Study on the Support Systems for Corporate Governance

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The problems generated by the information asymmetry within the agency relationships at corporation level, governments and capital markets led to a higher necessity for corporate governance (CG). The information system of corporate governance is a very complex one, which involves a series of actors, decision-making and transactional processes, technologies, procedures and good practice codes. In order to ensure the efficiency and efficacy of corporate governance as a premise for increasing company's performance and position consolidation for the company on the capital market, it is necessary to analyze the way information technology could contribute to this undertaking. The purpose of this study is to analyze the architecture of the corporate governance systems and to identify and classify the systems and technologies involved in ensuring CG support in order to underlie the basis for developing a conceptual model for a hybrid and collaborative support system for corporate governance.
Keywords: *Corporate Governance, Support Systems, Information Technology, Decision-Making, Performance*

1 Introduction

The necessity of approaching Corporate Governance (CG) from the point of view of the role of the information technology in ensuring a real and efficient support for it is presently a subject of major interest in the economic and informatics research. This undertaking is based on reducing the information asymmetry we can see in the agency relationship between the principal (shareholders) and the agent (management) and creating an efficient and effective decision-making support for the decision-makers. According to the agency theory this relationship represents a contract by which one or more people (the principal) employs another person (the agent) in order to fulfill a purpose [14]. The principal delegates to the agent a part of its decision-making power. Thus, within the corporation, a shareholder (the principal) assigns the manager (the agent) the inventory of the company he holds. Based on the agency theory, the major issue of corporate governance is assuring the shareholders that the managers and the executive power acts more in the interest of the shareholders than in their own interest [12].
In figure 1 we present the way the information is concentrated within the decision-making process of the company, mainly on the management and the board of directors, highlighting the information asymmetry between those involved in company governance.

Thus, for the best governance, the shareholders need quality and accurate information in real time. Most of the times, this information is controlled by the management (the agent) generating information asymmetry [1] between the two parties.

The issues within the agency relationship at a corporate level are solved by good corporate governance.

Generally, good corporate governance includes:

- a balance between entrepreneurial spirit and that of control, and also between performance and the conformity with the corporate governance norms [28];
- the existence of a proper environment for performance based management, focused on a mechanism that will ensure integrity and transparency in the decision-making processes [28];
- clearly setting the company objectives, the means through which these objectives are achieved, and also the methods of evaluating performance [28];

- increasing company performance [23], [4];
- transparency in the management and the executive committees decision-making

- processes [32], [33];
- minimizing company risks [33], [7], [22];
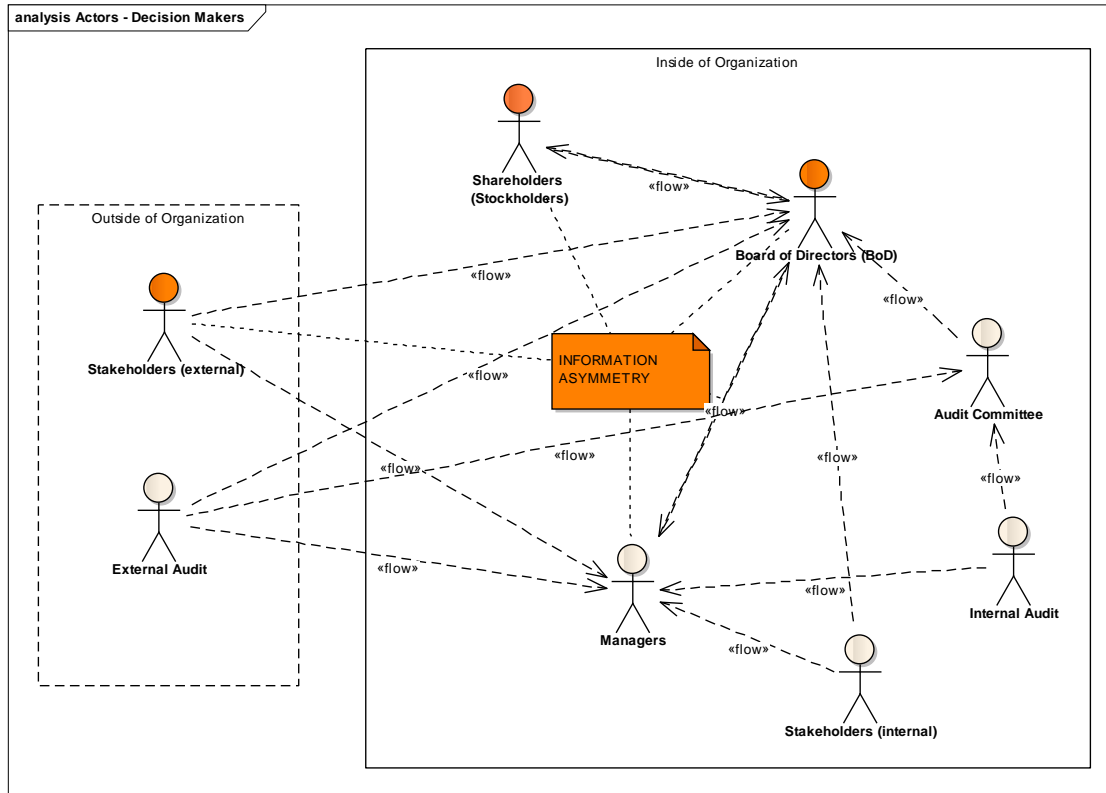- increasing investors' trust in the company and making a higher company value [3].

Fig. 1. Information flows asymmetry in corporate governance system

In order to have all the conditions for good corporate governance, it is necessary to ensure information integrity and prevent abusive use of all information by all those involved in the internal or external governance system of the companies [21]. In this context, the use of information technology (IT) can be viewed as a real support in order to ensure good corporate governance [19]. Information technologies could lead to an increase in efficiency for the corporate governance systems, by reducing information asymmetry within the agency relationship, offering a real and permanent support to the principal. Also, it could ensure increasing the efficiency of corporate governance systems, by ensuring support for monitoring and evaluating corporate governance in order to optimize and increase its performance [17], [23].

The purpose of this study is to analyze the

architecture of the corporate governance systems and to identify and classify the information systems and technologies involved in ensuring CG support in order to underlie the basis for developing a conceptual model for a hybrid and collaborative support system for corporate governance.

2 Research methodology

The research that has been done is based on an analytical study of the published works (articles and books) from 2001 to 2011 in the area of corporate governance, based on the following search key words: support systems in corporate governance, decision support systems and corporate governance, information technology and corporate governance, corporate governance performance.

The analyzed works were chosen based on the search terms from the following consult-

ed data bases: ScienceDirect, ProQuest, Emerald, SpringerLink, Wiley Online Library and EBSCO. In the analytical study, classification of relevant works (articles and books) was based on keyword density calculation. Keyword density is the percentage of times a keyword or phrase appears on a document compared to the total number of words on the document. A keyword density (KD) is calculated using the formula:

$KD = (N_{kr} / T_{kn}) * 100$

where:

N_{kr} - is the number of occurrences of the key word in the document or analyzed text

T_{kn} - is the total words in the analyzed text

Also the analysis was conducted on a sample of 50 articles with a weighted average keyword density of between 0.5% and 3%. Works with a weighted average keyword density ratio below of 0.5% was considered with little relevance to the analysis.

3 Actors and processes of corporate governance system

The corporate governance system could be

viewed as a complex system of rules, procedures, monitoring and assessment methods, processes and relationships between the actors of the system [5]. Also, this system is focused exclusively on decision-making processes and information flow between the shareholders, the board of directors, the audit committees, stakeholders and the management. Within this system, there can be identified a series of interest groups that hold different roles in company governance [32], [28], [30]. These groups interact within certain complex processes that could affect company performance and its position on the stock market. A possible issue regarding the optimal integration and functioning of these processes is that of information support. For good corporate governance, both actors and processes need an integrated information support that processes and offers the most accurate information in real time, to all decision-making factors within the corporate governance systems [19]. This support must be into a collaborative manner.

Table 1. Actors and base process of corporate governance system

ACTORS	internal	• Shareholders (Stockholders) • Board of Directors (BoD) • Managers • Executive Directors • Non-executive Directors • Audit Committee • Internal Auditors • Employees
	external	• Investors (Financial Markets) • External Auditors • Banks • Suppliers and Customers • Governments
PROCESS		• Risk Management • Internal Control • Internal Audit • External Audit • Development and Analysis of the companz performance indicators • Corporate Governance Metrics development and analysis

By analyzing literature, both the American Model (Anglo-Saxon) and the Continental Model (German and Japanese) on corporate governance, we summarized it in Table 1 by

presenting the base actors and the processes of corporate governance [13], [10], [25], [29], [20].

In order to highlight the information flow be-

tween the actors and the processes within corporate governance, we develop the use cases diagram (Figure 2). We can clearly ob-serve in this diagram the interactions on the flow of input and output between the pro-cesses and the actors.
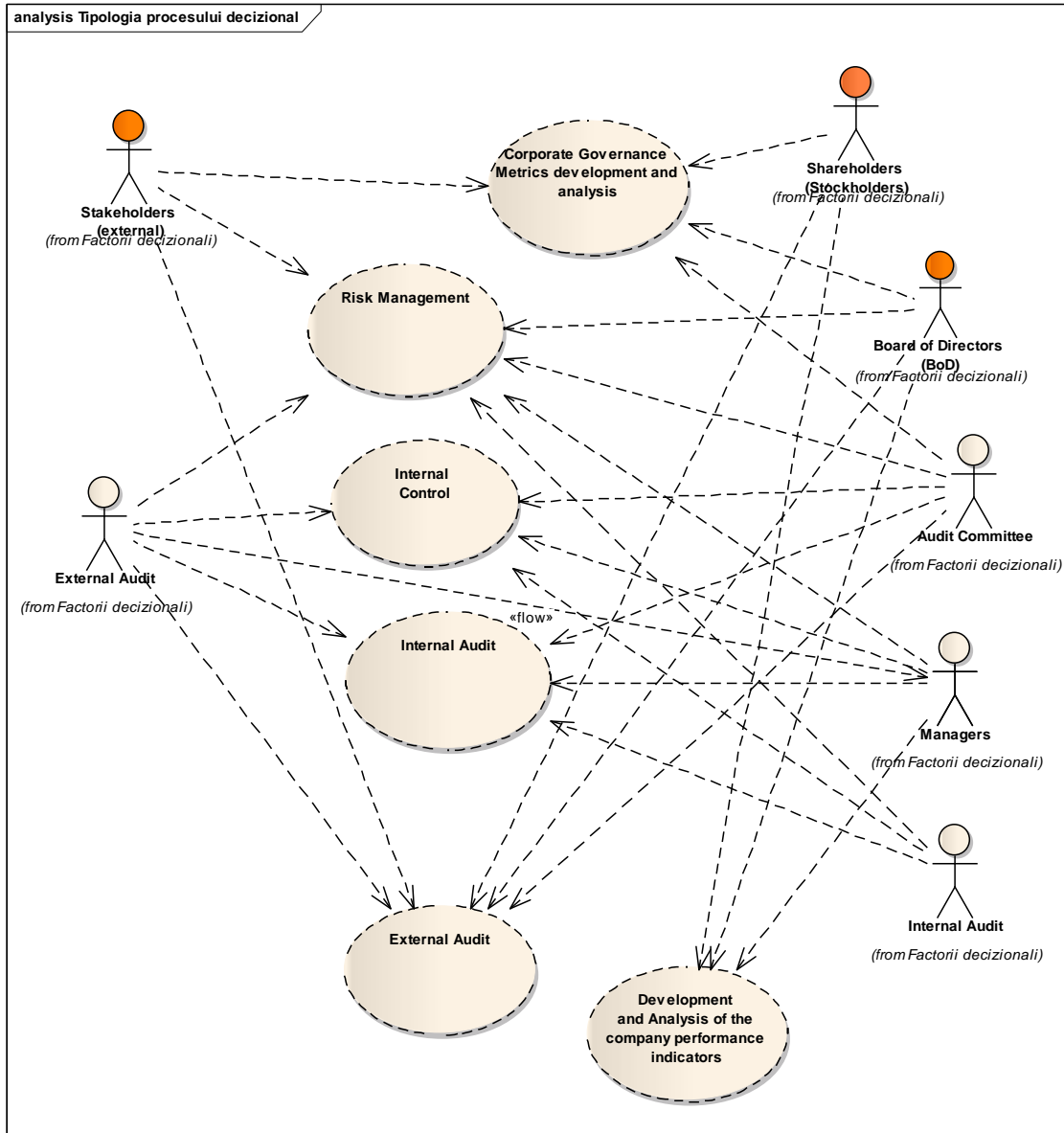

Fig. 2. Main process of corporate governance system

The architecture of the corporate governance systems is very complex and its foundation is based on one hand on heterogenic infor-mation (codes of good practice, performance indicators, scores), and on the other hand the decision-making processes and the decision-makers, which are very difficult to integrate. The optimization of corporate governance processes, so that they will be more efficient and effective, could be achieved only through a hybrid and integrated information system based on complex systems and technologies for the decision-making support [8]. Without a flexible and efficient information system, the corporate governance will be more a gov-ernance mechanism based only on trust and reputation [19].

The problem of the governance mechanism based on trust and reputation is given by the fact that the input, the processes and the out-

put are not explicitly and transparently determined. Therefore, through the integrated use and in collaborative manner of the information technology within the corporate governance, the governance mechanisms will become more efficient and effective.

As we go on, we will analyze the systems and technologies that could be used to increase the efficiency and efficacy of the processes within corporate governance.

4 Taxonomy of the Support Systems for Corporate Governance (SSCG)
In the literature we identified a series of systems and technologies used within corporate governance. They are focused on supporting only certain processes and are used in a dispersed way, so these systems and technologies cannot manage to create a sufficient transparency in order to decrease information asymmetry and improve decision-making process.

By analyzing the systems and technologies that are used within the governance processes we develop a taxonomy of these systems according to their position within the company and their role in supporting corporate governance. Thus, we can classify them as follows:

A. **Support systems and technologies for corporate governance from inside the company**:

1. *The systems for supporting transactional processes and the tactical and operational management*. Within this category we can include the ERP systems (Enterprise Resource Planning), SCM (Supply Chain Management) and CRM (Customer Relationships Management) [11]. By analyzing the support offered to organizational processes in the governance area, these systems offer an active and permanent support for processing transactions and disseminating information towards the management, auditors, clients and suppliers.

2. *Systems for supporting communication and collaboration*. Here we can mention the groupware systems and document management, and also the enterprise portals and the company websites [16], [18], [15].

3. *Systems and technologies for supporting decision-making process*. In this category we can include the different decision support systems (DSS) for company management (operational, strategic and tactical), BI technologies (Business Intelligence) and the hybrid intelligent systems (expert systems, intelligent agents, multi-agent systems) [6], [26], [27], [8], [9]. Considering the fact that the decision-making support in the governance processes uses financial reports, we can also include XBRL language (Extensible Business Reporting Language) or XML in this category as a standard formula for representation and communication of the financial reports [2], [24], [31].

B. **Support systems and technologies for corporate governance from outside the company**: - in this category we can include the systems and technologies that offer an active support for presenting information and standards and also the codes of good practice (websites and dedicated information portals – OECD, ECGI, GMI, CGQ), respectively the information regarding the capital market evolution (informational portals for the stock market). Considering the communication of the financial reports with entities outside the company, we can include the XBRL or XML technology as a support for financial data imports necessary for the decision-making process for corporate governance.

Starting with this taxonomy, in Table 2 we represented the way information systems and technologies ensure support for corporate governance actors inside and outside the organizational level.

Summarizing the above, we can say that the Support Systems for Corporate Governance (SSCG) represent the assembly of systems and technologies for data and information processing and ensure transparency within

corporate governance processes, respectively   for monitoring and assessing it.

Table 2. Actors and support systems for corporate governance

	SSCG	Shareholders	Board of Directors	Managers	Internal Audit	External Audit	Stakeholders
INTERNAL	ERP, SCM, CRM			X	X	X	
	DSS			X			
	Groupware & document management		X	X	X		
	Enterprise Portals		X	X	X		
	Corporate's Website	X	X	X			X
	Intelligent Support Systems		X	X	X		
	Business Intelligence (OLAP, Data mining)			X	X	X	
EXTERNAL	Information Portals (stock exchange, OECD)	X	X	X	X	X	X
	Specialized Websites (GMI, OECD, ECGI, CGQ)	X	X	X	X	X	X
INTERNAL / EXTERNAL	XBRL, XML	X	X	X	X	X	X

Analyzing the results presented in Table 2 we see that managers have access to most tools support both inside and outside the company. The least access to these tools it have shareholders and stakeholders. Also the most accessed instruments are Information Portals (stock exchange, OECD), specialized websites (GMI, OECD, ECGI, CGQ), XBRL, XML.

5 Conclusions
As a research result this study through relevant works (paper and books) analysis and synthesis the architecture of corporate governance and taxonomy of systems and information technologies used in corporate governance process add value for literature because creates a theoretical basis to develop new conceptual models of support systems for assessment and improving performance of corporate governance.

The problems generated by the information asymmetry within the agency relationships at corporation level, governments and capital markets led to a higher necessity for corporate governance. The information system of corporate governance is a very complex one, which involves a series of actors, decision-making and transactional processes, technologies, procedures and good practice codes.

In order to ensure the efficiency and efficacy of corporate governance as a premise for increasing company's performance and consolidation their position on the capital market, it is necessary to analyze the way information technology could contribute to this undertak-

ing. Corporate governance involves a complex information and decision-making system, based on decision-making processes distributed among different users and decision-makers both inside and outside the organization. Although within the companies there are complex information systems that offer support for the transactional and decision-making processes, they don't have the efficiency of corporate governance. On one hand, these systems and technologies are not sufficiently integrated and correlated with the objectives of good governance, and on the other hand, they are not designed to offer a real and permanent support to all the actors of corporate governance.

The taxonomy of the support systems for corporate governance can constitute the starting point for creating a hybrid and adaptive support system for decision making for assessing and increasing corporate governance performance and also company performance. By implementing a decision support system focused on corporate governance necessities, that would integrate systems and technologies from inside and outside the company and offer decision making support in a collaborative manner to all actors of corporate governance, an efficiency and efficacy could be reached in corporate governance.

These would lead to a decrease of information asymmetry and increase of transparency in the decision-making processes and improvement of governance so that the shareholders' and all interested parties' (stakeholders) trust would increase.

Acknowledgements

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