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## Contents

### Economics

**Board Independence and Internal Committees in the BRICs** 521

*Daniela M. Salvioni, Luisa Bosetti, Alex Almici*

**Entrenched Board in New Public Firms: An Empirical Study of Chinese IPOs** 540

*Fitriya Fauzi, Abdul Basyith, Nirosha Hewa-Wellalage, Gaoxiang Wang*

### Management

**Effects of Team Structure on Innovation Performance: An Empirical Study** 554

*Miha Prebil, Mateja Drnovšek*

**Merit and Evaluation Models for Managers in the National Health System:  
An Empirical Study** 572

*Elena Candelo, Cecilia Casalegno*

**Strategic Partnership Between Private Organizations and Universities: The Search for Regional  
Development Through Solutions for Hospital Management** 583

*Jamerson Viegas Queiroz, Abner Vicente Braga, Fernanda Cristina Barbosa Pereira Queiroz,*

*Jéssica Monyk Tiburcio de Souza, Renata de Oliveira Mota*

# Board Independence and Internal Committees in the BRICs

Daniela M. Salvioni, Luisa Bosetti, Alex Almici  
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To be successful in global markets, companies from the emerging countries need the approval of foreign investors and other stakeholders. In this regard, Brazil, Russia, India, and China (BRIC) have progressively strengthened their corporate governance rules to help their companies overcome the competitors from the old industrialized countries. Directors' non-executive qualification, independence, and professional expertise represent basic requirements for effective corporate governance, so they should be carefully considered to guarantee a proper board composition and an adequate establishment of internal committees in listed companies. The paper intends to compare the legislative and regulatory frameworks adopted by the four countries; then it aims at answering to the following research questions by means of an empirical investigation: Have BRIC companies appointed non-executive and independent board members? What do BRIC companies do in order to assure an effective participation of non-executive and independent board members to corporate governance activities? Have BRIC companies established internal committees? The research examines the appointment of non-executive directors and independent directors to the boards of 100 BRIC leading firms, as well as their involvement in internal committees focused on matters requiring motivated and impartial opinions. Although the laws and recommendations seem to favor a general convergence of corporate governance principles among the four BRIC and towards the international best practices, some differences and peculiarities emerge from a firm-level perspective. Indeed, the Indian and the Chinese companies analyzed appear more inclined than the Brazilian and the Russian ones to reassure their international stakeholders about board independence and effective committees.

*Keywords:* corporate governance, globalization, convergence, BRICs, independence, board committees

## Introduction

Globalization is significantly modifying the ways companies compete in international markets. Nowadays competition is also played in relation to corporate governance, especially for firms of emerging countries, which need foreign investors and other stakeholders' trust to build and develop successful long-term relationships (Salvioni, 2005).

Brazil, Russia, India, and China—also known as the BRICs—have progressively strengthened their national laws and regulations on corporate governance, by adopting principles and rules that have characterized the old industrialized countries for nearly two decades.

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This paper investigates the existence and role of non-executive directors and independent directors in the boards of a sample of BRIC listed companies. In particular, the paper is focused on the supporting and controlling functions such directors should carry out as members of the board and its internal committees.

Firms operating in emerging economies can benefit from the appointment of non-executive and independent directors to the board. Indeed, these members can effectively monitor both the decision-making process and the behavior of managing directors, who frequently represent and act in the interest of majority shareholders of large family holdings and state-owned companies dominating the BRIC economic scenario.

Due to their personal condition marked by neutrality, objectivity, and professional expertise, non-executive and independent directors are also often selected to form board committees entrusted with instituting the board's proceedings, making suggestions and supervising the company's activities.

Since the presence of non-executive and independent directors should increase the protection of outside investors and other stakeholders, including the foreign ones, it can prove valuable to consensus generation in global markets.

This research aims at exploring the topic from both theoretical and empirical perspectives and the paper is organized as follows. The second section presents the scientific background, summarizing the literature on independent board members and internal committees. The third section introduces the legislative and regulatory framework on independence and committees in BRIC. The fourth section describes the methodology and discusses the results of an empirical investigation based on 100 BRIC companies. The fifth section contains some concluding remarks, limitations of the study, and future research direction.

## **Literature Review**

### **Independent Board Members**

Companies usually appoint non-executive and, among them, independent directors considering the contribution they can offer to the improvement of the board's activities. A number of studies have underlined that the board has two main functions, the development of which can take advantage from the presence of non-executive and independent directors. Such functions consist in monitoring tasks and service or advisory tasks (Zahra & Pearce, 1989; Forbes & Milliken, 1999; Zattoni & Cuomo, 2010).

According to the agency theory (Fama, 1980; Fama & Jensen, 1983), companies are characterized by a principal-agent problem between shareholders and managers (García-Ramos & Olalla, 2012), which determines the risk that managers might decide and operate for their own interests, instead of maximizing corporate value for shareholders. For that reason, the agency theory attributes control tasks to the board of directors: in this view, the board is understood as a group of independent directors who must monitor and supervise the managers in order to protect the shareholders' expectations (Fama & Jensen, 1983; McNulty & Pettigrew, 1999; Golden & Zajac, 2001).

In this regard, Luan and Tang (2007) underlined the mixed composition of the board, which often includes two types of members: the inside directors or executive directors, who work as company officers, and the outside directors or non-executive directors, who do not develop any managerial functions (Peng, 2004). Due to their different involvement in corporate affairs, the interests of the former are aligned with those of the management, while the role of the latter should consist in controlling the management and counterbalancing the weight of inside directors in decision-making, to guarantee an adequate representation of all shareholders' interests (Luan & Tang, 2007).

Alongside with monitoring tasks, the board also has a service function towards the management, as stated in the resource dependence theory (Pfeffer & Salancik, 1978). According to this perspective, the board has the duty to advise the management and support them in strategic decision-making process; in this sense, the board members provide their experience and expertise to the managers (Helland & Sykuta, 2004; Hillman & Dalziel, 2003). Moreover, the board intervention should help the company in obtaining external legitimacy and developing networking relations (Daily & Dalton, 1994; Stiles & Taylor, 2001; Huse, 2005; Luan & Tang, 2007). In particular, this function is considered as a typical task of non-executive directors, whose appointment usually helps the firm enter a networking structure based on the linkages between each outside director and other companies. As obvious, belonging to a networking structure can facilitate the raising of funds and other resources.

The literature also comprises a number of studies considering the definition of independent director. According to a "Note" published in the Harvard Law Review (2006), definitions of independent director may fall into three categories: the "disinterested outsider", the "objective monitor", and the "unaffiliated professional director".

In the disinterested outsider model, directors are independent when they are not involved in company's management and they have no financial interest in a particular transaction, or an excessive financial interest in the firm's business more generally, which should help the directors fulfill their fiduciary duties to the shareholders. This definition of independence is usually adopted by policy makers and regulators, such as stock exchanges and securities and exchange commissions, which have also introduced quantitative parameters representing the maximum financial interest permitted.

The definition of independent director as an objective monitor of corporate decision-making stresses the loyalty of such a board member towards the company's shareholders. Indeed, independent directors control executives and managers from inside the board, acting as substitutes for shareholders, on behalf of these latter.

In the unaffiliated professional director model, independent directors are defined as experts whose knowledge and skills support the advisory function and supervision they develop over the board, providing a different point of view from the executives (Roberts, McNulty, & Stiles, 2005) and improving the quality of decisions (Carter & Lorsch, 2004). According to such considerations, some studies have also suggested that independent directors should be full-time experts paid by investors to serve on more boards (Gilson & Kraakman, 1991), assisted by their own staff particularly in the activity of collecting and evaluating corporate information (Brudney, 1982).

Other definitions of independence have been proposed in the literature (Zattoni & Cuomo, 2010), as well as in laws, regulations, and self-discipline all over the world. In particular, independent board members should be free of financial, employment and family ties with the company's owners, executive directors, and officers, because such relationships may provoke a conflict of interest with the firm (Brudney, 1982; Borowski, 1984; Dalton, Daily, Ellstrand, & Johnson, 1998).

Finally, previous researches have investigated the role of outside independent directors for effective corporate governance. Most studies have considered the link between board independence (i.e., the presence and portion of independent directors within the board) and firm performance. However, the results are far from conclusive: for example, some scholars state a positive relationship (Chen & Jaggi, 2000; Anderson & Reeb, 2004; Chen & Hsu, 2009; Hutchinson & Gull, 2004), while others have discovered a negative link (Agrawal & Knoeber, 1996; Lawrence & Stapledon, 1999; Mishra, Randoy, & Jenssen, 2001) or even a non-significant one

(Hermalin & Weisbach, 1991; Villalonga & Amit, 2006; Prabowo & Simpson, 2011).

### **Board Committees**

A number of papers are focused on internal committees set up by the board to perform specific tasks. According to Spira and Bender (2004) “the establishment of board sub-committees has been strongly recommended as a suitable mechanism for improving corporate governance, by delegating specific tasks from the main board to a smaller group and harnessing the contribution of non-executive directors”.

Scholars have particularly analyzed the audit committee, the remuneration committee, and the nomination committee, which are subject of laws, regulations or recommendations all over the world.

The audit committee has been widely investigated with reference to its composition comprising accounting financial experts (Krishnan & Lee, 2009) and its contribution to implement and monitor corporate governance best practices (Agarwal, 2006; Puri, Trehan, & Kakkar, 2010). Other researchers have considered the role of the audit committee in preventing earnings management and improving financial reporting quality, even if with non-conclusive results (Dechow, Sloan, & Sweeney, 1996; Beasley, Carcello, Hermanson, & Lapides, 2000; Jeon, Choi, & Park, 2004; Piot & Janin, 2007; Baxter & Cotter, 2009).

Some studies have discovered a positive relationship between firm size and the number of audit committee’s meetings (Sharma, Naiker, & Lee, 2009), between audit committee independence, meetings and attendance and firm performance (Saibaba & Ansari, 2011), and between auditor independence and audit committee meetings (Sori, Mohamad, & Saad, 2008).

As concerns the remuneration committee, this has been described as a mechanism for minimizing the risk of managers determining their own payment, which can be effective if the committee includes non-executive directors (Carson, 2002). Some studies have investigated the relationship between remuneration committee quality (measured in terms of independence) and compensation practices adopted by firms (Anderson & Bizjak, 2003), while others have discovered the effect of remuneration committee quality on the relation between CEO payment and firm performance (Vafeas, 2003). Moreover, Sun and Cahan (2009) found that the remuneration committee quality varies depending on the committee size and other characteristics, such as the presence of CEO, senior directors, and CEO-appointed directors within the committee.

Finally, the nomination committee is considered as an institutional mechanism for improving director appointment (Ruigrok, Peck, Tacheva, Greve, & Hu, 2006) by suggesting board candidates or defining their profiles (Eminet & Guedri, 2010).

According to empirical evidence, both the establishment of a nomination committee and its independence are inversely related to the firm’s level of inside ownership; moreover, the nomination committee can influence the independence of outside directors, but not their number (Vafeas, 1999).

The literature has stressed the role of the nomination committee in corporate governance. Recent studies indicate that the nomination committee composition is a pre-requisite for gender (Grosvold, 2011) and nationality diversity, and that the presence of the CEO on the committee reduces board cohesiveness (Kaczmarek, Kimino, & Pye, 2012). Furthermore, companies with a nomination committee dominated by non-executive directors or which excludes the CEO usually select candidates to the board who have strong reputation as supervisors over management (Eminet & Guedri, 2010).

### **Corporate Governance in the BRICs**

Some studies have already investigated the corporate governance systems implemented in the BRICs, but

their attention is mainly focused on a specific national environment (Yan-Leung, Jiang, Limpaphayon, & Lu, 2010; Székely-Doby, 2011; Braga-Alves & Shastri, 2011; Black, Gledson de Carvalho, & Sampaio, 2012), or particular topics (e.g., the relation between corporate governance and company's value, and the effectiveness of corporate governance in emerging markets with reference to the CEO turnover) (Gibson, 2002; Belikov, 2004; Singh & Gaur, 2009; Ararat & Dallas, 2011).

Other studies have also analyzed the corporate governance of emerging markets according to the different ownership patterns across the countries (Aguilera, Kabbach-Castro, Ho Lee, & You, 2012); besides, some scholars have investigated how better corporate governance frameworks benefit firms through greater access to financing, lower cost of capital, better performance, and more favorable treatment for all stakeholders (Claessens & Yurtoglu, 2013).

However, the existing literature seems to be lacking in detailed comparisons among all four countries as regards independence of board members and internal committees; hence, the paper is expected to contribute by presenting a comparative analysis of laws, regulations, and recommendations on these subjects in all the BRICs, supplemented by an empirical verification.

### Legislative and Regulatory Framework

The BRICs have similarly improved their corporate governance systems in recent past. In all four countries, the national corporate governance framework is based on the companies' law, supplemented or specified through regulations and recommendations issued by stock exchanges, securities and exchange commissions or other institutions. For the purposes of this research, the corporate governance frameworks of BRIC are summarized in Table 1.

Table 1

#### *Corporate Governance Framework*

Country	Provision
Brazil	Corporation law (Law No. 6404 of December 15, 1976) (LAW)* Recommendations on corporate governance (2002), issued by the Securities and Exchange Commission of Brazil (SECB)* Code of best practice of corporate governance (2009), issued by the Brazilian Institute of Corporate Governance (CODE)*
Russia	Companies law (Federal Law of the Russia Federation No. 208—FZ of December 26, 1995) (LAW)* Corporate governance code (2002), issued by the Federal Commission for the Securities Market (CODE)*
India	Companies act (1956), as amended (LAW)* Clause 49 of the listing agreement, introduced by the Securities and Exchange Board of India in 2000 and repeatedly revised until 2008 (CLAUSE 49)* Corporate governance voluntary guidelines (2009), issued by the Ministry of Corporate Affairs (GUIDELINES)*
China	Companies Law of the People's Republic of China (in force since 1 January, 2006) (LAW)* Code of corporate governance for listed companies in China, issued by the China Securities Regulatory Commission (CSRC) and the State Economic and Trade Commission, 2001 (in force since 2002) (CODE)* Establishment of independent director system by listed companies guiding opinion, issued by the CSRC, 2001 (CSRC)* Code on corporate governance practices, Appendix 14 of the Hong Kong Stock Exchange's Listing Rules (HKEX)*

*Note.* In the next tables, each provision will be mentioned through the abbreviated form marked with \*.

In this section the research is focused on the main rules concerning independence and internal committees in the four countries, in order to emphasize similarities and distinctiveness.

#### **Independent Board Members**

Since the beginning of this century the BRICs have updated their legislative and regulatory framework by adopting rules on independence of board members. All the BRICs have introduced the concept of independence

and listed either the requirements directors have to satisfy in order to be considered independent or the posts that are incompatible with this kind of position (see Table 2).

Table 2

*Board Independence*

Brazil	Russia	India	China
Independence definition and criteria			
<p><b>CODE:</b></p> <ul style="list-style-type: none"> <li>• no family ties with the firm's controlling owner, officers or managers</li> <li>• no economic ties with the firm or previous relationships as employee or officer</li> <li>• no commercial relationships with the firm</li> </ul>	<p><b>LAW:</b></p> <p>also in one preceding year:</p> <ul style="list-style-type: none"> <li>• no executive or management positions in the firm</li> <li>• no family relationships with executives or managers of the firms</li> <li>• no affiliates or directors of the firm</li> </ul> <p><b>CODE:</b></p> <ul style="list-style-type: none"> <li>• no membership of the managerial board</li> <li>• independence from the company, its officers and their affiliated persons and from major business partners of the company</li> <li>• over the last three years, no position of officer or employee of the company, or of the managing organization of the company</li> <li>• no position of officer in other firms where any of the officers of the company is a member of the nomination and remuneration committee</li> <li>• no contractual relationships with the company that produces value in excess of 10% of the person's aggregate annual income, other than through normal remuneration for operating as a board member</li> <li>• no major business partner of the company (i.e., with an annual value of transactions with the company in excess of 10% of the asset value of the company)</li> <li>• no government representative</li> </ul>	<p><b>CLAUSE 49:</b></p> <ul style="list-style-type: none"> <li>• no pecuniary or other relationships or transactions with the company, its promoters, directors, senior management or holding company, subsidiaries and associates, as well as no supply relationships with the firm that may affect independence</li> <li>• no position as executive of the company in the preceding three years</li> <li>• also in the preceding three years, no positions as partner or executive in the statutory audit firm or the internal audit firm of the company, and in legal and consulting firms with a material association with the company</li> <li>• maximum shareholding: 2% of the block of voting shares in the company</li> </ul>	<p><b>CODE and CSRC:</b></p> <ul style="list-style-type: none"> <li>• no positions in the firm apart from the one of independent director</li> <li>• no relationships with the company and major shareholders that could hinder objective judgments</li> </ul> <p><b>CSRC:</b></p> <ul style="list-style-type: none"> <li>• also in the previous year: <ul style="list-style-type: none"> <li>- no family relationships with the firm or its subsidiaries</li> <li>- no persons holding 1% or more of the shares of the company or ranking in the top-10 company's shareholders</li> <li>- no persons holding positions in entities that directly or indirectly hold 5% or more of the company or ranking in the top-5 company's shareholders</li> <li>- no relatives of the persons listed in the preceding two categories</li> </ul> </li> <li>• no financial, legal or consultancy relationships with the company or its subsidiaries</li> </ul>
Independent board members			
<p><b>SECB:</b></p> <p>as many as possible</p> <p><b>CODE:</b></p> <p>all external and independent directors</p>	<p><b>CODE:</b></p> <p>at least 1/4 of the board, which should have at least three independent directors</p>	<p><b>CLAUSE 49:</b></p> <ul style="list-style-type: none"> <li>• 1/2 of the board, if the chairman is executive</li> <li>• 1/3, if the chairman is non-executive</li> <li>• 1/2, if the non-executive chairman is a promoter (or related to a promoter)</li> </ul>	<p><b>CSRC:</b></p> <p>at least 1/3 of the board (including at least one professional accountant)</p> <p><b>HKEX:</b></p> <p>at least three independent members</p>

(Table 2 continued)

Brazil	Russia	India	China
Independent board members' term of office			
-	-	<p>CLAUSE 49: up to nine years, in the aggregate (non-mandatory requirement)</p> <p>GUIDELINES:</p> <ul style="list-style-type: none"> <li>• six years, followed by a period of three years before obtaining any further position in the company</li> <li>• no more than three tenures as independent director</li> </ul>	<p>CSRC: • no more than three tenures as independent director</p>
Limits to simultaneous positions			
<p>CODE: no more than five simultaneous positions in boards and committees (with shareholder meeting's approval)</p>	-	<p>GUIDELINES:</p> <ul style="list-style-type: none"> <li>• limit for managing directors: seven positions of non-executive or independent director in other companies</li> <li>• limit for all directors: seven positions of independent board member</li> </ul>	<p>CSRC: no more than five positions of independent director in listed companies</p>
Executive sessions of independent directors			
<p>CODE: regular</p>	-	-	<p>HKEX: at least one annual meeting of the chairman with all non-executive directors</p>
Remuneration			
-	-	<p>CLAUSE 49: all non-executive directors' fees shall be fixed by the board and approved by the shareholder meeting that shall also specify the maximum number of stock options</p> <p>GUIDELINES:</p> <ul style="list-style-type: none"> <li>• option to pay only fixed contractual remuneration to non-executive directors, or also a percentage of the net profits: fixed component should not exceed 1/3 of the total package; variable component should be based on meeting attendance (sitting fees) and chairperson positions in the board or committees. Stock options can be granted to non-executive directors</li> <li>• compensation of independent directors depending on net worth and turnover; stock options or profit-based commissions cannot be granted to independent directors</li> </ul>	-

Even if independence's criteria or incompatibilities have different degree of detail in the four countries' legislation and regulation, they can be summarized as follows:

- Controlling shareholders appointed as directors are not independent; to be independent, a director should not hold company's shares exceeding a fixed, very low percentage threshold;
- Independent directors should not have any managerial, business, contractual or consultancy relations with the company, or work as employees of the company;
- Independent directors should not have any family relationships with executive directors, officers, and controlling owners of the company;
- To be independent, a director should comply with the above-mentioned requirements not only in respect to the company where they hold such a position, but also in respect to controlling and controlled firms and their executive directors, officers, and owners;
- Some requirements (e.g., not being a company's executive director or employee) should also be checked in respect to one or more previous years.

On the whole, complying with the summarized criteria should guarantee that the directors formulate unbiased judgment and assessment as concerns the resolutions proposed or taken by the executive directors and the non-executive but non-independent ones.

In all the BRICs there are rules issued by the stock exchanges or recommendations contained in the corporate governance codes that require the presence of independent members within the board. While Brazilian companies are requested to appoint as many independent board members as possible, even the totality, the other BRICs provide rules on the board composition as regards the minimum portion of independent members, from at least one fourth in Russia to one half in India when the chairperson is an executive director or a non-executive promoter of the company. In such a situation independent directors are expected to counterbalance and control the executive chairperson in the development of their functions.

India and China have also limited the independent board members' term of office and defined the maximum number of tenures, with the purpose of promoting a real separation of the independent directors from the company's management and owners.

In order to assure that independent directors spend reasonable time in supporting decision-making and monitoring the company's activities properly and objectively, all the BRICs except Russia have introduced restrictions to the number of posts they can simultaneously hold in other firms.

Moreover, regular meetings reserved to non-executive and independent directors are required to Brazilian and Chinese listed firms: indeed, the absence of executive members and officers should favor impartial debate and neutral judgment in the interest of the company's minority shareholders and other stakeholders.

To preserve independent directors' neutrality in expressing judgment on the company's strategies, policies and performance, the international best practices usually consist in paying them a fixed contractual remuneration, which takes into consideration chairperson positions in the board as well as internal committees' membership. In addition, independent directors are usually entitled to sitting fees linked to their meeting attendance. On the contrary, the international best practices tend to exclude variable compensation for independent board members, due to the risk that a performance-based remuneration system could stimulate them to be involved in operational activities, so compromising their objectivity in assessment and control. As concerns the BRICs, strangely enough the Indian recommendations on corporate governance permit assigning compensation to the independent directors depending on the company's net worth and

turnover.

### Internal Committees

According to the corporate governance system adopted in each country analyzed, specialized committees can be set up within the board of directors (in the Indian one-tier model), the supervisory board (in the Brazilian and the Russian two-tier model), or both of them (in the Chinese two-board horizontal model) (Salvioni, Almici, & Bosetti, 2012).

The nomination committee is recommended by only India and China, while Russia and Brazil provide no regulation about this body (see Table 3). With reference to the composition, both India and China require a majority of independent directors, including the chairperson, while Brazil and Russia do not regulate this aspect. Furthermore, only China explains the committee's roles and powers, such as the recruitment of board candidates and the formulation of election procedures. None of the BRICs consider the quality of non-executive director.

Table 3

#### *Nomination Committee*

Brazil	Russia	India	China
Establishment			
-	-	GUIDELINES: the company may have a nomination committee	CODE: the board of directors may establish a nomination committee
Composition			
-	-	GUIDELINES: • majority of independent directors • independent chairperson	CODE: • only directors, in majority independent • independent chairperson
Powers			
-	-	-	CODE: • to formulate standards, procedures and recommendation for the election of directors • to extensively seek, review and recommend qualified candidates for directorship and management

The establishment of the remuneration committee (called human resources committee in Brazil) is recommended in all the BRICs (and also prescribed by Clause 49 of the Indian Listing Agreement); however, only India and China regulate the composition of the body (see Table 4). In particular, China requires a majority of independent directors, including the chairperson, while India regulates the composition less strictly than China, by requiring at least three directors, all non-executive and comprising an independent chairperson, according to Clause 49. With reference to the committee's role, all the BRICs underline the following main powers:

- to study and review the remuneration policies and make recommendations;
- to develop the company's remuneration policies;
- to manage and solve problems relating to succession, compensation and people development;
- to define the appraisal standard for directors.

Table 4

*Remuneration Committee*

Brazil	Russia	India	China
Establishment			
CODE: the board may set up a human resources committee	CODE: the board may set up a human resources and remuneration committee	CLAUSE 49: the board may set up a remuneration committee (non-mandatory requirement) GUIDELINES: the board should have a remuneration committee	CODE: the board of directors may establish a remuneration and appraisal committee
Composition			
-	-	CLAUSE 49: • at least three directors, all non-executive • independent chairperson (non-mandatory requirement) GUIDELINES: • at least three directors, in majority non-executive, with at least one independent	CODE: • only directors, in majority independent • independent chairperson
Powers			
CODE: to instruct proceedings relating to succession, compensation and people development	CODE: to develop the company's remuneration policy	CLAUSE 49 and GUIDELINES: to determine the company's policy on specific remuneration packages for executive directors and senior management, including pension rights and any compensation payment, such as retirement benefits or stock options (non-mandatory requirement)	CODE: • to study the appraisal standard for directors and management personnel, to conduct appraisal and to make recommendations • to study and review the remuneration policies and schemes for directors and senior management personnel, and make recommendations

All the BRICs require the establishment of the audit committee, according to the law (in India), the code of best practices (in Russia), or the Securities and Exchange Commission's regulations (in China and Brazil) (see Table 5). However, only Brazil and Russia prescribe the presence of solely independent directors, while China and India admit also non-independent members (but no more than one half and one third, respectively). The committee's role is specified by all the BRICs, which identify the main powers in overseeing the company's financial reporting, ensuring that the management develop reliable internal controls and comply with both the law and the code of best practices, and developing recommendations for the selection of independent auditors.

Alongside with the nomination, remuneration, and audit committees, listed firms may introduce further specialized committees for the resolution of specific matters requiring neutral judgment, such as ethics issues, risk management, strategy, and external or internal disputes (see Table 6). Such committees should prepare proposals on their specific subjects and submit them for discussion and vote by the board.

Table 5

*Audit Committee*

Brazil	Russia	India	China
Establishment			
SECB: an audit committee should supervise the relationship with the auditor	CODE: the board of directors should create an audit committee that provides for control over the financial and business operations	LAW: Public company having paid-up capital of not less than five crores of rupees (50 million rupees) shall constitute an audit committee  CLAUSE 49: A qualified and independent audit committee shall be set up	CODE: The board of directors may establish an audit committee
Composition			
SECB: only directors, with one member representing minority shareholders.  CODE: only directors, preferably independent	CODE: only independent directors; if this is impossible, the audit committee should be headed by an independent director and its members should be independent and non-executive directors	CLAUSE 49: <ul style="list-style-type: none"> <li>• at least three directors; two thirds shall be independent</li> <li>• independent chairperson</li> <li>• all financially literate members</li> <li>• at least one member with accounting or financial expertise</li> </ul> GUIDELINES: <ul style="list-style-type: none"> <li>• at least three directors, in majority independent</li> <li>• independent chairperson</li> <li>• all members with knowledge of financial management, audit or account</li> </ul>	CODE: <ul style="list-style-type: none"> <li>• only directors, in majority independent</li> <li>• independent chairperson</li> <li>• at least one independent member with accounting expertise</li> </ul>
Powers			
CODE: <ul style="list-style-type: none"> <li>• to review the financial statements</li> <li>• to supervise and promote financial area accountability</li> <li>• to ensure that management develop reliable internal controls</li> <li>• to ensure compliance with the firm's code of conduct</li> </ul>	CODE: to make recommendations for the selection of an independent audit firm	CLAUSE 49, LAW, and GUIDELINES: <ul style="list-style-type: none"> <li>• to investigate and seek information from employees</li> <li>• to oversee the company's financial reporting and to review the financial statements</li> <li>• to recommend the appointment, replacement or removal and the remuneration of the statutory auditor and the chief internal auditor</li> <li>• to review the performance of statutory and internal auditors and the adequacy of all internal controls</li> <li>• to review the findings of internal audit activities and investigation, and follow up there on</li> <li>• to review the management discussion and analysis, the statement of related party transactions and the reports on internal control weaknesses</li> </ul>	CODE: <ul style="list-style-type: none"> <li>• to recommend the engagement or replacement of the external auditors</li> <li>• to review the internal audit system</li> <li>• to oversee the interaction between internal and external auditors</li> <li>• to inspect financial information and disclosure</li> <li>• to monitor the internal control system</li> </ul>

Table 6

*Other Specialized Committees*

Brazil	Russia	India	China
SECB: • related party transactions  CODE: • finance • governance	CODE: • ethics • risk management • strategic planning • corporate conflicts resolution	CLAUSE 49: • shareholder/investor grievance	CODE: • corporate strategy

These committees are voluntary, or sometimes recommended by the stock exchange's regulations and the corporate governance codes.

Among the BRICs, Russia has the most complete and severe self-discipline with reference to voluntary internal committees. Indeed, the Russian corporate governance code suggests the establishment of:

- An ethics committee, entrusted with ensuring the company's compliance with ethical standards and contributing to the creation of an atmosphere of trust within the company;
- A risk management committee, in charge of analyzing, discussing, improving, and monitoring the efficiency and effectiveness of the internal risk management policies adopted by the executive directors and officers;
- A strategic planning committee, which should advise the board on strategic goals, investments, and priority areas of operation, evaluate long-term productivity and market position, and develop recommendations on the company's dividend payment policy;
- A corporate conflicts resolution committee, responsible for preventing or, if necessary, effectively solving the disputes arising between the company and the shareholders or inside the company.

Due to the importance of the motivated, reasonable, and impartial opinions the above-mentioned committees are expected to express, they should be composed of at least a portion of independent members, even if their presence is plainly requested only to the corporate conflicts resolution committee.

Indian listed companies are invited to set up a shareholder/investor grievance committee, which should specifically handle the complaints of shareholders and investors concerning transfer of shares, non-receipt of balance sheet, non-receipt of declared dividends, etc.. This Indian committee is similar to the Russian corporate resolution committee and, in compliance with the national stock exchange's regulations, it should have a non-executive chairperson. However, the nature of its activity may justify the presence of independent members, even if they are not recommended by the regulators.

As regards China, the corporate governance code suggests introducing a corporate strategy committee responsible for conducting research and making proposals on long-term strategic development plans and major investment decisions. The code does not specify rules on the committee's composition, but the involvement of non-executive and independent directors should be useful to ensure the objectivity of resolutions.

In Brazil, self-discipline only considers the opportunity to adopt a finance committee, a governance committee, and a related party transactions committee, without describing their composition and tasks. Nevertheless, according to the international best practices, a finance committee should constantly monitor and review the company's budget and expenditure, checking their consistency with the long-term plans. In this regard, a finance committee is comparable to a strategic committee, so it should comprise one or more independent directors to balance the presence of executive members. In the same way, the board should select

independent members to form its governance committee and related party transactions committee: indeed, the former should guarantee equality and effectiveness of decision-making affecting the rights and expectations of different categories of shareholders (e.g., controlling shareholders and minority shareholders), and the latter should impartially face the matters involving the interests of insiders or connected parties (for example, when the board has to decide about signing a commercial agreement in which the CEO is the counterparty).

## Empirical Research

### Purposes and Methodology

Based on the provisions summarized in the previous section, an empirical research has been developed in order to verify the actual corporate governance choices of a selected sample of companies from BRIC, in relation to board independence and internal committees. In this regard, the research questions were the following:

- Have BRIC companies appointed non-executive and independent board members?
- What do BRIC companies do in order to assure an effective participation of non-executive and independent board members to corporate governance activities?
- Have BRIC companies established internal committees? Which ones? What are their characteristics?

The investigation considered 100 companies, more exactly the top-25 firms from BRIC that were included in Forbes Global 2000 list of April 2011, a well-known list containing the most important firms worldwide, ordered through an index combining sales, profits, assets, and market value. All the 100 companies extracted from Forbes list resulted to be traded on one or more stock exchanges, so being required to adhere to specific governance rules.

The investigation consisted in a content analysis (Weber, 1990; Neuendorf, 2002; Krippendorff, 2004) of the most recent disclosure on corporate governance divulged by the companies through their websites within April 2012.

Items to be checked were identified in accordance with the above described legislative and regulatory framework and referred to:

- presence of non-executive and independent board members and their meetings;
- establishment of board committees and their composition, meetings, attendance rate, functions, and activities carried out in actual fact.

Information was collected from corporate governance and investor relations pages of the firms' websites and the documents attached therein, such as the latest annual report on corporate governance (referred to 2011 or 2010/11 financial year), the board and committees' charters and the company's statute. To facilitate data-processing, all significant findings were registered in an Excel database.

### Results

This section contains the results of the empirical investigation. The data contained in Tables 7-11 summarize how many companies from each country divulged information on the items investigated.

Data refer to 94 firms: one Chinese and five Brazilian companies were excluded, because they did not have either a website or its English translation at the time of the investigation, or had not updated information for long.

Despite the existence of national provisions requiring or recommending the appointment of independent members to the supervisory board of Brazilian and Russian listed companies and to the board of directors of Indian and Chinese ones, it was sometimes difficult to check the compliance with such rules. While all the Indian firms analyzed (25) and almost all the Chinese ones (23 out of 24) detailed the presence of independent members within the board of directors in their web-based disclosure, only 13 Brazilian and five Russian companies disseminated this type of information with reference to the supervisory board (see Table 7).

Table 7

*Non-executive/Independent Members*

	Brazil-SB	Russia-SB	India-BoDs	China-BoDs
Independent members	13	5	25	23
Executive sessions of non-executive or independent members	0	0	4	1

*Note.* SB: supervisory board; BoDs: board of directors.

The higher care of the Indian and the Chinese firms for independence was confirmed by the clear classification they gave for each board member as executive, non-executive (but not independent) or independent. That permitted determining the average composition of the boards analyzed: in China, within a board formed by 13.5 members on average, 37.8% of the members were independent, 33.3% were non-executive, and 28.9% were executive; the results for India showed an average dimension of the board equal to 13 members, 48.8% of whom were independent, 22.3% were non-executive, and 28.8% were executive.

On the other hand, scarce transparency used to characterize the communication of the whole sample of firms in respect to non-executive and independent members' executive sessions: information about their meetings in the absence of managing directors and officers was divulged by only four Indian companies and a Chinese one, but by none of the Brazilian and Russian firms investigated.

Focusing on the Indian context, the research also revealed a significant adoption of incentive-based remuneration systems for non-executive directors, including the independent ones: 11 firms of the sample emphasized the payment of commissions to their non-executive directors, i.e., variable compensation usually not higher than 1% of the net profits, in addition or in alternative to sitting fees.

None of the Brazilian companies analyzed had a nomination committee; conversely, this body existed in some Russian, Indian, and Chinese firms (see Table 8). The committee was usually composed of independent directors in India and China, while no detail—except for the number of members—was disseminated by the Russian companies. Disclosure on the committee's role, activities, frequency of meetings, and attendance rate was more complete for the Indian and the Chinese committees than for the Russian ones.

The remuneration committee had been mainly established in the Indian, the Chinese, and the Russian companies, while it existed in only 16% of the Brazilian firms analyzed (see Table 9). With reference to the composition, the committee was totally independent in only seven companies (three Chinese, three Indian, and one Russian). Little disclosure was given by the Brazilian and the Russian firms relating to the attendance rate, while in the Indian and the Chinese ones such a rate was often 100%. The Brazilian firms' communication was the least transparent about the committee's role and activities carried out.

Table 8

*Nomination Committee*

	Brazil-SB	Russia-SB	India-BoDs	China	
				BoDs	SB
Establishment of the committee	0	11	13	20	6
Composition	-	8	13	17	2
Number or frequency of meetings	-	1	12	16	1
Attendance rate	-	1	10	14	0
Powers and functions	-	7	11	16	2
Activities carried out in actual fact	-	4	2	13	1

Table 9

*Remuneration Committee*

	Brazil-SB	Russia-SB	India-BoDs	China	
				BoDs	SB
Establishment of the committee	4	19	23	23	2
Composition	2	17	23	19	0
Number or frequency of meetings	0	5	22	19	0
Attendance rate	0	3	19	15	0
Powers and functions	3	14	18	17	0
Activities carried out in actual fact	1	11	2	16	0

The audit committee had been set up in the most part of the companies investigated (64% in Brazil, 96% in Russia, 100% in India, and 92% in China) and it often comprised a majority of independent directors (see Table 10). Transparency on the meetings held by the committee was greater in the Indian and the Chinese firms, while the disclosure on powers and functions was good in almost all the BRICs.

Table 10

*Audit Committee*

	Brazil-SB	Russia-SB	India-BoDs	China-BoDs
Establishment of the committee	16	24	25	23
Composition	12	24	25	19
Number or frequency of meetings	0	8	25	19
Attendance rate	0	3	24	16
Powers and functions	15	23	24	16
Activities carried out in actual fact	4	12	5	19

The research also verified the existence of other specialized committees (see Table 11), first of all considering the ones recommended by the national corporate governance codes and stock exchange's regulations. However, the content analysis revealed that a number of companies had voluntarily established further committees, even if they were neither requested nor recommended in their countries.

Before 2011 none of the Brazilian companies investigated had introduced the committees suggested by their national frameworks, such as the related party transactions committee, the finance committee, and the governance committee. In Russia, 13 firms had complied with the recommendation of having a strategic committee, but only one had set up a corporate conflicts resolution committee, while none had neither set up an ethics committee nor a risk management committee. In India, all the 25 companies had established a

shareholder/investor grievance committee, as required by the stock exchange's regulations. In China, 18 out of 23 firms had introduced the recommended corporate strategy committee.

Table 11

*Other Committees*

	Brazil-SB	Russia-SB	India-BoDs	China	
				BoDs	SB
Ethics—CSR	1	0	9	1	-
Environmental issues	2	1	5	3	-
Risk management	3	0	10	13	-
Related party transactions	0	1	0	8	-
Strategy	4	13	0	18	-
Shareholder/investor grievance	0	0	25	0	-
Corporate conflicts resolution	0	1	0	0	-
Shareholder relations	4	0	0	0	-
Supervision	-	-	-	-	8
Performance and due diligence	-	-	-	-	4
Others	10	9	17	4	-

Generally speaking, the Indian and the Chinese firms resulted the most inclined to introduce voluntary-based internal committees. Risk management committees had been set up by 10 Indian companies and 13 Chinese ones, but also by three Brazilian firms. Social matters and environmental issues were covered in India by nine and five specialized committees respectively, while eight committees had been formed in China to handle related party transactions. In Brazil, four committees were responsible for shareholder relations.

Finally, some Chinese firms had established specialized committees not only within the board of directors, but also the supervisory board, in particular, eight supervisory board's committees were in charge of monitoring the activity of the entire body, while four were responsible for performance evaluation and due diligence.

### Conclusions, Limitations, and Future Research Directions

The review of the BRICs' legislative and regulatory framework on independence and board committees demonstrates the existence of comprehensive institutional convergence among the four countries, as well as towards the international best practices of corporate governance. Indeed, all the BRICs have adopted criteria of independence according to which the condition of independent director is incompatible with family, business, consultancy, and ownership relationships with the company that could jeopardize objectivity of judgment.

As stated by the agency theory, the appointment of independent board members is a commonly accepted solution for protecting minority shareholders who do not take part in firm's decision-making and operations, and consequently need neutral supervision on management. This situation, which is typical of all listed companies where large inside ownership coexists with small outside shareholding, is growing in importance in the BRICs, the companies of which represent interesting targets for foreign investors.

As concerns internal committees, all the BRICs require or recommend the establishment of a remuneration committee and an audit committee, similarly to the international best practices. Differences exist among the four countries in relation to the composition, even if laws and recommendations usually provide for the

presence of independent members.

In line with what happens in other countries marked by high concentration of ownership, also in the BRICs the nomination committee seems to be less important than the audit and the remuneration ones. On the other hand, further committees are required or suggested in order to help the board handle specific issues (such as risk management, ethics, strategic planning, finance, and corporate conflicts) with professional competence and skills. Hence, the selection of non-executive and independent directors to compose at least a part of such committees can be interpreted in the light of the resource dependence theory, given the expertise such directors can offer to the board.

The study has also produced evidence from a firm-level perspective, although the shortage of transparency in corporate governance disclosure hampered the development of conclusive remarks. However, the Indian and the Chinese companies investigated seemed to be more inclined than the Russian and the Brazilian ones to divulge information on the board independence and the role of internal committees with reference to topics requiring impartial judgment.

The empirical findings obviously suffer of the innate limitation of all content analyses that is to be based only on external communication. To overcome this limitation, the research could be repeated by contacting the companies to obtain the missing information. This solution could also permit supplementing the study by investigating further aspects, for example, the impact of independence on firm performance.

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# Entrenched Board in New Public Firms: An Empirical Study of Chinese IPOs

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This study empirically investigates the impact of managerial entrenchment on firm financial performance of Chinese firms initial public offerings (IPOs). Using 142 firms listed in the Shenzhen Stock Exchange (SZSE), which was collected from the Guotaian Research Service Center (GTA-RSC) databases, this study uses two proxies to measure firm performance and three proxies to measure managerial entrenchment. The two proxies for firm performance are Tobins' Q and return on assets (ROA), and the three proxies for managerial entrenchment are entrenchment 1, entrenchment 2, and entrenchment 3. These three entrenchment proxies are derived from the principal component analysis (PCA). Though previous studies of managerial entrenchment and firm performance variables suffer from endogeneity, with respect to the corporate governance it is unclear as to which variables are endogenous and which are exogenous. This study confirms that the data are linear and no endogeneity issue should be address in this study, but only heteroskedasticity, non-normality for Tobins' Q are a problem, therefore, the regression method employed for Tobins' Q is the generalised least square (GLS) and the ordinary least square (OLS) between estimators for ROA. The regression result for Tobins' Q reveals that managerial entrenchment is negatively impact on firm performance. The results are in contradiction to the stewardship theory for new firms whereas the managerial entrenchment for new firms is positive. Furthermore, only one entrenchment proxy yields a significant coefficient. In conclusion, the negative results of entrenchment proxies were caused by the different institutional structures and legal systems which are the Chinese corporations that are still largely owned and controlled by a state and hence the centralised state controlled was responsible for all managerial actions.

*Keywords:* managerial entrenchment, firm performance, Chinese firms initial public offerings (IPOs)

## Introduction

The earliest beginnings of Shenzhen Stock Exchange (SZSE) can be traced back to 1986. The Shenzhen Development Bank started the first security translation at the securities company counter. After the Shenzhen City Investment Securities and the Bank of China Securities Department was opened, several companies also

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issued and traded stocks, and then the rudimentary form of SZSE was structured. Shenzhen City Hall had introduced the decision to build up the SZSE in November 1989 and SZSE was founded in 1st December, 1990. The SZSE was formally opened for business on 3rd July, 1991. The SZSE was regulated by the Shenzhen branch of the People's Bank of China. After 1st April, 1993, the SZSE was established by the Shenzhen Securities Management Committee. With the SZSE trading gradually becoming active, the number of listed companies gradually expanded. The SZSE provides a centralized trading place for securities. It also organizes and supervises those securities trading under the direct supervision and management of the China Securities Regulatory Commission. Being committed to multi-level security market construction, the SZSE strives to create an open and fair market environment.

The main functions of the exchange include developing the trading rules, arranging IPO listings, supervising IPO listings, organizing and monitoring securities trading, supervising the investors and listed companies, administering and disclosing market information, and any other functions licensed by the China Securities Regulatory Commission. The SZSE market capitalization and trading volume are also increasing regarding to the increased number of listed stocks and number of investors. As one of the two stock exchanges in China mainland, the SZSE is growing with whole China securities markets. After 22 years' development, the SZSE has successfully built a national level securities market in a new city through the use of modern technology. Now the SZSE is playing a very important role in establishing the modern enterprise system, promoting the adjustment of economic structure, optimizing the allocation of resources, and spreading the knowledge of market economy. In China there is a position contributing to corporate governance known as "supervisors". Listed companies are required to establish a board of supervisors, consisting of no fewer than three members and who must meet at least every six months. Supervisors have a term of three years which may be renewed.

The supervisor role includes five main responsibilities. First, supervisors are responsible for supervising directors and management to ensure their behavior which has not violated any laws or regulations and that they abide by the articles of association of the company and the resolution of the shareholders' assembly. Secondly, they are responsible for the inspection of financial status and other accounting documents. Thirdly, they are responsible for checking the accounting reports, business reports, profit distribution, and financial data that board of directors submits to the shareholders' meeting. Fourthly, they have the right to the company's management and give forward suggestions. Fifthly, they are responsible for the resolution of the shareholders' meeting. Commitment to their job is comprehensive and responsible. According to Chinese Company Law Act 2005, a listed company shall set up a board of supervisors, not less than three members, who must meet at least once every six months. The tenure of office of the supervisor is three years, with provision for reappointment when that tenure expires. The number of meetings per year may represent the supervisory effort expended.

Two significant parties that own corporate shares in China are state-owned enterprises (SOEs) and legal persons. Corporate legal persons are defined by "People's Republic of Enterprise Legal Person Registration Regulations" and "Republic of China Company Registration"; the individuals and organizations report to the national law with the amount of money, business name, articles of association, organization, address and other statutory requirements, and must be able to independently bear civil liability, and be approved and registered by the competent authorities to obtain legal personality. In many corporate SOEs, legal persons own more than 60% of the shares. This study a high correlation between SOE and legal person ownership variable, as government

officers are the legal persons of many of the listed companies. Accordingly, the non-traded share percentage may become important. In many instances the non-corporate legal person is a government officer.

Further, to support the Chinese market economy, particularly Chinese capital market, there are some regulations promulgated. In 2001, the China Securities Regulatory issued "the leading opinion on building up the institutional of independent board director in the listed company". In 2002, the China Securities Regulatory and State Economics and Trade Commission issued; first, the rules of governance of the listed companies; second, the management standard of the listed company. In 2003, State-Owned Assets Supervision Commission was established. These rules are aimed at: first, preventing the big shareholders from seizing the benefits of the listed company; second, improving the board structure and functions. These actions were aimed at improving an effective governance conducts which affecting firms credibility and performance. Due to different characteristics of governance conducts, institutional structures, legal systems and environments, it is interesting to investigate the impact of managerial entrenchment on firm performance, particularly new listed firms in the SZSE.

Further, it is important to examine the degree of managerial entrenchment in new listed firms, because it is believed that most of the new listed firms have less strict of the corporate governance conduct. Further, it is important to examine the degree of managerial entrenchment in new Chinese firms, because China is playing a very important role in establishing the modern enterprise system in the world, and one of the largest market economies. Some of new listed firms are from family business, hence duality positions are suspected, thus may contribute to the managerial entrenchment and may raise the conflict of interest between shareholders.

### **Research Problem**

The research problem posed in this study is whether managerial entrenchment is positively related to firm performance of IPOs firms.

### **Literature**

There is no single model of corporate governance. Governance practices vary not only across countries but also across firms and industry sectors, for example, product market competition, structure of capital and labor markets, and the regulatory and legal environments. Shleifer and Vishny (1997) argued that much of the differences in corporate governance systems around the world stem from varying regulatory and legal environments. In addition, product market competition can reduce the scope for managerial inefficiency. This is because there are fewer rents to be expropriated when markets are competitive. Competition also provides a benchmark by which the performance of the firm can be judged when compared with the performance of other firms in a similar sector.

Corporate governance mechanisms should be able to minimise the conflict of interests within the company. However, inappropriate conducts of corporate governance mechanisms can be a source of managerial entrenchment. Weisbach (1988) defined managerial entrenchment as a situation where managers gain much power to further their own benefits rather than the benefits of shareholders. Furthermore, Shleifer and Vishny (1989) defined managerial entrenchment as an act of managers based on their own interest in judgment which investment gives them more benefits because they obtain more latitude in determining corporate strategy, thus reduce the probability of being replaced, pursue higher wages and larger perquisites from shareholders.

Furthermore, effective corporate governance should be able to monitor management activities. Therefore,

in order for boards to effectively fulfil their monitoring role they must have some degree of independence from management, thus independent directors on board are important. Although the independent directors on board in theory should represent the interests of shareholders and the company, in practice they often become part of the management of the corporation, and they can easily become entrenched as well. This is particularly the case when independent directors are compensated for their activities, and are themselves responsible for overseeing executive and board remuneration.

Corporate governance mechanisms such as board structures have been widely tested by present researchers; most of them focus on the effect of outside directors, board size, and female directors' impact, and CEO duality on firm performance. Gompers, Ishii, and Metrick (2003), and Bebchuk, Cohen, and Ferrel (2005) documented a negative relationship between various entrenchment indices and Tobins' Q or firm operating performance. This evidence suggests that entrenchment is detrimental to firm value.

An effective of corporate governance mechanisms should improve internal and external governance structures in China. High quality audits, higher stock ownership of senior managers, higher block shareholders, and less interference of the SOEs are of examples in improving corporate mechanisms in China. In the end, an effective corporate governance mechanisms lead to good performance (Gao & Kling, 2008). In addition, firms with larger controlling shareholders, with smaller supervisory boards, and having CEO duality, are more likely to choose low quality auditors, and hence lead to low firm performance (Z. J. Lin & M. Liu, 2009).

Moreover, CEO characteristics play an important role in explaining the IPO performance. According to Fan, Wong, and Zhang (2007), CEO's political ties are negatively associated with post IPOs' returns and other accounting characteristics, because politically connected CEOs are more likely to have boards populated by current or former government bureaucrats rather than professionals in China. Likewise, Li and Naughton (2007) found that CEO duality is positively associated with long-term IPO performance in China. In contrast, Chahine and Tohmé (2009) found that CEO duality is negatively related with short-term IPO underpricing in Arabian countries. Moreover, board characteristics do have some explanatory power on IPO aftermarket performance in the Chinese market (Li & Naughton, 2007). State ownership is significantly negatively connected to short-term IPO performance in China (Gu, 2003). Furthermore, the CEO age is potentially important for China which has given a continuing general reverence given to older people who are viewed as having acquired more wisdom. This may also explain why all presidents of the Communist party in China have been over 60 years of age. The majority of Chinese companies do disclose age.

Rosenstein and Wyatt (1990) found that the proportion of outside directors increases shareholders' wealth by documenting a positive stock price reaction at the announcement of the appointment of outside directors. In contrast, Yermack (1996) found that the percentage of outside directors has no impact on firm performance, and firm value is a decreasing function of board size. In addition, Baysinger and Butler (1985), Hermalin and Weisbach (1991), and Bhagat and Black (1997) found that various characteristics of board composition have no impact on firm performance. Thus, the evidence for the importance of outside directors is mixed.

The roles of the CEO and the chairman of the board (COB) are all crucial but different. The CEO is responsible for leading the firm's management, whereas the COB is responsible for leading the board. The separation of the CEO and the COB are mainly intended to reduce self-interest rather than shareholders' interest. However, sometimes, one individual often holds the CEO and the COB in the same time, known as a CEO duality. According to the agency theory, Jensen and Meckling (1976) suggested that CEO duality is not

ideal for firm value and performance because it could compromise the board's necessary monitoring role of the CEO. Stewardship theory (Donaldson, 1990; Muth & Donaldson, 1998), in contrast, asserted that CEO duality may be ideal for firm value and performance because of the unity of leadership and control it presents. However, Fama and French (2001) and H. DeAngelo, L. DeAngelo, and Stulz (2006) reconciled agency theory and stewardship theory of board leadership by assessing whether the probability a CEO concentrating his/her power by combining the COB affects firm performance.

### **Hypothesis Development**

According to the stewardship theory, the impact of CEO power concentration on firm performance is positive in early stage, and the influence becomes more negative as firm's life-cycle matures, supporting the agency theory. CEO power concentration is beneficial to determine the future direction for growth when the firm is in early stage, while CEO power concentration is detrimental when the firm is in the mature stage at which it requires check-and-balance rather than power concentration. Therefore, the impact of CEO duality should be positive owing to the required demand of leadership for right directions.

According to stewardship theory, the hypothesis for this study is formulated as follow:

H<sub>0</sub>: Managerial entrenchment is positively related to firm performance of IPOs firms.

### **Method**

Data in this study were collected from the Guotaian Research Service Center (GTA-RSC). From the period of 1999 to 2005, there were only 142 IPOs. Hence, an unbalanced panel data of 142 firms were observed.

Variables are largely adopted from previous studies. To investigate the impact of managerial entrenchment and firm performance, the researchers employ two proxies for firm performance used as dependent variable; Tobins' Q and return on assets (ROA). Tobins' Q is calculated from the market value to book value divided by total equity. ROA is calculated from net income after interest and taxes divided by total assets.

Managerial entrenchment serves as explanatory variable, and the researchers use three proxies to measure managerial entrenchment. These three proxies were derived from the principal component analysis (PCA). The PCA is used to determine the component factors for each managerial entrenchment proxies. A set of corporate governance characteristics that are likely to be associated with manager's own interests is used such as the board size, the percentage of independent directors, the percentage of female directors on board, the CEO age, the CEO gender, the CEO entire experience in the company, the CEO duality are independent variables used to derive component factors for managerial entrenchment proxies.

There are some benefit using the PCA; first, the PCA allows to determine a combination from a wide set of corporate governance variables in constructing a single entrenchment proxy; second, the PCA allows data reductions; third, the PCA produces weights, hence the entrenchment proxies will explain much of the variance in the group of corporate governance variables.

Tables 1 and 2 present the results from PCA. In Table 1 (Panel A), there are three components that having eigenvalue higher than one, and these three components explain 58.532% of the total variance. Therefore, three component factors will be used for entrenchment proxies; hence these three component factors will be referred as entrenchment 1, entrenchment 2, and entrenchment 3. In Table 2 (Panel B), only factor loadings which have correlation  $\pm 0.6$  are included as factor loadings combined for each component factor. Entrenchment 1 is a

combination of CEO entire experience in the company and the percentage of independent directors. Entrenchment 2 is a combination of board size and the percentage of female directors. Entrenchment 3 is a combination of the CEO duality and the CEO gender. In addition, firm size, leverage and the dummy for IPOs year serve as control variables. Market capitalisation is used as firm size indicator, and total debt-to-equity ratio is used as leverage ratio.

Table 1

*Panel A: Total Variance Explained*

Component	Initial eigenvalues		
	Total	% of variance	Cumulative %
1	1.326	21.939	21.939
2	1.136	18.931	40.870
3	1.06	17.662	58.532
4	0.95	15.837	74.368
5	0.848	14.133	88.501
6	0.69	11.499	100.000

Table 2

*Panel B: Rotated Component Matrix*

Component	Component		
	1	2	3
CEO duality	-0.166	0.087	-0.609
CEO gender	-0.102	0.119	0.732
CEO experience	0.779	-0.182	0.139
Board size	-0.082	-0.791	0.218
NED	0.752	0.279	-0.072
Female directors	-0.032	0.677	0.314

Rotation method: Varimax with Kaiser normalisation

The researchers use panel data which allow the unobservable heterogeneity for each observation in the sample to be eliminated and multicollinearity among variables to be alleviated. Maddala and Lahiri (2008) specified problems that might be present in the regression model, such as heteroskedasticity, multicollinearity, and endogeneity problems. Those problems cause inconsistency of the ordinary least square (OLS) estimates.

As can be seen in the Tables 6 and 7, most cross-correlations for the independent variables are fairly small, thus, giving less cause for concern about the multicollinearity problem. Further, a joint information matrix (IM) test of heteroskedasticity, skewness, and non-normal kurtosis is employed. Tables 3 and 4 present the joint IM test, when Tobins' Q and ROA respectively are used as dependent variable in each regression model. The joint IM test, when Tobins' Q used in the model, rejects the model assumption that  $y \sim N(x'\beta, \sigma^2 I)$ , because  $p = 0.0000$  in the total row. The decomposition indicates that all three assumptions of homoscedasticity, symmetry and normal kurtosis are rejected (see Table 3). In contrast, the joint IM test, when ROA used in the model, rejects the model assumption that  $y \sim N(x'\beta, \sigma^2 I)$ , because  $p = 0.8533$  in the total row. The decomposition indicates that all three assumptions of homoscedasticity, symmetry, and normal kurtosis are accepted when ROA used as dependent variable in the model (see Table 4).

Table 3

*Cameron and Trivedi Decomposition of IM-test for Tobins' Q*

Source	Chi2	df	p
Heteroskedasticity	121.45	38	0.0000
Skewness	40.08	9	0.0000
Kurtosis	5.66	1	0.0174
Total	167.19	48	0.0000

Table 4

*Cameron and Trivedi Decomposition of IM-test for ROA*

Source	Chi2	df	p
Heteroskedasticity	26.38	38	0.9224
Skewness	8.76	9	0.4596
Kurtosis	2.71	1	0.1000
Total	37.58	48	0.8533

To estimate the firm performance, this equation is the first point to begin, the model is as follows:

$$y_{it} = \alpha + x'_{it}\beta + \dots + x'_{in}\beta_n + u_{it} \quad (1)$$

$$u_{it} = \mu_i + \lambda_t + v_{it} \quad (2)$$

$$i = 1, \dots, N; t = 1, \dots, T$$

where  $\mu_i$  denotes the unobservable individual effect,  $\lambda_t$  denotes the unobservable time effect, and  $v_{it}$  is the remainder stochastic disturbance term.

While endogeneity is prevalent across many aspects of corporate finance, the relationship between corporate governance and firm performance is likely to be infiltrated with the endogeneity problem. It is important that endogeneity is taken into account as the presence of unobserved influences is likely to generate a degree of correlation between regressors and the error terms, which leads to biased estimates of the regressors' coefficients. Theory and empirical work suggest that corporate governance is dynamically endogenous with respect to firm performance. Wintoki, Linck, and Netter (2009) asserted that any type of endogeneity, such as past performance, simultaneity and unobservable heterogeneity, is likely to be present between board structure and firm performance. In contrast to Wintoki et al. (2009), using the Durbin-Wu-Hausman test for endogeneity, this study confirms no endogeneity. However, most of those previous studies were based in the US, which has different characteristics, different corporate governance practices, and different institutional characteristics from China, thus the result of the endogeneity test of this study cannot reject the null hypothesis.

Furthermore, a number of studies have found a non-linear relationship between managerial ownership and performance, which under the agency model, indicates managerial entrenchment (McConnell & Servaes, 1990; Short & Keasey, 1999; Hermalin & Weisbach, 1991; Holderness, Kroszner, & Sheehan, 1999; Morck, Shleifer & Vishny, 1988). This study confirms the linearity, when Tobins's Q is used as dependent variable in the model, using Box-Cox test, with results of -0.3636, which is approximated as close to one. Because ROA contains a negative value, thus linearity is more appropriate.

According to the specification test results for heteroskedasticity, skewness, kurtosis, endogeneity, and linearity of the data, thus the regression method employed for each dependent variable is different; for Tobins' Q, the GLS is appropriate because the assumptions of homoscedasticity of errors fail, as for ROA, the OLS between estimators is appropriate because of the short time period and many observations.

Then the regression model is specified as:

$$FP_{it} = \beta_0 + E1_{it} + E2_{it} + E3_{it} + FS_{it} + CV_{it} + \varepsilon_{it} \quad (3)$$

where:

*FP*: Firm performance;

*E1*: Managerial entrenchment 1;

*E2*: Managerial entrenchment 2;

*E3*: Managerial entrenchment 3;

*FS*: Firm size;

*Lev*: Leverage;

*CV*: Dummy for IPOs year.

## Result and Discussion

Table 5 presents the descriptive statistics for all variables. The mean value for Tobins' Q is 2.5892, with a range 0.6965 to 12.8508, suggesting that most of IPOs firms have high firm performance based on market value. This is evidence that the markets react positively to IPOs firms. The mean value for ROA is 0.0408, with a range 0.0000-0.3903 to 0.2716, indicating that most of IPOs firms have a lower performance based on accounting measure. The mean value for CEO duality is 0.8075, suggesting that approximates to 80% of the CEOs are also the COB, which hinders board from playing an effective monitoring role. The mean value for non-executive directors is 0.2149, suggesting that new public firms in China have lower outside directors in the beginning of their listing, hence indicating an effective monitoring role within the board. The mean value for female directors on board is 0.1012 with a range 0.1045 to 0.6000, suggesting that the presence of woman of Chinese firms' board is low. The mean value of entrenchment one is 1.93 with a range 0.0000 to 7.5000, suggesting that the CEO experience and non-executive directors' variables are a minor cause in creating an entrenched board. The mean value of entrenchment two is 1.0650 with a range 0.4771 to 1.4795, suggesting that board size and female directors on board variable are a major cause in contributing an entrenched board. The mean value of entrenchment three is 0.8306 with a range 0.0000 to 2.0000, suggesting that the CEO duality and the CEO gender variables are also a major cause in contributing entrenched board. Overall, higher value of entrenchment indicates greater managerial entrenchment; thus, greater managerial entrenchment yields lower firm value.

Table 5

### *Descriptive Statistics*

Variable	Obs.	Mean	Std. dev.	Min.	Max.
Tobins' Q	426	2.5892	1.8979	0.6965	12.8508
ROA	426	0.0408	0.0583	-0.3903	0.2716
Board size	426	0.9609	0.1138	0.3010	1.2304
Female directors	426	0.1012	0.1045	0.0000	0.6000
NED	426	0.2149	0.1678	0.0000	1.5000
CEO duality	425	0.8075	0.3947	0.0000	1.0000
CEO experience	425	0.0235	0.1518	0.0000	1.0000
CEO age	425	1.7176	1.4309	0.0000	6.0000
Firm size	426	1.8182	1.2656	0.9334	5.7302

(Table 5 continued)

Variable	Obs.	Mean	Std. dev.	Min.	Max.
Leverage	426	0.1102	0.2055	0.0000	1.5899
Entrenchment 1	486	1.9323	1.3803	0.0000	7.5000
Entrenchment 2	486	1.0650	0.1320	0.4771	1.4795
Entrenchment 3	486	0.8306	0.3900	0.0000	2.0000
IPOs_2000	426	0.3662	0.4823	0.0000	1.0000
IPOs_2001	426	0.3451	0.4760	0.0000	1.0000
IPOs_2002	426	0.0704	0.0837	0.0000	1.0000
IPOs_2003	426	0.0070	0.0837	0.0000	1.0000
IPOs_2004	426	0.0000	0.0000	0.0000	0.0000
IPOs_2005	426	0.2746	0.4469	0.0000	1.0000

Tables 6 and 7 present the correlation matrix for Tobins' Q and entrenchment proxies, and for ROA and entrenchment proxies respectively. As can be seen in Table 6, the highest correlation is 0.4465 between Tobins' Q and firm size, and all variables yield correlation coefficient lower than 20%. While the rest of the variables yield lower correlation between each other. Similarly, in Table 7 all the correlation coefficients are lower than 20%. Low correlation coefficients for both regression models suggest that multicollinearity is not a problem.

Table 6

*Correlation Matrix for Tobins' Q and Entrenchment Proxies*

Variable	Tobins' Q	Entrenchment 1	Entrenchment 2	Entrenchment 3	Firm size	Leverage
Tobins' Q	1.0000					
Entrenchment 1	0.0282	1.0000				
Entrenchment 2	0.1082	0.0076	1.0000			
Entrenchment 3	-0.0761	-0.0398	-0.0215	1.0000		
Firm size	0.4465	0.1735	0.0428	-0.0892	1.0000	
Leverage	-0.1794	0.0383	-0.0960	0.1965	-0.0637	1.0000

Table 7

*Correlation Matrix for ROA and Entrenchment Proxies*

Variable	ROA	Entrenchment 1	Entrenchment 2	Entrenchment 3	Firm size	Leverage
ROA	1.0000					
Entrenchment 1	0.1616	1.0000				
Entrenchment 2	0.0306	0.0076	1.0000			
Entrenchment 3	0.0506	-0.0398	-0.0215	1.0000		
Firm size	0.1715	0.1735	0.0428	-0.0892	1.0000	
Leverage	-0.1031	0.0383	-0.0960	0.1965	-0.0637	1.0000

Table 8 presents the regression result for Tobins' Q using the GLS regression model. There are three regression results; the researchers regress the independent variable one by one to observe the significance changes of variable included in each regression model. Surprisingly, there seems no significant difference among three regression models. The coefficient for entrenchment 1 is -0.0661 and significant, suggesting that the entrenchment 1 has a negative impact on firm performance. The coefficient for entrenchment 2 is -0.3557

and significant, suggesting that entrenchment 2 has a negative impact on firm performance. The coefficient for entrenchment 3 is -0.1830 and significant, suggesting that entrenchment 3 has a negative impact on firm performance. The negative and significant results for three entrenchment proxies indicate that the higher the managerial entrenchment within the company, the lower the firm performance. Furthermore, the highest coefficient among three entrenchment proxies is entrenchment 2 which is a combination of board size and female directors on board. This suggests that the larger the board size and female directors of Chinese firms the higher the managerial entrenchment. The second largest entrenchment coefficient is entrenchment 3 which is a combination of CEO duality and CEO gender. This suggests that the existence of CEO duality contributes to higher managerial entrenchment in Chinese firms. Overall, the corporate governance variables combined as an indicator of managerial entrenchment contributes to the detrimental of firm performance. In addition, the results are in contradiction to the stewardship theory for new firms whereas the managerial entrenchment for new firms is positive.

Table 8

*Regression Results for Tobins' Q*

Variable	REG 1	REG 2	REG 3
Constant	0.9481*** (0.0056)	0.9220*** (0.2142)	0.9310*** (0.2831)
Entrenchment 1	-0.1929*** (0.0100)	-0.1488*** (0.0108)	-0.0661*** (0.0111)
Entrenchment 2		0.0093 (0.1805)	-0.3577* (0.1842)
Entrenchment 3			-0.1830*** (0.0494)
Firm size	0.7084*** (0.0045)	0.6887*** (0.0053)	0.8933*** (0.0430)
Leverage	-0.3729*** (0.0361)	-0.5160*** (0.0368)	-0.0940 (0.0749)
IPOs_2000	0.5153*** (0.0362)	0.5370*** (0.0425)	0.3621*** (0.1265)
IPOs_2001	0.4601*** (0.0320)	0.3247*** (0.0380)	0.0764 (0.1282)
IPOs_2002	-0.0807 (0.1597)	-0.0680 (0.1670)	-0.2111 (0.1503)
IPOs_2003	-0.1259 (0.2270)	-0.2200 (0.2002)	-0.1401 (0.1754)
IPOs_2004	(omitted)	(omitted)	(omitted)
IPOs_2005	(omitted)	(omitted)	(omitted)
Groups	142	142	142
Wald-chi2	1291.00***	5889.6	1078.10***
Prob.chi2	0.0000	0.000	0.0000

Note. Standard errors in parentheses are for coefficients. \* Sig. at 10% level; \*\* sig. at 5% level; and \*\*\* sig. at 1% level.

However, the contradictory results may be due to that Chinese firms are different from the US firms and

other developed countries in which the majority studies of managerial entrenchment were conducted. There are some reasonable explanations which may support the negative result for managerial entrenchment in Chinese firms. First, the majority of firms' shares in China are owned by their government by direct or indirect shareholdings through state-owned institutions such as state investment companies, state holding companies, and state assets management agencies. The major non-state ownership is individual shareholding (non-state investors are rarely). Therefore, the government direct or indirectly interfered with the governance conduct for each company they invested in; hence the managerial entrenchment is higher, and leads to lower firm performance. These practices caused a defect of corporate governance structure in the corporatised SOEs inheriting from the public ownership.

Chen, Fan, and Wong (2004) reported that almost 50% of the directors are appointed by state controlling owners, and they occupy most board seats in China. In addition, Fan et al. (2007) reported that almost 28% of the CEOs are current or ex-government bureaucrats. Chen, Fan, and Wong (2007) argued that the appointment of politically-connected CEOs does not enhance shareholders value but rather pursue political goals of politician. In addition, the lower mean of outside directors found in this study, which is 0.2149, support the facts that the Chinese listed firms on the board of directors' front is considerable less. Further, the controlled-based model is adopted as the corporate governance practices by the Chinese listed firms. The controlling shareholders (the state) tightly control the listed firms through concentrated ownership, management friend boards and low transparency in their operations. In the end, the inefficient corporate governance structure provided the managers the opportunities to personalise their own interests or even conducted asset-stripping behaviour.

Furthermore, the coefficient for firm size is 0.8933 and significant, suggesting that larger firms tend to have higher firm performance. This result supports the fact that the market capitalisation in China is considerably high, thus attracted investors to acquire capital gain. Further, the coefficient for leverage is -0.0910 and insignificant.

Table 9 presents the regression results for ROA using the OLS between estimators' regression model. There are three regression results; the researchers regress the independent variable one by one to observe the significance changes of variable included in each regression model. Surprisingly, there seems no significant difference among three regression models. The coefficient for entrenchment 1 is 0.0100 and significant, suggesting that the entrenchment 1 has a positive impact on firm performance. Apart from entrenchment 1, the coefficient for entrenchment 2 and entrenchment 3 are insignificant. The positive and significant results for only entrenchment 1 proxy indicate that the higher the managerial entrenchment within the company, the higher the firm performance. The results are in line with the stewardship theory for new firms whereas the managerial entrenchment for new firms is positive.

The three entrenchment proxies' results for Tobins' Q and ROA are different, whereas Tobins' Q resulted negative impact on firm performance and ROA resulted positive impact on firm performance. This seems to be inconclusive result, but this study confidently assures that Tobins' Q has more power in explaining the firm performance of new public firms, as Tobins' Q reflected a market measure rather than accounting measure. In addition, due to the speculative nature of the Chinese capital markets and low quality in the accounting information, ROA alone probably does not reflect fundamentals in China's stock market (Wang & Xu, 2004).

Table 9  
*Regression Results for ROA*

Variable	REG 1	REG 2	REG 3
Constant	-0.0720*** (0.0120)	-0.0622* (0.0365)	-0.0863*** (0.0356)
Entrenchment 1	0.0097*** (0.0034)	0.0098*** (0.0039)	0.0100*** (0.0029)
Entrenchment 2		-0.0099 (0.00296)	-0.0085 (0.0320)
Entrenchment 3			0.0187 (0.0127)
Firm size	0.0406*** (0.0043)	0.0410*** (0.0043)	0.0440*** (0.0034)
Leverage	-0.0302* (0.0169)	-0.0308 (0.0197)	-0.0390 (0.0244)
IPOs_2000	0.0284*** (0.0088)	0.0284*** (0.0097)	0.0310*** (0.0090)
IPOs_2001	0.0300*** (0.0070)	0.0303*** (0.0046)	0.0332*** (0.0087)
IPOs_2002	0.0423*** (0.0088)	0.0413*** (0.0900)	0.0455*** (0.0128)
IPOs_2003	(omitted)	(omitted)	(omitted)
IPOs_2004	(omitted)	(omitted)	(omitted)
IPOs_2005	(omitted)	(omitted)	(omitted)
Groups	142	142	142
Wald-chi2	3.00***	3.05***	3.18***
Prob.chi2	0.0005	0.0009	0.0025

Note. Standard errors in parentheses are for coefficients. \* Sig. at 10% level; \*\* sig. at 5% level; and \*\*\* sig. at 1% level.

## Conclusions

The Chinese capital market is a typical new and transitional market. There are nonstandard problems with the size and quality of listed companies, the controlling level, the governance regulations and conducts, and the development of rules and laws. These factors lead to a low level of market transparency and trust, and thus affecting the firm's performance. This study examines the impact of managerial entrenchment, as a result of corporate governance conduct in Chinese firms, on new public firms' performance. Using 142 firms listed in the SZSE, which was collected from the GTA-RSC databases, this study uses two proxies to measure firm performance and three proxies to measure managerial entrenchment. The two proxies for firm performance are Tobins' Q and ROA, and the three proxies for managerial entrenchment are entrenchment 1, entrenchment 2, and entrenchment 3. These three entrenchment proxies are derived from the PCA. From the PCA result, each factor loading for each component are combined, and only factor loadings have value higher than  $\pm 0.6$  are included for each components.

Further, the regression method employed for two firm performance measures is different, which it based on their specification testing results, confirming that the data are linear and no endogeneity issue should be address in this study, but only heteroskedasticity, non-normality for Tobins' Q are a problem, therefore, the regression method employed for Tobins' Q is the GLS and the OLS between estimators for ROA. The

regression result for Tobins' Q reveals that managerial entrenchment is negatively impact on firm performance. The results are in contradictory with the stewardship theory for new firms whereas the managerial entrenchment for new firms is positive. In contrast, the regression result for ROA reveals that managerial entrenchment is positively impact on firm performance, however, only one entrenchment proxy yields a significant coefficient. The results are in line with the stewardship theory for new firms whereas the managerial entrenchment for new firms is positive.

There are some reasonable explanations which may support the negative result for managerial entrenchment in Chinese firms. First, the majority of firms' shares in China are owned by their government by direct or indirect shareholdings through state-owned institutions. Therefore, the government direct or indirectly interfered with the governance conduct for each company they invested in; hence the managerial entrenchment is higher, and leads to lower firm performance. These practices caused a defect of corporate governance structure in the corporatised SOEs inheriting from the public ownership. Further, the inefficient corporate governance structure provided the managers the opportunities to personalise their own interests or even conducted asset-stripping behaviour.

Second, in fact that financial institutions may also be able to suppress the managerial entrenchment of companies, this also unable to be applied as well to the Chinese market because the China's financial sector has been under the strong influence of the state. The state monopoly of the financial sector has been an obstacle for China's capital market to develop. Third, the China's legal and institutional framework is still immature. The different institutional structures, legal systems, and governance conducts casts doubt on whether the western models of managerial entrenchment theories have explanatory power on the entrenchment of new publicly Chinese firms in China's market.

In conclusion, the negative results of entrenchment proxies were caused by the different institutional structures and legal systems. The Chinese corporations that are still largely owned and controlled by a state resulted in the different institutional structures and legal systems, and hence the centralised state controlled was responsible for all managerial actions.

The findings of this study are restricted to the limitation of the data, which was collected through publicly available data sources such as annual reports and other databases. If there are any problems relating to data disclosures or professional accounting practices, then that would limit the validity of the findings. In addition, the entire population from period 2000 to 2005 comprises only 142 firms, which is relatively small, hence conclusions derived are only limited to the SZSE and the events happened in the year observed.

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# Effects of Team Structure on Innovation Performance: An Empirical Study

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Teamwork is gaining increasing attention in a broader management research. In addition to previous research on the relationship between team structure and innovation performance, this study draws from an interesting experience-based theory advanced by Kelley and Littman (2005), which examines teams from design thinking perspective, and tests its contributions and effects on team's innovation performance. According to Kelley any team should include the following team roles: The anthropologist, the experimenter, the cross-pollinator, the hurdler, the collaborator, the director, the experience architect, the set designer, the storyteller, and the caregiver. We develop theoretical logics to explain how team structure that includes these key team roles and competences lead to a better innovation performance, and propose pertinent hypotheses. Experimental-empirical research and quantitative analysis were used in the study. The study conducted multiple experiments on three samples: a group of foreign entrepreneurship students, a group of technical students, and an additional group of randomly selected individuals, aged between 20 and 58, with diverse backgrounds. A special approach was implemented and a new instrument was developed to evaluate individuals in teams. While the results show that team that possess the major competences proposed by Kelley are more innovative, preliminary results also show that not all team roles are equally important. Moreover, team roles should be allocated equally among members for better collaboration, member satisfaction, and quick response, and within one team, one prevailing personality is optimal in terms of innovativeness. We discuss the implications of our findings for future research and managerial practice.

*Keywords:* innovative team structure, team roles, team formation strategy, design thinking, Kelley's index, ten faces of innovation, team innovation performance

## Introduction

Increasing global competition, ever increasing requirements for flexibility and adaptability to the unexpected conditions and changes has advanced the salience of how teams are structured in the effective production of innovative goods and services (Guzzo & Dickson, 1996; Kozlowski & Ilgen, 2006).

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Consequently, significant attention has been paid to a better understanding of what determinants make teams work effectively. In several studies in the field of business, management and psychology scholars have tried to unveil the factors that affect team performance (Kozlowski & Bell, 2003). For instance, group cohesion (Mullen & Copper, 1994), emotional displays (Van Kleef et al., 2009), collective goals (O'Leary-Kelly, Martocchio, & Frink, 1994), member satisfaction (Feng, Yongjuan, & Erping, 2009), etc., were all shown as significant predictors of team performance and innovation.

Similarly, more and more ventures are successfully founded by teams (Feeser & Willard, 1990). An increasing number of success stories from the "start-up" world have emphasized the importance of teamwork in the field of entrepreneurship (Chan, 2009) and broader management research (Guzzo & Dickson, 1996). Although existing literature has largely contributed to our knowledge about determinants of team performance (Banker, Field, Schroeder, & Sinha, 1996; Stewart & Barrick, 2000), there are several remaining unanswered questions. For instance, while existing studies highlight many differences across teams' innovative performance, and underscore the importance of considering composition of team roles in the study, there is less attention paid towards understanding how the composition of team roles impacts innovative performance. In particular, factors affecting teams' performance, creative excellence and innovativeness are still poorly examined (Bygrave & Timmons, 1992; Henneke & Luthje, 2007).

Further, evidence shows that team heterogeneity is crucial for product innovativeness (Henneke & Luthje, 2007), team learning (Clarysse & Moray, 2004), and firm performance (West, 2007), but little is known so far about processes that lead to successful team formation (Chandler & Lyon, 2011; Forbes, Borchert, Zellmer-Bruhn, & Sapienza, 2006). Taken altogether, research in determinants of team innovation performance has been growing over the past few years, with team structure being emphasized as one of the main reasons for variability in innovation performance of teams (Cohen & Bailey, 1997; DeCusatis, 2008). In particular, individual characteristics and attributes of team members influencing allocation of tasks and authority have been attributed a crucial role in team performance (O'Neill & Allen, 2011; Peeters, Van Tuijl, Rutte, & Reymen, 2006), and team innovation (Bell, 2007).

In examining the impact of team roles structure, Belbin's model of team roles has so far gained a lot of research attention. According to Belbin, team roles are defined as a pattern of six factors: personality, mental ability, current values and motivation, field constraints, experience, and role learning. Although Belbin (2010) did not show how much of the variance of a specific role is explained by individual factors, he argued that all roles should acquire a balanced representation in a team (Aritzeta, Swailes, & Senior, 2007). However, not all studies could verify the Belbin roles' contribution to innovation and performance (Anderson & Spleap, 2004; Rushmer, 1996). Meanwhile, other role theories and guidelines, such as by Benne and Sheats (1948), Katz and Kahn (1978), Graen and Scandura (1987), Parker (1990), Davis, Millburn, Murphy, and Woodhouse (1992), Spencer and Pruss (1992), and Holland (1997) had gained only limited attention in practice. What makes those findings particularly interesting is, that some of the mentioned models have overlapping roles, whereas some of them are unique to a particular researcher (Senior, 1997).

Many have tried to come up with a perfect formula that would allow forming most innovative teams (Belbin, 1981, 2010; Parker, 1990), but none of the guidelines can be generalized across variety of circumstances. The lack of solid theoretical foundations for studying the impact of team roles composition on innovation performance represents a significant gap in literature and demands attention in order to enable more systematic future research. Despite certain theories have already been validated and well noted, in this research

we study team roles from a different angle. Our research is grounded in design thinking theory, which has become increasingly popular in innovation activities in firms, with a specific goal to test such team structure that allows a better implementation of design thinking in firms. The basic mechanism of the design thinking is to use the designer's sensibility and methods to match people's needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity" (Brown, 2008). In addition, drawing from design thinking logics, Kelley (2005) argued that team members' diversity, skills, abilities, responsibilities, and personalities affect team innovation performance. Kelley's findings are upon authors' own fieldwork experiences in working with different teams in very different contexts. Although the ideas that Kelley is advancing in his theorizing are very appealing, they have yet not been validated in a structured manner. Therefore, the main purpose of the study is to test and verify Kelly's empirical theory on 10 innovative roles and its connection to innovation performance in a team on a large sample. In order to do so we use a combination of experimental and quantitative research methods in the contexts of different teams.

Our specific contribution is conceptual and empirical. First, we develop theoretical logics and proposition explaining why team structure that includes key team roles leads to a better innovative performance of teams. Second, we test our proposition using experimental techniques. Third, while most of the existing research on teams was focused either on the micro-level to explore individual member contribution to innovation performance, the leadership style of teams (Oldham & Cummings, 1996) or the macro-level to explore effects of organizational design, industry specific attributes, prior ties, and demographic homogeneity on teams' performance (Eisenhardt & Tabrizi, 1995), to our best knowledge not many studies focused studying effects on the team level of research. According to Klein and Kozlowski (2000), examining determinants of organizational effectiveness from the team level of research allow better understanding of intra-team interactions and behaviour as well as its external influences ( Glynn, Kazanjian, & Drazin, 2010). This study therefore investigates the innovation performance of teams depending on members' interactions and personalities. By identifying and validating characteristics of innovative team structure that entrepreneurs should pay specific attention to, we provide practical implications that can help firms enhance their competitiveness.

### **Literature Review and Hypothesis**

Teamwork facilitates firm innovation because diversity, skills, and knowledge breadth of team members' contributions are more than a simple sum of individuals' contributions (Burpitt & Bigoness, 1997; Jehn, Northcraft, & Neale, 1999). Innovation often has seeds in the mind of a creative individual, but requires the whole team to analyze and develop (Tang, 1998). The experience-based theory of team structure effectiveness developed by Kelley (2005) argued that any team should include 10 different team roles from three major domains: (1) learning (the anthropologist, the experimenter, and the cross-pollinator); (2) organizing (the hurdler, the collaborator, and the director); and (3) building (the experience architect, the set designer, the storyteller, and the caregiver). Kelly's proposition does not necessarily denote 10 different persons denominated with a single role: The role should be understood as 10 attributes, which can be distributed among any number of team members—one member may possess more than just one role. For each of the roles, its characteristics and task responsibilities are linked to the positive effect they hold on innovation and performance that lead to a higher innovation performance. Drawing from the fact that teamwork depends upon individual contributions, and that each of the characteristics and responsibilities has an individual influence on

innovation, we expect that a team will be more innovative and effective with members covering each of the roles explained hereinafter (Barrick, Stewart, Neubert, & Mount, 1998; Stewart & Barrick, 2000; Tjosvold, Yu, & Wu, 2009). Below we summarize key roles identified in the Kelley's (2005) framework and integrate them in the innovation performance literature. In specifics, we emphasize key characteristics of each role and link it to the existing studies that related a specific characteristic with innovation performance.

The learning roles are crucial for the firm's performance, as knowledge provides a basis for a competitive edge and fosters innovation (Cohen & Levinthal, 1990; Grant, 1996). Learning roles, which include the anthropologist, the experimenter, and the cross-pollinator, are in charge of expanding knowledge by constantly gathering new information.

### **The Anthropologist**

The anthropologist's task is to observe the market and develop a deep understanding of the latent needs of society and the way people interact with products. He/she tries to see all the important details, particularly of the problem-solving action. The most prominent characteristics of this role are open-mindedness, intuition, and possession of empathy (Kelley & Littman, 2005, pp. 15-40). In prior research, these three characteristics have been significantly related to innovation performance. First, open-mindedness indicates the degree to which people are open-minded, and like novelty (McCrae & Costa, 1987). Moreover, it refers to the willingness to tolerate different opinions and consider new unfamiliar ideas (Flynn, 2005; LePine, 2003), which are argued to facilitate good understanding of members and lead to a better team innovation performance (Homan et al., 2008). Furthermore, open-mindedness was shown to positively impact individual's creativity, imagination, and innovativeness (Baer & Oldham, 2006; Jacoby, 1967). Second, intuition, evolves from experiences and accumulated knowledge, and is most often used in an environment that lacks information (Harper, 1988; Kardes, 2006). Furthermore, intuition proves useful in strategic decisions (Khatri & Ng, 2000) and can foster creativity and individual innovation performance (Sadler-Smith & Shefy, 2004; Tesolin, 2007). Third, empathy helps branch out into other skills and integrate them with their deep knowledge, as long as they experience the problem from multiple perspectives to fully understand the latent needs. By combining different insights it allows for creativity and higher innovation performance (Martin, 2009; McDonagh & Thomas, 2010).

### **The Experimenter**

His/her task is to make ideas tangible to give a shape to a new concept. He/she embraces failures at early stages to avoid big mistakes later in the process and thus saves money and makes the thinking process more fun, therefore more pleasant to work. The most prominent characteristics of this role are able to experiment, risk-taking, and learning from failures. A person's ability to experiment is crucial for team's performance and new product development, as prototypes (from experimentation) enable more powerful explanation via solution visualization and successful idea evolving (West & Iansiti, 2003; Wouters & Roijmans, 2010). Second, risk-taking involves taking bold actions, and is also an important factor that positively affects creativity in terms of idea boldness (Baucus, Norton, Baucus, & Human, 2008), firm performance (Antoncic, 2003), and team innovation performance (particularly radical innovation due to higher level of complexity and uncertainty) (Cabrera, Medina, Lavado, & Cabrera, 2008; Rhee, Park, & Lee, 2010). Moreover, experimentation and trial and error learning improve the development process and foster creativity and organizational innovation performance (Cannon & Edmondson, 2005; Thomke, 2003).

**The Cross-Pollinator**

His/her role is to provide knowledge breadth to the team. This team role facilitates combining knowledge, i.e., to connect general knowledge, experiences, skills, hobbies to the problem in the area of expertise. It enables bringing new perspectives on how to utilize the expertise knowledge in many different aspects of life to the team (Brown & Katz, 2009; Kelley & Littman, 2005, pp. 67-90). The variety of knowledge and skills of this role enhances opportunity recognition (Kogut & Zander, 1992), new product development (Leonard-Barton, 1995), creativity and firm's innovation (Sakkab, 2007). Finally, it was demonstrated that curiosity has a positive effect on creativity and innovation performance (Fleming, 2004; Sakkab, 2007).

The set of roles that concentrate on organizing are salient for moving ideas forward in organizations. Organizing is essential to teams as it provides a path to follow, to connect, and to integrate all the members into a team by setting goals and motivating other team members. These roles also manage team resources such as time, effort, and financial resources (Kelley & Littman, 2005).

**The Hurdler**

He/she is the entrepreneur of the team, persistent, optimistic and determined, with great problem-solving skills. He/she follows the path to the goal he/she believes in and successfully overcomes obstacles that emerge in the way. In the past, persistence has been positively related to innovation activity, as it helps to complete a variety of tasks over time no matter what (Wong, Tjosvold, & Liu, 2009). Optimistic individuals are also more effective problem-solvers (Peterson, Owens, Tetlock, Fan, & Martorana, 1998), as they are more open to new knowledge and experimentation (Levinthal & March, 1993), more open to new challenges (Seligman & Nathan, 1998), pay more attention to information (Aspinwall, Richter, & Hoffman Iii, 2001), and more likely react to problems (Geers, Handley, & McLarney, 2003), which result in a higher problem recognition (Papenhausen, 2004) and individual innovation performance (Gary, 2003).

**The Collaborator**

The role of collaborator is to take care of the team, to assign roles to other team members, depending on the problem set and the skills needed, and to inspire teams with confidence (Kelley & Littman, 2005, pp. 113-140). He/she brings people together to get things done and ties the group together in challenging times. In the literature, collaboration has been recognized as an essential part in fostering innovation activity through idea generation (Barczak, Lassk, & Mulki, 2010; Brown & Katz, 2009), creativity (Alves, Marques, Saur, & Marques, 2007), speeding up the product development process (Brown & Eisenhardt, 1995; Schippers, West, & Dawson, 2010), and better predictions of environmental changes (Ambrose & Harris, 2009; Hansen & Oetinger, 2001). The collaborator's main goal is to ensure that the team is used to its full potential in attaining innovation performance.

**The Director**

Among the organizing roles, the director is the operative manager of the team. He/she needs to find talented individuals, compose a team, and direct the team towards a goal. The director helps to spark creativity and instills the team with inspiration, motivation, and empowerment (Kelley & Littman, 2005, pp. 141-164). Similarly, empowerment is important for the creation of trust (Brunetto & Farr Wharton, 2007), autonomy and power in decision-making (Spreitzer, Kizilos, & Nason, 1997), proactiveness, open communication, and shared vision and common goal (Ahmed, 1998), which have all been shown to lead to enhanced performance and organizational innovation performance (Jung, Chow, & Wu, 2003).

The building roles integrate information gathered by the learning roles with the empowerment of the organizing personas into a combination that allows and fosters innovation.

### **The Experience Architect**

He/she creates unique consumer experiences to connect at a deeper level with the consumer's latent needs and satisfy market needs. By having the capability of transforming a product or service into an extraordinary experience (Kelley & Littman, 2005, pp. 165-192), the role fosters innovation performance. Indeed, design literature suggests that focusing on the functional performance of products is not sufficient; innovating firms need to consider a product's emotional satisfaction and market latent needs as well (Leavy, 2010; Y. Li, Wang, X. Li, & Zhao, 2007). Many contemporary business success stories relate to new experiences (Martin, 2007, 2009); companies such as Apple, P&G, Four Seasons, Red Hat, Cirque de Soleil brought to the market what people had not even known they need or want.

### **The Set Designer**

He/she has the capability of transforming ordinary work environments into a powerful tool that stimulates creativity and fosters innovation by affecting participants' behaviour. The work environment was determined as an important factor in stimulating an individual's creativity, affecting creative performance and innovation as a result (Oldham & Cummings, 1996). The work environment is salient to individuals' creativity and innovation performance (Amabile, Conti, Coon, Lazenby, & Herron, 1996).

### **The Storyteller**

The storyteller builds morale and environmental awareness by fostering the transmission of values, emotions, and objectives through fascinating stories. Stories have a greater power of persuasion than any other facts or reports and are also the channel through which knowledge, norms, and values are exchanged and shared in the pursuit of emotional connection (Boyce, 1996). They enhance trust and commitment through greater understanding, provide new perspectives on the problem, and are a source of inspiration and simulation. The storyteller enforces new ways of considering market needs, which normally results in an improved product, consumer experience, and innovation performance (Beckman & Barry, 2009; C. Heath & D. Heath, 2007; Sole & Wilson, 1999). He/she also has a specifically instrumental role when the team pursues radical innovation (Beckman & Barry, 2009; Sole & Wilson, 1999).

### **The Caregiver**

He/she is a customer-focused role with strong empathy to promote and further enhance the consumer experience. His/her customer-focus and empathy enable him/her to promote and further enhance the consumer experience, by making people feel like they are the only customers in the world and that a certain product or a service is specially designed for them (Kelley & Littman, 2005, pp. 215-240). The caregiver is able to step into the customer's shoes (Ambrose & Harris, 2009), which results in much greater innovation performance, as many new ideas are exposed (Li et al., 2007; Wylant, 2008).

Above we showed how each of the roles advanced by Kelley (2005) is related to innovation performance by itself. Given that, we argue that teams that include all of the roles discussed above should also be significantly related to innovation performance (Barrick et al., 1998; Stewart & Barrick, 2000; Tjosvold et al., 2009). This leads us to propose:

Hypothesis: Team structure that includes the roles proposed by Kelley (2005) will lead to better innovation performance than team structure that includes a random combination of individuals.

In this case, “a role” is considered as an attribute of a team structure and is not necessarily linked to one team member only. Moreover, each member of a team can possess more than just one role.

## **Research Design**

### **Research Strategy, Measures, and Data Analysis**

In order to test our hypothesis a combination of qualitative and quantitative research methods was used (Bryman, 2006; Tashakkori, 2006). Given the nascency of this research field the qualitative methodological approach was found appropriate to explore the motives, feelings, values, attitudes, and perceptions that underlie and influence the behaviour of individuals in a team (Merriam, 1998; Patton, 2002). Based on qualitative theory, experiments were used to get better insight into the phenomenon within its real-life context (Denzin & Lincoln, 1994; Patton, 2002; Yin, 2009) and to understand underlying emotions and cognitions within a team (Sørensen, Mattsson, & Sundbo, 2010). Quantitative research (linear regression) was used to provide additional support to the relationship between the presence of team roles and organizational innovation.

Given the longitudinal nature of this research multiple experiments were used as a qualitative research tool to consider different cases for replication. Indicative guidelines by Yin (2009) and Patton (2002) were followed on how to perform experiment to have a control over actual behavioural events and simultaneously focus on contemporary events (Denzin & Lincoln, 1994). However, recommendations regarding qualitative research design are somewhat loose, which leaves a lot of room for a subjective interpretation of the researcher. In what follows, the research design that was used for the purposes of this research is explained.

As Kelly’s theory comes from the author’s long-term observations of how teams function, an experiment was designed in similar settings within which the original findings emerged. In such setting team members work together for a longer period of time and therefore know each-other’s advantages, weaknesses, and interactions better. The experimental phase started with an observation of teams of international students and teams of technical student. Additionally, a deeper understanding of the same phenomenon in the short run was desired. Therefore a one-day experiment was conducted.

Three different samples were involved in the experiment. They were selected in a way that allowed us long- and short-term observation as well as international participation. The duration of observed sample and each experiment varied, as the intention was to get a deeper understanding of effect of different team structures (different roles) and intra-team interactions on innovation in different time frames, which were distinctive of individual tasks. All participants performed in teams and were given a problem set to solve. During the task their roles were assessed and compared to Kelly’s, and their solution was reviewed by a group of independent experts.

The first sample was composed of 13 teams of international students enrolled in the entrepreneurship course at the local university. They were observed working on two different projects during a six month time frame to find out, how team roles interact on a long term and how individuals coming from different cultures and countries operate. Teams were observed once a week during workshops to allocate different roles that appeared during the process and their variable interactions. The second sample included 11 teams of engineering major students enrolled at the local university. They were observed working on a single project during a four month time frame also once a week on their workshops. The third sample consisted of 10 teams of randomly selected individuals, aged between 20 and 58, with diverse backgrounds. They were observed during a one-day experimental study to get an insight of roles’ interactions when performing quick tasks.

During the process, team interactions were carefully monitored and recorded to get an in-depth insight of team dynamics and to identify member team roles. To obtain more detailed information and to simplify research process, a structured questionnaire was developed on the basis of our observation. Our survey instrument included questions about team members and was tested on a group of post-graduate students at the local university prior to being used in the experiment. The questionnaire proved to be an adequate substitute for observation, as the answers of the existing roles were similar to what we observed and was then used to calculate the independent variable—team role score. For the purposes of this research the name Kelly's index was suggested to designate team role score.

After a task completion, each team member was asked to evaluate his/her team members. In terms of structure and organization, the left side of the questionnaire held descriptions of each of the 10 roles, whereas the right side contained a table to fill out. Each member of the team had one minute to read the characteristics of a certain role (the anthropologist). After, more information on a specific role was provided by interrogator in order to prevent misunderstanding. Next, the team members had one minute to evaluate the mentioned role on the sample of their members, including themselves and attribute it to any individual. They repeated the process outlined above for each of the 10 roles. Each member of the team was able to select a maximum of two people who in his/her opinion possessed the mentioned characteristics, and rated them on a scale from 1 (the characteristics are poorly expressed) to 5 (the mentioned characteristics can be completely related to the person). If no such characteristics existed in the team, the person was requested to leave it blank. The independent variable, which delineated Kelly's index, was measured through questions. Individual scores were then used to calculate team role score with only the role scores of members receiving at least 50% of the voted size being considered. The index was calculated as the sum of individual shares (the amount of rates compared to the maximum amount of rates a person can get) and measured the number of expressed roles in a team (out of 10).

The dependent variable (team's innovation performance) was assessed by independent experts' opinion. Three experts individually evaluated teams' projects in terms of innovation performance on a scale 0-100%. For the purposes of the study the average rate of innovation performance for each team was calculated. It is again important to emphasize that not all roles existed in each team and that team members can associate with multiple roles.

### **Sampling**

Sample 1 was composed of international students of Entrepreneurship, aged between 19 and 24. They were requested to finish two projects (Cases 1 and 2), each during a five week time frame. Case 1: The problem involved designing a new cafeteria on the school's patio. They were assigned to six different teams, consisting of five to six members each, and were given five weeks to finish the project. Throughout the execution of the project, the teams were regularly monitored and each member needed to fill out the questionnaire on teamwork. Team innovation performance was also assessed at that point by three experts. Case 2: The second case was conducted on the same group of students, but with different team composition. Students were requested to form teams volitionally. There were seven teams in this case, each consisting of four to five members. They were given three similar problem sets to choose from and were allowed six weeks to finish their projects. Throughout the execution of the project the teams were regularly monitored and each member needed to fill out the questionnaire on teamwork. Team innovation performance was also assessed at that point by three experts.

Sample 2 included two groups of students (Cases 3 and 4) majoring in engineering, aged between 18 and 25 years, who were requested to finish two projects within a time frame of three months. Cases 3 and 4: Students were given three months to finish a business project of their own. Based on design thinking principles they had to develop their own idea and then present it in a business plan format. Throughout the execution of the project, the teams were regularly monitored and each member needed to fill out the questionnaire on teamwork. Their presentation, along with the business plan, was rated by independent experts who also evaluated each team's project innovation performance.

Sample 3 included 25 randomly selected individuals, aged 20 to 58, who formed five teams for the first two creative problem sets, and were later on assigned different teams for the next two problem sets. The duration of the tasks was between 8 and 45 minutes. Case 5: Five teams were formed volitionally and were given a "warm-up" task of constructing an instrument for eating any kind of food when on a hike or in the mountains. They had 45 minutes to finish their task. Afterwards they were requested to evaluate each other by filling out the questionnaire. Three experts assessed team innovation performance. Case 6: Teams were formed based on the results from the questionnaire in Case 5. Individual scores of the roles they possessed enabled the formation of the following five teams: (1) Team 1 included participants who had developed several strong personal team roles in the first problem set; (2) Teams 2 and 3 consisted of individuals who had not significantly expressed any of the roles in a team; (3) Teams 4 and 5 were composed of individuals who had expressed a maximum of two roles, and, as a combination of members, covered all 10 necessary roles. These teams were given two problem sets. The first was a short, impulsive one, whereas the second was similar to the previous experiment. Two different tasks that required different completion times were selected to gain insight into the effect of stress and restraints. As the teams remained the same during both tasks, the role score index was evaluated with one questionnaire for both tasks after the second task was finished. Furthermore, innovation performance was calculated as an average of both problem set scores. In the first problem, teams were given a short team building exercise. The first task included construction of a floating boat within eight minutes. If the team completed the task, it was given the opportunity to race with its boat by blowing into it in a small pool. The teams' innovation performance was rated accordingly to exercise rules. The second problem required designing an innovative solution to existing camera bags (with specimen). At the end of 45 minutes, team members evaluated their partners with a questionnaire. The team role score was then calculated as the sum of both individual scores, and experts' rated innovation performance of the solution.

### **Data Analysis and Results**

The qualitative research results (observation, interviews) provided evidence to support our hypothesis that the number of roles influences a team's innovation performance. Teams that had more roles demonstrated higher innovation performance in their solutions. In addition, as the sample was of sufficient size, a linear regression analysis was used to assess the effect of the roles on innovation performance. The hypothesis was tested using a linear regression model of standardized coefficients. The following regression coefficient was obtained:

$$\text{Innovation performance} = 0.68 \times \text{Kelly's index}$$

which denotes that innovation performance is predicted to increase by 0.68 when Kelly's index goes up by one. "Kelly's index" in the regression model marks the overall team role score (the number of the roles that were formed in a team) that was calculated from questionnaire data. The significance level of the coefficient was

0.000 ( $t = 5.518$ ). The coefficient of determination ( $R^2$ ) was 0.46, indicating that 46% of the total variance in innovation performance was explained by this linear regression model, which left the rest of the variance (54%) as variability of the data from the model. Unquestionably, the argumentation above provides sufficient reasoning to confirm our hypothesis, as Kelly's index measured the number of expressed roles in a team. Accordingly, teams of members covering a larger portion of the roles proposed by Kelley are more innovative than teams that encompass a random combination of members.

The results are presented in Table 1. In what follows, the results of the executed experiments are discussed in detail, based on our monitoring of the teams. Case 1 supported the idea that teams that achieve a better Kelly's index are more innovative. The upper three teams according to innovation performance rank were also the upper three teams based on Kelly's index rank. The team that achieved the highest Kelly's index got the second best result in innovation performance, whereas the team that placed first on the innovation performance scale reached the second highest Kelly's index. Teams 6 and 2 attained 3rd and 4th place according to their Kelly's index and the same places in innovation performance. In addition, teams 3 and 5, whose solutions to the problems were the least innovative, scored the lowest Kelly's index. Case 2 included seven teams. The results of this experiment further support the hypothesis. Teams that ranked in the upper half of Kelly's index results achieved better cumulative innovation performance rank as opposed to the lower half of ranked teams.

Table 1

*Standardized Values Ranks*

Case	Team	Kelly's index	Innovation performance	Kelly's index rank	Innovation performance rank	Standardized Kelly's index rank*	Standardized innovation performance rank*
Case 1	Team 1	5.10	91	2	1	-0.80178	-1.33631
	Team 4	6.45	89.3	1	2	-1.33631	-0.80178
	Team 6	4.35	83.3	3	3	-0.26726	-0.26726
	Team 2	3.96	82.3	4	4	0.26726	0.26726
	Team 3	1.32	70	6	5	1.33631	0.80178
	Team 5	3.20	64.3	5	6	0.80178	1.33631
Case 2	Team 4	5.16	95.0	4	1	0	-1.22559
	Team 3	8.55	94.2	1	2	-1.38873	-0.77406
	Team 7	3.96	89.2	5	2	0.46291	-0.77406
	Team 8	6.72	85.0	2	4	-0.92582	0.12901
	Team 9	3.75	75.0	6	4	0.92582	0.12901
	Team 6	2.85	69.2	7	6	1.38873	1.03208
	Team 2	5.50	63.3	3	7	-0.46291	1.48361
Case 3	Team 2	4.48	96.3	1	1	-1.26491	-1.26491
	Team 1	4.04	88.8	2	2	-0.63246	-0.63246
	Team 3	3.68	86.3	3	3	0	0
	Team 5	3.64	85.0	4	4	0.63246	0.63246
	Team 4	1.52	67.5	5	5	1.26491	1.26491
Case 4	Team 1	7.10	95	1	1	-1.33631	-1.33631
	Team 3	5.76	85	2	2	-0.80178	-0.80178
	Team 2	4.88	84	3	3	-0.26726	-0.26726
	Team 5	4.65	83	4	4	0.26726	0.26726
	Team 6	2.80	76	6	5	1.33631	0.80178
	Team 4	2.96	73	5	6	0.80178	1.33631

(Table 1 continued)

Case	Team	Kelly's index	Innovation performance	Kelly's index rank	Innovation performance rank	Standardized Kelly's index rank*	Standardized innovation performance rank*
Case 5	Team 1	5.32	87.5	2	1	-0.63246	-1.26491
	Team 2	4.52	85.0	3	2	0	-0.63246
	Team 3	6.12	85.0	1	3	-1.26491	0
	Team 4	3.52	74.0	4	4	0.63246	0.63246
	Team 5	2.96	62.5	5	5	1.26491	1.26491
Case 6	Team 5	3.48	85.0	3	1	0	-1.26491
	Team 4	7.68	74.2	1	2	-1.26491	-0.63246
	Team 3	3.00	73.8	4	3	0.63246	0
	Team 1	1.48	65.0	5	4	1.26491	0.63246
	Team 2	5.56	53.3	2	5	-0.63246	1.26491

Note. \* Standardized within a case.

Results of the Case 3, which was composed of technical students, provided supporting evidence for the existence of a relationship between the 10 roles and team innovation performance. Kelly's index rank that each team attained matched entirely with their innovation performance rank. Likewise, the results of the Case 4 proved almost identical, with a minor deviation in the two teams that achieved the lowest Kelly's index rank.

In Case 5, three teams that scored at the top of Kelly's index scale took the top three positions in the innovation performance scale rank, with a slightly different distribution. Furthermore, teams 4 and 5, which reached the lowest position with regard to their Kelly's index, also hit the bottom two positions in their innovation performance rank. On the other hand, the results in Case 6 align with the hypothesis, despite the fact that one team (team 2) did not co-operate as expected. According to observation and members' comments, they did not realize the seriousness of the task presented. However, despite noticed deviations within specific experiments and the results differentiating and varying across samples, the overall study shows the significant importance of Kelly's index when predicting team innovation performance.

In the following paragraphs results and activities of each of the teams in the Case 6, which tested how these 10 types of roles work together in real time settings, are discussed. The first team included those individuals that had achieved the highest Kelly's index individually in the Case 5, which in practice meant that they had significantly developed and adopted three or more different roles. The team was unsuccessful in completing the first task, which lasted eight minutes. A clash of roles appeared, team productivity was inhibited by members spending too much time figuring out and determining their roles. Members within a team were not working as a team. Rather, they were acting as a team of non co-operating individuals, each of them trying to find a solution individually. When asked, participants expressed their feelings, noting that the exercise was one of the worst teamwork experiences of their lives. This inability to collaborate also reflected in their Kelly's index. According to normal expectations, a team of individuals with high individual Kelly's index would ultimately lead to a team with a high Kelly's index. On the contrary, their strong personalities suppressed their team roles and they rated each other poorly in the questionnaire at the end of the project.

However, despite difficulties experienced during the first task, the team achieved much better results in the second task, which was of a longer duration. Albeit only three members in the team actually participated in the problem-solving activity, their collaboration was taxing and full of adaptation. They came up with a solution that brought them the highest innovation performance score (of all cases). Accordingly, we can assume that innovation performance is positively related to the number and strength of roles mostly in the long run and if

the roles do not overlap. Notwithstanding, their average innovation performance score was, due to the equivalent weight of the both tasks, still low and matched completely with the low Kelly's index they attained.

The second and the third team were organized with participants that had not developed any significant role in their team in the first part of the experiment. According to their internal evaluation and observation, some of these individuals developed significantly more roles than in the first team, therefore the Kelly's index of newly composed teams yielded a higher value. This can be due to the fact that their team roles in Case 5 might not have been expressed and developed to its full potential. However, the same two teams ranked in the bottom part of the innovation performance rank in Case 6, despite one of them achieving a rather good Kelly's index. Observation of the work process offered a good explanation: The members of the team were unwilling to fill in the questionnaires carefully and thoughtfully, as some of the members were in a hurry to leave the experiment for some reason. In addition, the members of the team were not in a mood and did not take the experiment seriously enough (their solution to the problem set was innovative but also unrealistic. Such circumstances possibly led to a bad result in innovation performance and a quite good Kelly's index (they were too generous evaluating each other, because they did not want to offend each other).

The final step included organization of the fourth and the fifth team of participants out of the participants that had expressed a maximum of two roles in the first part and whose roles did not overlap. Teams that would cover as many of the roles as possible were formed. These two teams achieved the highest rank in combined innovation performance from both problem sets. In the first problem set, which required a quick response, both teams acted as a great team and came to brilliant solutions. Simultaneously, their high Kelly's indexes were congruent to their innovation performance rank. Moreover, according to their comments, these two teams really went along well and enjoyed working together. Great work conditions, member satisfaction, roles that did not overlap and yet covered all 10 of the roles, no strong personalities with than one developed role, no one that would put himself/herself forward by any means; all these components seemed to be essential to the teams' success and innovation performance. The experiment settings and findings are presented in Table 2.

Table 2

*Experiment Findings*

Sample	Experiment number	Team	Duration	Settings	Task	Findings	General findings
Sample 1: International students of entrepreneurship	Case 1	6	five weeks	Individuals chose their own teams	Designing a new cafeteria	Teams that achieved higher Kelly's index ranked higher on innovation performance scale.	Teams that encompass more roles are more innovative (no matter which roles).
	Case 2	7	five weeks	Teams were formed by instructor	Designing a marketing plan for Slovenian brand	Teams ranked in the upper half of Kelly's index results achieved better cumulative innovation performance rank.	
Sample 2: Engineering major students	Case 3	5	11 weeks	Individuals chose their own teams	Business plan by their choice	Kelly's index rank that each team attained matched entirely with their innovation performance rank.	
	Case 4	6	11 weeks	Individuals chose their own teams	Business plan by their choice	Kelly's index rank that each team attained matched with their innovation performance rank.	

(Table 2 continued)

Sample	Experiment number	Team	Duration	Settings	Task	Findings	General findings
Sample 3: 25 random individuals, aged between 20 and 58	Case 5	5	45 min	Individuals chose their own teams	Designing an instrument for eating out	Teams that scored at the top three of Kelly's index scale took the top three positions in the innovation performance scale rank.	
	Case 6	5	8 min + 45 min	Teams were formed based on questionnaire results in Case 5*	Construction of a boat; designing a camera bag	Teams with higher Kelly's index ranked higher on innovation performance.	(1) Team roles should be allocated equally among members (each member should not adopt more than three roles); and (2) within the team, one prevailing personality (a person that adopts the most roles) is optimal in terms of innovation performance.

*Note.* \* Individual scores of the roles they possessed enabled the formation of the following five teams: (1) Team 1 included participants who had developed several strong personal team roles in the first problem set; (2) Teams 2 and 3 consisted of individuals who had not significantly expressed any of the roles in a team; and (3) Teams 4 and 5 were composed of individuals who had expressed a maximum of two roles, and, as a combination of members, covered all 10 necessary roles.

## Discussion

This research was drawn from an interesting, experience based proposal how team composition may affect its innovation performance (Kelley & Littman, 2005). The aim was to bring together disparate research on the effects of team role composition on innovative performance in teams by testing Kelly's theory on team structure and how it has an effect on innovation. In specifics, the study proposes that the team structure that will include all roles as proposed by Kelley (2005) will attain better innovation-related results than a randomly assigned team. The study can be seen as a starting point of empirical research on the role of team composition in innovation performance.

A multiple-experiment research was conducted to test Kelly's theory that varied team roles are needed for a better team level innovation performance. This hypothesis was supported with data from three different samples and several cases within each sample. Obviously, the initial motivation for this study was to provide advice for entrepreneurs and managers on how to structure teams with the goal of attaining the best possible team innovation performance. To examine Kelley's proposed roles the work of 34 teams was followed and recorded within a six month time frame. The data collected were analysed with qualitative and quantitative research methods. The results provided support for the core proposition of the Kelley's theory that a balanced team structure leads to better innovation results. Furthermore, the empirical examination additionally complements Kelley's guidelines with unique insights: It provides recommendations on how to optimally

allocate roles among members in a team and suggests a hands-on approach to measuring team innovation performance and composing a team.

The study shows that innovation performance is positively impacted by Kelly's index, which denotes the number of expressed roles in a team. Based on our findings conclusions are drawn as follows:

(1) Teams that encompass more roles proposed by Kelly are more innovative (no matter which roles).

Moreover, our study finds some specific characteristics related to this theory and makes its own contribution.

(2) Team roles should be allocated equally among members for a better collaboration, member satisfaction, and intra-team interactions.

(3) Each member should not adopt more than three roles.

(4) Within the team one prevailing personality (a person that adopts the most roles) is optimal in terms of innovation performance.

(5) Finally, teams that cover all 10 roles are more innovative.

The study proposes that managers and entrepreneurs should in structuring their team's aim to include all of the 10 suggested team roles. However, it may happen that a specific role is not permanently present in different teams. A person might possess a predisposition for certain roles, but the nature and behaviour of the roles are dynamically dependent on other roles expressed in a team. Similarly, in assessing a team's performance, questionnaires are meant to evaluate members of a certain team and cannot be used to evaluate individuals that are not part of the team. Therefore it is recommended that when a team is organized, individuals should be tested within this specific team. This team should be requested to solve at least one one-hour problem set and should be evaluated at the end of the exercise by questionnaires and observation. If the roles of the members are covered and equally arranged, then such team will work to its full potential. In contrast, if the roles are not expressed, it could mean one of the following: (1) Members of a team do not meet the requirements—they are unexpressed and do not match to problem-solving related assignments; or (2) The team consists of too many dominant and strong members, which ultimately inhibits the development of the roles and overall creativity of the team. The solution could be to form a team with different representation of the members, or try to determine participants that cause such a condition and allocate them responsibilities of the roles that are missing in a team. In essence, the process of finding an optimal team is very much of a trial and error concept and requires persistence in finding a well-working balance. However, it is worth to invest more time to construct team as the innovation activity may escalate profoundly.

### **Limitations and Future Research**

There are several limitations that should be considered in interpreting findings from this study. The first limitation is related to the boundary condition—the context specificity of team's work. This limitation can best be explained with the following example: Different participants have different styles of engaging in the working process, which can influence team output. There is a question of whether the 10 types could work together in a productive manner in every single circumstance, or whether there would arise a clash of roles that undermines the creativity and performance of the team under certain conditions. Our results indicate that a team works in a productive manner when all 10 roles are adopted and allocated equally among team members. However, future research should focus on additional verification and examination of this particular insight, paying specific attention to interactions among roles and contextual conditions.

The second limitation of the study relates to role allocation among team members and team members' possession of multiple roles. The study did not take into consideration the optimal combination and number of roles, an individual member shall master. There is an opportunity for future research to determine the most compatible and complementary role groups that may be possessed by an individual member in order to maximize effectiveness.

Third, this study did not examine the importance of individual roles and how different roles affect innovation activity. There exists a need to assess contribution of individual roles to team's innovation performance and to determine which roles are more crucial to include in a team.

Fourth, the study was conducted in a non-stress environment. Despite the nature of problem sets being realistic, the money component was not present. People tend to accept different, less courageous choices in real life, when their decisions might have severe consequences for them or their firm. There is a need to re-conduct the study in real work settings, in particular with teams that innovate for their living. Finally, the questionnaire used in the study was developed and tested on teams of four to six members. Future work is needed in developing a questionnaire that can fit to any team size.

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# Merit and Evaluation Models for Managers in the National Health System: An Empirical Study<sup>\*</sup>

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The national health system (NHS) complexity increase requires a review of the managerial human resources evaluation and recruiting methods, considering that nowadays doctors need to improve not just their clinical capabilities, but also managerial competences. At this end it is important to develop performances control models and to identify appropriate results indicators, with the aim of introducing an effective doctors selection system for managerial roles. The paper considers the Italian situation and tests the current evaluation and selection methods, by analysing the literature and the existing legislation and by interviewing experts. Moreover, in order to reach an innovative model, complex organizations have been taken into account as benchmarks. Three different categories of experts have been interviewed and texted: national health care organizations managers, companies managers, and business consultants. The 137 interviewed experts have been asked about four main questions concerning the evaluation for hiring managers as chief medical director, department director, and head of complex units. The conducted research suggests four different options in order to evaluate and to select heads of complex unit for the most strategic roles. By consequence, the analysis shows that required characteristics must be managerial attitudes as well as clinical capabilities.

*Keywords:* evaluation methods, national health care system, clinical governance, skills development, competences-based management, managerial competencies

## Introduction

### Management, Leadership and Development Evaluation in the Italian National Health System

The more your human resources are skilled, trained, and involved, the better your organization will profit. This is one of the human resource management bases. As Ulrich and Lake (1990) pointed out “the human resource management (HRM) system can be the source of organizational capabilities that allow companies to learn and to capitalize on new opportunities”. After this premise, is possible to look at human capital as a distinctive asset in order to grow and evolve, every time more (Bahra, 2001; Griliches, 1996; Pfeffer, 1999;

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Caudron, 2004; Armstrong, 2006; Kaplan & Norton, 2004). This means not only to motivate people, but also to assure that they can develop and grow. This is applicable to “for profit” realities, but even for “no profit” ones; the strategic assets management, in this case, not only ensures more effectiveness, but also more efficiency. Whatever is the strategy adopted by the company, no matter how conceived, it is doomed to fail until it is not implemented efficiently (Casalegno, Pellicelli, & Civera, 2012). Especially talking about the national health system (NHS) in Italy, it is possible to highlight how central is the role of management; this role is as crucial as difficult because to those who have management and coordination responsibility is required—at different levels—not just to have the best skills required for their profession (in this case doctors with a lot of experience, an extensive clinical cases, and a certification of their scientific activity) and to be able to share and apply the guidance of a multi-year plan, but also to lead, motivate, and enhance their employees, so that the whole structure points to improve continuously, to be able to assess with accuracy others work, to influence in a positive way organizational behaviors; to possess, in short, the characteristics set that distinguishes a good leader (Various Authors, 2006). Starting from the analysis of their ability to manage—that is not normally learned through academic courses—it should be noted that an effective management, organizing people working groups, must drive them towards a common mission and lead them by giving example and motivating. If what has just been said is not simple in “for profit” sector, the problem is even bigger in public sectors, where it is more difficult to share common goals, have a clear perception of the “added value” concept and, above all, consider the competitive advantage concept.

Talking about the Italian National Health System (INHS), it is necessary to consider that, established in 1978, it follows the British model (the Beveridge model, developed in 1942)<sup>1</sup> and it is fed by citizens’ taxes. This kind of coverage “provides uniform healthcare access to citizens” (Nutti, Seghieri, & Vaineri, 2012). Moreover, it must be underlined that, from the beginning of the 1990s, Italian system has developed a strong policy of decentralization, facing a power shifting from the central government to the 21 Italian regions, which have, nowadays, a strong autonomy in managing the local public health system and in allocating the financial resources (Nutti et al., 2012). The decentralization has taken to a devolution of power: On the one hand, it is necessary to consider a central government, planning and managing guidelines and main resources, on the other hand, the 21 regional governments allocate financial resources to the local units named “Azienda Sanitaria Locale” (Local Health Structure) or “ASL” which is divided in several departments (one or more for every medical field). Each department is composed by various complex units skilled in different medical specialties. Departments are public organizations legally creatures of the region (Francea, Taronib, & Donatini, 2005) and every region is governed by a president. Talking about the managerial roles of an ASL, the following must be considered:

- General director (GD) of the ASL—named by the regional president “without any kind of comparative evaluations” (art.3, comma 6d., Lgs: 502/1992);
- Accounting director—named by the GD with reasoned disposal;
- Chief medical director—named by the GD with reasoned disposal. He/she manages sanitary services and GD support activities;
- Department director—named by GD;
- Head of complex unit—named by the GD, he/she manages the complex unit;

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<sup>1</sup> To go deeper, see Nutti et al. (2012) and Francea et al. (2005).

- Complex unit assistant—named by the GD according to the suggestion of the head of complex unit.

The concept of leadership would therefore take to recognition of a continuing education which should not fear structural and organizational barriers. The research conducted in 2010 by Walson, Chou, and Khaliq shows that also on the other side of the ocean the propensity to a continuing education—and its managerial involvement of health professional figures—is greater in the private practice, which is definitely more focused on short-term horizons and some motivations efficiency-related may characterize the willingness to supply training. On the opposite side, in NHS structures, slower in strategic decisions and characterized by a more fragmented reality, most of the energies of health care managers are required for conducting their own professional activities with the responsibilities involvement related to it. Who really is the chief? A doctor? A manager? Both? If the latter is the answer, when and how can he/she really achieve and consolidate his/her management capabilities that until now have not been part of his/her education and career? Even if the answers are difficult to find, it is clear that doctors should be trained on the job and in a continuous manner. One of the research conclusions carried out in 2010, concerns, in fact, the inverse proportionality now exists between the organizational structure and the lifelong learning concept, proportionality that could be reversed if the continuous improvement would be included in the aims of the same organization (Pfeffer & Salancik, 1978; Kimberly, 1976).

#### **Evaluation as the Key Factor for a Proper Management: The Competencies-Based Management**

Training and learning are key levers to bring competitive advantage to an organization which, such as a health care one, must manage continuous change. Literature supports the point of view which sees the propensity to change of a sanitary company for becoming a true learning organization (Tichy, 2004) is closely related to the amount of time that managers invest in their capabilities and skills development (Lee & Herring, 2009).

A health quality service requires to focus on the management of each individual staff, with their own skills. This is why an innovative management takes charge of every professional and brings him/her closer to the skills system required to his/her role, through a series of custom development. This is accomplished by identifying personal skills gaps and associating them to some development activities built on the specific needs of each. Competencies-based management is the process through which activities are concentrated on staff management and are not only limited to focusing on general population employed examination, but also their verify skills—such as knowledge, skills gained in relation to their personal faculties—requested to the employees to get the whole organizational structure able to achieve their goals (Bonder, Bouchard, & Bellemare, 2011). This methodology is improving, for the public administration, its importance since there is a greater awareness of the impact on business performance of internal know-how. The study and the identification of skills, related to outstanding performance, can establish, in an innovative way, the managerial policies of the entire human resources turnover. The challenge is double: On the one hand it is necessary to train human resource in its own individuality and on the other hand it is necessary to include the worker in a collective context.

The competencies-based management involves an assessment of the skills in order to enable the achievement of defined objectives, for example, leading to the identification of the best candidate in a selection process. This is not a total new field of research; a research carried out in 1993 showed how effective can be the most used and well-known assessment methods as shown in Table 1 (L. M. Spencer & S. M. Spencer, 1993).

L. M. Spencer and S. M. Spencer (1993) depicted some of these skills called “generic” (see Table 2), adaptable to every managerial level; this scheme is suitable to be adapted for a complete senior figures assessment in public health who, as it has already been said, not only have to prove their managers capabilities but, in the present state of things, have also to pursue their clinical and scientific activity.

Table 1  
*Correspondence Between Selected Profile and Performance Provided in the Working Position*

Evaluation method	Correspondence (MAX = 1)
Assessment center	0.65
Bei	0.48-0.61
Practical tests	0.54
Ability tests	0.53
Personality questionnaires	0.39
Bibliographic	0.38
References	0.23
Interviews (not Bei)	0.05-0.19

Note. Source: L. M. Spencer and S. M. Spencer (1993).

Table 2 demonstrates, in a generic manner, the complexity of managerial figure in public domain or, rather, public health; we are faced with a high degree of skills overlapping, not simple—therefore—to assess.

Table 2  
*“Generic” Managerial and Clinical Skills*

“Generic” managerial skills	Persuasiveness Stress to the result Teamwork Analytical thinking Initiative Development of other Self-confidence Leadership ability Continuous research of information Strategic leadership Conceptual thinking
Clinical/scientific skills	Continuous updating Continuity in publications Working groups coordination
Basic requirements	Organizational awareness Building relationships Technical ability

Note. Source: L. M. Spencer and S. M. Spencer (1993).

The competencies-based management leads to identify which skills—and in which way—have to be used, according to each different role in an organization chart of a certain reality. The selection, therefore, has to be focused on identification and definition of skills a certain role needs to possess. In public sector is not so easy to identify the recruiting model leading to efficiency and effectiveness results; it is necessary therefore to have a methodology that considers the context in which the new resource will have to express his/her potential and to place the newcomer in a position useful to give his/her best. In order to show the complexity and the necessity of a new perspective of the current evaluation method, this research has texted interviewed concerning the role

of head of complex unit; once that it has been selected the person, he/she is placed in a completely new context. Until that time his/her activity was clinical and scientific, but now it is necessary that the responsibility moves his/her attention to a third activity, to which probably is not very prepared; it is the managerial one (or even more simply administrative), which, of course, implies use of different capacities from those learned during his/her university studies and specialty.

### **Italian Current Evaluation Methods**

Since what said above is fundamental to understand how in companies roles are managed in order to understand in which way people and managers can be hired, evaluated, and monitored in the NHS.

The objective is to define meritocratic models of development and transparency in sanitary service with the purpose of elaborating methods to recruit top human resources in a sanitary system using efficiency and effectiveness criteria.

The following is the result of a research based on different methods: analysis of currently used methods, experienced interviews, benchmarking of complex organizations, and literature analysis of the subject (top human resources management).

Questions to answer are the following:

(1) Considering the experience of private companies and complex organizations management, is it possible to get suggestions and indications to give greater transparency, effectiveness, and efficiency in the selection and the heads of complex unit designation?

(2) How is it possible to integrate the existing rules for the appointment of the head of complex units with other methods?

(3) Which skills, attitudes, behaviors should be requested to candidates for the analyzed roles in order to maximize the efficiency and effectiveness of the organization?

The final aim is to deliver methods, models, and tools to general directors, supporting them and helping in the selection of various managerial roles.

**Current assessment methods.** First of all, the research has analyzed the selection procedures concerning the most important roles in the public healthcare system. The process develops as follows.

GD names the department director choosing him/her among three eligible candidates. A committee composed by three members assigns the eligibility using a competition. The committee is composed by the chief medical director and by two other members (heads of complex unit) of whom one is selected by GD and the other one comes from the ASL board. They are selected between two groups of heads of complex unit (three from the region considered and three from other regions) drawn from a complete list prepared by the region (this list is taken from complete lists created by chief medical director of different ASLs in the national territory, divided in various disciplines). The GD chooses his/her commission member among the three extra regional candidates, while the ASL makes its choice take into account the other group.

### **Research Design**

In order to shape key findings, four methods are being used:

(1) Study of legislation. An Analysis of existing legislation at national and regional level has been conducted;

(2) Interviews. Experts of three different categories have been interviewed:

- Managers of healthcare organizations: GD, accounting directors, chief medical directors, department directors, Heads of complex unit, complex unit Assistants, Doctors, Agenas (which is the acronym for the Italian translation of “National Agency for Regional Health Care Services”) Director, Italian Regions managers;

- Companies managers with responsibility in complex organizations;

- Consulting firm managers specialized in recruiting and in strategic human resource management.

(3) Literature analysis of the subject. There is a vast literature on how to select managers of complex organizations;

(4) Benchmarking of complex and for profit organizations.

### Key Findings

Thanks to the competencies-based management which is possible to define skills and knowledge have to be implemented for the analyzed assessment methods. Moreover the performances evaluation can be developed by using a decision tree, as shown in Figure 1. The expected results may be the following: reduction in resources turnover, equal opportunities, entrance training, and faster learning curves. The development the competency-based management requires to implement three different phases such as: development of competency tasks models (it is a preliminary phase in which is defined a schedule of tasks and features necessary to carry them out effectively); choice of assessment tools for defining the most appropriate definition skills for evaluation method of job-person matching (parameters of effectiveness and efficiency); objective parameters—related to the role for which you are doing selection and, above all, assessed in an absolute sense, can objectively help to decide the proper person for a certain role, beyond the nature of evaluators themselves (internal or external).

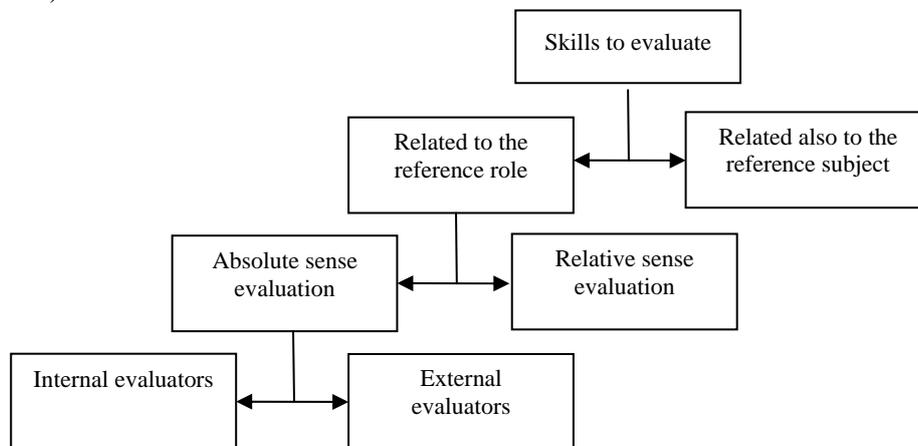


Figure 1. Decision tree related to skills selection. Source: Various Authors, 2006.

Table 3 shows about achieved results from personal interviews; how is possible to see, not just health care managers are considered, but also strategic roles coming from private sectors. Interviewed have been asked about four main questions concerning the evaluation for hiring managers as chief medical director, department director, and head of complex units: (Q1) the necessity of testing managerial skills and attitudes; (Q2) the peer evaluation; (Q3) the importance of an evaluation thought the resumes analysis; and (Q4) the necessity of a practical test (case methods), in order to test the medical knowledge of a doctor.

Table 3  
*Interviewed Managers and Consultants (Correspondence: MAX = 1)*

Role	Quantity	Q1	Q2	Q3	Q4
Chief medical directors	3	0.65	1	1	0.75
Department directors	10	1	0.85	1	0.50
Heads of complex unit	30	0.50	1	1	0.75
Doctors	50	0.40	0.50	1	0.50
Firms' CEO	3	1	1	1	1
Consultants and experts in human resources management	20	1	0.75	1	1
For profit companies managers	20	1	1	1	1
Agenas director	1	1	1	1	0

Note. Source: Authors' processing.

Going deeper, characteristics considered in evaluating a candidate—for the position of head of complex unit—concern both clinical and managerial skills and attitudes summarized in Table 4.

Table 4  
*Major Assessment Characteristics Required*

Managerial competence	Managerial attitude	Clinical capacity
<ul style="list-style-type: none"> <li>• To introduce, in compliance with existing legislation, mechanisms that increase the efficiency and effectiveness of the organization</li> <li>• To share and to assign different goals to employees and measure the results achieved</li> <li>• To evaluate employees focusing on the achievement of their goals</li> <li>• To reward deserving employees (examples: with bonus, with participation in conferences, with the involvement in decisions, with direction of simple structures)</li> <li>• To delegate decisions and activities</li> <li>• To motivate employees</li> <li>• To apply the principles of Total Quality Management (TQM) to health care organizations</li> <li>• To find benchmark positions with evaluation of standard references</li> <li>• To start from the benchmark positions and adjust assessments when required</li> <li>• To create a climate conducive to productivity</li> <li>• To identify the right workloads in relation to resources available</li> <li>• Team work</li> <li>• Problem-solving: analyze problems, identify possible solutions and simplify</li> <li>• To promote innovation in methods of management and continuous improvement</li> <li>• Contribute on definition of the organization reward system</li> <li>• To apply the techniques of budgeting</li> <li>• To attract funding</li> <li>• To negotiate with parties (examples: employees of department or division)</li> <li>• To intervene in emergencies</li> <li>• Specific organizational skills</li> <li>• Experience gained in management in Italy and abroad (related with the position to be awarded)</li> <li>• To manage complex systems</li> <li>• To plan actions to achieve objectives</li> </ul>	<ul style="list-style-type: none"> <li>• To act quickly and decisively</li> <li>• To place the customer satisfaction among the primary objectives</li> <li>• To lead</li> <li>• Teaching</li> <li>• To act in accordance with organization ethical principles</li> <li>• To treat people with dignity and fairness</li> <li>• To share information</li> <li>• To manage interest in contradiction</li> <li>• To promote continuous improvement</li> <li>• To assess acceptability or unwillingness to compromise</li> <li>• To discuss, debate, negotiate</li> <li>• To conceptualize, improve, modify, check</li> <li>• To communicate</li> <li>• To build relationships</li> </ul>	<ul style="list-style-type: none"> <li>• Amount of performances, diagnostic tests and/or surgery</li> <li>• Surgery: type of medical operations, amount of medical operations acting as first doctor</li> <li>• Results achieved in previous years and relative valuation obtained</li> <li>• Organizations in which the candidate has done service</li> <li>• Publications (number of publications, year, journal, publisher, distribution, content, impact on the scientific community)</li> <li>• Publications in multiple authors: consider both, order of the names and (where possible) the contribution of each author to the work</li> <li>• Participation in conferences, congresses, seminars, courses as an auditor</li> <li>• Participation in conferences, congresses, seminars, courses as speaker</li> <li>• Participation in training courses and refresh courses (as a student)</li> <li>• Certified innovation in methods</li> <li>• Patents</li> <li>• Culture in the subject, preparation</li> </ul>

Note. Source: Authors' processing.

The competencies-based assessment when it is used in hospitals/healthcare system, is part of a wider scope; its applicability has been analyzed and changed from what has been done at the end of 1990s in UK in order to respond to the healthcare quality crisis, typical of those years (Bevan, 2008) in which were followed scandals in hospitals, together with the inability to give adequate responses. Walshe and Shortell (2004) thought that these scandals and response delays were linked rather to the internal nature of clinical practice, medical profession and, finally, to healthcare organization culture. In those years it was launched a program of “Clinical Governance Reviews”. According to the British Department of Health (1998) the “clinical governance” is “a process to reduce deviations from standards of quality”, “a responsible structure”, and “applicable to all employees of the hospital”.

This approach was based on each hospital visit. Furthermore, the assessment was done by using multidisciplinary groups led by a manager (not necessarily clinical) and other clinical and not clinical staff. Table 5 shows the last two key factors elements.

Table 5  
*The Clinical Governance Elements in a Hospital*

	Components element
Resources and process: • Quality process	Involvement of patient and general public Clinical audit Risk management Programs of clinical efficacy
• Focus on staff	Staff management Continuous training of personal and professional development
Using of continuous information	Using information to support clinical governance and to delivery health services

*Note.* Source: Adapted from Bevan (2008).

The research has taken into account these conclusions and results come from interviews and literature review. The following steps or options are suggested in order to evaluate and to select heads of complex unit for the most strategic roles considered above. Evaluators can combine different presented methods, depending on clinical fields and ASLs organization.

In the following, the term “support committee” indicates the working group providing grants to the GD.

(1) The first option: “Peer evaluation”. The option consists in submitting the candidates evaluation to their peers role colleagues, with the same or different clinical specialization. The support committee is composed by three members and the process is divided into three phases.

- Phase a: Constitution of the support committee. It can be through election or drawing;
- Phase b: Formalization of the support committee. Once elected, the committee is appointed by a higher authority that certifies and formalizes its existence and its role. Through this step, the committee members are easy known by any candidate in the competition. The committee formalization is a necessary requirement to make this method acceptable and its result sustainable;
- Phase c: Candidates evaluation. The support committee expresses its own judgments about capabilities, professional skills, and competences of candidates.

Two systems are suggested: The first one is about the resume evaluations, with a blind review if possible. The second one also considers a personal interview to check resume contents.

The “peer evaluation” takes the following advantages. It considers advice from people who know the healthcare structure, as well as its complexity and it allows assessing the impact of the subject on the organization results.

(2) The second option: “Assessment by doctors who work in the structure the future head of complex unit will work in”. Since doctors currently working in the healthcare structure know problems and requirements of their workplace, a negative opinion may take to a loss in motivation and maybe the abandonment of the structure itself. Moreover, the better is the choice concerning the head of complex unit, the higher will be the healthcare structure prestige. Alternatively, in this case, the support committee may be constituted by:

- All the doctors in the same clinical field in the structure the future head of complex unit will work in;
- Bullet “a” doctors and doctors coming from other clinical field;
- Bullet “a” doctors and every ASL head of complex unit.

(3) The third option: “Assessment by expert people do not work in the structure the future head of complex unit will work in”. In this case, the support committee is composed by: recruiting consultants specialized in management selection (i.e., Mercer, Hey), firm managers (human resource directors, top managers), former general managers of healthcare structures, doctors with experience in business management.

(4) The fourth option: Assessment by “case method”. It is based on the belief that putting a group of people to solve a problem and inviting them to discuss with each other, it is possible—by one or more silent observers—to identify different elements: problem analysis, negotiation skills of the possible solutions, rationality of solutions, ability to work in teams, and ability to “fairness” (respect for different opinions). The support committee identifies a significant problem and asks candidates to solve it.

The option aims to recreate the conditions in which the future health physician will operate in reality. From the contribution and the behavior of each candidate in the group discussion, the observer is able to get useful indications. In this case the support committee is made by experts in case methods.

### **Conclusions and Suggested Steps**

The conducted analysis has underlined the necessity—according to the collected answers—of the improvement of clinical governance, in order to build best professional skills in a system undermined by the central role of politics, together with the importance of private practice (Tousijn & Giorgino, 2009). Clinical governance also means a program of continuous improvement in provided quality, based on the principle that leaders in the healthcare system should be responsible for their actions. Finally, this program also makes reference to a new model in which clinical judgment is combined with national standards, in contrast with centralized control—previously used—of clinical judgment and patients’ needs. This has been taken up and developed in Italy since 2004 with the approval by the Ministers Council of the bill by Minister for Health Sirchia (Fontana, 2005). Methods and quality checks become, in this way, integral parts of a program under direct responsibility of the department board, which has, therefore, to prepare a multi-annual action plan. The main elements of clinical governance, as already implemented but to improve in Italy, are the following:

- Broadcast of guidelines. It refers to the adoption of a clear parameters instruction to be used for accounting within the public institution;
- Adoption of a clinical audit. This is the clinical performance check. It is the accurate check that must be done according to ISO parameters (quality management system), and controlling if achieved results meet main objectives;

- Introduction of the risk management concept. Since it is possible to talk about patient's risk, health personnel's risk in general, and the risk on property itself, healthcare structures need to consider and use ongoing procedures review, by adopting quality standards (ISO) and planned procedures, and the management of adverse events (Giangrande, 2004);
- Transparency. Towards the patient and the community;
- Training and assessment. The training is on the job and the assessment must be continuous, considering that the role of chief must be taken by the best doctors with managerial skills;
- Research, development and the job evaluation. Considering that it comes from evaluating a structure in which the development is an essential element of the social object, this parameter is critical; the evaluation must be done not just at the beginning, in order to find the right person for a certain managerial role, but as a continuous process.

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# Strategic Partnership Between Private Organizations and Universities: The Search for Regional Development Through Solutions for Hospital Management

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The public power and the private enterprise, the main agents of national economic and social development, when cooperating strategically, promote increased functional efficiency of their activities. In order to highlight the relevance of such partnership, this article aims to analyze the potential of actions jointly developed by private organizations and Brazilian universities. The research problem is lined in the field of health, which hosted actions developed between the Federal University of Rio Grande do Norte (UFRN) and the Hospital Maternity Guiomar Fernandes (HMGF), located in the city of Alexandria, in Rio Grande do Norte. The study emphasizes the shortcomings of this organization, the resolving power of the university in this scenario, and performs the analysis of the effects of this cooperation. The methodology used in this research was the case study in HMGF. With emphasis on fundraising and improving the informational management system, funding sources for projects of restructuring and expansion of the hospital were sought, as well as initiatives for developing hospital management softwares for small- and medium-sized organizations. As a result, the articulation between the university and the hospital provided the elaboration of a project for software development and the production of a project for physical restructuring and technological investment, aiming to expand the supply and quality of the hospital's services. The implementation of information systems, associated with investments in hospital infrastructure, providing increased efficiency in public assistance to the population, bringing both local and regional benefits, besides, providing the authorities with relevant data on the development of public policies.

*Keywords:* fundraising, hospital management, information system, strategic cooperation

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## Introduction

The accelerated development of information globalization imposes, the dawn of new and complex technologies, the different ways of seeing the business environment, the relentless pursuit by the competitiveness of market are all factors which fall into an important tool vividly in the current techno revolution: knowledge. In this way, the correct operation of knowledge brings with it the opportunity to incorporate important information to business decisions, allowing them the possibility of achieving greater and better results on the market.

It is exactly within this context where the partnership between university and company is inserted. The university, generation and dissemination of knowledge, becomes a powerful ally and licenser of process necessary to reach this knowledge. Companies look at a media holding which does not have access, or not know how to make use of decisive way. On the other hand, the university has the opportunity, as an institution of teaching, research, and extension, it can be inserted into the socio-economic reality of the country, to the same extent that provides the students an early integration with the labour market, managing to form people engaged in the problems the country faces, and better prepare them for the timing of egress.

The problem of public health, while the industry filled with urgent needs and administrative mistakes, falls in search of evidence of the power of the resolute problems experienced by private companies operating in this sector. There is evidence that in addition to these, it is necessary to promote joint actions with the participation of health workers, the private sector, and civil society.

The Ministry of Health in Brazil was established with the law n° 1,920 (Brasil, 1953) and is the executive branch entity that has the responsibility to organize and draw up plans and public policies in search of promotion, prevention, and health care of the citizens of the country. Despite the campaigns and projects developed by the ministry and from existing improvements when carried out a comparison with data from previous years, the Brazilian public health still reveals troubling features, requiring immediate actions to change that reality.

In this context, the unified health system (SUS) in Brazil is the universal service system, namely, aims to cater to all Brazilians, without any kind of distinction of resources among patients without cost to them, where they receive care can be equivalent to your needs. In practice, the conditions of the SUS are quite different: according to the website of the Ministry of Health on the internet, the IDSUS (system performance index of health), created by the federal government, points out that Brazil has IDSUS 2012 equivalent to 5.47—in an average from zero to 10—showing that much of the population lives in cities with lower indices of quality of services than the ideal.

It is based on the above so that the present article aims to analyze the potential of general actions developed by Brazilian universities and private organizations in seeking to promote an alternative solution to the shortcomings highlighted today in the public health sector.

Based on these questions, the search issue revolves around the following question: How and to what extent the university is able to serve as a partner to assist in solving the problems of strategic and financial nature of a hospital of Rio Grande do Norte? To answer this question, it was for funding sources that can fit to the reality of the institution, serving as support for the achievement of projects that would ensure the immediate needs for this organ.

With increasing significance, the article is divided into chapters and sub-chapters that start with the

introductory perspective, followed by theoretical tooling where the themes of the third sector and fundraising for this are presented. It is therefore pointed to the option search methodology, which highlights the ways in which the research was conducted. Soon after, the structuring of the remarks related to the case study—where are the search results, so that, subsequently to be presented the concluding remarks in conclusion, in addition to suggestions for further work. The job is terminated with the bibliographic reference used in the search.

### **Fundraising in the Third Sector**

As for Olak and Nascimento (2009), the third sector is made up of private institutions with the specific purposes of lead changes and whose patrimony is constituted, maintained, and expanded from contributions, gifts, and grants and that, in any way, it reverts to its members or maintainers.

The main causes of the growth of the third sector (Olak, Slomski, & Alves, 2008) are summarized as follows:

(1) Crisis in the public sector and consequent reduction of resources allocated to social areas; (2) volunteer growth, driven by increased awareness of the people, media support and standardization of this service; (3) growth of urban and rural violence; and (4) greater business involvement, trying to captivate consumers with corporate citizenship policy. (p. 32)

According to Silva, Menezes, Barbosa, and Felizola (2011), philanthropy, which is at the origin of the third sector, is a very ancient phenomenon and is characterized as a continuing action to donate money or other goods in favor of the institutions or persons. This practice is generally adopted by wealthy individuals, known as philanthropists or philanthropic people.

In this sense the term “third sector” has been used as opposed to the concept of first and second sector and that basically the third sector is not part of the public sector and has no interest in profit (Niyama & Silva, 2008).

Seen it, Villas Bôas Neto, Stefani, and Pezzi Junior (2003) stated that management in the third sector is something that differs from the management of other private companies, because:

The management of the third sector, in spite of using traditional management tools, it does through adaptations that there are administrative groups on a daily basis and they begin to be treated in courses and materials for this area-specific management. (p. 60)

Inserted in this context, the fundraising activity won, in recent years, great importance and came to be seen as an action that should be undertaken with increased dose of professionalism, given their significance for the survival of the institutions, since they may not be expecting that only the government provides the necessary resources so that they can keep, or be at the mercy of donations, what press the institutions to search other investors sources, making the fundraising activity more efficient and dynamic.

The philanthropic, non-governmental and non-profitable organizations do not achieve their goals due to problems faced in fundraising, which precludes the development of projects (Sartori, Franco, & Pereira, 2003). In this way, the success in fundraising depends on the relationship that is established by the donors, who are persons or institutions which usually share the mission, values, and objectives of the organization (Szazi, 2005; Pereira, 2006; Tachizawa, 2007).

The stiff competition for resources available, the need to measure and assess the performance of managers, internally as well as to determine the feasibility of projects, fundraising, all these factors compel organizations to improve and innovate ways to capture (Adulis, 2001, 2002a, 2002b). According to Falconer (1999) and

Tachizawa (2007), the main sources of financial resources are the cooperative agencies, foreign institutions, the sale of products/services, government bodies, companies, foundations, and individual donors.

It is essential that the funded projects add value to the organization, helping to build its history and contributing to the creation of organizational skills that help in getting new features (Cruz, 2012). Developing fundraising strategies facilitate the adaptation of organizations to changes and requirements of funding sources, to ensure the sustainability of their goals and initiatives. With the expansion and diversification of sources of funding, organizations reduce the vulnerability and subordination typical of when it depends on very few sources of funds (Valarelli, 1999).

### **Methodology**

For the completion of the current work, the methodological option chosen was the case study of the exploratory and descriptive type based on reality and the characteristics of the object of study.

As research, the case study can be essentially exploratory, being used as a basis for obtaining preliminary information about the object of interest. May also be analytical, where one seeks to discuss the object under study, build or develop a new theory in order to confront it with something that already exists. To be essentially descriptive, it aims to describe some of the case study. An exploratory character work is viable as a pilot study of a large-scale research, whereas the descriptive study is necessary for the preparation of an intervention.

For Goode and Hatt (Lazzarini, 1995), the technique is “one way to organize the data in terms of a given unit chosen”. Yin (2005) stated that the case study is an empirical research, a method that covers everything—planning, data collection, and technical analysis of the same.

Yet about the theme, Yin (2001) stated that the case study is a scientific research that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly defined; facing a situation technically only in that there are more variables of interest than data points and, as a result, is based on multiple sources of evidence (...) and benefits from the prior development of theoretical propositions to drive the collection of data analysis.

Accordingly, this study deals with the elaboration of financing plans for obtaining the financial resources for a non-profit organization, deployed from the analysis of their reality.

To this end, the fieldwork lasted from March 2012 to December 2012, during which time he explored the characteristics of Maternity Hospital Guiomar Fernandes (HMGF) from the point of view of knowledge gained at the academy, general purpose of an extension project approved by the Federal University of Rio Grande do Norte (UFRN). The research had the same coordination of research project, a professor of industrial engineering at the university.

Thus, in a first step the objective of the bibliographical research with regard to funding sources available to establish what and with what focus these could be employed for the purposes which are necessary for the institution, as well as allow its authors foundation enough to direct them in the implementation of the current work. To achieve that goal, the researchers worked with authors that deal with specific themes, in conjunction with consultations of scientific articles and research in databases like portal of periodic.

Capes, in a later step, aimed at the diagnosis of the situation of the HGMF regarding financial funding to the everyday reality of the hospital, as well as its physical structure, professional framework, shortcomings, and needs. For this purpose, were made trips to the institution's city, in order to do an active observation. As the central data collection techniques utilized to documentary research in financial reports prepared in the file, as

well as access to documents on the legal status of the hospital, statistics on the number of calls made, medical equipment; and meetings with the directors, managers, and other employees of the hospital.

In the third step, the data coming from the previous step were analyzed in a qualitative way, in search of interpretation of these for the moment of the proposition of financing plans. From previous point was developed some fundraising projects that meet the interests of the organization, preparing and submitting three projects financing as financing institutions concerned model.

## **Case Study**

### **History and Description of the Main Initiatives**

The HMGF is a health establishment of charitable purposes, with certificate of Social Assistance Beneficent Entity (CEBAS), founded on May 1, 1956, initially to meet the demand of population of Alexandria, city of Rio Grande do Norte, today with 14,000 inhabitants. Featured in founded as maternity hospital, HMGF today offers a range of services that the ranks as a general hospital.

In the last 10 years the hospital developed quickly, passing through a reform of the physical structure and deployment of new equipment and services, funded by the Ministry of Health, through the project ReforSUS, which provided duplication of its installed capacity—developing administratively and technically, with bigger and better resolving power, plus a considerable improvement of the quality of care. Currently, its area of influence is distributed in the municipalities of the sixth Regional Health of Rio Grande do Norte, Northeastern semi-arid region, comprising 36 municipalities and some other of the 2nd Regional Health/RN, covering an area with a population of more than 400,000 people, as well as neighboring municipalities in Paraíba, all serviced exclusively through SUS.

Offers services identified by three fundamental classes: outpatient clinic (related to clinical consultations), clinical and surgical inpatient (referring to the patient's hosting), as well as diagnostic support through imaging tests and laboratories. Outpatient services offered are divided into the following categories: medical clinic, gynecologic, orthopedic, obstetric, angiologic, pediatrics, cardiology, gastroenterology, ophthalmology, in addition, speech therapy and physical therapy services.

Among the surgical services are offered: general surgery, vascular, ophthalmic, orthopedic, obstetric, gynecologic, and otorhinolaryngologic dermatological. There are also image diagnosis support via ultrasound, endoscopy and radiology, electrocardiography, as well as clinical analysis laboratory services and microbiology, still with the inpatient services, urgent and emergency. Also in the field of diagnostic electrocardiography, support that integrates the cardiac telemedicine service, in which the exam is done at the health facility and is analyzed and the report issued by a professional in another location, this made possible thanks to the transmission of information across the World Wide Web, which provides flexibility to the institution in the diagnosis of their patients since there is no medical need to be physically present for review of that examination.

There is also the Hospital Epidemiology Service (IF) that brings together all the information of the hospital health and compulsory notification services, as well as the national network of integral attention to health of a worker who is a network of sentinel “medical services and ambulatory of medium and high complexity responsible for diagnosing the accidents and work-related diseases and by registering them in the information system of reportable diseases (SINAN-NET)” (Ministério da Saúde, 2012).

The HMGF offers a Center of Material and Sterilization (CME) that employs advanced technology to

monitor the results achieved through modern validation evidence, besides industrial laundry, electric generator, and Waste Management Program in the Health Service—PGRSS.

Are eighty-seven (87) professionals involved in the dynamic daily, of which twenty (20) are doctors, thirty (30) nursing professionals, ten (10) technical areas of support professionals, and twenty-seven (27) general service staff.

The wealth of the hospital is composed of assets acquired through purchase or donation. Currently there is an installed capacity of fifty (50) beds in the national register of Health Establishments (CNES); Surgical Center with three (3) operating rooms, as well as structure and equipment for physical therapy services, speech therapy, and occupational therapy.

The maintenance of this structure has a high cost, which is aggravated by the meager income of the hospital. By attending exclusively via SUS, regular income is restricted to the payment of the procedures performed, which is a fixed amount, established by the MS and applied to all health units.

Other features are the parliamentary amendments, approved resources in the annual budget of the union, or of the state. These revenues, in turn, are for specific purposes, such as purchase of equipment, medicines, and equipment, making it possible to target them to payments of fixed costs, such as salaries and maintenance. Another feature of this type of resource is the fickleness, not possible to stipulate certain deadlines for their receipt.

The low volume of resources makes investments in various areas, especially in those that demand the most expressive values. An example of this is the creation of a diagnostic imaging center, which would correspond to the region of the high West Brazil today without a structure, requiring often going to the capital to carry out examinations. In addition, a technical limit to the expansion of cardiac telemedicine service is the poor quality of internet service in the city, restricting the capacity and range of exams that could benefit.

Another challenge faced by HMGF is also true in other institutions of similar profile, which is low managerial and operational efficiency, sometimes explained by low supply of instruments that aim to meet the demands of a health unit for small and medium businesses, being almost non-existent software accessible for this slice of the market. The development of software of this kind demands high investments and time to maturity and implementation.

### **Partner HMGF/UFRN**

Acting together at the Federal University of Rio Grande do Norte with HMGF was one of the actions planned for the development of strategies on fundraising for the hospital. Through the technical expertise provided by UFRN, extension actions were developed aiming at the improvement of the health unit. The partnership provided to both development, since when approaching a social institution the university gives to its members better reading of the external reality, seeking applications of universities' theories and improving its techniques, establishing a link between students and the society that allows them greater understanding of what is learned in the academy. While the hospital receives the contribution of students, teachers, and technicians, often in contact with innovative solutions and channeled for various surveys.

There is a deficiency in the institutions in general, especially in smaller, pros to develop projects aiming to plead financial entities with the resources or even companies. This grace period deepened when we leave public sector organizations or non-profit. Thus the partnership HMGF/UFRN was established in order to build projects to enable the hospital to request funding, sponsorships, and donations to carry out its goals. In addition

to projects of this nature, there also developed other seeking to improve the quality of information, developing ongoing evaluation mechanisms, both as an information management system.

## Results

Accurate analysis of existing demands in the hospital revealed structural, managerial problems, and staff. From these projects were elaborated demands aimed at raising funds for investment in strategic areas.

A situation observed in HMGF was the absence of an integrated system of hospital management, which would give employees greater accuracy on the information, providing increased operational efficiency, both for greater agility and the ability to better control, reducing waste, and freeing up resources. In order to meet this need, there developed a technology information system focused to manage small- and medium-sized hospital institutions. Through a business plan encompassing market and competitiveness analysis, analysis of the internal environment, product plan, marketing plan, and financial plan have structured a product robust and commercially viable for hospitals of this size, since there is a lack of information systems geared to this audience.

This system would consist of 10 integrated modules with one another, which would provide information to employees including via remote connection and web platform. The modules would be the following: hospital management, hospital support, hospital billing, particularly comptroller and covenants, billing the SUS, clinical administrative management, clinical management, diagnostic and therapeutic service, supplies, and technological support systems.

The full implementation of this system benefits public management, as it allows the crossing of various natures information coming from different locations, producing valuable information such as epidemiological distribution, occupancy rate of beds and medical area professionals distribution which allows public health managers more accurate analyses and the development of more efficient strategies.

The concentration of health units able to care of medium and high complexity in the two largest cities in the State of Rio Grande do Norte, Natal, and Mossoró, causes a swelling in the hospitals of these cities, being one of the reasons a lot of patients coming from other cities. Within this context the HMGF provides service to a region with a population of more than 400,000 people, since apart from the municipalities of its regional health, people coming from other areas, including the State of Paraíba, seek the HMGF for consultations, surgery, and hospitalization. In order to provide the expansion and growth of these services, two projects in different lines were prepared, but equally important in the population. The first was creating a diagnostic sector and orthopedic care of medium complexity, which involves the restructuring and expansion of current facilities and hiring of specialized professionals. This project was developed with the idea of offering the most complete service area population, decreasing the need for these to go along long distances in search of care. This directly impacts on the effectiveness of patient care and public health system efficiency, since from a balanced distribution of the demands there will be a reduction of quotas in the major cities, from the queues of waiting for consultations and surgical procedures.

The realization of this project had the following objectives: prevention and treatment of diseases of the brain and cervical order, to analyze rich of fractures related to bone changes, perform cardiology accompaniments, develop gastrointestinal analyses, perform mammography examinations for prevention and treatment, blood analysis, and to perform diagnostic imaging, surgical interventions and evaluation of cardiology after-treatment. For both were provided for a series of civil works and procurement of miscellaneous

equipment, as well as hiring and training of professionals to work in the area.

Another project developed seeking the extension of the range of services was the deployment of a wing of the maternal and child health care capable of giving to the population of the region medical services such as examinations, surgeries, and treatments geared to the mother and the child. Attention to this area has a high relevance for the region, as the maternal and child health indicators such as infant mortality rate, neonatal mortality, perinatal mortality, maternal mortality rates are among the highest of the Brazilian States influencing directly on regional development.

From the perspective of fundraising, the fruits of the partnership are based on three HMGF/UFRN projects—being a product development and expansion and restructuring two-hospital managers have a greater chance of success when pleading appeal to funding agencies, development banks and government agencies. Bypassing the line of action of projects can still be cited eight scientific articles presented in Congress and another six published in journals, as well as two monographs, all of these indicating the success of the partnership.

### Conclusions

The improvement in the health of the Brazilian population did not follow the advancement of economic indexes of the nation in recent years. In a country with very high tax rates, which is invested in public health is not yet the required value, what is proved by those who need the services of SUS. Designed to be a universal system and ensure quality care in health care to citizens who so request, the reality of the numbers of the SUS is completely different from objectified in your project. There are doctors, beds, basic physical structure, materials, and necessary medical equipment to health problems of the population.

Seeing this, the university-business partnership featured in this survey pointed to a change in the reality experienced by HMGF, reality fairly close to that experienced by SUS because it is directly dependent on this, while it encourages those who are inside the university a broad vision of the current situation of the society in which they are inserted. While the university hospital board delivers technical knowledge regarding management strategies, also cares about the other needs of the organization, pointing out that the major difficulties faced by the hospital fall in the absence of sufficient financial resources to cover what it is necessary to raise the institution to a better level of service to their target population.

Equally difficult is the search for sources of funds and the return of those who are willing to invest in this issue, which is worrisome given the relevance of the theme in the health problems experienced by society. Thus, in addition to the delivery of a different vision as regards the way in which it sees the hospital day after day, the projects for financial—fundraising and other scientific papers are presented as the results of the university-company partnership highlighted in the case of the search.

In this way, the partnership can prove HMGF/UFRN effectiveness of benefits of mutualism between the university and the company, to the extent that the initial goal of the extension project which led to the drafting of the article was reached when the students were able to apply the knowledge acquired in the classroom within the perspective of the problems faced by the hospital, while the hospital has benefited from that knowledge to apply to methods, human resource processes, and available for carrying out the procedures of daily life at the hospital.

Similarly, the overall objective of the article was fulfilled and its research problematic was solved, since it is presented as the university-business partnership is important in the search for effectively promoting solutions

to today's shortages experienced by the public health sector, and even what stage the resolute power of this strategic partnership is able to bring clear benefits to both institutions.

The search does not allow methodological option by itself that the peculiarities provided in case the job object can be extended to other Brazilian States. We then question about the possibility that extension of reality presented to other localities of Brazil, thus encouraging other researchers to further develop this theme, in seeking to promote new solutions—either in university-business partnership, or by other methods—for problems faced by hospitals, with a view on the current situation of significant improvement of public health in Brazil.

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