCOPUS	NCISI
NUMAUTOR	1.00	-0.41	0.80	0.86	0.84
IMPF	-0.41	1.00	-0.19	-0.43	-0.39
NCGSCHOLAR	0.80	-0.19	1.00	0.97	0.98
NCSCOPUS	0.86	-0.43	0.97	1.00	1.00
NCISI	0.84	-0.39	0.98	1.00	1.00

Year: 2003. Sample: 6 articles.

	NUMAUTOR	IMPF	NCGSCHOLAR	NCSCOPUS	NCISI
NUMAUTOR	1.00	0.93	0.76	0.93	0.86
IMPF	0.93	1.00	0.91	0.97	0.91
NCGSCHOLAR	0.76	0.91	1.00	0.94	0.74
NCSCOPUS	0.93	0.97	0.94	1.00	0.82
NCISI	0.86	0.91	0.74	0.82	1.00

Year: 2004. Sample: 5 articles.

	NUMAUTOR	IMPF	NCGSCHOLAR	NCSCOPUS	NCISI
NUMAUTOR	1.00	0.67	-0.43	-0.26	-0.49
IMPF	0.67	1.00	-0.29	-0.16	-0.20
NCGSCHOLAR	-0.43	-0.29	1.00	0.93	0.95
NCSCOPUS	-0.26	-0.16	0.93	1.00	0.96
NCISI	-0.49	-0.20	0.95	0.96	1.00

Year: 2005. Sample: 9 articles.

	NUMAUTOR	IMPF	NCGSCHOLAR	NCSCOPUS	NCISI
NUMAUTOR	1.00	0.53	0.65	0.39	0.29
IMPF	0.53	1.00	0.21	-0.18	-0.18
NCGSCHOLAR	0.65	0.21	1.00	0.82	0.82
NCSCOPUS	0.39	-0.18	0.82	1.00	0.93
NCISI	0.29	-0.18	0.82	0.93	1.00

Year: 2006. Sample: 4 articles.

	NUMAUTOR	IMPF	NCGSCHOLAR	NCSCOPUS	NCISI
NUMAUTOR	1.00	0.25	0.84	0.81	0.92
IMPF	0.25	1.00	0.31	0.46	0.58
NCGSCHOLAR	0.84	0.31	1.00	0.99	0.89
NCSCOPUS	0.81	0.46	0.99	1.00	0.93
NCISI	0.92	0.58	0.89	0.93	1.00

Year: 2007. Sample: 9 articles.

	NUMAUTOR	IMPF	NCGSCHOLAR	NCSCOPUS	NCISI
NUMAUTOR	1.00	0.00	0.44	0.50	0.51
IMPF	0.00	1.00	0.38	0.26	0.38
NCGSCHOLAR	0.44	0.38	1.00	0.91	0.94
NCSCOPUS	0.50	0.26	0.91	1.00	0.89
NCISI	0.51	0.38	0.94	0.89	1.00

Year: 2008. Sample: 16 articles.

	NUMAUTOR	IMPF	NCGSCHOLAR	NCSCOPUS	NCISI
NUMAUTOR	1.00	0.08	-0.49	-0.46	-0.48
IMPF	0.08	1.00	0.37	0.55	0.53
NCGSCHOLAR	-0.49	0.37	1.00	0.86	0.60
NCSCOPUS	-0.46	0.55	0.86	1.00	0.90
NCISI	-0.48	0.53	0.60	0.90	1.00

Year: 2009. Sample: 11 articles.

	NUMAUTOR	IMPF	NCGSCHOLAR	NCSCOPUS	NCISI
NUMAUTOR	1.00	-0.01	-0.23	0.00	-0.07
IMPF	-0.01	1.00	0.14	-0.02	-0.04
NCGSCHOLAR	-0.23	0.14	1.00	0.94	0.90
NCSCOPUS	0.00	-0.02	0.94	1.00	0.96
NCISI	-0.07	-0.04	0.90	0.96	1.00

Year: 2010. Sample: 21 articles.

	NUMAUTOR	IMPF	NCGSCHOLAR	NCSCOPUS	NCISI
NUMAUTOR	1.00	0.60	0.48	0.43	0.41
IMPF	0.60	1.00	0.67	0.57	0.56
NCGSCHOLAR	0.48	0.67	1.00	0.84	0.78
NCSCOPUS	0.43	0.57	0.84	1.00	0.97
NCISI	0.41	0.56	0.78	0.97	1.00

Year: 2011. Sample: 24 articles.

	NUMAUTOR	IMPF	NCGSCHOLAR	NCSCOPUS	NCISI
NUMAUTOR	1.00	-0.23	-0.11	-0.10	-0.09
IMPF	-0.23	1.00	0.49	0.43	0.49
NCGSCHOLAR	-0.11	0.49	1.00	0.66	0.68
NCSCOPUS	-0.10	0.43	0.66	1.00	0.95
NCISI	-0.09	0.49	0.68	0.95	1.00

A.11Details of co-authorship per year

	NUMBER OF AUTHORS							
YEARS	**2**	**3**	**4**	**5**	**7**	**8**	**12**	**TOTAL**
1990	3							3
1991	1	1						2
1992	2							2
1993	1	2						3
1994	2							2
1995	1					1		2
1996	4	1						5
1997	4	2						6
1998	2	1						3
1999	3	3						6
2000	1	1	2					4
2001	3	2	1					6
2002	5	4						9
2003	4	4						8
2004	5	2	1					8
2005	8	7	2					17
2006	7	3	3					13
2007	15	4		2	1			22
2008	23	16	5					44
2009	16	11	6	1				34
2010	37	24	8	2				71
2011	28	22	4	1			1	56
2012	32	22	8	2		1		65
2013	16	13	4	4				37
TOTAL	223	145	44	12	1	2	1	428

A.12Information on the kind of collaboration per year

YEAR	International collaboration	Collaboration within the same organization	Collaboration with Spanish institutions
1990		3	
1991		1	
1992		2	
1993		3	
1994		1	
1995		1	
1996	1	4	
1997	1	6	
1998		3	
1999		3	
2000	1	4	
2001	1	6	
2002	1	8	
2003	1	6	
2004		5	
2005	2	8	1
2006	1	12	
2007	6	13	
2008	8	29	
2009	9	20	2
2010	17	42	3
2011	15	37	3
2012	19	30	
2013	17	20	3
TOTAL	100	267	12

A.13Average number of citations

Number of authors	Number of articles	Average number of citations	Average number of citations of papers with citations[a]
1	275	4,83	8,00
2	223	9,19	14,03
3	145	7,02	9,62
4 o más	60	7,03	12,14
TOTAL	703	28,07	43,79

Note: [a] This column is calculated taking into account only those papers of each level of number of authors that have citations, i.e., excluding those papers that have 0 citations.

Appendix B: Outcomes of this dissertation

B.1 Articles in peer-reviewed academic journals

Title: What is the meaning of 'talent' in the world of work?
Authors: Gallardo-Gallardo, E.,Dries, N., &González-Cruz, T.
Source:*Human Resource Management Review*
Volumenin press[Special Issue] **Pages:**1-11 **Published:** 2013
ISSN: 1053-4822
Indexed in: ISIJournal Citation Reports **Impact Factor:** 2,375 [Management, Q1]
Indexed in: SJR (SCImago Journal Rank) **Impact Factor:** 1,255

Title: Gestión del talento en la empresa española. Rol del departamento de recursos humanos
Authors: Gallardo-Gallardo, E., González-Cruz, T., Martínez-Fuentes, C., & Pardo-del-Val, M.
Source:*Revista Venezolana de Gerencia*
Volume:17 **Issue:** 58 **Pages:**232-252 **Published:** 2012
ISSN: 1053-4822
Indexed in: ISI Journal Citation Reports **Impact Factor:** 0,074 [Management, Q4]

Articles under revision:

Title: Talent Identification: A Multidisciplinary Review of Different Components
Authors: Nijs, S., Gallardo-Gallardo, E., Dries, N. & Sels, L.
Source:*Journal of World Business*
Indexed in: ISI Journal Citation Reports **Impact Factor:** 2,383 [Business, Q1]
Indexed in: SJR (SCImago Journal Rank) **Impact Factor:** 1,019

B.2Working papers

Title: What do we actually mean by talent in business?
Authors: Gallardo-Gallardo, E.
Source:*Documents de Treball de la Facultat d'Economia i Empresa (UB). Col·lecció d'Economia,* E11/258
Included in: *New Economics Papers (NEP)* [It can be accessed at: http://ideas.repec.org/n/nep-cbe/2011-09-22.html]

B.3International scientific conferences

Title: Who, Where, When and How of talent management: A bibliometric analysis
Authors: Gallardo-Gallardo, E., Nijs, S., Gallo, P.,& Dries, N.
Conference:*8th International Conference of the Dutch HRM Network*
Venue: Leuven (Belgium) **Year:** 2013

Title: The Who, Where, When and How of talent management?
Authors: Gallardo-Gallardo, E., &Dries, N.
Conference:*IX International Workshop on Human Resource Management*
Venue: Cádiz **Year:** 2013 (Postponed by the organization committtee)

Title: What is meant by talent in business?
Authors: Gallardo-Gallardo, E.
Conference:*Academy of Management Annual Meeting*[Symposium: Building Talent Management Theory: Definitions, Typologies, Propositions]
Venue: Boston (United States) **Year:** 2012

Title: What is meant by talent in business?
Authors: Gallardo-Gallardo, E., Dries, N., & González-Cruz, T.
Conference:EIASM *1st Workshop on Talent Management*
Venue: Brussels (Belgium) **Year:** 2012

Title: What do we actually mean by talent in business?
Authors: Gallardo-Gallardo, E.
Conference:*VIII International Workshop on HRM*
Venue: Seville (Spain) **Year:** 2011

Pending of acceptance:

Title:A bibliometric analysis of TM research from 1990-2013: Productivity, impact and collaboration
Authors: Gallardo-Gallardo, E., Gallo, P., & Dries, N.
Conference:*2nd Workshop on Talent Management*
Venue: Brussels (Belgium) **Year:** 2013

Title:A historical review of TM research: 1990-2013
Authors: Gallardo-Gallardo, E., Nijs, S., Gallo, P., & Dries, N.
Conference:*2nd Workshop on Talent Management*
Venue: Brussels (Belgium) **Year:** 2013

B.4 National scientific conferences

Title: Talento: Definición y percepción de gestión en la empresa española
Authors: Gallardo-Gallardo, E., González-Cruz, T., Martínez, C., & Pardo-del-Val, M.
Conference:*XXI Congreso Nacional de la Asociación Científica de Economía y Dirección de la Empresa (ACEDE)*
Venue: Barcelona (Spain) **Year:** 2011

B.5Newspaper article

Title: Per què li diuen gestió del talent quan volen dir gestió de recursos humans?
Authors: Gallardo-Gallardo, E.
Source:*Món Empresarial*
Volume: April **Page:**18 **Published:** 2012

Science is not a cut-and-dried body of knowledge, which someone has collected once and for all: it is an attitude of mind, a way of finding out. Unless these facts are appreciated, science degenerates into mere scholarship and its study has a narrowing instead of broadening effect on the mind.

J. E. Holsmstrom

[Cited in Petre, M., & Rugg, G. (2012). The unwritten rules of PhD research. 2nd ed. Berkshire: Open University Press, p. 116]