# AUGMENTING CORPORATE GOVERNANCE THROUGH SYSTEM DYNAMICS

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**Abstract**

The paper aims to augment good corporate governance as a whole with the efficiency and effectiveness of system dynamics via a system dynamics model. The majority of study of corporate governance focus on financial issue, ownership, agency theory etc. rather than analyzing the relation of all aspects associated to corporate governance system as a whole. This study aims to address this gap by focusing on corporate governance in a holistic manner. The value is determined as two-fold: i) It is possible to understand the importance of system dynamics methodology; and ii) It can help the organization to quantify corporate governance for development of organization in holistic manner.

**Keywords:** Corporate Governance, System Dynamics, Cause-Effect Relationship

**Type:** Research paper

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## 1 Introduction

Corporate Governance (CG) is a novice in the academic and professional sector. Its popularity gained momentum during the late 1990s when misdemeanours occurred at the high profile corporate houses in the United States and other countries. Several companies and government departments established code of corporate governance in 1990s, especially after SEBI directives on governance requirements (Balasubramanian, 2009). The emphasis of corporate governance is on the decision-making of an organization, primarily on the set of factors that regulate the decision-making process. It scrutinizes various factors related to the decisions of decision-making of the organization, including the execution of controls of decision-making and the processes.

The existing literatures in the CG has inspected the pathology of corporate governance, the regulations that have come to existence due to it and the efficiency increase of an organization due to good corporate governance implementation. A study by Carvalhal and Nobili (2011) has analysed the influence corporate governance makes on the stakeholders of the company, particularly in the way they perceive the firm. There are also studies on the structure and features of corporate governance, through dummy variables or indices. After a comprehension of 24 governance rules existing today, Gompers et al. (2003) has derived a 'governance index', which measures the structure of corporate structure. However, the index does not shed light into the functioning aspect of the governance.

## 2 Aspects of Corporate Governance

Recently, CG has been under the limelight for various reasons including corporate failures, wrong audit practices, fund mismanagements, disparities in remuneration packages, insider trading, and so on. Most of these issues are the tails of bad economic conditions. The ways to address these issues point to the foundation making of an organization, by implementing measures to continually monitor the scenarios as well as by laying ethically strong corporate foundation. A positive accounting theory and being reasonable to a variety of 'what if' situations emerging will also eradicate the dangers of corporate frailty. Environmental dynamics, methodology for assessing corporate governance strategies (both quantitatively and qualitatively) and obtaining optimum response strategy (including structures and resource allocation) are the other factors that seek attention and investigation.

It should achieve transparency through:

- Nature of various reforms;
- Contemplated improvement initiatives to arrive at desirable modification;
- Multinational Business Finance – finance goals and governance, rights and future;
- Constant growth, ecologicalism and corporate social responsibility which one emerging as concern for the general public at large and in board as business gazes towards an opportunity.

The above mentioned gamut of corporate governance features, issues and concerns spread across areas. When a few among them are quantifiable, some are vague and purely qualitative in nature. However, they encircle and define the corporate performance implicitly. Corporate performance is the most crucial and significant measures of judging corporate governance. In order to measure corporate governance in complex situations, appropriate tools is required that provide both quantitative and qualitative results. System Dynamics is that excellent and appropriate tool for the purpose.

Henceforth, the paper focuses on developing an integrated dynamic model for corporate governance using system dynamics techniques, and also to quantify its critical factors such as transparency, responsibility, ethics, accountability, information disclosure et cetera to measure corporate governance.

## 3 Scope of Corporate Governance

Due to the surge in scams and consequent bankruptcies of some high profile corporate organizations, corporate governance has become a topic of extreme significance among the practitioners, academicians, researchers and governments worldwide. CG lays the requisite regulations for the corporate activities of the businesses to attain a stringent grip on its governance, thereby establishing better processes, better safeguards and higher ethical standards in businesses. Efficient corporate governance decreases the possibility of corporate down falls that result from deprived decision-makers or board behaviour. Several empirical and theoretical researches reinstate the fact the corporate governance mechanisms matter in the profitability and growth of large organizations. Governance systems influence output and investment decisions of firms through several channels that include ownership and control structure, development of financial intermediaries and capital market, corporate financing and investment patterns, investor protection and creditor rights, among others.

Below is a list of definitions of ‘corporate governance’ quoted in the literature that are neither mutually exclusive nor exhaustive. They provide an overall scope of corporate governance, denoting the vast structure of its existence.

1. Corporate governance is a system which deals with laws, procedures, practices (CII, 1998); cultural and institutional arrangements (Blair, 1995); return on investment of investors (Shleifer and Vishny, 1997); direct and control companies (Cadbury, 1992); integrity, accountability, openness, fairness to accomplish company affairs to all stakeholders (SEBI, 2000 and 2003).

2. Corporate governance engrosses the interface of several organizational elements in intricate ways. Its review should, thus be equally multidimensional (Keasey et al., 2005); CG is a set of rules that defines the correlation among the stakeholders of an organization, between its management, board of directors, shareholders, among others. It is the constitution based on which the objectives of the company are set. It determines the means to attain those objectives as well as monitor the company’s performance (OECD, 2004).

3. The process and structure to manage the business and affairs of corporations with the objective of enhancing shareholder value, which includes ensuring the financial viability of the business (TSE, 1994).

4. An effective and proficient corporate governance system ensures proper resource allotment and improves return on investment of an organization. The return on capital investment is estimated to be twice high in the countries, where equity rights are safeguarded, than seen in the countries where rights are unprotected (Classens, 2003).

5. CG diminishes the threat of nationwide economic crisis. There is also a strong relationship between the corporate governance and the depreciations occurring in the currencies (Johnson et al. 2000).

6. CG has a great role to play in developing countries due to its contribution to the financial flow of the organizations, which explicitly influences the national development through GDP. The corporate governance has major influences on transition economies, mainly in creation of Private Corporation that changes the economic transformation to a market-based economy. It also has significant effect on the allocation of capital, development of market, attracting foreign investments and making contribution to national development (Babic, 2001).

Several studies existing in the field of corporate governance identify that the corporate governance frameworks differ from one organization to another. This difference accounts to the complexities of entities, in the nature of their business outputs besides the types of stakeholders involved with them. Effective corporate governance for an organization can only be derived after thoroughly understanding the roles of executive members and their relationship with others in a corporate structure. Their relationship with the employees, communities and government should be analysed in terms of fairness, citizenship and commitment. Implementation of good corporate governance in any organization demands a focused attitude from the part of directors, CEOs and senior management executives. They should also be adhered to the motto of business success through responsible and ethical means.

Although thoughtfully drafted, the rules for good governance can fail due to improper implementation and practice. This is where the notion of ‘commitment’ should stay vibrant among the senior management and employees. Good corporate governance sets goals for the company, helps in proper decision-making and allows monitoring of performance. At an organization of good governance practices, interactions between the stakeholders will be seamless and changing circumstances will not be a menace. A solid corporate value will be imbibed across the organization that will provide the investors an enduring reliability in the company.

Some important facets of CG that are present in business, industrial, organizational and governmental context are:

i. CG is concerned with the financial health of a conglomerate and society in general, and inspects how to secure and stimulate well-organized management of companies by the use of incentive instruments, such as contracts, organizational designs and legislation.

ii. CG attempts to develop a better relationship between a business organization and its investors/shareholders or, more broadly, as an association to society and promote fairness, transparency and accountability in corporate houses.

iii. CG improves an organizational system by imbibing within it a structure, where rights are properly distributed and responsibilities are equally allocated among all the participants involved with the organization.

iv. The company goals are accurately placed; the approaches to accomplish those objectives are set; and the performances are well evaluated.

v. Prevailing organization culture, use of power and their information and control (i.e., cybernetic) architecture have also drawn attention in analysing its contribution in governance of social institutions as one of the main CG responsibilities.

Overall, corporate governance delivers coherent, dynamic and holistic thinking for better performance of stakeholders/shareholders, employees, etc. and the society and nation at the large. For this kind of performance to occur, corporate governance needs dynamics, flexible, logical techniques, which can be offered by System Dynamics.

## 4 Scope of system dynamics

System dynamics has been developed by Forrester (1961) in the mid 1960s as a tool to analyse long-term decision-making methodology for the industry. Researchers have been using system dynamics methodology in various areas such as business policy, strategy problems, medical science, engineering, rural development, information technology, operations management, project management, corporate planning, corporate strategy, social systems, telecommunication, tourism, logistic and supply chains, rural and urban planning and studies, public and private sectors, education, industry, defence, aerospace, ecology and environment, global studies, environmental studies, information science, business, spirituality etc. The vital notion of system dynamics is to comprehend how all the entities in a system intermingle with one another.

To list more precisely, System dynamics is applied in business in the following ways:

- Analysing the industrial feedback by delineating the complex connection between the equipment maintenance and final results
- Analysing the innovation diffusion in the market by inspecting the market reach of newly launched products and competitor innovations
- An industrial analysis from product manufacturing stage marketing response of products, which will determine the growth or decline of the industry
- Maintaining the necessary demographics in an organization
- Balancing the work log of an organization during normal and heavy work flow days
- Improving factors like product development, market share etc.
- Managing inventories, supply chains etc.
- Policy designing to enable an organization to grow by accurately understanding the industry requisite

In his paper, Bove (2003) illustrates a wide range of mechanisms to inspect corporate behaviour. He derives the mechanisms by an integration of the American corporate control system at the federal level, into a concise system dynamics model. The model emphasizes the clarity of information about corporations' performance and behaviour, and illustrates how the mechanisms are used differently to ensure transparency. Xu, Hua (2002) has used system dynamics modeling for policy analysis to demonstrate ways to change the corporate governance structure in transitional China. Copeman (2011) has applied system dynamics from simple perspective to observe complex issues at a boarder level. Sahay and Kumar (2014) have measured the corporate performance through system dynamics.

## 5 System dynamics approach in Corporate Governance

As a means to analyse the impact of CG on measures of corporate performance, the researchers have either used variables or have tried to create composite measures of CG practices. The results are still contradictory and ambiguous ((Bhaghat et al. 2008). The results failed to show their capability to predict future performances. For this reason, definition of 'good CG mechanisms that results in financial efficiency, social legitimacy or goal achievement' has been a challenge in CG researches (cf. Judge, 2010, Aguilera et al. 2008).

Similarly, there requires a fresh perspective in few areas of corporate practices. The existing practices dealing with transparency, accounting, role of executives, accountability to stakeholders and impact on public good demands a closer assessment. Development of framework to deal with these practices comes under the purview of CG. To say, the regard for environment or the conservation of resources is a matter of CG.

Considering such challenges, we have developed a comprehensive influence diagram (Figure 1). It explains causal relations among different factors that are associated with corporate governance including corporate performance. A positive loop shows an exponential growth or decline. On the contrary, the negative feedback is declining or controlling/balancing influence. A causal loop diagram is helpful, but it does have some considerable boundaries, including lack of ability to differentiate between stocks (accumulations) and flows of material and information.

Conflict of interest among the stakeholders is a serious matter of consideration when it comes to CG. Sometimes an official action has the potential to benefit private interest of one of the stakeholders involved, to say an executive or an officeholder. Such conflict of interests can morph into financial fraud in an organization (Demski, 2003). Figure 1.1 below depicts this conflict of interest, when the transparency, ethics or corporate culture decreases.

Currently, transparency is synonymous with competence and execution. It has been considered as a measure of quality governance in every sector, including public, private, government and non-government. For CG, transparency and information disclosure are fundamental. They give positive impact on shareholders and investors, thus enhancing the corporate image of the company (Figure 1.2).

**Figure 1.** Influence diagram for Corporate Governance

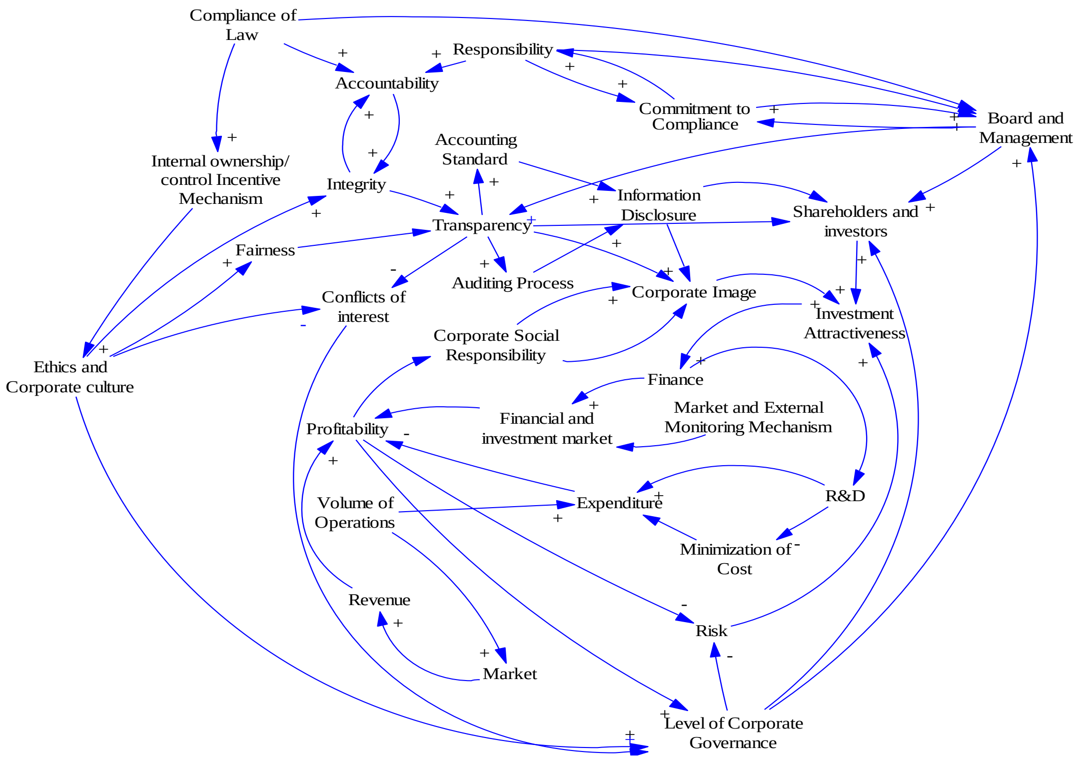



Figure 1.2 elucidates the relationship of transparency in an organization with shareholders and investors. It supports Adeoti (2007) argument that transparency implies openness, communication and accountability. The transparency creates accountability among the stakeholders of the company. To elucidate, if transparency is curbed, there will be an absence of value for the money spent, leading to the absence of accountability. In his paper, Adeoti reinstates that the transparency is opposite of privacy, budgetary reviews, denoting open meetings, freedom of information, financial disclosures and auditing of financial transactions. Maintaining good governance factors such as transparency, probity and accountability will attract investments and thus, can improve the funding of the company (Ayininuola, 2009; Onuoha and Amponsah, 2012). Transparency is a control vale against inefficiency and fraud (George and Sabelli, 1994).

Corporate image reinforces corporate social responsibility and investment attractiveness. Corporate social responsibility reinforce corporate image.

Integrity is one of the most preferred qualities, not only of individual employees, but of companies in the contemporary business world and especially for corporate governance. An intense look at integrity reveals why it is so elementary to business. Figure 1.4 proves Dubinsky and Richter (2009) works ethics & corporate culture improves integrity, which refer to a commitment to ethical deliberation and actions in all segments of how an organization is administered and run. Integrity further raises the bar of transparency and due to transparency shareholders and investors interest increases to invest in the organization. Ayininuola

(2009) concludes that corporate governance is to take care and give assurance to the rights of the stakeholders.

Figure 1.5 makes clear that as shareholders and investors invest more in a company, the amount invested in a company increases. When the invested amount in company increases, it reinforces funding (finance). As Fund (finance) increases then the company can invest more on R&D and also in financial market to make money. As the financial investment in market increases profit, revenue also improves profit, profit reinforce wealth maximization and reduce the risk. Investment attractiveness increases due to low risk. When R&D increases cost decrease and expenditure and volume of operations increase.

**Figure 1.1** Conflicts of interest

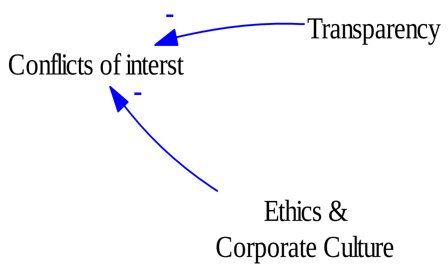



**Figure 1.2** Transparency & Disclosure

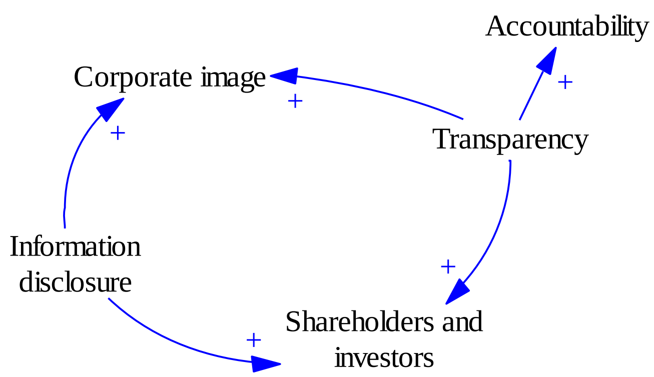



**Figure 1.3** Corporate image

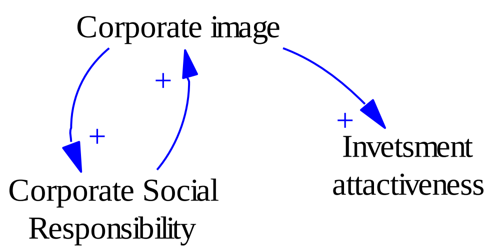



**Figure 1.4** Ethics & Integrity

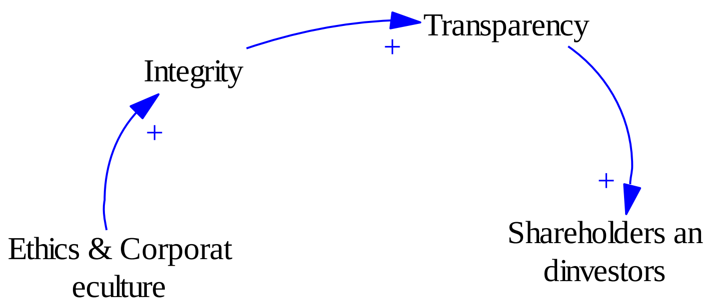
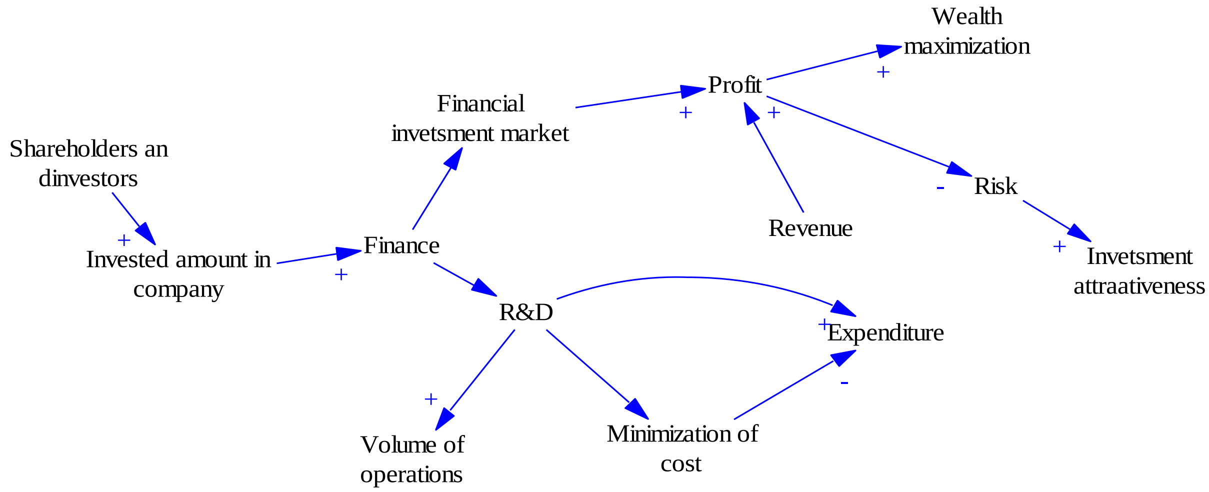


**Figure 1.5.** Finance




The comprehensive influence diagram figure 1 shows ethics, corporate culture, boards and management and profit increase the level of corporate governance. As each organization differs from one to another in the nature of business, their corporate culture too differs. Hence, a common dimension for measuring corporate culture cannot be derived. The significance of any ethical measurement tool is thus equivalent to the organizational uniqueness. There are two main pillars for corporate governance: i) manager's accountability to shareholders; and ii) corporation and responsibility to society. The problems arising in an organization would be tough to solve and boosting the level of self-confidence of stakeholders in problem-arising circumstance is difficult without proper CG. It is accomplished with fairness and trust in assorted facets of CG, particularly reporting (auditing and annual report). The potency and precision of the reporting is also augmented by several standard and regulations. Stakeholders largely depend on the decision of a company's directors, and auditor's annual reports. Creditors provide financial support to the company, whereas the government and regulators impose constraints and support, including guidelines for company behaviour. Suppliers, customers and society are the obvious stakeholders of the company, influencing its functions. Investor opinions play a key role in company. If the confidence of investor rises, then the share price of the company increases. In contrary, the value of the stock plummets due to low confidence of investor. Therefore, it is crucial for a company to read its investors mind before making important decisions and to maintain a flawless management quality. The role of board and management is to understand and meet its obligations to the company's stakeholders, bring an appropriate balance of innovation, experience, independence and challenges, to ensure effective and timely decision-making for corporate growth as well as stakeholder's wealth-maximization. Corporate scandals and collapses of high profile companies in last one and half decades have highlighted the need for robust compliance and regulations for publicly listed companies. Adherence to laws, regulations and standards are not only for responsible and accountable corporate governance. It requires a stringent compliance system, its stakeholders and employees all are protected as comprehensively as possible. Figure 1 shows that compliance of law reinforces the role of the board & management as well as the internal ownership/control incentive mechanism. While simulating the figure 1, almost all the above said factors have been considered to quantify the corporate governance.

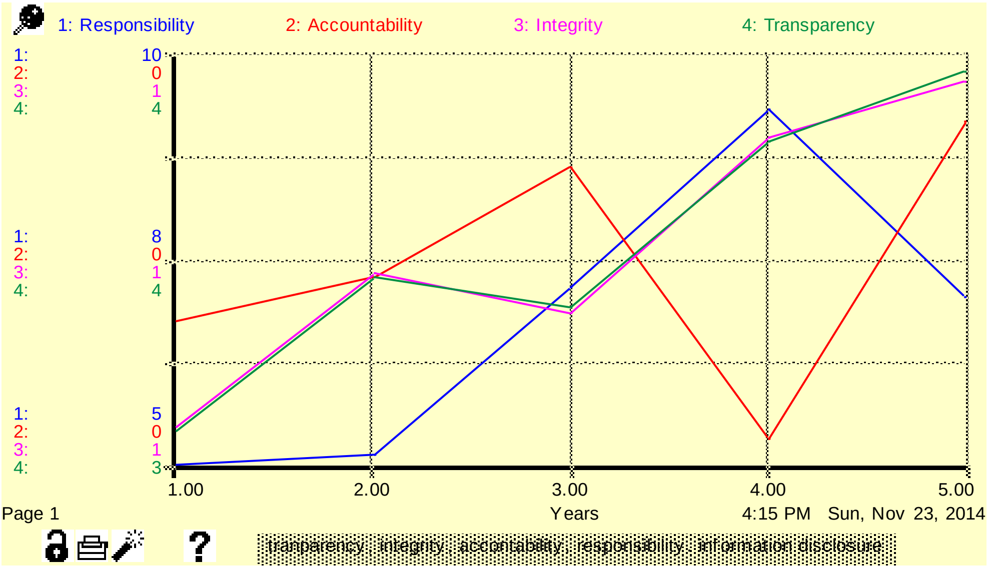
## 6 Simulation analysis of the model

Transparency, responsibility, integrity, accountability, and ethics are the major factors for measuring corporate governance of the organization. The authors have created figure 1 using "iThink" software.

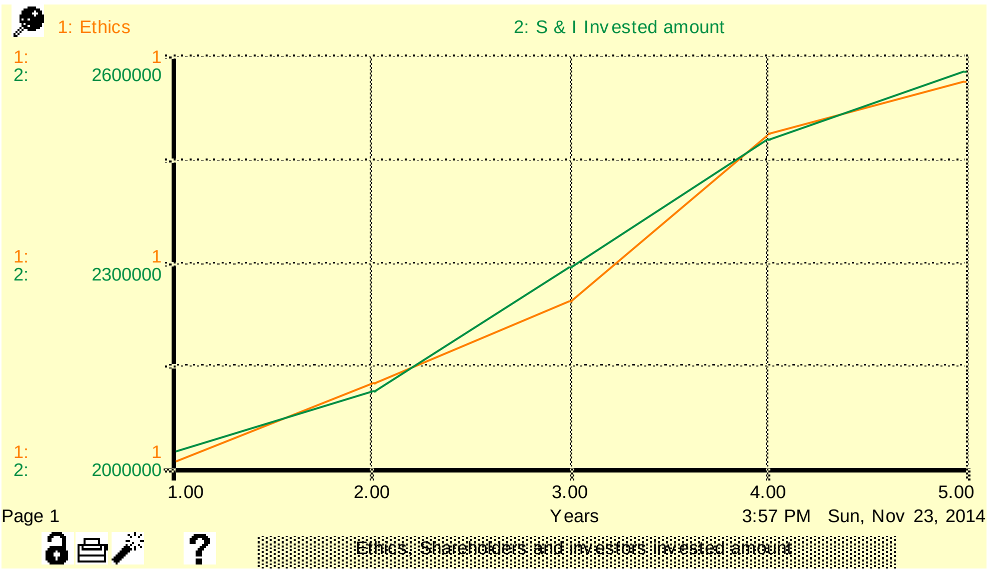
The data have been taken from the annual reports of the company from year 2009 – 2005. The expert opinion is also taken as an assumption. The base-run simulated results with selected variables are given in graph 1 and 2. The model has been simulated with the reference year of 2009.

Graph 1 shows that the responsibility is increasing from 5 to 7.03; accountability from 10% to 20%; integrity from 64% to 100%; transparency from 32.9% to 37.3%, respectively over the next five years i.e. to 2013. In this model responsibility has been considered number of talk with organization. Similarly, the behavioral patterns of ethics and shareholders and investors invested amount are shown in graph 2. In this graph, the value for ethics is raised from 63% to 70% and shareholders & investors' invested amount is also increasing from Rs. 202 billion to Rs. 257 billion.

**Graph 1.** Growth in transparency, accountability, integrity, responsibility, information disclosure




**Graph 2**. Growth in ethics, shareholders/investors' invested amount




The above model and graphs gives indication that corporate governance factors are quantifiable. Alternate strategies can be formulated for good governance by changing the value of some key parameters. This emphasises the efficacy of system dynamics in corporate governance for long term strategic decision-making.

## 7 Conclusions

Good corporate governance takes care of transparency, responsibility, ethics, corporate culture, fairness, and accountability with respect to shareholders and other stakeholders. It is a requirement for the integrity and credibility of the companies. By building confidence and trust, good corporate governance permits right to use to external finance and allows companies to build reliable promises to creditors, employees and others.

In conclusion, we propose that the system dynamics can provide a systematic and rigorous way for understanding and analyzing corporate governance, hence contributing to the further development of corporate governance in totality. Organization could also win competitive advantages using system dynamics.

This paper mainly focuses that corporate governance factors are quantitatively measurable and improvable with the help of system dynamics, therefore the main critical factors of system dynamics model is model validity, the validity of the set of factors used as compared with the real processes.

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