

# A Cybernetic Approach to Corporate and Stakeholder Governance

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## ABSTRACT

In this paper, we attempt to apply a cybernetic approach to an analysis of corporate and stakeholder governance. The cybernetic approach could offer a good framework for analyzing communications and control [1]. A corporation is formed by a “nexus of contracts”. By analogy, cybernetics has been used increasingly in relation to internet communication technologies (ICTs).

The paper is divided into three sections: first, the question of what a cybernetic approach is addressed; second, the concept of this paper is set out; and finally, a cybernetic approach to corporate and stakeholder governance is elaborated [2]. Each section takes a step-by-step approach to describing its subject from a socio-cybernetic point of view.

Norbert Wiener’s cybernetics theory aimed to create an autonomous system. It has played an important role in terms of its founding philosophy and is seen today, for example, in factory automation systems that include sensor assistance (feedback).

**Key words:** cybernetics, corporate and stakeholder governance, path dependency, communications, control

## 1. INTRODUCTION

Wiener introduced the socio-cybernetic concept in his work, by way of suggesting the control of a large current by a small voltage. This notion of control can be applied to a company’s top management system. This is a rational way of business control, aimed primarily at corporate governance. Wiener’s control system, more concretely described in the development of his vacuum tube-based systems, is today a way of thinking of systems based on modern semiconductors. The controllers have been developed, by computational work, and have been shown to be much faster and more accurate than human computation allows. The ‘conversation’ between the parts of the system is based on the principle of feedback. Such a feedback function could be a theoretical basis for automated machines, such as the factory automation systems now produced by several companies.

## 2. CONCEPT OF THIS PAPER

To apply a cybernetic approach to the analysis of corporate and stakeholder governance, review Figure 1, a conceptual diagram, below. This diagram shows stakeholder governance, including the core of legal compliance, and corporate governance. The cybernetic approach highlights each “module” that communicates and interacts, passing information between stakeholders, such as owners, labor, clients, competitors, suppliers, and the government. Cybernetics is now used heavily in relation to ICT. Informatics can support a framework for

analyzing communications and control. Informatics, via a computer, is processed in terms of a “nexus of contracts” in the form of packet data communication and its controlling rules.

Each stakeholder is combined with four different platforms: the economy, technology, natural environment, and society. These environmental spheres of a firm are based on the New St. Gallen Management Model [3]. This research paper doesn’t adopt the first type of St. Gallen Management Model, which is very traditional one [4], [5], [6]. Each stakeholder makes a framework centered round the company (professional manager), and the four platforms form organic linkages by modules (interactive information linkages, referred to as “double feedback”).

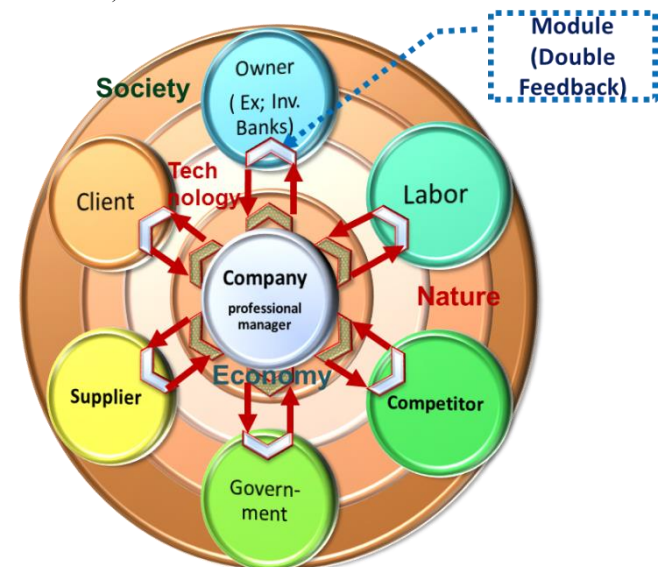


Figure 1. Conceptual diagram [3] [4]

## 3. CYBERNETIC APPROACH TO CORPORATE AND STAKEHOLDER GOVERNANCE

So, how can we apply these concepts to corporate and stakeholder governance? Wiener’s cybernetics can be applied to social organizations. The governor regulates the market. This controlling system by the governor could represent the price system. The current market economy is based on price, and price is decided by supply and demand. According to Adam Smith, who wrote “The Wealth of Nations” in relation to the first industrial revolution in the 18<sup>th</sup> century, an ‘invisible hand’ determines the optimal price [5]. This invisible hand results in the optimal price under the precondition of moral governance, another idea proposed by Smith in his other well-known work, “The Theory of Moral Sentiments” [6]. However, Smith’s

model of a price system has limited value in the context of online service provision. We have written a paper about the online charges of 'free' providers, and set out ideas on accountability and the use of the term 'free' [7]. Internet service provider doesn't include virtue into their businesses. They put a value on more importantly to make gain and loss.

There is a network within the private sector that includes corporations and stakeholders in cyberspace. Communications among these entities may be controlled by a feedback system of modules (a double feedback system), seen in Figure 1, as in communications between machines. However, we could identify no exact feedback system (sensor); we wonder, though, whether it is possible to reconsider the feedback system for 'value'. The feedback system is analogous to machines that work primarily by the measurement of physical quantities, and to digital machines that work primarily by counting and arithmetic operations. An area for further consideration is the analogy between physical and arithmetic feedback and the economic governance system, with a view to creating an autonomous system.

#### 4. TABLE FOR STAKEHOLDER MANAGEMENT

In this section, we are trying to apply a cybernetic approach to corporate and stakeholder governance, and we mention the New St. Gallen Management Model, which has six central categories: 1. four environmental spheres, 2. six stakeholders, 3. interaction issues, 4. structuring forces, 5. processes, and 6. modes of development. The New St. Gallen Management Model was aimed at reducing complexity [8]. The specific functions of those 24 factors are indicated in Table 1. It is also important to pay attention to handling the functions of the "COMPANY". The company plays an important role in stakeholder governance.

TABLE I. STAKEHOLDER MANAGEMENT; CRITERIA & 24 FACTORS

Criteria & 24 factors		Economy	Tech-nology	Nature	Society
		1	2	3	4
Owner	A	Stock price	Genetic Engineering	Resource	Open-Mindedness
Labor	B	Wage	Robot	Work Life Balance	Level of education
Client	C	Market price	Process Engineering	Topography	Age Structure
Supplier	D	Process	Traffic Technology	SCM	Infrastructure
Competitor	E	Free Market	Technology cluster	Climate Change	Social/Global problems
Government	F	Market Regulation	ICT Governance	Sustainable	Political forces, NPO/NGO

In Table 1, we would like to determine a double feedback model, such as those in financial markets. For example, the Black-Scholes model is a mathematical model of a financial

market containing derivative investments, for use in the pricing of options. This model also shows a type of complexity reduction. So, how could we apply this idea to, for example, socially responsible investments (SRI).

- 1) Four environmental spheres, in Table 1, the horizontal axis shows four environmental spheres of a firm, as described in Figure 1. This sphere of 1.economy, 2.technology, 3.nature and 4.society must take part of important trends to make a Change for their environment.
- 2) Six stakeholders, which are following A. to F.,
  - A. Owner; provide profits for the stockholders.
  - B. Labor; protect workers' right.
  - C. Client; keep close attention on the consumer market.
  - D. Supplier; establish a relationship with an existing and new supplier.
  - E. Competitor; a highly competitive marketplace.
  - F. Government; determine the roles to be played by the government, such as government interventions.

The vertical axis shows the six stakeholders. Thus, there are 24 factors: four (1 to 4) times six (A to F).
- 3) Interaction issues, This is in the relationship between four environmental spheres and six stakeholders, include company's coordination ability. The company are identified themselves at personal and cultural issues. Therefore, they need to communicate with their whole Environments.
- 4) Structuring forces, this is re-called "structural property" by Giddens A.,. However, this sense means a structuring factor, despite of meaning of language by Giddens.
- 5) Processes, it means to create value-added activities by the management teams. The process is described by specific tasks, which is special for the company.

#### 5. FINDINGS: FUZZY AND PATH DEPENDENCY

In this paper we discuss about to apply a cybernetic approach to the analysis of corporate and stakeholder governance, also we offer various special features, such as "Module (Double Feedback)" idea. Then, how could we apply this idea to our society, also understand in our context of cybernetics?

With this each of six stakeholders are interacted. This relationship between each of six stakeholders builds a firm's value-added activities.

'Luck' is also a part of ability. Wiener introduced the cybernetics concept that suggests, "... the structure of the machine or of the organism is an index of the performance that may be expected from it." If this is the case, then is 'luck,' which assumes an unexpected circumstance (Fuzziness), part of performance? It makes "variety" of a system.

A path-dependency could offer the cause. David proposed three reasons for path dependency: technical inter-relationships; switching costs; and historical accidents [9]. We focused on the third factor, historical accidents. Historical accidents or unexpected circumstances are a precondition for and a component of ability. In general, our decisions do not reflect an optimum resolution of questions in the economic world, such as the superiority of VHS over Beta or Windows over Apple. Wiener expected predictable performance from a machine, which could ensure certain capabilities based on its material properties.

The Stakeholder approach is accepted as mainstream theory in corporate governance area. Why? This is first reason of David's idea, "technical inter-relationships", which could think of "Module" as technical point of view. This "Module" shows their interest to differentiate among stakeholders. This tendency

towards a process of the New St. Gallen Management Model is the general way of recent corporate governance researches. This system approach is for the reduction of complexity, and more useful for management praxis on the one hand, but other hands, it is accurate destroyed the organic interaction between management system itself, which makes more “variety” of a system.

## 6. SOLUTION AND CONCLUSION

Stakeholders are organized or unorganized groups of people, organizations, and institutions. They have influence on value-creating activities of companies. Strategic stakeholders are defined as those individuals who are originally positively involved in the activities of the business. They are differentiated from “involuntary” stakeholders, who are “normal” stakeholders, such as owners, labor, clients, suppliers, competitors and governmental agencies, as it’s mentioned above. We offer several factors, which stakeholder’s approach need to confront with those issues, such as destruction of environment, Unemployment and other problems.

We could also see on socio-cybernetics, as discussed above, and its application to corporate and stakeholder governance. An applicable example of real corporate governance comes from the Japanese production support company, Omron Corporation [10]. This company offers several types of automated systems, such as automatic ticket vending machine, automated ticket gates, and other kinds of robots for an automated society. Omron has a biggest global market-shear of the home blood pressure monitoring system. We are now evoking an image of “Industrie4.0” in Germany [11].

Then, we’ve found several points, which are;

2. CONCEPT OF THIS PAPER; Figure 1, a conceptual diagram, shows stakeholder governance. The cybernetic approach highlights each “module” that communicates and interacts, passing information between stakeholders on the environmental spheres, which are based on the New St. Gallen Management Model.
3. CYBERNETIC APPROACH TO CORPORATE AND STAKEHOLDER GOVERNANCE; it is possible to reconsider the feedback system for ‘value’. There is a network round the corporations and stakeholders in cyberspace. Communications among these entities may be controlled by a feedback system of modules (a double feedback system) in communications between machines, to creating an autonomous system.
4. TABLE FOR STAKEHOLDER MANAGEMENT; we have discussed on the third term about Interaction issues. The relationship between four environmental spheres and six stakeholders are identified themselves, and create new value added activities with their whole Environments. Also, “Structuring forces” make a sense of their structuring factor. In order to “Processes”, it follows value-added activities by the management teams (corporation).
5. FINDINGS: FUZZY AND PATH DEPENDENCY; This each of six stakeholders are interrelated. This interrelationship between each of them builds a firm’s value-added activities. Then, Fuzziness is assumed an unexpected circumstance, and this is the performance of a corporate governance systems.

We are concluding this paper with the word “variety” [12]. P. Hall and D. Soskice doesn’t discuss about our central theme “A Cybernetic Approach to Corporate and Stakeholder Governance”. This interrelationship between four

environmental spheres and six stakeholders makes “variety”, how to correlate and cause, therefore we have pointed out the criteria and 24 factors. The fuzziness (unexpected circumstance) is playing important role for the performance of a corporate governance systems, and create new value added activities.

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