Top management teams: a bibliometric research from 2005 to 2015

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Abstract: This article aims to identify the main characteristics of the works on top management team (TMT). Firstly, it was related to the classic and current authors who research TMT performing a bibliometric research in the scientific journals of Web of Science, in the period from 2005 to 2015 (inclusive). Later, in order to raise the main evolutionary approaches, the years 2013, 2014 and 2015 specifically were analysed and for the reason that this period reflects the current tendency of the theme. The results were processed in the software Bibexcel and this generated a matrix of citation and co-citations, whose data were submitted to an exploratory factor analysis, from which five factors were identified. These were named in accordance to the main approach of the classic and authors, namely: 1) competencies of top management team; 2) features of top managers; 3) effect of demographic lines failures; 4) salary disparities among CEOs; 5) organisational learning. Among the evolutionary approaches of the authors who continue researching the theme, we highlight the interest in the context of TMT in family companies, gender diversity in the team and the internal and external influences of TMT. From the study, it can be concluded that the researches on human and behavioural aspects of TMT are constantly growing, since they accompany the evolutionary process of organisations. There is an increase in the tendency to study decision making under the human and behavioural aspect and not only under the structured and rational aspect.

Keywords: top management team; TMT; CEO; evolutionary approach; bibliometric research.
1 Introduction

The economic financial adversities, such as the interferences of government policies, the economic crisis of the country, and the high level of business competitiveness added to the marketing requirements, more avid consumers for affordable quality products, the competition proliferation, the need for stronger organisational control, require that the companies constantly and rapidly take more assertive decisions that enable the organisation to meet its objectives and so be able to achieve better results. The decisions are taken by the high-level managers of the company together with the top management team (TMT) aiming to conduct the decision-making process in order to optimise the usage of the financial physical and organisational resources and may also meet particular interests rather than those of the company. According to Barney (1991), those resources are controlled by the company and enable the strategic decision operationalisation.

In this regard, so that the organisation may be competitive, the high-level managers need skills, expertise and ability compatible with the strategic decision-making process. According to Serra et al. (2014), the TMT of the companies can be one of the fundamental strategic resources and its decisions should be based on extreme caution and significant rapidity, since the competences and abilities which this team makes company generate useful and timely data that support the decision-making process.

Despite the importance of the subject, after searching the Web of Science database regarding TMT, few review studies which consider the approaches elaborated till then were found. Therefore, this work contributes profoundly to academia for the reason that it presents in a condensed and systematic manner a study which details the characteristics of the works developed about TMT in the last ten years, demonstrating this way the longitudinal progress and the academia’s interest for the subject, since the high-level managers and the TMTs are essential tools for the existence of a company. It should be
highlighted that this article aims to identify the main characteristics of the works about TMT. In this regard, there must be the achievement of some specific objectives, namely:

1. Relate the main classical and current authors who research TMT.
2. Raise the main approaches about the subject.

For this purpose, it is adopted as methodology a bibliometric research in the journals of the international scientific basis *Web of Science*, in the time period of 2005–2015 (inclusive), having as search keywords the term ‘TMT’, in the ‘topic’. Therefore, this time period reflects the evolving tendency of studies about this subject. The results were processed firstly in the software Bibexcel, which generated a matrix of quotations and co-quotations, and this one subsequently was granted another statistic treatment, in the Software SPSS, being possible, through the exploratory factor analysis, the identification of five factors.

Structurally the article is divided into parts, being the first of which the study introduction, followed by the theoretical approach, the methodology and finally the result analysis and the concluding remarks, as well as the references used. It is expected to contribute to science in so far as it is possible to structure and systematise the conceptual part considered to organise the TMTs since in most cases the authors present in their works the subject solely under the managerial and contextual aegis.

2 **Theoretical review**

We present hereinafter a brief conceptual approach about the subject TMT.

2.1 **Top management teams**

We begin this topic presenting the main characteristics of the TMT.

2.1.1 **Characteristics of the TMTs**

Understanding the relationship between the managers and the strategic behaviour is vital for the organisation, since in general the decision-making process must be timely, urgent and useful. According to Ramos and Roglio (2013), the researches about the subject have been performed in order to get to know the main characteristics of TMT as well as what these affect, positively or negatively, in the strategic decisions made by the organisation. This effort is justified by the necessity of improving the organisational results, and by the pursuit of adaptation between the characteristics of the managers and the challenges posed by the competitive scenario. In this connection, it is possible to point several lines of study about the decision-making process in the organisations, however; the most traditional paradigms are the rationalist and political perspective. Regarding rationality it is concerned to comprehend better the decision-making points, the rational judgements and the limitations of data source and processing. When it comes to political issue, it is aimed to analyse the influence of the use of power in decision-making (Ramos and Roglio, 2013).
According to Papadakis and Barwise (2002), the forerunners who discussed the subjects of TMTs were Hambrick and Mason (1984), who developed a study about the importance and characteristics of the TMTs and hence it was found that the greatest importance of TMT is in its influence on decisions as well as the importance in the strategic decision making for the performance of the organisations. For these authors, the characteristics were divided into perceptible and psychological ones. The first refer to the aid in the formation of psychological characteristics and include easily identifiable data, such as age, education, etc. In relation to the latter, the study of the authors, which have knowledge base and can also be linked to personal values, and therefore are more difficult to be measured (Serra et al., 2014).

Further about the characteristics of TMT under the vision of (Hambrick and Mason, 1984), we should mention that the same were divided into psychological and observable ones, according to Figure 1.

**Figure 1** Characteristics of TMT (see online version for colours)

![Characteristics of TMT](image)

*Source:* Adapted from Hambrick and Mason (1984)

In the psychological perspective are found the knowledge base, values and personality. Cognitivist studies seek a better comprehension of how the thought processes of the individuals affect their perception of reality and subsequent behaviours (Ramos and Roglio, 2013). About age, it is important to highlight the idea that younger officers are associated to managers linked to growing companies and that are more likely to take a risk. However, less young officers are more conservative since their physical and mental strength is lower, although they have a greater organisational commitment and are not willing to take a risk, mainly due to the fear that their financial and professional life could be affected. Regarding functional range, we face the question that functional areas which the officers went past affect somehow the decisions made by the same. In relation to other experiences in the career, it is emphasised the reasoning that managers outside the company bring with themselves other experiences, being more willing to changes and more receptive to opportunities.

With respect to education, it is assumed that having training means having expertise and therefore the education level of TMTs is positively related with receptiveness and
innovation. The socioeconomic issues depict the influence of origin of the executives in the decision-making process. When it comes to financial position, it is highlighted that the organisational financial result is not related to the owners, but rather to the return to the managers who may or not belong to the company shareholding structure. In terms of features of the group of TMT, we identify that both heterogeneous and homogeneous groups must be analysed, because in stable environments the team’s homogeneity is related positively to profitability, and in complex environments the team’s heterogeneity shall be related positively to profitability (Hambrick and Mason, 1984).

The study also argues that the organisations are a reflection of values and knowledge bases of their TMT, and it is highlighted the great dominant coalition power in the elaboration and the adoption of the best organisational strategies, in the search to achieve a high level of corporate performance (Hambrick and Mason, 1984). Furthermore according to (Hambrick and Mason, 1984), the studies about TMT bring three benefits to organisations, namely:

1. They enable the prior identification of organisational results.
2. Provide the selection and development of managers of a better educational level.
3. Focus their efforts to get to know and anticipate the actions/reactions of competing companies.

TMT may be impacted by some variables:

1. heterogeneity of composition
2. age and background diversity of the executives
3. the diversity of demographic composition.

Demonstrating what was stated, Murray (1989), when quoted by Serra et al. (2014) mentioned that the team’s heterogeneity affects performance in a two-fold manner: by low process of socialisation, which may require greater exploration of strategic alternatives, and by a broader background range which can help in the identification of new strategies. For (Dolz et al., 2015), the age and background diversity of the executives of TMT have been related to the ability to perceive change and take different levels of risk capable of responding to environmental changes.

The diversity of demographic composition of TMT has been related to the wealth of information that is taken into consideration, but also to the difficulty to achieve consensus, and at this point it is important to mention that the managerial decisions are influenced mostly by emotional issues of the managers originating from behavioural factors, ambition levels, social culture, etc., to the detriment of human rationality (Nielsen, 2010). Hambrick and Mason (1984) also reaffirm such positioning when they quote that the complex decisions are mostly the result of behavioural factors instead of a mechanical search for economic optimisation, and in this respect it is important to highlight that the strategic decisions can be affected by the behaviour of the managers, unlike the operating decisions which are nothing more than direct and calculable decisions in the organisation. Furthermore regarding the diversity of TMT, Carpenter (2002) observes that it is related to the abilities and expertise of the decision makers and this appears to be an opposing force, and also provide TMT access to a wide range of information and social knowledge bases. For this reason, it is believed that the
heterogeneity of TMT brings more benefits to the companies with complex environments in which the differences between the team members become an attractive to debates about the better decision to be made about a subject.

With respect to multinational companies, the TMTs need to know and manage the operations in accordance to each region, as well as need to cope with international demands (Greve et al., 2015). This is because each region have its peculiarities and specific demands, such as specific cultures, climate that enables different productions, geographical location for production flow, tax incentives, offered by the government.

Massis et al. (2015) point out that the behavioural theory is responsible for highlighting the negative consequences of family engagement such as lack of self-control, which might lead it to become more risk averse, and unconsciously favour decisions that damage company and family. Finally it is possible to determine that the high-management teams make strategic decisions, and the quality and the time these decisions are made determine the organisational performance. And in this way for Johnson and Lederer (2010), good relations between information technology managerial team and its TMT contribute to a strategic alignment of the IT role and organisational strategy, leading to organisational performance improvement.

We can see that CEO’s work together with TMT presents strategic solutions that meet the needs imposed by the external environment. Studies about the composition of TMT elaborated by Carpenter et al. (2004) denote CEO’s dominance and the diversity of interaction levels of TMT which affect the strategic decision making (Papadakis and Barwise, 2002).

2.1.2 Structure of TMTs

The structure of TMT has several elements which can determine the team’s interdependence level. Johnson et al. (2006) highlight three of the critical aspects of team’s structure which form the interdependence: horizontal, vertical, and reward to the interdependence. The horizontal interdependence is the level at which it is arranged in such a way that the actions and effectiveness of their peers affect each other. Of particular relevance in the context of TMT is the distinction between a division and a functional structure. The greater the horizontal interdependence, the more TMT members are influenced by each other’s actions and attributes, and therefore, more heterogeneity will influence processes and social results. The vertical interdependence refers to the degree to which members are peers, as opposed to disparate hierarchies. The implicit image of a TMT is a CEO and a set of direct reports of the same hierarchical stature, they all say under the title of executive. The reward for interdependence is yet the level to which members receive rewards for the performance of the company (or group) rather than subunit or individual performance. In general, what can be noticed is that directly or indirectly TMT is the guide of the decision-making process. Its influence is composed of a mixture of personal characteristics, its life experiences and professionals, its age, its values and its specific abilities and competences acquired according to its cognitive base. On the other hand, it is also true to say that the other part of its management is influenced by more rational characteristics based on precise information and great objectivity. Based on the theoretical context presented here, the next section will present the methodology used in this paper.
2.1.3 Competencies and organisational learning of TMTs

According to Spencer (1993, quoted by Pereira et al., 2006), the concept of competence is thought of as a set of knowledge, skills and attitudes, that is, a set of human abilities that justifies a high performance, believing that the best performances are based on the intelligence and the personality of the people. This approach considers competence, therefore, as a stock of resources that the individual holds. The evaluation of individual competence is made, however, in relation to the set of tasks of the position or status occupied by the person.

However according to Prahalad e Hamel (1990, quoted by Brandão and Guimarães, 2001), they deal with the concept at the organisational level, referring to competence as a set of knowledge, skills, technologies, physical and managerial systems inherent in an organisation. Thus, organisational core competencies are those that confer competitive advantage, generate distinctive value perceived by customers, and are difficult to be imitated by competitors. It is possible, therefore, to classify the competences as human those related to the individual or to the work team or organisational ones that concern the organisation as a whole. Fleury and Fleury (2001, quoted by Pereira et al., 2006) argue that mapping and developing organisational and individual competencies have become one of the strategies of large companies to reach their final consumer more efficiently. It is part of this strategy, the training of employees and partners of an organisation, so that they know profoundly the product they sell and, therefore, have a greater influence on the customer’s decision. For it is no use for a company to strive to make an excellent product if its internal customers do not know the information about what they produce or sell. There are basically two types of organisational competencies: the basic ones, which guarantee the survival of a company, because if it does not have these competences, it will be out of the market; and the essential ones that allow the differentiation of a company in the market. Quality management nowadays, for example, for many companies, is part of a core competency, but it is still important.

Pereira (2002) says that competence is the ability to generate observable results, necessary to reach the objectives (business and cultural) defined in the strategic positioning of the company and in the purpose of maintaining and developing its essential ideology. It is a concept that defines the attitudes, skills and knowledge necessary to achieve differentiated results, the set of qualifications that the person has to perform a job with a higher level of performance. TMT can be considered as important and fundamental organisational ‘leaders’. Pereira et al. (2006) define two basic skills (competencies) that must be present in the leaders to make effective the implementation of strategies: human skills and conceptual skills. Human skills represent the ability to interact with people, communicate clearly, motivate employees and value results. Conceptual skills refer to the ability to look at the whole, to have a systemic view of the processes and their interactions with the external environment (market, clients, government). In the future, the crucial competence of companies will be the ability to creatively and continually destroy themselves and remake themselves to meet the demands of the consumer. Everyone in the organisation should have the responsibility to take immediate action, as a company needs leadership throughout the organisation, and this leadership is the ability to see reality as it really is and to mobilise the appropriate response. Regarding organisational learning, Senge (2000, cited by Pereira, 2002) defines that it is a continuous process of detecting and correcting errors. Erring means learning, involving self-criticism, risk assessment, tolerance to failure, and course correction, until
reaching the goals. It is the ability of organisations to create, acquire and transfer
knowledge and modify their behaviours to reflect these knowledge and insights. This
implements a mechanism by which workers contribute to the company’s performance by
applying their knowledge and skills to solve problems and to innovate constantly. It
creates the organisation that learns and that generates knowledge.

Zangiski et al. (2009) point out that organisational learning refers to the effective
processing, interpretation and response of information internal and external to the
organisation, and the main discussion is related to which forms of change are associated
with learning. Complementarily, the social perspective tries to study how people attribute
meaning to their work experiences, and these experiences can be from explicit sources,
such as financial or tacit information, by perception or ‘sensitivity’; therefore, according
to this view, learning originates from social relations.

The effectiveness of organisational learning and the generation of knowledge is
determinant for the formation of organisational competencies.

In this way, the interaction between organisational knowledge, organisational
competencies and organisational learning is represented by the different organisational
and management processes, insofar as they mobilise the organisational knowledge base
through organisational competencies; and also execute performance management that can
be a result of organisational learning.

It is also clear the need to develop organisational spaces for the socialisation and
dissemination of knowledge, which would characterise a space for learning and
participatory management. The organisational structures, as far as the definition of
vertical and lateral coordination mechanisms are concerned, at the levels of organisation
of units or work, should allow collaboration and the development of autonomy.

2.1.4 Wage disparities between CEOs of TMTs

Remuneration is a reward given in return for a service or favour. In general, salaries in
organisations are paid according to the importance of the position held, the degree of
specialisation required, the responsibilities and especially the supply and demand of
specific labour for that function in the market. Thus, it is very natural that some tasks are
better paid than others, taking into account the level of competence required for their
execution. And even more that managerial functions receive a larger sum, plus more
benefits than the operational functions. With the advancement of the information age and
the arrival of globalisation, in the current scenario there is competition for all parties
involved in the working relationship. Employees need to seek qualification, good training
and experiences that make them attractive to companies, while the latter have the role of
offering good remuneration, capable of retaining employees in the organisation,
preserving their intellectual capital and remaining competitive to competing companies.
Each company has its remuneration policy established and these must meet the
expectations of its employees, allowing them to feel motivated to grow in the
organisation and thus play their role in the best possible manner. In this way it is
necessary to find the balance between the interests of the collaborator and the
organisation, and also generate a concrete return for both parties (Silva et al., 2015).

For Henderson and Fredrickson (2014) the need for coordinated decision-making
takes into account the wage gap between the CEO of a company and its other top
executives. A behavioural view suggests that because of greater pay equity, it fosters
collaboration, a greater need for coordination encourages small pay gaps, and the combination of increased needs and lower gaps increases the company’s performance. In this context one can cite two theories: the first is the theory of relative deprivation where individuals compare their salary with that of people in the larger organisational ranks.

Relative deprivation is particularly relevant to the CEO’s pay gap for two reasons. Firstly, it involves bottom-up comparisons between lower-level employees and their superiors. Secondly, deprivation involves comparisons of results with little consideration for differences in inputs such as effort, ability, or skills. Large wage differences increase the overall effort of subordinates, but they do so by promoting self-reliant efforts at the expense of cooperatives and also increase the possibility of political sabotage. Companies with the greatest coordination needs will display small CEO’s pay gaps and the combination of increased coordination needs and smaller gaps will increase the company’s performance.

The second theory is that of the tournament that was developed to explain the large, typically observed gaps between CEO’s salaries and executive’s pay directly below them. This theory defines that when monitoring is reliable and cheap, the optimal effort is obtained by paying agents based on their marginal products. The promotion options are also direct because the directors can simply compare the marginal contributions of the competitors. In general, the tournament theory states that as monitoring difficulties increase, the CEO’s larger payment gaps reduce the need for costly supervision and provide strong incentives that better align the interests of key players.

2.1.5 Effect of TMT demographic lines faults

With respect to the effects of the demographic faults of the TMT, a synthesis of the theories highlighted by (Serra et al., 2014) is presented below, where the view of some scholars of the subject is listed.

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Contributions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bantel and Jackson</td>
<td>1989</td>
<td>They have tested the level of cognitive resources and demographic characteristics of the CEO and TMT, showing that cognitive resources in the decision-making process and the diversity of views are important for innovation.</td>
</tr>
<tr>
<td>Smith et al.</td>
<td>1994</td>
<td>They tested three alternative models to assess the effects of demographics and TMT relationship processes on organisational performance; in a model only the demography influences; the second is influenced mainly by the process; in the third model, intervening, are the demographic characteristics influencing the process. The results showed that the process has a direct effect on performance, although demography may have some direct and indirect impacts.</td>
</tr>
</tbody>
</table>

Source: Adapted from Serra et al. (2014)
Table 1  Contributions on the effect of demographic lines failures (continued)

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Contributions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wiersema and Bantel</td>
<td>1992</td>
<td>They studied TMT demographics focusing on the relationship between TMT’s demographics and corporate strategic change as measured by Fortune 500’s largest diversification. In their study, they concluded that TMTs with a greater propensity to change are characterised by lower average age, shorter organisational tenure, higher education, greater heterogeneity of educational specialisation, and greater academic training in science.</td>
</tr>
<tr>
<td>Michel and Hambrick</td>
<td>1992</td>
<td>They studied the relationship between the diversification posture of the companies and the integration between the business units from TMT. The authors concluded that the greater the need for interdependence imposed by the company’s diversification strategy, the greater the need for TMT to operate on a broad basis</td>
</tr>
<tr>
<td>Einsenhardt and Bourgeois</td>
<td>1988</td>
<td>They discussed how political behaviour can affect CEO strategic decision-making processes in a dynamic marketplace. They presented a theoretical proposal linking power, political behaviour and performance. They concluded that political behaviour comes from the centralisation of power and that autocratic CEOs engage in politics and engender the same behaviour in their subordinates. They also concluded that political behaviour is organised in stable coalitions based on demographic characteristics and that this behaviour is usually associated with a bad performance.</td>
</tr>
</tbody>
</table>

Source: Adapted from Serra et al. (2014)

Thus, Table 1 shows the main contributions related to the effects of the demographic lines of the TMTs, where it was evidenced that the demography in the TMT related to the attributions influence the organisational performance of the entity. Following is the methodology and main results of the research.

3 Methods

According to Guedes and Borschiver (2005), the bibliometric research allows to map and generate different indicators of information and knowledge treatment and management, which in a way minimises the subjectivity inherent in indexing and retrieving information, producing knowledge in a particular area of studies. According to Ferreira et al. (2014), bibliometric studies can use various techniques. These are based on citation and co-citation analyses to assess the scientific relevance and influence. Citation analysis is based on the number of times the work is cited in other works.
The methodology used in this article is characterised as bibliometric and the data were collected in the international database of Web of Science, since it is considered a broad base of publications, not needing access to other databases since most of the articles are repeated. The data were collected as follows, in May 2016:

1. It was selected as a keyword ‘TMT’, in the ‘topic’, it was validated by two experts in the area as being the most representative.

2. The selected period comprised the years 2005 to 2015 (inclusive).

3. For the evolutionary analysis of the theme, the years 2013, 2014 and 2015 were used to reflect the current trend of the theme, according to experts in the field.

The search began with the appearance of 558 records, this one was refined and other areas of knowledge that are not from the business and management were excluded.

After refinement, there were then 354 articles, of which 316 belong to the main collection of WoS, these were selected and inserted in the Bibexcel software. Then, an exploratory factorial analysis was performed using SPSS software, where five factors around which the authors were grouped, were identified through the correlation between the co-citations, which are presented in the results. This first part had the unique intention of analytically verifying the composition of the citations. Continuing the analyses, the readings of the abstracts were started aiming to relate the main classical and current authors that research TMT in order to raise the main evolutionary approaches on the subject.

**Figure 2   Research design**

![Research design diagram](image)

**Source:** Elaborated by the authors

Figure 2 shows the research steps and the procedures performed to meet the objectives outlined here.
Table 2

Identification of factors (see online version for colours)

<table>
<thead>
<tr>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
<th>Factor 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kor (2003)</td>
<td>0.751</td>
<td>Hambrick (1996)</td>
<td>0.696</td>
<td>Lau (2005)</td>
</tr>
<tr>
<td>Murray (1989)</td>
<td>0.745</td>
<td>Kor (2006)</td>
<td>0.631</td>
<td></td>
</tr>
<tr>
<td>Hitt (1991)</td>
<td>0.730</td>
<td>Tihanyi (2000)</td>
<td>0.595</td>
<td></td>
</tr>
<tr>
<td>Hambrick (1994)</td>
<td>0.727</td>
<td>Hambrick (2007)</td>
<td>0.583</td>
<td></td>
</tr>
<tr>
<td>Jackson (1992)</td>
<td>0.720</td>
<td>Haynes (2010)</td>
<td>0.565</td>
<td></td>
</tr>
<tr>
<td>Carpenter (2004)</td>
<td>0.685</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carpenter (2001)</td>
<td>0.652</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smith (1994)</td>
<td>0.633</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Cannella (2008)</td>
<td>0.620</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Aiken (1991)</td>
<td>0.612</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Neter (1996)</td>
<td>0.588</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finkelstein (1990)</td>
<td>0.569</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bartel (1989)</td>
<td>0.568</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milliken (1996)</td>
<td>0.564</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Podsakoff (2003)</td>
<td>0.509</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Source: Research data (2016)
4 Result analysis

The results of the exploratory factor analysis resulting from the processing of the citation matrix of the selected articles are presented in this topic. It was necessary to name the factors of the classical or seminal authors according to their conceptual approaches, and later the abstracts of 150 of the 316 articles were analysed to identify evolutionary aspects, considering the publications of 2013, 2014 and 2015 for portraying the most current aspects of the theme. The procedures adopted in the AFE followed the order recommended in the literature, namely: KMO analysis (above 0.5); KMO of each item in the anti-image matrix (above 0.5); exclusion of items with commonality below 0.5; exclusion of items with loads in only one factor below 0.5; exclusion of items with a higher load on a factor other than the original; and exclusion of the remaining items from a reliability factor (Cronbach’s alpha) below 0.6. The sample is considered adequate since (KMO = 0.675, Bartlett p < 0.001).

4.1 Appointment of factors

As it can be seen in Table 2, 27 authors remained grouped into five factors of the rotated component matrix. These were more cited and are considered the classical authors of the theme.

The next step was to name the factors, thus identifying: ‘Factor 1: TMT competencies; Factor 2: characteristics of top management; Factor 3: effect of the demographic lines failures; Factor 4: salary disparities between CEOs; and Factor 5: organisational learning.’

4.2 Main approaches of classical and current authors

Table 3 shows the relationship between the approaches of the classical or seminal authors and the current authors who research corresponding themes.

It can be seen in the articles that were part of the Factor 1, called ‘TMT competencies’, that the approaches relate to:

1 Corporate risks: every organisation is subject to risks, both internal and external, i.e., are subject to events that can influence, positively or negatively, the conduct of the business and/or its results, such as the CEO’s political orientation, the gender of the individual, performance feedback and CEO’s values.

2 Ambidexterity: an ambidextrous company seeks to equate its actions to achieve the harmony between what needs to be done and what can be done, such as the search for contradictory innovations, the combination of the characteristics of the CEO with the characteristics of TMT, among others.

3 Communication: establishment of appropriate means of communication between CEO and TMT, interference of share price informational in performance compensation (PPS) of chief executive compensation.

4 Adaptability when changing group members.
5 Professional experience: influence of the international career of CEOs, family-business owners seek to integrate non-family CEOs with non-family business professional experience, in order to enrich the family enterprise resource pool, childhood experiences (social class) in the training of executives influence their strategic choices.

6 Subjectivism present in decision-making processes.

Table 3 Approaches of classical and current authors (see online version for colours)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Authors/year – seminal</th>
<th>Authors/year – actual (2005 a 2015)</th>
</tr>
</thead>
</table>

Source: Research data (2016)
As for Factor 2, ‘top manager’s characteristics’, we can see a significant number of current authors who continued to research on the subject, specifically in the periods of 2013 to 2015. In this approach important scientific investigations were performed, such as: effects of the prestige characteristics of TMTs in the formation of international strategic alliances, diversity in human capital and the performance of TMT.

Factor 3 is characterised by the theme ‘effects of line failures or demographics’, in which it can be highlighted how the diversity in the demographic composition of TMT is related to the quality of information and also to the difficulty of consensus on them.

Factor 4, ‘salary disparities among CEOs’ was the subject of two classic articles and aroused interest in the most recent research. This approach addressed the relationship between TMT wage dispersion and company performance, citing the moderating role of organisational governance in this process as well as the factors that increase or inhibit this relationship.

In factor 5, ‘organisational learning’, there was only one work in 1991, however, during the analysed period there was an increase in studies about this theme. Several approaches have been highlighted in this factor, such as the analysis of organisational practices and human resources management, Porter’s five competitive forces (PFCF) as factors that lead to the choice of strategy, theory and hypotheses about how the management team of a company learns from the acquisition experience, because, consequently, the composition of the team is crucial, and how it affects the frequency of acquisition and its success, among others.

4.3 Evolutionary analysis of the theme

Regarding the evolutionary analysis of the abstracts of the 150 articles (from 2013 to 2015), it is presented in Table 4 and shows the evolutionary trends of research in this area.

It is perceived that in the evolutionary approach there is a strong tendency in the studies of topics on the TMTs and family companies, the influences of the TMT and the context of the insertion of women in the high-level team, as well as the remuneration of top managers.

About ‘TMT conflicts’ it is emphasised how the CEO’s types of paternalistic leadership affect TMT, and in this sense the team’s conflicts function as a mediator in the relationship between the CEO and the effectiveness of his decisions. Another important approach is how the diversity of TMT members can lead to conflicts that disrupt team processes and hamper their performance. Following the studies, it was also identified how (cognitive and affective) conflicts became important variables to better understand the mixed results on the relation between TMT functional diversity and organisational innovation.

The evolutionary factor ‘family business’ was another focus of researches developed by the scholars. In this sense, we have identified studies on the association between family capacities combined with the character and demographic characteristics of TMT, particularly in relation to how the diversity of the team can influence the decision making. We also explored the effects of family involvement in the performance of small and medium-sized enterprises, as well as the family business performance format when TMT is formed by both family members and non-family members.
Table 4  Evolutionary approaches of current authors (see online version for colours)

<table>
<thead>
<tr>
<th>Evolutionary approach</th>
<th>Current authors – 2005 a 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conflicts of top management teams</td>
<td>Chen et al. (2015b), Few and Joshi (2013), Sciascia et al. (2013), Qian et al. (2013), Zimmermann et al. (2015), Simsek et al. (2015), Li (2013a)</td>
</tr>
<tr>
<td>Gender diversity in the top management team</td>
<td>Baixauli-Soler et al. (2015), Parola et al. (2015), Bao et al. (2014) and Dezso and Ross (2011)</td>
</tr>
<tr>
<td>Remuneration of top managers</td>
<td>Walters et al. (2015), Sudip and Iskandar-Datta (2015), Hou et al. (2013) and Lin and Cheng (2013)</td>
</tr>
<tr>
<td>Organisational structures</td>
<td>Burkert and Lueg (2013), Wry et al. (2013), Guadalupe et al. (2014), Sheehan et al. (2014), Shirokova et al. (2013) and Crilly and Sloan (2014)</td>
</tr>
<tr>
<td>External influences on the top management team</td>
<td>Atinc and Ocal (2014), Shepherd and Rudd (2014), Schmid and Dauth (2014), Orens and Reheul (2013), Heyden et al. (2013) and Sahaym and Nam (2013)</td>
</tr>
</tbody>
</table>

*Source:* Research data (2016)

Regarding ‘gender diversity in TMT’ it has been shown that the gender diversity of TMT generates a positive effect on the process prior to performance, but contradictorily causes maladies related to the integration of results. Another point studied concerns the influence of women’s participation in the company, as it creates risks in lawsuits.

Regarding Factor 9, ‘compensation of top managers’, it focused on investigating the relationship between the CEO’s compensation and his participation in international joint ventures. It was also analysed how the difference between the compensation of CEO and TMT affects the performance of the company. The focus of Factor 10, ‘influences of TMT’ addressed the relationships and identification of changes in organisational projects brought about by CEO’s influence. Regarding Factor 11, ‘organisational structures’, the link between the entity structure and the top management work division was discussed. It also investigates the reasons that result in success or failure of human resource management in relation to company performance. And the last evolutionary factor identified, ‘external influences in the TMT’, deals mainly with how the stock market behaves in the face of the appointment of an international top manager.

In the face of the whole discussion about the classic and evolutionary approaches to TMT, it can be seen that the tendency of researches is always to measure the performance achieved by companies.
4.4 Analysis of the characteristics of publications

Finally, it is important to make some analyses on the characteristics of the main publications that addressed the topic TMTs in the period 2005 to 2015.

Figure 3 Articles published per year (see online version for colours)

Source: Research data (2016)

It is noticed that there was a significant increase in the number of publications since 2011, with emphasis on the years 2014 and 2015 with almost 50 citations per year.

Figure 4 Citations per year (see online version for colours)

Source: Research data (2016)
It is also important to point out that the citations of the classic or seminal authors on the subject have gained greater scope as of 2014. There is still an increasing evolution of the number of citations.

Figure 5 Main journals (see online version for colours)

Finally, the main journals in which the articles that were studied in this paper were published are shown in Figure 5. The 316 articles in the WOS main collection were drawn from 96 journals, of which only 16 were selected for the drawing the graph, since they contained the largest number of articles published, being considered from five articles, which totalled 173 publications. The rest, 143 articles were published in another 80 different journals, with an average of 1.8 articles per journal.

5 Discussions and main implications

Among the main conclusions that can be reached is that TMT is a growing subject, which can be verified from the increasing number of the citations of the works of the area. It is also evident that the journals that most count with articles of the area are periodicals consecrated in the studies of general administration (Figure 5) and, especially, in decision making.
From the data analysed and classified in five major factors, it is important to highlight that understanding the competencies and characteristics of high-level managers is the point that generates more interest among researchers on the subject (both the seminal aspect and the studies performed more recently). This leads us to believe that there is a need to understand the behavioural differences that differ from senior managers to those of operational and tactical level. There seems to be a perception that these managers have different behavioural characteristics and skills and that once explicit and understood in depth, other managers could be oriented towards these characteristics. Thus, for TMT studies, it seems that the characteristics of senior executives are relevant variables for understanding the performance, decision making and strategic orientations of organisations.

The conflict between senior managers for decision-making also appears as a major feature. However, although there are fewer seminal works in this direction, there are recent studies trying to understand these conflicts. This is likely to be explained by the increasing need for professionalization and establishment of councils, which makes conflicts among high-level members become more recurrent and attract more attention from researchers. It is understandable that they seek to understand origins and consequences of high-level conflicts that emerge, which also has a human aspect attached to their studies.

Factors 4 and 5 that were more modest in seminal works gained weight in more recent studies. It is highlighted that the human and behavioural factors linked to learning gain much relevance, and learning is the factor that proportionally developed the most in the area. It is possible to perceive that an executive is capable of gaining technical and social knowledge throughout his professional career, which interferes directly with the way decisions are made. It is emphasised that one cannot leave aside the understanding of the human and personal side of the senior manager when one wants to study TMT and how decisions are made in the organisation. It seems, therefore, that academic studies have recently gained more prominence, which is perhaps something related to the understanding that high-level personal’s characteristics and behaviours are decisive in understanding organisational decision-making. This probably points to a direction in which one has sought to understand how decisions are made given the characteristics of the higher echelons. The perspective which understands that decision-making depends on the human and personal elements of top management becomes relevant. Thus, there is no dominance of the idea that there is a formal, rational and fully structured planning that fully supports decision making. There is a tendency for the human aspect of decision-making to be increasingly present and relevant in TMT studies.

6 Final considerations

This research was based on a review of the literature about the TMT concepts, from which it was possible to highlight the representativeness of TMT in the organisation’s strategic decisions. Based on this finding, the objective was to identify the main characteristics of TMT works as well as to present the main evolutionary approaches on the subject. This survey was performed through a bibliometric study using data collected in the international Web of Science database. After data processing and analysis, the main contribution that the present study brings is the identification of five factors, named
according to their classic or seminal approaches that represent the main conceptual currents about TMT and seven other approaches considered evolutionary because they are not part of the works of the seminal authors, which highlight the paths and changes that have occurred in organisations. From this categorisation, a new way of organising the literature on the theme is proposed.

In conclusion, it can be affirmed that this article contributed to the understanding about the main theories and approaches on TMT as well as its evolution in following up the growth and needs of the organisations. Among the evolutionary approaches of the authors who continue to research on the subject, it is highlighted the interest in TMT context in family companies, gender diversity in the team and especially the Internal and External Influences of the TMT in the enterprise. Future research can be constructive by looking at the annual follow-up of the evolution of researches on TMT. It is understood to be relevant, as well, future discussions on the results achieved by companies that have as leader of TMT women compared to performance obtained by other companies managed by men. The importance of gender research is necessary in view of the increasing participation of women in the strategic decisions of companies.

As managerial implications, it can be stated that the competencies and characteristics of the managers of the top teams, which represent the majority of the studies of the area and form the two main factors, are elements of attention. In other words, from these data, it can be stated that possible initiatives for training and formal education of these managers tend to focus on discussing their skills and characteristics. It is important then that these initiatives are made on the basis of relevance studies of the area rather than eventual behavioural programs without scientific support. The present study then offers a robust theoretical reading and support proposal (see Table 3), from which educators can develop subject matter syllabus in executive education programs.

As a limitation of the present study, it should be considered that bibliometric studies focus on collections performed in specific databases (in this case, the Web of Science) and that they tend to highlight older studies that obtained more citations as a result of being pioneers and having more time available for citations (which was tried to overcome with the recent analysis of the publications). In other words, more recent articles, with less time available to the academic community, can hardly get many relevant citations and broader dissemination among researchers like older works.

Based on this, it is suggested as future studies that this same analysis can be conducted in other databases in order to identify whether there are factors that can emerge from studies published in journals not available in the Web of Science. For this purpose, broader bases such as Scopus, for example, are suggested. In addition, it is suggested that pairing studies should also be performed so that the most recent studies may also be among the most relevant in the TMT area.

References
Top management teams


Top management teams


