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A Systematic review of the literature on managerial tenure and innovation

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Abstract

This study aims to examine the relationship between managerial tenure and innovation by systematically reviewing the existing literature of managerial tenure as an independent– linking innovation as an outcome. Although scholars have reached contradictory conclusions regarding the topic, no prior paper has extensively studied the mentioned relationship, however. A systematic search of major databases including Scopus and EBSCO was performed for original research articles published since “Upper Echelons theory” publication-1984 using related keywords of innovation and tenure. From 31.399 retrieved records, 14 studies were selected by applying a sequence of exclusion criteria. This study provides four notable contributions. First, it claims that managerial tenure is a predictor of innovation. Secondly, this is the first paper to assess by systematic review the relationship between managerial tenure and innovation. Third, it is found, contrary to some scholars, the short-tenured manager will promote more innovation in a firm in compare to the long-tenured manager. Fourth, it discusses the industry, type of management and organisation size as moderators of this relationship. Besides, main gaps and future research directions are presented, in an attempt to stimulate the research on this relevant topic for research and corporations.

Keywords: systematic review, managerial tenure, innovation, upper echelons theory

Introduction

Often, the top management role requires the constant action of adapt the firm to the dynamic business environment (Andrews, 1987; Augier & Teece, 2009; Child, 1974; Floyd & Lane, 2000; Smith, 2014). Also, in a frequently changing environment, innovation is widely viewed as a crucial source of competitive advantage (Dess and Picken, 2000; O’Reilly & Tushman, 2011), as innovation capability is the most relevant determinant of firm performance (Mone, Mckinley & Barker, 1998).

Innovation is a multifaceted construct and it is investigated from multiple aspects by researchers from a diversity of academic disciplines such as economics, physics, psychology (Damanpour and Schneider, 2009; Wolfe, 1994). At the organisational level, scholars have usually entitled “innovation” as the construction (generation) and/or application (adoption) of new ideas or behaviours (Amabile, 2012; Damanpour and Wischnevsky, 2006; Zaltman, Duncan, and Holbek 1973). However, the present systematic review will adopt the broad definition of innovation instead of focussing only on a particular type of innovation (e.g. technological innovation).

The interactions between managers and innovation variables have obtained increasing consideration in management studies (Cho & Kim, 2017; Damanpour & Schneider, 2009; Halbesleben, Novicevic, Harvey & Buckley Ronald, 2003; Kammerlander, Burger, Fust & Fueglistaller, 2015; Kets De Vries, 1996; Sharma and Rai, 2003; Tierney, Farmer, & Grean, 1999; Wang, Zhao & He, 2016). However, it is common to see controversy results among authors regarding the relationship between managerial tenure and innovation.

West & Anderson (1996), for instance, suggested that managerial tenure has no significant relationship with innovation. In contrast, some authors suggested a positive relationship between managerial tenure and innovation (e.g. Barker & Mueller, 2002).

In summary, although the literature provides considerable research between managerial tenure and innovation (Bantel and Jackson 1989; Barker & Mueller, 2002; Damanpour, 1991; Finkelstein and Hambrick, 1988; Hambrick and Mason, 1984; Howell and Higgins, 1990; Kimberly & Evanisko, 1981; Quinn, 1986; Taras, Kirkman & Steel, 2010), our concern relies on the controversy of the results about this relationship. Nevertheless, due to the big range of meanings of the terms “tenure” and “innovation” and to keep our systematic review attached to well-defined variables. Therefore, we focus this research on tenure-related to the top managers (CEO, Top Management Team or Board), as the independent variable and the broad definition of innovation, organisational innovation, as the dependent variable.

In response to this concern, we conduct a systematic review of existing research regarding the relationship between managerial tenure and innovation, elaborate a quality assessment procedure to create a quality score for each of the studies identified, and we address the implications of our findings for both research and companies.

2- Theoretical Framework

The recognition of the relevance of the role of the top manager in a firm is not new (Barnard, 1938). Hambrick and Mason (1984) research by their "upper-echelons theory", as cited below, argue that firm performance is directed connected with their top manager's features.

Upper Echelon Theory

" The central idea in our original paper, and the core of upper echelons theory, has two interconnected parts: (1) executives act on the basis of their personalized interpretations of the strategic situations they face, and (2) these personalized construals are a function of the executives' experiences, values, and personalities. As such, the theory is built on the premise of bounded rationality (Cyert & March, 1963; March & Simon, 1958) - the idea that informationally complex, uncertain situations are not objectively "knowable" but, rather, are merely interpretable (Mischel, 1977). If we want to understand why organizations do the things they do, or why they perform the way they do, we must consider the biases and dispositions of their most powerful actors - their top executives." (Hambrick & Mason, 1984)

Among various managerial characteristics investigated by authors, as mentioned before, the different conclusions among the authors regarding the relationship between managerial tenure and innovation can vary from positive, negative or even that there is no relationship at all between those two variables (West & Anderson, 1996).

Thus, given the conflicting results, managerial tenure was chosen as the independent variable to be investigated in the present research. Regarding the dependent variable, as the literature suggests Innovation as a crucial link to firm performance (Mone et al., 1998), we choose innovation as the dependent variable to be examined.

Independent variable

- **Managerial tenure**

The term managerial tenure refers to the longevity that a manager stays in a specific managerial position. Hou, Priem & Goranova (2014) in examining the relation between CEO tenure and performance, use two different and interrelated specifications: a 3-year cut-off specification, to differentiate between early and late stages of CEO tenure. From an empirical research Hambrick and Fukutomi (1991) outlined that in the first three years of tenure, new CEOs are expected to be in their “response to mandate” and “experimentation” stages. Also, Khurana (2001) and Shen (2003) in their research on CEO tenure and displacement of newly appointed CEOs, being the dismissal of new CEOs recognised as a core research topic for management, also adopted the three-year cut-off specification. Research on the dismissal of top executives generally adopts the first three years of a CEOs as the early stages of tenure.

Nevertheless, the 3-year cut-off specification is also applied on the research of how CEO succession affects organisational outcomes, such as innovation (Zhang and Rajagopalan, 2004), CEO origin and strategic change (Zhang and Rajagopalan, 2010) and explicitly recommended by Finkelstein and Hambrick (1996) as the appropriate time-window to study the survival of new CEOs.

Kahneman and Tversky (1979) suggest that top executive long-tenured became risk-averse for they have a great deal - physiologically and tangible- invested in the company. Also, Hambrick and Fukutomi (1991) and Henderson, Miller & Hambrick (2006) stated that top manager long-tenured became devoted to their paradigm, suppress information that interrupts this paradigm and neglect commands for strategic changes, consequently becoming an obstacle to innovation.

Therefore, following Hambrick and Fukutomi (1991) and others relevant authors, the first three years of a top manager in a managerial position is named early stages of tenure or short-tenure and after the 3-year cut-off specification, is named later stages of tenure or long-tenure (Figure 1).

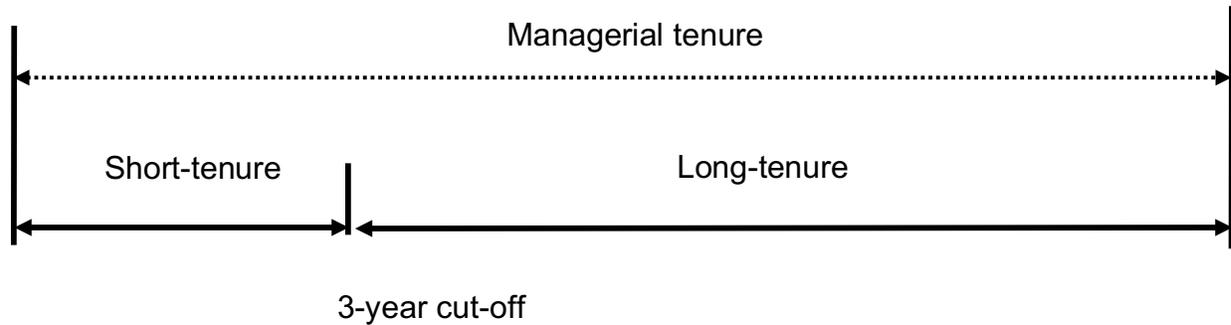


Figure1 – Representation of short-tenure and long-tenure according to the literature

Dependent variable

- **Innovation**

March and Simon (1958) hinted that greatest innovations result from appropriating rather than invention, at the organisational level, which is supported by vast research on innovation (e.g., Downs & Mohr, 1976; Hamberg, 1963; Mueller, 1997; Myers and Marquis, 1969; Terzioviski, 2010; Urban and Von Hippel, 1988).

Innovation belongs to a dynamic process of generating commercially successful inventions, while innovativeness, as mentioned before, regards to an organisation as a whole to adopt product, processes, or organisational innovations (Garcia and Calantone, 2002; Hurley and Hult, 1998; Tsai and Yang, 2013).

Many researchers have made relevant distinctions between types of innovation, like open vs closed (Chesbrough, 2003; George, G., Mcgahan, A. M., & Prabhu, J., 2012), incremental vs radical (Dewar and Dutton, 1986; Ettl, Bridges & O'Keefe, 1984; Kim, D.-Y., Kumar, V., & Kumar, U., 2012) and administrative vs process (Daft, 1978; Damanpour, 1987; Herminia, 2016). Another important type of innovation among management literature is organisational innovation (Damanpour, 1991).

Although scientists still debating on a single definition of innovation, Kimberly (1981) defined three forms of applying the term: (1) innovation as a process; (2) innovation as items, including products, programs, or services; (3) innovation as an attribute of organisations (innovativeness). Moreover, as mentioned before, the present systematic review will apply the broad definition of innovation, including all types of innovation considered in the literature.

Moderators

- **Industry**

Some researchers reveal an enormous influence that industry dynamism could apply to the organisation (Jansen, Van Den Bosch & Volberda, 2006; Miller and Friesen, 1982; Tidd, 2001), even modifying the analyses of managerial tenure-innovation relationship (Damanpour, 1991).

Gordon (1991), in his research, investigated the differences between the stable and the dynamic industry to define the features of each group. The industry environment can determine the tenure of managers found in top positions. Railroad executives, for instance, due to this stable industry, are older and often long-tenured than executives in other industries. In contrast, the dynamic electronics industry is recognised as volatile, and it is formed by younger executives with relatively managerial short-tenure in their firms.

Therefore, by analysing firms of high technology companies with highly dynamic (novel) and manufacturers with very static (reliable) marketplaces, Gordon (1991) reached some relevant findings. In the first group, made by companies in the highly dynamic environment, products, technologies, and consumer preferences evolved frequently; but in the latter group, made by manufactures companies that do not are highly dependent of continuous and intense innovation, the products, technologies, and consumer choices changed very slowly. Hence, an industry can be classified as stable or dynamic, depending on the type of industry.

Bantel and Jackson (1989) examined the stable bank industry, and the results show a not significant relationship between CEO tenure and innovation, but significant when the relationship

is performed with Top Management Team. Therefore, any audacious attempt to trace relationship about innovation and managerial tenure in stable and volatile firms, due to the significant effect of industry characteristics, all the propositions must carry the implicit phrase, "within an industry." (Hambrick & Snow, 1977).

- **Type of management**

Researchers elaborated several views about the relevance of manager's role in the organisational outcomes, such innovation, as a significant concentration of early management researchers was directed on lower-level manager's role (Joshi, Kathuria & Porth, 2003; Seibert, Wang & Courtright, 2011; Smith and Tushman, 2005; Waldiman, Ramírez, House & Puranam 2001). Later, the top manager relevance captured the researcher's attention and had repeatedly been recognised for their decisive role in identifying opportunities and making decisions that influence innovation (Damanpour,1991; Drucker, Morland & Drazin, 1985; Finkelstein and Hambrick, 1988; Quinn, 1986; Subramaniam and Youndt, 2005).

Cooper and Schendel (1976) revealed that executive decisions and succeeding organisational moves about innovation had great organisational strategic implications. Organisational agreement and implementation of innovation require top executive support and involvement (Drucker et al., 1985; Jassawalla and Sashittal, 2000). Nevertheless, although CEO and Top Management Team can be interpreted by who occupy the Upper echelon or top managers, the apparent difference between them have conducted some authors to address research to one of them.

Top managers are determinants of strategic choices for an organisation, and consequently, organisations became a reflection of them (Crossland, Zyung, Hiller, & Hambrick, 2014; Cyert and March 1963). Consequently, the literature not only confirms the importance of top managers, as it often indicates the managerial level considered in each research such as the CEO at innovative firms (e.g. Barker and Mueller, 2002; Thomas, Litschert & Ramaswamy, 1991), the top managers (Chaganti and Sambharya 1987; Hambrick and Mason, 1984), Top

Management Team-TMT (Finkelstein and Hambrick, 1988) and also some scholars investigate both TMT and CEO (Bantel and Jackson 1989; Daellenbach, McCarthy & Schoenecker 1999).

Accordingly, independently of the approach given by authors, they have in common the view of managers as decision maker towards innovation. Hambrick & Snow (1977) conceptualised the perceptual process of decision by taking the following view: *"First, a manager, or even an entire team of managers, cannot scan every aspect of the organisation and its environment. The manager's field of vision-those areas to which attention is directed is restricted, posing a sharp limitation on eventual perceptions. Second, the manager's perceptions are further limited because one selectively perceives only some of the phenomena included in the field of vision. Finally, the bits of information selected for processing are interpreted through a filter woven by one's cognitive base and values"*.

- **Organisation size**

Some researchers find that smaller firms are more innovative than large firms (Globerman, 1975; Rothwell, 1991), while Ettlé et al. (1984) proposed that larger organisation will produce more and complex innovation. From meta-analysis research, Damanpour (1992) has confirmed the positive relationship between organisation size and innovation that was previously appointed by Hage (1980). However, the first one made recommendations about the use of organisation size as a variable one applied together with others variables.

A prevailing theory applied in management studies states that larger firms can control more resources, and therefore that when firms control more resources, it is easier to initiate and sustain changes, such innovation (Haveman, 1993). On the other hand, some authors imply that firms with many employees face bureaucratic force (Mintzberg, 1978) and often have great difficulties to adopt changes (Aldrich, 1979).

3- Methodology

Choosing a Methodology

An analytical review plan is required for systematically appraising the enrichment of a presented body of literature (Ginsberg and Venkatraman, 1985; Davis, Mengersen, Bennett & Mazerolle, 2014). A systematic review applies a well-defined sequence of steps, to collect and further critically assess the literature. According to Tranfield, D., Denyer, D. and Smart, P. (2003), systematic reviews upgrade the quality of the review method and outcome by implementing an open and reproducible process. In general, the review process consists of the following elements: data collection, data analysis, and synthesis.

Data collection. The researchers in various modes can gather data: applying a panel of experts to distinguish related papers; employing knowledge of the extant literature to choose articles; exploring different databases utilising keywords and others.

Data analysis. Once the articles are elected for a review, the data analysis progress by applying the quality assessment protocol of each study. Our intent in this review is a broad overview and a conceptual consolidation. Consequently, we are methodologically restricted to descriptive instead of statistical approaches in our analysis of the outcomes. The nature of the collected data is qualitative rather than quantitative.

Data synthesis is the first value-added outcome of a review as it gives new knowledge based on accurate data collection and rigorous analysis. Overall, the systematic review aims to build a conceptual consolidation across a fragmented area by applying systematic data collection methods, descriptive and qualitative data analysis techniques.

Methodology Description

We used a systematic review approach (Higgins and Green, 2011) to identify, select and analyse a range of relevant studies regarding the relationship between managerial tenure and innovation. By synthesising research in a systematic process - transparent and reproducible, the systematic reviews increase the quality of the review process and outcomes (Littell, Corcoran &

Pillai, 2008; Petticrew & Roberts, 2006; Stewart, van Rooyen, & de Wet, 2012; Tranfield et. al., 2003).

The systematic review comprised four steps: First, an explicitly stated set of objectives with an explicit, reproducible methodology. Thus, we generated a database by executing a systematic search to identify all relevant literature concerning the relationship between managerial tenure-innovation published in peer-reviewed academic journals. Second, by a systematic process of identifying relevant data, we developed a study selection procedure to submit all studies towards eligibility criteria. Third, we submitted each selected study to a quality assessment protocol and assigned to each research a score "high", "medium" and "low" according to the quality of the study. Finally, the results were synthesised, and the interpretation of the findings of the covered studies was presented. (Bimbo, Bonanno, Nocella, Viscecchia, Nardone, De Devitiis & Carlucci, 2017; Littell, et. al., 2008; Moher, Shamseer, Clarke, Gherzi, Liberati, Petticrew and Whitlock, 2015; Voegtlin & Greenwood, 2015).

As part of this process, we chose to concentrate our forces mainly on research in the management and organisations field. This decision assisted our aim of highlighting a coherent yet assorted body of knowledge and also attended our purpose of influencing future research in the management and innovation area (Cardinal, Kreutzer & Miller, 2017).

We decided to restrict our sources to peer-reviewed journals because of both the verified knowledge and the expectation that they have the highest impact in the area (Podsakoff, Mackenzie, Bachrach & Podsakoff, 2005). The Scopus was the primary database for the literature search, as it is a suitable database of peer-reviewed journals in the social sciences (Harzing & Alakangas, 2016). Following Ardito, Messeni Petruzzelli & Albino (2015) EBSCO host (Business Source Premier) was applied as a second database to certify the broad access to relevant papers on the field. Our decision for the time span from 1984 until 2018 is attributed to the "upper echelon theory" designed by Hambrick and Mason (1984) because of the relevance for the management literature by the focus on the relation between managerial tenure and firm performance, in which innovation is the most relevant determinant.

Keywords and Search Terms: Identifying Initial Selection Criteria

To identify relevant studies, we used a sequence of steps (Carney, Gedajlovic, Heugens, Van Essen & Van Oosterhout, 2011; Heugens, van Essen, & van Oosterhout, 2009), which includes the quantitative method of the study and the type of journal each study was published (Cardinal et. al., 2017; Cotton & Tuttle, 1986; Kirca, Hult, Roth, Cavusgil, Perry, Akdeniz, White, 2011).

The research team elected an initial list of 9 keywords. The keywords were separated into two classes (Table 1). Precisely, category A recognises keywords related to the concept of tenure and category B comprises words concerning innovation. Being conscious of the broad range of definitions and applications of our keywords, we deliberately scattered the net wide to be sure to retrieve all conceivably related papers.

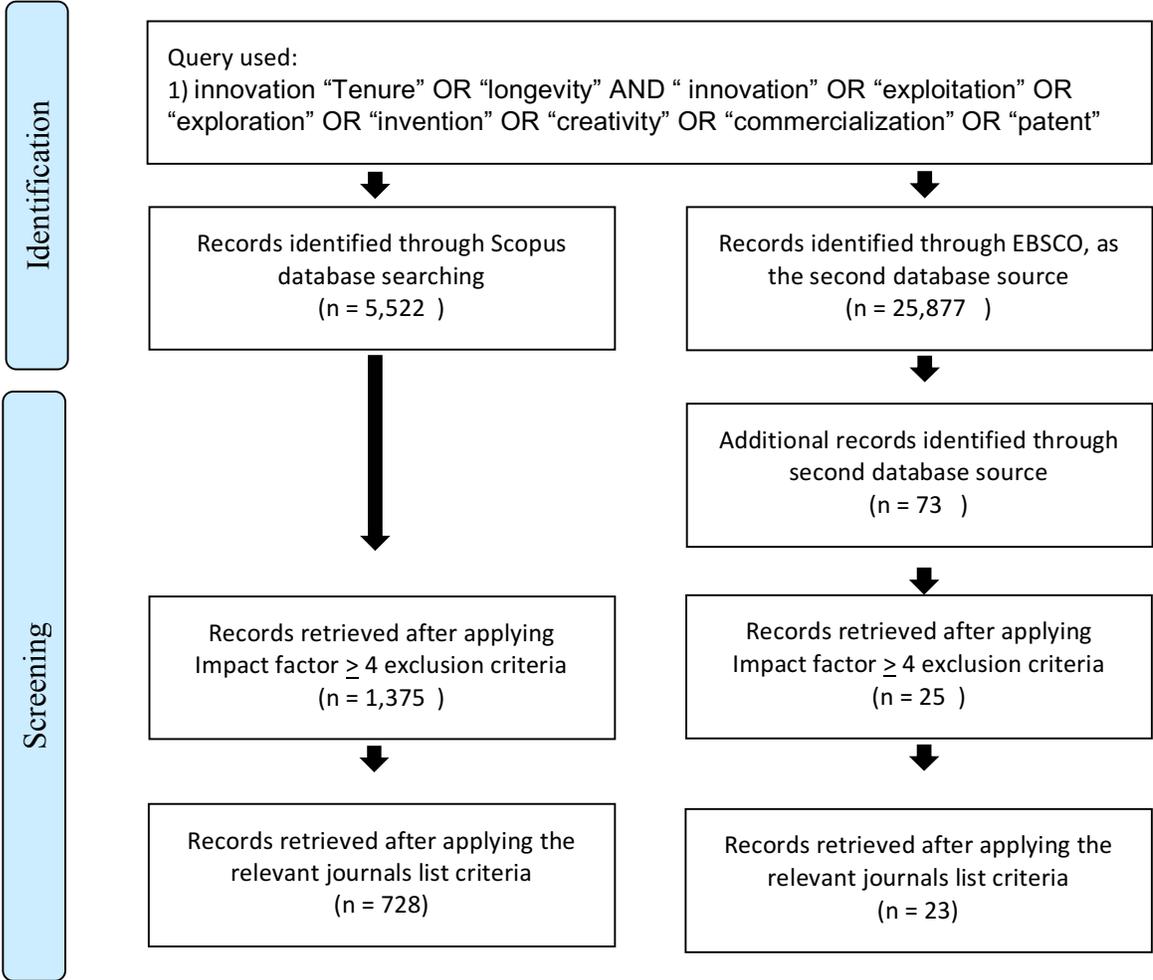
CATEGORY A	CATEGORY B
TENURE	INNOVATION
LONGEVITY	EXPLOITATION
	EXPLORATION
	INVENTION
	CREATIVITY
	COMMERCIALIZATION
	PATENT

Table 1 – Search terms

Figure 2 shows the selection process continued with four steps in which inclusion/exclusion criteria decreased the number of studies continuously. We started the sequence of article's selection by applying queries using Boolean operators and two sets of keywords.

The keywords were applied as a selection criterion for the issue (title, keywords, or abstract), generating an initial sample of 5,522 papers on Scopus and 25,877 papers on EBSCO databases.

Furthermore, we selected journals that present a threshold equal to or above 4.00 for 5-year, which results in 1,375 papers on Scopus and 73 papers on EBSCO databases. It is worth stating that the massive reduction in the number of articles that we encountered is not uncommon in literature reviews. It is worth stating that the massive reduction in the number of articles that we encountered is not uncommon in literature reviews. In particular, in our case, the high number of papers excluded in the search method is caused by the general nature of our search terms. Admittedly, they are regularly used in different sorts of study.



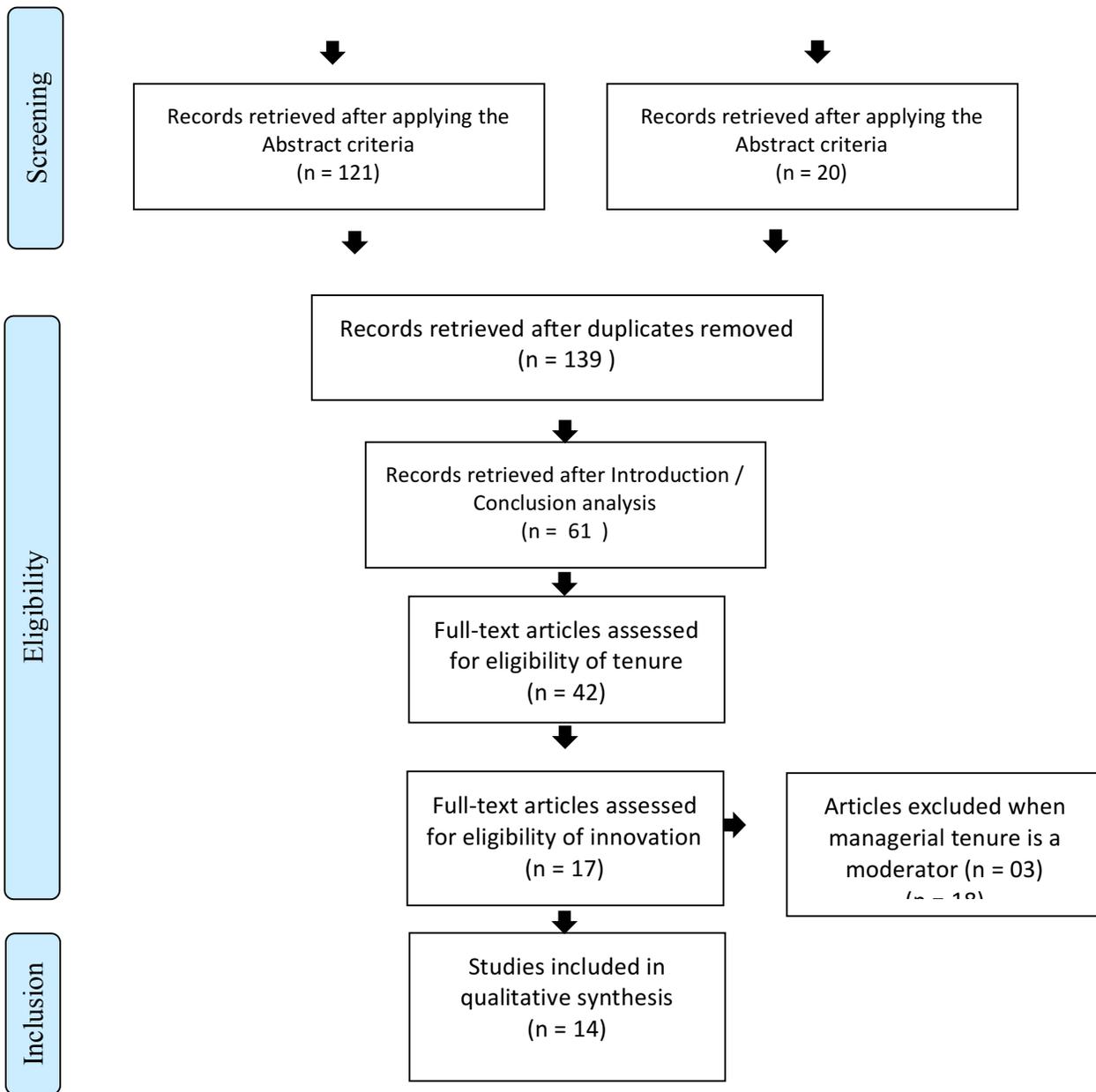


Figure 2- Selection papers process.

After, studies were included if they were relevant to the scope of the review, in precise words, the articles from the most relevant journals in the management area. This step guided us to the following: Academy of Management Journal, Academy of Management Review, Administrative Science Quarterly, Entrepreneurship: Theory and Practice, Journal of Applied Psychology, Journal of International Business Studies, Journal of Business Venturing, Journal

of Public Administration Research & Theory, Management Science, MIS Quarterly, Organization Science, Personnel Psychology, Research Policy, and Strategic Management Journal.

Thus, 728 articles on Scopus and 23 articles on EBSCO were retrieved as the outcome. Consequently, we believe both choices are supported by the fact that we could reach highest quality articles from the most important management journals, which is consistent with the study field.

By combining the articles from both databases, 141 articles were retrieved after reading the abstract. Nevertheless, 02 articles were find using the same data, and therefore they were removed. Finally, after reading introduction and conclusion to verify the fit of each research to our study, we reached a total of 61 articles were selected. The breakdown of this initial range of 61 articles reveals the relevance of examining the relationship of tenure and innovation by a crescent number of publications that combine our selection criteria, since the publication year of “upper echelons theory” (Figure 3).

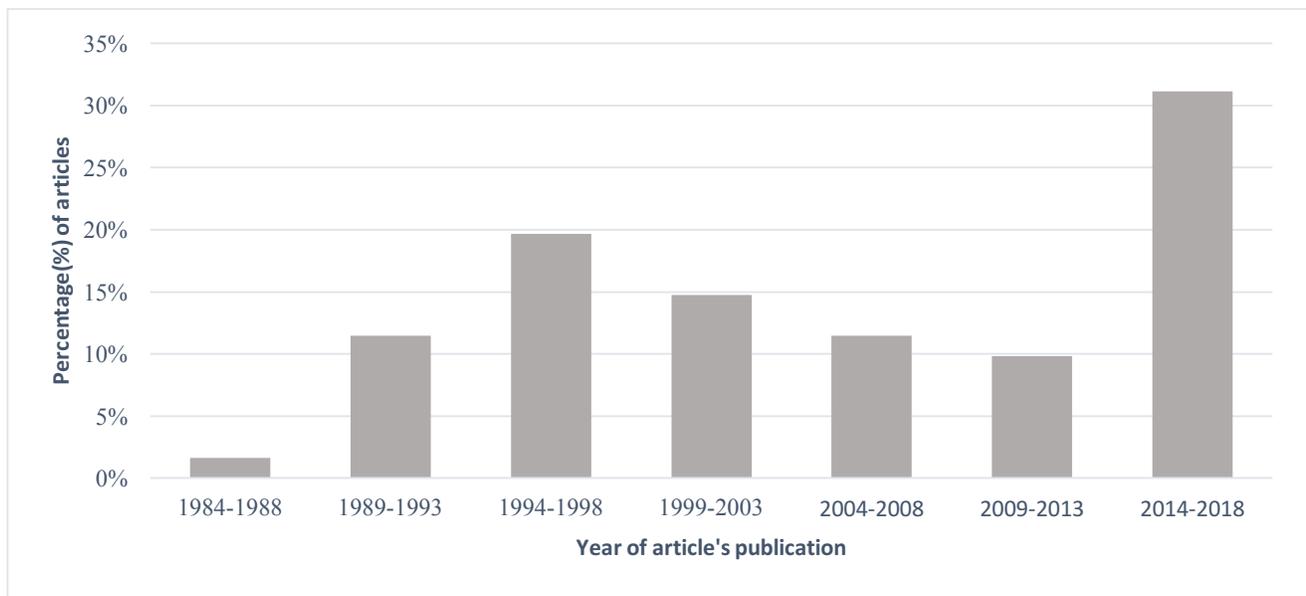


Figure 3- Number of publications over time that investigate tenure and innovation

Nevertheless, to narrow down our selection of 61 articles according to the research focus, we verified the different applications of tenure and excluded those that do not approach tenure

as an independent variable or moderator, resulting in 42 articles. Consequently, from the 42 articles, we visualised the variable and proxy studied as the dependent variable, which resulted in 17 articles that applied innovation or its proxy as the dependent variable. Therefore, because our goal is to study the relationship of managerial tenure as the independent variable and innovation, as the dependent variable, three articles that applied managerial tenure as moderator were excluded. Thus, a final list of 14 papers, from 7 different journals, attended all steps of the selection criteria (Figure 4).

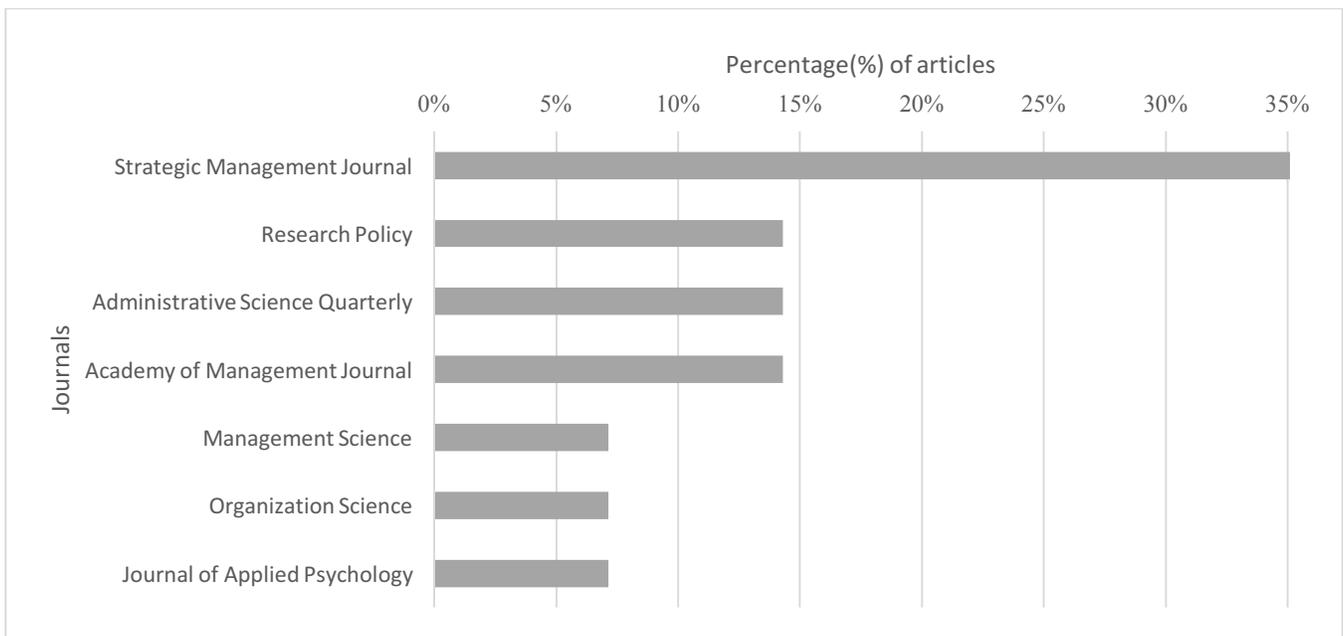


Figure 4- Distribution of the final list of 14 articles across the journals

Following the systematic review process, we then examine all 14 selected articles and generate a quality assessment protocol (Lipsey & Wilson, 2001) for selecting and assess all relevant data (Bimbo, at.al. 2017) (Table 2).

Articles	Quality	Area covered					
		Industry	Innovation	Type of management	Tenure measurement	Firm size	Country
BANTEL & JACKSON (1989)	High	X	X	X		X	X
FINKELSTEIN & HAMBRICK (1990)	High	X	X	X		X	
WEST & ANDERSON (1996)	Medium	X	X	X		X	X
BOEKER, W.(1997)	High	X	x	X		X	X
BOEKER, W. (1997)	Medium	X	X	X		X	X
PAPADAKIS ET. AL. (1998)	Low	X	X	X			X
MILLER & SHAMSIE (2001)	Medium	X	X		X	X	X
BARKER & MUELLER (2002)	Medium		X	X	X	X	X

KOR, Y. (2003)	Low	X	X	X		X	X
WU ET. AL.(2005)	High	X	X	X	X	X	X
SIMSEK, Z. (2007)	Medium	X		X		X	X
TALKE ET. AL.(2010)	Low	X	X	X		X	X
SOUDER ET. AL.(2012)	High	X	x	X	X	X	X
ZONA, F.(2016)	High	X	X	X	X	X	X

Table 2- Summary of the studies and quality ranking.

Quality assessment

The absence of homogeneity in the methodologies applied across the studies, for example, tenure length, type of industry, innovation, and type of management, made it difficult to apply the quality assessment on the studies. Therefore, due to the absence of a quality assessment protocol from the literature, the performed quality assessment protocol consists of six criteria elected according to the authors' knowledge: type of methodology; sample size; the

number of observations; theoretical model; confounders and bias; and outcome objectively quantifiable.

An appraisal tool was performed to evaluate the quality of the identified studies. The quality assessment tool created for this study (Appendix, Table A.1) is inspired on the Instrument Critical Appraisal Checklist (2009) presented by the Joanna Briggs Institute as a source document, likewise Cox, Hendrie, and Carty (2016). The tool consists of a 6-item checklist, which can be used to assess the quality level of an article by examining different criteria of study design, data collection, and the analysis and interpretation of the results (Bimbo et al., 2017).

The first item is related to the type of methodology applied by the authors. From this criteria, the two possible answers could be qualitative or quantitative; in which qualitative research would receive “low” assessment, whereas quantitative research would receive “high” assessment. In our research, all studies were quantitative, and therefore all fourteen articles were assessed as “high” for this particular criteria.

The second quality assessment item is regarding the sample size analysed in each article. In our case, the units referred to sample size are the number of firms studied. Therefore, following the quality assessment protocol (Appendix, Table A.1) if the sample size was until 50, then the study was rated as “low”. The studies with sample size between 51 and 499 were rated as “medium”, and therefore, the studies that examined a sample size equal, and over 500 firms received “high” as the score for the second criteria. The output from the application of this second criteria resulted in 11 out of 14 studies scoring “medium” and three studies scoring “low”. Also, it is important to register that no study reached the score “high” for this particular criteria.

The third item is related to the question “Is the number of observations adequate?”. As our study deal with the number of firms as units of sample size, we considered the number of observations, as the factor to be analysed by this criteria. Therefore, if the number of observations was until 50, then the study was rated as “low”, which implies that the number of observations does not represent the interest of the study adequately. The studies with observations between 51 and 499 were rated as “medium”, and therefore, the studies that examined equal and over 500 observations received “high” as the score for the third criteria. The output of this third item resulted in a total of three studies received “high” as score, and eleven received the “medium” score.

Regarding the fourth assessment criteria, the question was regarding the theoretical model applied and if the theory drives the results. After an in-depth analysis of each article regarding this criteria, 11 out of 14 articles received “high” score, and only three received “low” score.

On the fifth assessment criteria, the question was about confounders and bias. When the study did not describe the confounders or sample selection adequately, it received “low” score. Studies received “medium” as score when confounders are minimised or explicitly stated (e.g. inter-industry confound, biases due to sample selection procedure); whereas the score “high” was given to studies that controlled confounders in study design or analysis. Therefore, as an output of this criteria, 08 articles received score “high”, two “medium” and four received score “low”.

Finally, the sixth assessment item has the goal to answer the following question “Is the outcome measure validated and/or objectively quantifiable?” (e.g. regression of the relationship between managerial tenure and innovation). Studies would receive “low” quality rating when the outcomes of the research were not valid and/or it is not an objectively quantifiable measure; whereas studies would receive “high” quality rating when the research outcomes is a validated and/or objectively quantifiable measure. From this criteria, 8 out of 14 studies scored “high” and six scored “low”.

Table A.2. Quality assessment table summarising studies on the relationship between managerial tenure and innovation.						
Author, date	What it is the methodology researchers used in this study?	Sample size adequate?	Is the number of observations representative?	Theory driven results?	Are potential confounders and bias minimized?	Is the outcome measure validated and/or objectively quantifiable?
Bantel & Jackson (1989)	High Quantitative (Regression)	Medium N=199	Medium	High. Yes	High.	High. TMT tenure were significantly

						correlated with innovation.
Finkelstein & Hambrick (1990)	High Quantitative (Regression)	Medium. N=100	Medium	High. Yes	High.	High. Managerial team tenure has a profound influence on organisational outcomes.
West & Anderson (1996)	High Quantitative (Regression)	Low. N=27	High.	High. Yes	Low. Author did not describe confounders, bias or if they were minimized.	Low. Team tenure was unrelated to innovation, but the questionnaire data were gathered before the 6-month innovation data collection period.
Boeker, W. (1997)	High Quantitative (Regression)	Medium N=67	Medium	High. Yes	High. Choose a single industry to avoid confound inter-industry	High. CEO tenure has a significant effect on strategic change.
Boeker, W. (1997)	High Quantitative (event-history techniques, Regression)	Medium N=67	Medium	High. Yes	High.	Low.
Papadakis et. al. (1998)	High Quantitative (Regression)	Low. N=38	Medium	Low. No	Low (sample selection not adequately described)	Low.

	and Factor analysis)					
Miller & Shamsie (2001)	High Quantitative (Regression)	Low. N=7	Medium	High. Yes	High.	Low.
Barker & Mueller (2002)	High Quantitative (Regression)	Medium N=172	Medium	High. Yes	Low (sample selection not adequately described)	High. CEO tenure does not predict more R&D spending
Kor, Y. (2003)	High Quantitative (Regression)	Medium. N=73	Medium	Low. No	Medium.	Low.
Wu et. al.(2005)	High Quantitative (Regression)	Medium. N=84	High.	High. Yes	High.	High. Short-tenured CEOs engender more invention under highly dynamic technological environments, while long-tenure were more effective at spurring invention in stable rather than dynamic technology contexts.
Simsek, Z. (2007)	High Quantitative (Regression)	Medium. N=495	Medium	High. Yes	Medium.	High. Risk-taking propensity requires a willingness to embrace strategic

						change and uncertainty that would seem to favour short tenure.
Talke et. al. (2010)	High Quantitative (PLS structural equation modelling)	Medium. N=122	Medium	Low. No	High. Choose firm sample dominant or single-product business from manufacturing sectors to minimize intra-firm heterogeneity	Low. There is no outcome reported specifically for tenure.
Souder et. al. (2012)	High Quantitative (multiple regression model)	Medium. N=173	Medium	High. Yes	High.	High. CEO increases growth initiatives in the middle stages of tenure.
Zona, F.(2016)	High Quantitative (GMM estimator)	Medium. N=310	High	High. Yes	Low (sample selection not adequately described)	High.

Therefore, the articles were classified as low, medium, or high quality, depending on the sum of scores attributed to each of the six assessment criteria; each criterion received equal weighting. Following the quality assessment protocol, each research was rated as “high quality” if it ranked “high” on four or five criteria; “medium quality,” if it held three “high”; the left studies were labelled as “low quality.” Table A. 2 shows a summary of the observed studies’ characteristics. Six out of fourteen papers were rated as “high” quality, whereas, five ranked as “medium” quality and only three were classified as “low” quality study.

Results

Since 1984, due to the publication of “Upper Echelons theory” the number of publications in the field of Management investigating the relationship between managerial features and firm’s outcomes rose. Innovation is the outcome analysed in the present study, whereas tenure is the managerial feature analysed. Our final list of articles exposes the distribution of publications regarding the relationship between management and innovation through the years (Figure 5).

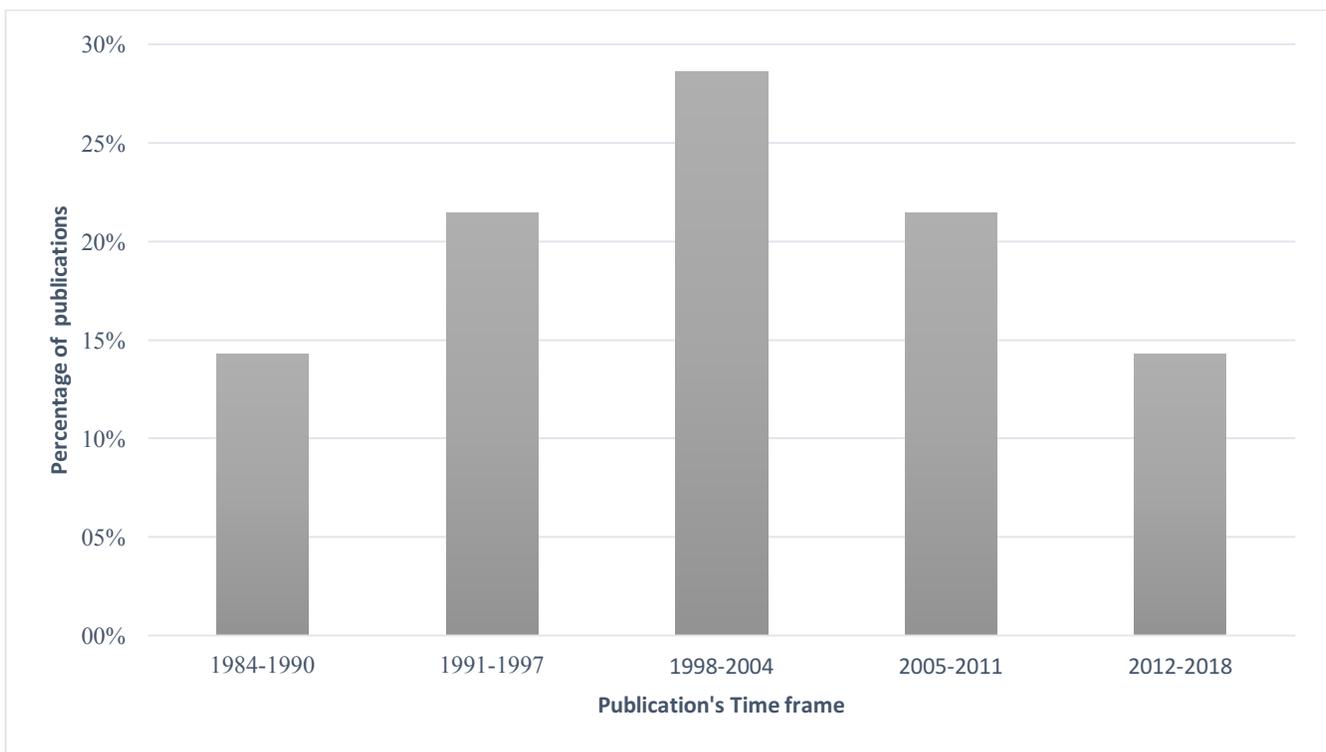


Figure 5- Breakdown of the final list of 14 articles among the journals

The majority of the studies, 11 out of 14 concentrated their investigation exclusively on the US, two focused in a specific European country, and only one study collected firms sample from North America and Europe (Table 3).

Articles	Country
BANTEL & JACKSON (1989)	US
FINKELSTEIN & HAMBRICK (1990)	US
WEST & ANDERSON (1996)	UK
BOEKER, W. (1997)	US
BOEKER, W. (1997)	US
PAPADAKIS ET. AL. (1998)	Greece
MILLER & SHAMSIE (2001)	US
BARKER & MUELLER (2002)	US
KOR, Y. (2003)	US
WU ET. AL.(2005)	US
SIMSEK, Z. (2007)	US
TALKE ET. AL.(2010)	17 countries (79% from Europe and 18% from North America)
SOUDER ET. AL.(2012)	US
ZONA, F.(2016)	US

Table 3- Breakdown of studies by country of sample investigated

Regarding research design, most of the studies (n = 10) are longitudinal studies, with a sample size ranging from 7 to 310 firms, with a minimum number of observations of 67 and a maximum of 2170. The great range of observations number is due the time of data collection across studies vary from months to 30 years. The remaining studies (n = 4) are single cross-sectional studies and present an average sample size varying from 27 to 495 firms, whereas the number of observations varies from 122 to 495. The overall distribution of the final list of 14 selected articles regarding sample size is represented in Figure 6, where 7 out of 14 studies examine a sample size equal to or higher than 100 firms.

Concerning the data analysis techniques employed, all studies used multivariate analysis techniques, such as analysis of variance or regression analysis. Besides regression analysis, the generalised method of moments (GMM estimator), an econometric method that estimates the best models to apply in a research and eliminate confound and biases was applied; also, PLS structural equation modelling, a technique that combines factor analysis and multiple regression analysis to analyse the structural relationship between measured variables and latent constructs. For more details on the characteristics of the studies covered in this review, see table A.2.

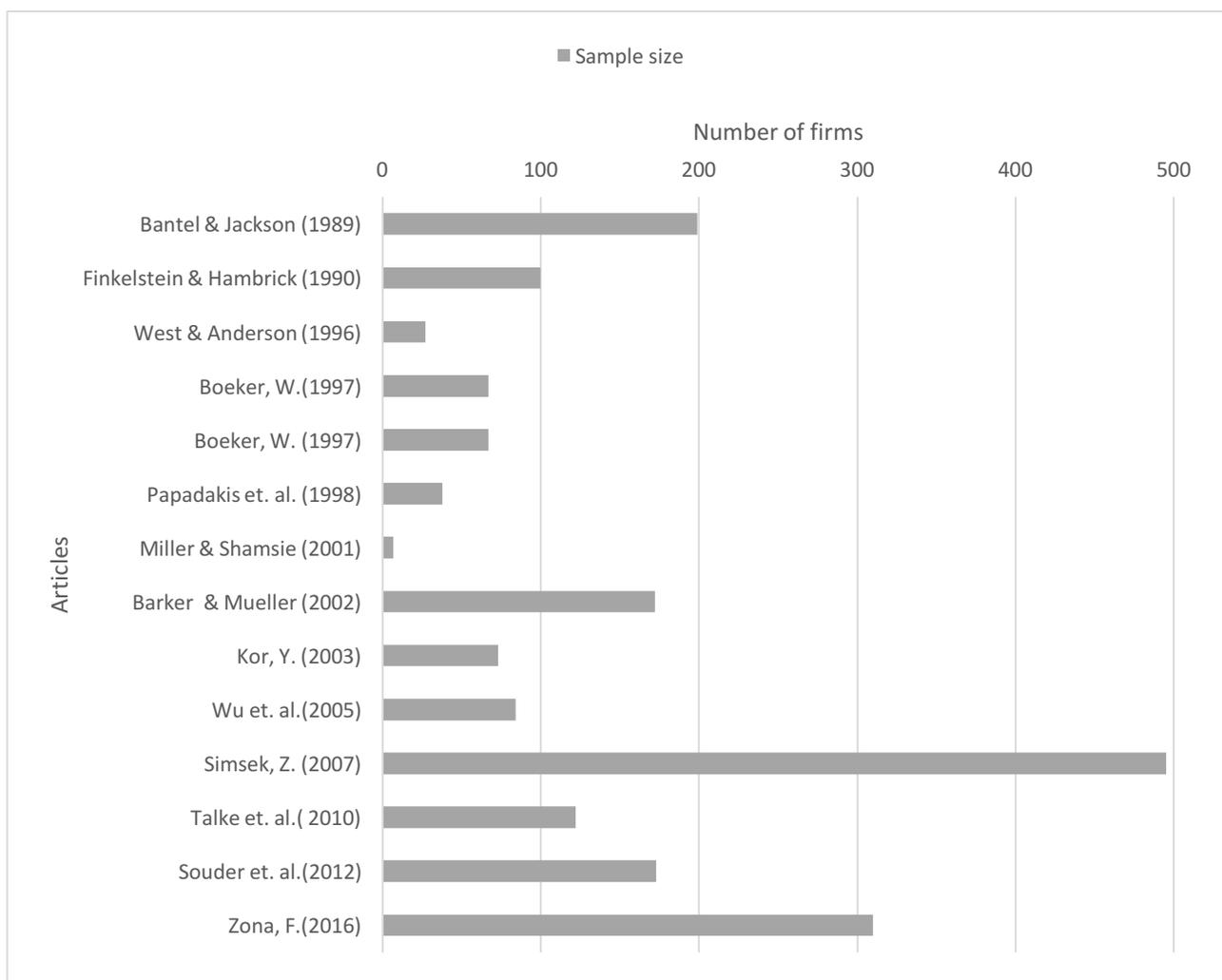


Figure 6- Breakdown of articles by sample size

In Figure 7, the total distribution of the number of observations regarding the final list of 14 articles can be visualised, where the great range of observations adopted by each author is identified. Overall, 13 out of 15 had observations lower than 600, and two studies had observations higher than 2,000.

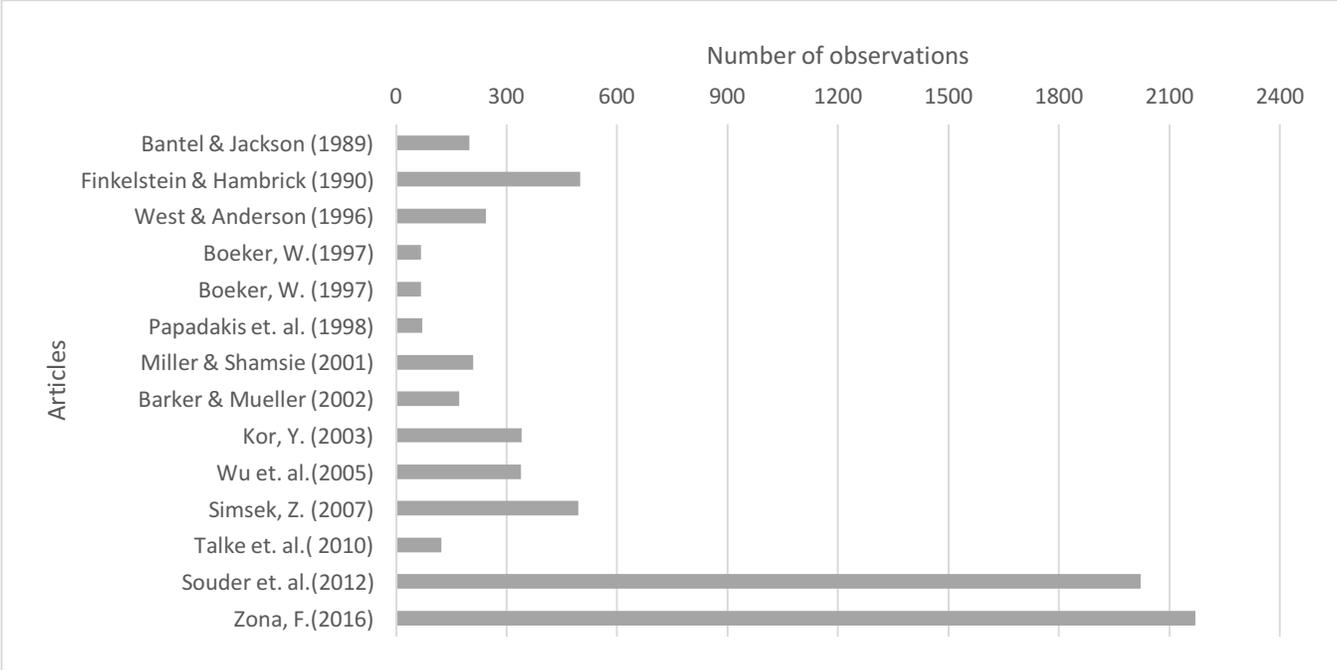


Figure 7- Breakdown of articles by number of observations

Another interesting finding is the time interval between the year in which the sample collection and the actual publication year. Overall, 10 out of 14 studies specified both the year of data collection and publication year. Therefore, the time interval across the studies between the year of data collection and publication year ranges from 4 to 36 years and it has an average of 11,6 years. Only four studies do not state the exact year of data collection (Papadakis et al., 1998; Simsek, Z., 2007; Talke et al., 2010; West & Anderson, 1996) (Table 4).

Articles	Year of publication	Data collection	Time interval (years)
BANTEL & JACKSON (1989)	1989	1980	9
FINKELSTEIN & HAMBRICK (1990)	1990	1978-1982 (5 years)	8
WEST & ANDERSON (1996)	1996	N/A	N/A
BOEKER, W.(1997)	1997	1978-1992	5
BOEKER, W. (1997)	1997	1976-1993	4
PAPADAKIS ET. AL. (1998)	1998	14 months	N/A
MILLER & SHAMSIE (2001)	2001	1936-1965(30 years)	36
BARKER & MUELLER (2002)	2002	1989-1990	12
KOR, Y. (2003)	2003	1990-1995	8
WU ET. AL.(2005)	2005	1992-1996	9
SIMSEK, Z. (2007)	2007	N/A	N/A
TALKE ET. AL.(2010)	2010	N/A	N/A
SOUDER ET. AL.(2012)	2012	1972 -1996	16
ZONA, F.(2016)	2016	2001-2007	9

Table 4- Breakdown of articles by the final year of data collection and year of publication

Although tenure is defined in all 14 articles by the number of years that a manager is assigned to this position within a company, only three articles (Miller & Shamsie, 2001; Souder et al., 2012; Wu et al. (2005) described the maximum and minimum number of years measured, 1 – 33 years; 0 – 44 years; 0-19 years, respectively.

Also, only three articles delimited in number of years the representation of short tenure and long tenure. Barker & Mueller (2002) stated short-tenure as the years range from 1 to 3 years and long-tenure from 8 years. Whereas Simsek, Z. (2007) performed the research investigating three groups: 1 to 12 years as short-tenure, 13 to 31 years and greater than 31

years as long-tenure. Zona, F. (2016) defined long-tenure as the first three years of a top manager in a company and above three years as long-tenure.

Regarding tenure measurement, the adoption of 3-years-cut-off to measure short-tenure, as mentioned on the literature review, was not found among all studies. Instead, tenure average was adopted by 9 out of 14 articles as a reference point between short-tenure and long-tenure (Figure 5).

Boeker, W. (1997) stated the use of the “average organizational tenure of the entire top team” without reveal numbers. Similarly, Talke et al. (2010) stated that “Board tenure heterogeneity is calculated by using the coefficient of variation”, however, no specific number is registered explicitly in the study. In the case of Zona, F., (2016), as mentioned before, the author adopted a clear distinction between short-tenure and long-tenure, and in line with “Upper Echelons theory” named the first three years of a top manager in a company as short-tenure and after it as long-tenure.

Articles	Tenure average (years)
BANTEL & JACKSON (1989)	14.79
FINKELSTEIN & HAMBRICK (1990)	N/A
WEST & ANDERSON (1996)	14.1
BOEKER, W.(1997)	4.75
BOEKER, W. (1997)	N/A
PAPADAKIS ET. AL. (1998)	18.14
MILLER & SHAMSIE (2001)	8.97
BARKER & MUELLER (2002)	N/A
KOR, Y. (2003)	4.48
WU ET. AL.(2005)	4.62
SIMSEK, Z. (2007)	13.8

TALKE ET. AL.(2010)	N/A
SOUDER ET. AL.(2012)	8.66
ZONA, F.(2016)	N/A

Table 5- Breakdown of articles by short-tenure year cut-off

Our findings show the heterogeneity of innovation proxy used per article to represent the dependent variable. Five articles measured innovation by the product innovation, diversification or experimentation approach (Boeker, W., 1997; Boeker, W., 1997; Miller & Shamsie, 2001; Kor, Y., 2003; Talke et. al., 2010), three articles measured R&D activities to represent innovation (Barker & Mueller, 2002; Finkelstein & Hambrick, 1990; Zona, F., 2016).

One article focused in technological innovation (Wu et. al., 2005); whereas two articles combine technical and administrative innovation (Bantel & Jackson, 1989; Papadakis et al., 1998), two articles approach organisational innovation (Simsek, Z., 2007; Souder et. al., 2012) and one article focus the dependent variable on the managerial behaviour towards innovation adoption (West & Anderson, 1996) (Table 6).

Articles	Dependent variable
BANTEL & JACKSON (1989)	Technical and administrative innovation
FINKELSTEIN & HAMBRICK (1990)	R&D intensity
WEST & ANDERSON (1996)	Innovation adoption
BOEKER, W.(1997)	Product diversification
BOEKER, W. (1997)	New product
PAPADAKIS ET. AL. (1998)	New business and new product introduction
MILLER & SHAMSIE (2001)	Product line experimentation
BARKER & MUELLER (2002)	R&D spending

KOR, Y. (2003)	Innovative products
WU ET. AL.(2005)	Firm inventiveness (Patents)
SIMSEK, Z. (2007)	Organisational innovation,
TALKE ET. AL.(2010)	New product portfolio (innovativeness)
SOUDER ET. AL.(2012)	New business
ZONA, F.(2016)	R&D intensity

Table 6- Breakdown of articles by proxy adopted to represent innovation

As described in the theoretical framework, the industries analysed by scholars can be classified as stable or dynamic. Also, in some cases, due to the strong effect of type of industry, authors can perform an investigation on both, stable and dynamic industry. Our findings show that 8 out of 14 articles investigated exclusively stable industry, whereas only 3 out of 14 articles covered dynamic industry and three studies analysed a sample from both industries, stable and dynamic (Table 7).

Articles	Type of company	Is the industry table or dynamic?
BANTEL & JACKSON (1989)	Banks (The financial services industry)	Stable
FINKELSTEIN & HAMBRICK (1990)	35 computer, 35 chemical, and 30 natural-gas distribution companies	Combination of both
WEST & ANDERSON (1996)	Hospital	Stable
BOEKER, W.(1997)	Semiconductor producers	Stable
BOEKER, W. (1997)	Semiconductor producers	Stable

PAPADAKIS ET. AL. (1998)	Manufacturing industries(food, chemicals, and textiles)	Stable
MILLER & SHAMSIE (2001)	Hollywood film studios	Dynamic
BARKER & MUELLER (2002)	General industry (Just not retailing)	Stable
KOR, Y. (2003)	High-technology medical and surgical instruments	Dynamic
WU ET. AL.(2005)	Biopharmaceutical	Dynamic
SIMSEK, Z. (2007)	manufacturing and service firms	Stable
TALKE ET. AL.(2010)	Industrial goods: food, technology, personal care, automotive	Combination of both
SOUDER ET. AL.(2012)	cable television industry	Stable
ZONA, F.(2016)	High and low tech	Combination of both

Table 7- Breakdown of articles by type of industry

By our literature review, we identified that some scholars applied a single individual (e.g. CEO) to represent the Upper echelons theory and others preferred to investigate the group behind the organisational decisions (e.g. TMT). From our systematic review, we identified that 7 out of 14 studies investigated a group of individuals, 6 out of 14 investigated a single individual and one study investigated both, a group and a single individual (Table 8).

of employees, while 4 out of 14 articles calculated firm size by sales, revenue or assets. One article does not state the measurement of firm size on their data, and one article stated that sample was retrieved from the “50 to 100 largest cable industries” (Table 9).

Articles	Organisational size
BANTEL & JACKSON (1989)	Mean 1.471 / Standard deviation 508 (Thousand of employees)
FINKELSTEIN & HAMBRICK (1990)	Mean 19.1 / Standard deviation 40.3 (Thousand of employees)
WEST & ANDERSON (1996)	Mean 1,430 / Standard deviation 914 (Thousand of employees)
BOEKER, W.(1997)	Mean 3.36 / Standard deviations 1.67 (Thousand of employees)
BOEKER, W. (1997)	N/A
PAPADAKIS ET. AL. (1998)	Average 730 employees
MILLER & SHAMSIE (2001)	Study size was calculated as the log of films revenue.

BARKER & MUELLER (2002)	Mean 2.51 / Standard deviation 1.37-0.35 (Thousand of employees)
KOR, Y. (2003)	Firm size, measured as the dollar value of total assets (in millions of U.S. dollars).
WU ET. AL.(2005)	Firm size, was measured by including the natural logarithm of a firm's total assets.
SIMSEK, Z. (2007)	The nation's largest small- to medium- sized business lobbying group. Minimum of 20 employees and 35 maximum of 500 employees.
TALKE ET. AL.(2010)	Mean 29.49 / Standard deviation 42.53 (Thousand of employees)
SOUDER ET. AL.(2012)	50 to 100 largest cable operators
ZONA, F.(2016)	Firm size, measured as the logarithmic transformation of total sales.

Table 9- Breakdown of articles by Organisation size'

MILLER & SHAMSIE (2001)	Yes
BARKER & MUELLER (2002)	Yes
KOR, Y. (2003)	Yes
WU ET. AL.(2005)	Yes
SIMSEK, Z. (2007)	Yes
TALKE ET. AL.(2010)	Yes
SOUDER ET. AL.(2012)	Yes
ZONA, F.(2016)	Yes

Table 10- Breakdown of articles by outcomes of the relationship between managerial tenure and innovation

Discussions

As an upper-echelons experiment, this systematic review is an added value to management literature regarding the relationship between managerial tenure – the independent variable and innovation – the dependent variable. A total of fourteen studies were systematically reviewed and submitted to a quality assessment protocol. Also, three moderators – industry, type of management and organisation size- were analysed and discussed. This review extends prior knowledge of the relationship between managerial tenure and innovation by reuniting, assessing and analysing all relevant research on the topic since Upper Echelon theory publication in 1984.

Independent variable

Although relevant management literature classifies managerial tenure into two groups, early stages or short-tenure, and later stages or long-tenure by adopting 3-years-cut-off as a

division measure (Hambrick and Fukutomi, 1991), some authors decide to classify each group according to the sample collected in the research or according to the author's assumptions.

Miller et al. (1982), for instance, on his research with managers from various industries, stipulated ten years as the division point between the short-tenure and long-tenure. In contrast, Zang and Rajagopalan (2010) choose three years as the medium point between the two groups.

Unexpectedly, in our systematic review only Barker & Mueller (2002), Simsek, Z., (2007), both "medium" quality studies and Zona, F., (2016), a "high" quality study, divided tenure into groups and presented the number of years which represent each group.

Barker and Mueller (2002) stated short-tenure as the first years that a CEO stays on this position in a firm, which could range from one to three years; while to a career be considerate long-tenure, the number of years as CEO in a firm should be in minimum eight years. Similarly, Zona, F. (2016) measured "Early stages of CEO tenure", the short tenure as the first three years of a CEO in a firm and the continuous years as "Latter stages of CEO tenure", the long tenure. Whereas Simsek, Z. (2007) divided tenure into groups of 1 – 12 years; 13 – 31 years and more than 31 years.

Interestingly, Barker & Mueller (2002) and Simsek, Z., (2007) declare a positive relationship between managerial tenure and innovation, but long-tenured managers according to the first have tenure over eight years and the second author labelled long-tenured managers as the ones with tenure ranging from thirty-one years.

Miller & Shamsie (2001), Souder et al. (2012) and Wu et al. (2005), respectively ranked as "medium", "high" and "high" are the only three studies that stated the range of years examined regarding tenure measurement, 1 – 33 years; 0 – 44 years; and 0 – 19 years, respectively. Boeker, W. (1997), a "medium" quality study and Talke et al. (2010), a "low" quality study did not explicitly show neither the measured tenure or average and standard deviation.

The Upper echelons theory (Hambrick and Mason, 1984) and Huber et al. (1993) argue that whereas managers new to their position are more responsive to innovation because they carry a different perspective to their job, long-tenured managers behaving accepting the organisation as it is, avoiding innovation.

Therefore, although the literature supports the tenure division into two groups, early stages of tenure or short-tenure and later stages of tenure or long tenure, only six studies explicitly applied this classification on their research by delimitating the range of years used to represent each group. More surprisingly, only two studies, a “medium” quality study and a “high” quality study (Barker & Mueller, 2002; Zona, F., 2016), applied 3-years-off-cut specification supported by the literature. Most of the studies applied tenure average of their sample as the division point between short-tenure and long-tenure. Overall, the short-tenure year cut-off from the findings varies from 3 years until 18,14 years (Figure 8).

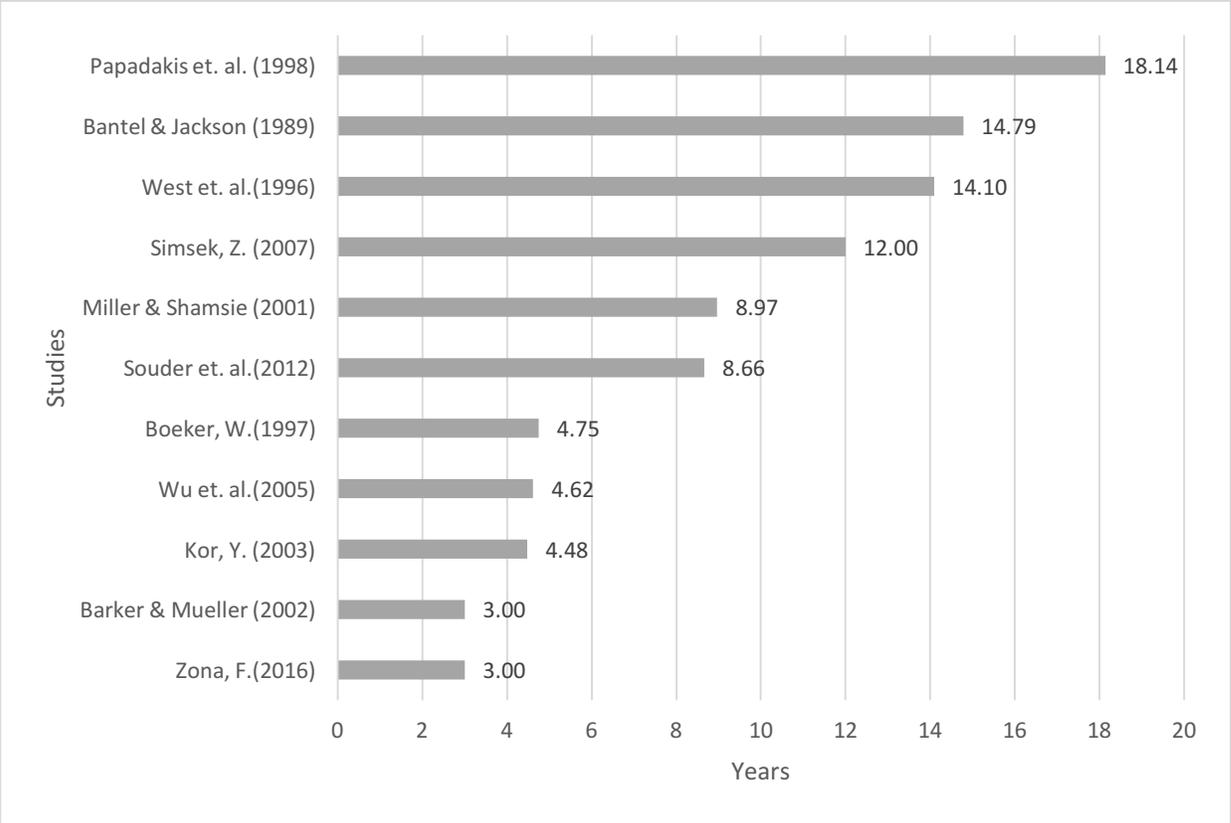


Figure 8 – Short-tenure year-cut-off applied per study – Excluding Boeker, W (1997) and Talke et al. (2010), as both did not state a number year-cut-off to short-tenure

We argue that future research is needed regarding the procedure of tenure measurement to clarify if it is feasible to standardise the year cut-off of short-tenure and long-tenure across studies. In the present study, although we conclude that short-tenured managers will implement

more innovation than long-tenured managers, we can not state the year-cut-off that divide short-tenure from long-tenure.

Dependent variable

Regarding innovation, all “high” quality studies concluded that managerial tenure is a predictor of innovation and that this relationship is negative. Interestingly, the studies did not investigate the same type of innovation. Boeker, W., (1997) in his research investigated product innovation, Wu et al., (2005) examined technological innovation; whereas Finkelstein & Hambrick, (1990) and Zona, F., (2016) used R&D as a proxy to measure innovation. Bantel & Jackson (1989) focused on technical and administrative innovation and finally Souder et al., (2012) investigated organisational innovation. However, when we divide the studies per type of innovation, we do not see a similar picture in the results.

The product innovation, for instance, investigated by Boeker, W., (1997), Boeker, W., (1997), Kor, Y. (2003), Miller & Shamsie (2001) and Talke et al. (2010), a “high”, “medium”, “low”, “medium”, “low” quality studies, respectively. Although all mentioned studies concluded that managerial tenure is a predictor of innovation, three of them are in favour of short-tenure managers (Boeker, W., 1997; Boeker, W., 1997; Miller & Shamsie, 2001). The others two studies preferred do not produce more test and analysis regarding the relationship between managerial tenure and innovation (Kor, Y., 2003; Talke et al., 2010).

On the other hand, Wu et al., (2005), a “high” quality study focused on technological innovation and following the Upper echelons theory concluded a negative relationship between managerial tenure and innovation.

Interestingly, among the studies that measured R&D activities to represent innovation although, all three studies show managerial tenure as a predictor of innovation (Barker & Mueller, (2002), Finkelstein & Hambrick, (1990) and Zona, F., (2016), classified as “medium”, “high” and “high”). However, our findings show that two studies concluded that the variables are negatively correlated (Finkelstein & Hambrick, 1990; Zona, F., 2016). However, one study (Barker & Mueller, 2002) concluded a positive relationship between managerial tenure and innovation.

In the case of Bantel & Jackson (1989), a “high” quality study and Papadakis et al. (1998), a “low” quality study tested technical and administrative innovation. Both recognised managerial tenure as a predictor of innovation and the first one concluded short-tenured managers as the promoters of innovation in compare to long-tenured managers. However, Papadakis et al. (1998) did not test managerial tenure isolated from the others measured independent variables and therefore no further analysis found in this study regarding the effect of managerial tenure on innovation.

Two studies devoted their attention to organisational innovation as the dependent variable, Simsek, Z. (2007), a “medium” quality study and Souder et al., (2012), a “high” quality study. Surprisingly, Souder et al., (2012) concluded that the manager’s type determines the type of relationship between managerial tenure and innovation. The understanding of if he is the founder of the firm or a hired one, called in his study as “agent CEO”, will impact the outcomes of research. Thus, in cases where the manager is the founder of the firm, the relationship was found negative, in line with Upper Echelons theory. However, when the manager is an agent, in other words, a professional hired to occupy this position, then the relationship is positive. Simsek, Z. (2007) concluded that long-tenured manager would promote more innovation.

Therefore, although contradictory results can be seeming when analysing the various quality studies level per type of innovation, all “high” quality studies support the conclusion that managerial tenure is a predictor of innovation and that the relationship is negative.

Moderators

Industry

Eight studies concentrated their efforts to investigate stable industries. Bantel & Jackson (1989), Boeker, W. (1997), Souder et al., (2012), all “high” quality studies and West & Anderson (1996), a “medium” quality study reached different conclusions regarding the relationship of managerial tenure and innovation. Bantel & Jackson (1989) and Boeker, W. (1997), in line with Upper Echelon theory, concluded that the relationship between managerial tenure and

innovation is negative, whereas Souder et al., (2012) agree with the negative statement only when the manager is the founder of the organisation. West & Anderson (1996) on the other hand was the only study to conclude that there is no relationship between managerial tenure and innovation.

Barker & Mueller, (2002), Simsek, Z. (2007) and Boeker, W. (1997), all classified as “medium” quality study, present a different conclusion for the relationship between managerial tenure and innovation. The first two studies point out a positive relationship and the last one a negative relationship. Papadakis et al. (1998), a “low” quality study, do not derive any further conclusion regarding the relationship be positive or negative.

Therefore, regarding the stable industry, although 4 out of 8 studies suggest a negative relationship between managerial tenure and innovation, we argue that the diversity of stable industries considered in each study (e.g. banks, semiconductors producers, food and chemical industry) was responsible for the contrasting results regarding the relationship between managerial tenure. Also, the findings show a gap of research on specific types of business within the stable industries, which calls for more research that investigate whether the specific business in the stable industry (e.g. food) present a more similar result regarding the relationship between managerial tenure and innovation.

Regarding dynamic industry, three studies dedicated their efforts to investigate this particular industry. Wu et al., (2005) assessed as “high” quality study concluded that short-tenured managers would invest more in innovation in compare to long-tenured managers, which is in line with the conclusion of Miller & Shamsie, (2001), a “medium” quality study.

Therefore, according to this systematic review, the industry is dynamic, the relationship between managerial tenure and innovation will be in favour of short-tenured managers as promoters of innovation. However, because of Kor, Y. (2003), a “low” quality study, did not derive any further analysis regarding the relationship, we argue that more research is needed on the dynamic industry to confirm our conclusion regarding the negative moderator effect of this factor on the relationship between managerial tenure and innovation.

Additionally, three studies investigated a combination of both industries, stable and dynamic. Finkelstein & Hambrick, (1990) and Zona, F., (2016), both “high” quality studies, concluded that the short-tenured manager would promote more innovation in a company in

comparison to the long-tenured manager. Talke et al., (2010), a “low” quality study, besides recognise managerial tenure as a predictor of innovation, do not derive further analysis regarding the relationship between managerial tenure and innovation.

Therefore, although the industry seems to be a moderator of the relationship between managerial tenure and innovation, we argue that more research is needed regarding this moderator factor, especially “within” the stable industry to investigate the contrasting results.

Type of management

Our review about the relationship of managerial tenure and innovation shows that often authors choose a different unit of analyses and nomenclatures to identify which managerial level was the research focus, such Top manager, top executive, executive, CEO, Top Management Team (TMT) and Middle management. Thus, we would like to highlight here that no systematic review was made before to verify if the type of management is leading to inconsistencies in the relationship between managerial tenure and innovation. Additionally, if the findings of research applied to a particular type of management (e.g. CEO) could also be applied to another research that has focused on a different type of management (e.g. TMT).

Dearborn and Simon (1958), for instance, reached significant finding with middle managers level, in the manufacturing industry, but commonly it is used as the base to support studies addressed to CEO and Top Management Team (TMT).

Although all “high” quality studies concluded that managerial tenure is a predictor of innovation and that the independent and dependent variables are negatively correlated, they focused the researches on a different type of management. Two studies investigated TMT (Bantel & Jackson, 1989; Finkelstein & Hambrick, 1990), three studies investigated CEO (Souder et al., 2012; Wu et al., 2005; Zona, F., 2016) and one study examined both TMT and CEO (Boeker, W., 1997).

From our systematic review, a total of six studies investigated CEO as the managerial type of the independent variable, managerial tenure. Souder et al., (2012) and Wu et al., (2005), both ranked as “high” quality study, agree on their conclusions regarding the negative

relationship between CEO tenure and innovation. However, Souder et al., (2012) pointed out that the relationship is negative for founder CEO, but positive if the CEO was hired for the job position.

Barker & Mueller, (2002), Miller & Shamsie, (2001), both “medium” quality studies and Zona, F., (2016), a “high” quality study, reveal different outcomes regarding CEO. The first one is in favour of long-tenure CEO as the more prominent promoter of innovation in compare to short-tenured CEO. On the other hand, the last two concluded that short-tenured CEO invest more in innovation than long-tenured CEO. Papadakis et al., (1998), a “low” quality study, besides of suggesting CEO tenure as a predictor of innovation, do not derive further analysis regarding the effect of CEO tenure on innovation.

Seven studies concentrated their research towards TMT, as the managerial type on managerial tenure to be analysed. Bantel & Jackson, (1989), Finkelstein & Hambrick, (1990), both “high and West & Anderson (1996), graded as “medium” quality study, presented different conclusions on their findings. While the first two recognised TMT tenure as a predictor of innovation and claimed that this relationship is negative, West & Anderson (1996) concluded that TMT tenure is not significantly correlated with innovation.

Boeker, W., (1997) and Simsek, Z., (2007), both classified as “medium” quality study, disagree on their findings regarding TMT. The former affirmed the negative relationship between TMT tenure and innovation; however, the last one concluded that long-tenure TMT would invest more in innovation, which classifies the relationship as positive.

Talke et al., (2010) and Kor, Y. (2003), both “low” quality study, besides the recognition of TMT tenure as a predictor of innovation, did not register more details regarding this relationship.

Boeker, W., 1997, a “high” quality study, was the only study to investigate both, CEO and TMT tenure. In line with Upper echelon theory, this study concluded that short-tenured CEO and TMT would promote more innovation in compare to long-tenured CEO and TMT.

Furthermore, although the quantitative difference between investigating an individual (e.g. CEO, top executive, top manager) and a group (e.g. Top Management Team, board), we argue that the type of management, group or an individual, does not moderate the relationship between

managerial tenure and innovation. Also, we concluded that the negative relationship revealed by all “high” quality studies is in line with Upper echelons theory (Hambrick, 2007) and therefore can be applied either to an individual top manager (e.g. CEO) or a group of managers (e.g. TMT).

Organisation size

Surprisingly, only seven studies measured the organisation size on the number of employees (Barker & Mueller, 2002; Bantel & Jackson, 1989; Finkelstein & Hambrick, 1990; Boeker, W., 1997; Simsek, Z., 2007; Talke et al., 2010; West & Anderson, 1996). Four studies measured organisation size based on the revenue or sales (Kor, Y., 2003, Miller & Shamsie, 2001, Wu et al., 2005 and Zona, F., 2016). One study revealed only the average of the number of employees across the sample, without more details regarding the organisation size of the sample (Papadakis et al., 1998). Souder et al., (2012) only stated that he investigated the “50 to 100 largest cable television companies”, however, no number is registered on his findings regarding organisation size. While Boeker, W., (1997) did not report any information regarding the organisation size.

Therefore, due to the lack of data regarding organisation size, we could not analyse whether organisation size is a moderator of the relationship between managerial tenure and innovation.

Overall of the relationship between managerial tenure and innovation

Our systematic review analysed the relationship between managerial tenure and innovation by investigating relevant papers on the topic since the publication of upper echelons theory in 1984. By assessing and examining fourteen retrieved studies, we found that 13 studies concluded that managerial tenure is a predictor of innovation (Table 11). This finding is fully compatible with upper echelons theory’s core premise that top manager has a significant influence on the firm outcomes, such innovation.

Articles	Short-tenure year cut-off (years)	Is managerial tenure significantly correlated to innovation?	If correlated, is the relationship positive or negative?	Study quality	Is the industry stable or dynamic?
Bantel & Jackson (1989)	14.79	Yes- TMT	Negative	High	Stable
Finkelstein & Hambrick (1990)	N/A	Yes TMT	Negative	High	Combination of both
West & Anderson (1996)	14.1	No TMT	-	Medium	Stable
Boeker, W.(1997)	4.75	Yes CEO and TMT	Negative	High	Stable
Boeker, W. (1997)	N/A	Yes – TMT	Negative	Medium	Stable
Papadakis et. al. (1998)	18.14	Yes CEO	N/A	Low	Stable
Miller & Shamsie (2001)	8.97	Yes – CEO	Negative	Medium	Dynamic
Barker & Mueller (2002)	3	Yes – CEO	Positive 8 + years	Medium	Stable
Kor, Y. (2003)	4.48	Yes – TMT	N/A	Low	Dynamic

Wu et. al.(2005)	4.62	Yes. CEO	Negative	High	Dynamic
Simsek, Z. (2007)	13.8	Yes TMT	Positive +31	Medium	Stable
Talke et. al.(2010)	N/A	Yes TMT	N/A	Low	Combination of both
Souder et. al.(2012)	8.66	Yes founder CEO and agent CEO	Negative to founder CEO and positive agent CEO	High	Stable
Zona, F.(2016)	3	Yes CEO	Negative	High	Combination of both

Table 11- Breakdown of articles by outcomes of the relationship between managerial tenure and innovation

Also, all “high” quality studies concluded that the relationship is negative (Bantel & Jackson, 1989; Finkelstein & Hambrick, 1990; Boeker, W., 1997; Wu et al., 2005; Souder et al., 2012; Zona, F., 2016). In others words, short-tenure top managers promote more innovation in a company than long-tenure top managers.

Long-tenure managers tend to proceed imitative strategies in line with industry trends, whereas short-tenure managers tend to invest and promote innovation to differentiate their firms from industry patterns (Hambrick, 2007; Hambrick & Mason, 1984).

Interestingly, Souder et al. (2012), a “high” quality study concluded that in cases where the top manager is the founder of the company the relationship will be negative, whereas if the top manager is an agent, a hired professional, the relationship would be positive. From the opposite results and possible explanation given by the author, whether the top manager is the founder or not, we support the development of future research considering this perspective.

Two studies, both classified as “medium” quality study concluded that the relationship between managerial tenure and innovation is positive (Barker & Mueller, 2002; Simsek, Z., 2007). One relevant factor regarding this opposite result is that both authors focused their research on the stable industry, the industry that by definition does not evolve fast. However, because others studies that also focused on the stable industry and concluded the relationship as negative, we argue that more research within the stable industry is needed to clarify whether there are different patterns between the various types of firms that belong to the stable industry (e.g. food, banks).

West & Anderson (1996), a “medium” quality study, investigated the managerial tenure towards innovation adoption, and it was the only study to conclude that there is no relationship between managerial tenure and innovation. The study stated: “Team tenure was unrelated to innovation, except that longer tenure was associated with the effect of innovations on staff well-being”.

Also, three studies ranked as “low” quality studies (Kor, Y., 2003; Papadakis et al., 1998; Talke et al., 2010) only concluded that managerial tenure is a predictor of innovation, but nor of them analysed or tested whether the relationship is positive or negative.

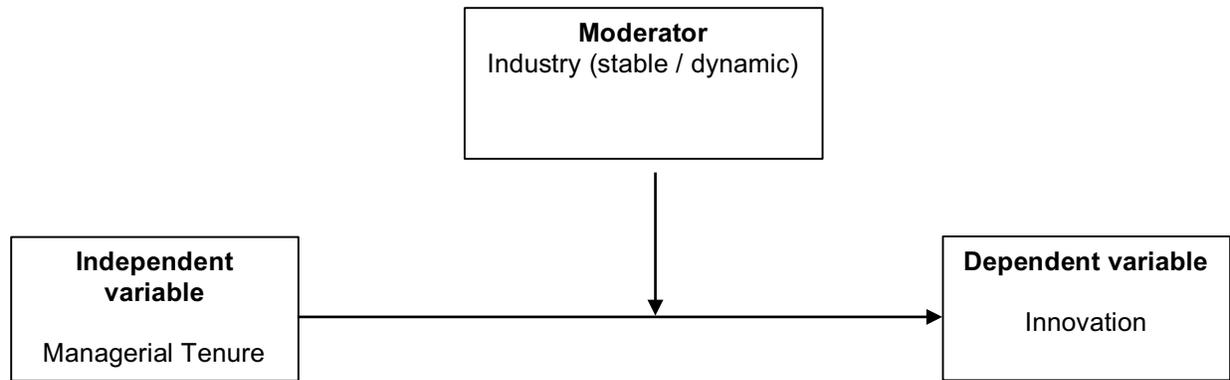


Figure 9 – Summary of the findings

Therefore, Figure 9 shows the results of our systematic review. The findings suggest that not only managerial tenure has a relationship with innovation, but also all “high” quality articles declare the negative relationship between the variables. From the three moderators analysed, the industry was the only factor that reveals significant moderating effects on the relationship between managerial tenure and innovation.

Limitations of the Current Review

This review only included studies published in peer-reviewed journals with the English language, which might lead to potential publication bias and thus overestimating the negative relationship between managerial tenure and innovation. Although we searched the central databases for management research, Scopus and EBSCO, other databases, such as Google Scholar and Web of Science, may cover additional relevant studies. Due to the restricted number of studies, we could not draw more inference on the moderators of the relationship between managerial tenure and innovation. Also, the majority of the studies investigated US companies, and it gives limitation regarding generalisation of the findings to others countries.

Although we conclude that short-tenured managers will promote more innovation in a company than the long-tenured manager, the inconsistency of tenure measurement across the

studies became a barrier to state in years how many years short-tenure represents and which number in years represents the start point of the stage long-tenure. Differently of relevant scholars that considers the first three years of a manager in a company as short-tenure and after three years, as long-tenure, the majority of the studies used the tenure average of their sample as the division point between short-tenure and long-tenure.

Therefore, we attribute the inconsistent picture of the range of tenure year-cut-off to data limitation, in others words, quantitative research regarding how to represent short-tenure and long-tenure, in years, is needed.

Also, a lack of consistency of organisation size measurement made it impossible to investigate whether organisation size is a moderator of the relationship between managerial tenure and innovation.

Suggestions of future research

According to the limitations, we suggest that future research address the following issues: First of all, more quantitative studies are needed to test others moderator factors of the relationship between managerial tenure and innovation. Besides, these future studies should make an effort to compare the effects of different measures of tenure on the relationship between managerial tenure and innovation. Moreover, to test others moderators such as the origin of top manager – founder of the company or hired for the job position – (Souder et al., 2012), and also investigate whether there is an optimal time, in years, of managerial tenure for the promotion of innovation.

Second, we suggest that future quantitative studies investigate more companies within the stable industry, such as the food industry. Thus, the inconsistent picture showing in some companies the long-tenured manager will promote more innovation, and in others cases, the short-tenured managers will promote more innovation, would be clarified. Third, consistent measure of organisation size lacks across the studies, and this data is fundamental for future research analyse whether organisation size is a moderator of the relationship between managerial tenure and innovation.

Therefore, although our systematic review concluded managerial tenure as a predictor of innovation and that the relationship is in favour of short-tenured managers, more quantitative investigation on the topic is needed. An advance on the topic would help us not only better understand which others moderators, besides industry, can affect this relationship. We also suggest as future research, the development of a predictive model of the relationship between managerial tenure and innovation to guide organisations in their decisions such as the hiring process, promotion and better-fit of top managers according to the internal and external features of each firm.

Conclusions

Our research transfers the theory of upper echelon to the innovation literature. Upper echelon theory explains the influence of top managers' characteristics on firm outcomes, such innovation. Relying on the upper echelon theory, we implemented a systematic review to investigate if managerial tenure enhances innovation and which factors moderate this relationship. Our results are in line with upper echelon theory showing that managerial tenure is a predictor of innovation of firms. Simultaneously, we conclude that short-tenured managers promote more innovation in compare to long-tenured managers.

After analysing industry, type of management and organisation size as moderators, we conclude that industry is a moderator factor in the relationship between managerial tenure and innovation. However, quantitative research with more companies within stable (e.g. food industry) would contribute to the understanding of the positive relationship concluded by two studies in the stable industry (Ciliberti, Bröring & Martino, 2015).

Our systematic review also proves that all findings of studies related to a group of top managers (e.g. TMT) can be applied to individual's top managers (e.g. CEO). Therefore, type of management, TMT or CEO is not a moderator factor in the relationship between managerial tenure and innovation.

Organisation size could not be analysed as moderator due to the lack of this data across the studies. Nevertheless, we encourage the investigation of others moderator's factors such as the top manager origin – founder of the company or hired for the position.

The authors highly recommend the development of a predictive model on the relationship between managerial tenure and innovation, as the test of others moderators, in future research. Therefore, due to the relevance of our findings to both academy and business, the innovation academy should devote more attention to investigate the short-tenure year cut-off and test more moderators besides the type of industry. We hope this research and results described here will facilitate further development of this vital area of understanding to the organisations and academy.

Appendix

Table A. 1. Study features and criteria of the quality assessment protocol applied in this research.				
Studies attribute	Criteria assessed	Quality rating		
		Low	Medium	High
Methodology	What type of methodology was applied by the authors?	Qualitative	n/a	Quantitative
Sample size / Observations	Is the sample size representative?	Until 50	Between 51 and 499	Equal and above 500
	Is the number of observations adequate?			
Theoretical model	Is the theory driven the results?	No	n/a	Yes
Confounders and bias	Are potential confounders minimized? Are bias avoided?	Confounders, bias or sample selection not adequately described	Confounders / bias minimized and clearly stated	Confounders / bias controlled
Outcomes measure	Is the outcome measure	No, it is not an objectively	n/a	Yes, the study outcomes measure is

	objectively quantifiable?	quantifiable measure		objectively quantifiable
Overall rating		No or two "high"	if a study held three "high"	When a study scored "high" on four or five criteria

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