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Making Systemic Innovation Using Process-Oriented Systems Research: The Case of Korean Company

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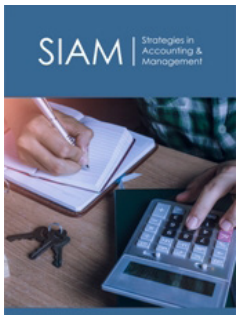

Abstract

Understanding the systemic innovation and active responsibility for the organization, Process-Oriented Systems Research (POSR) is used to explore problematic situations of the organization. In order to do so, the inquiring process of systems approach is extended to a higher level of learning and reflection that explores new sorts of "questions and problems" ingivensituations. A detailed account of a case study is given to demonstrate how POSR is applied in practice.This article argues that systems research fromsystemic inquiry using what we call 'process-oriented system approach' isuse ful to address the problematic nature of the strategic management issues related to dynamic relations between the ideas, discourseand action of the corporative strategy in Korean company.

Keywords: Systemic innovation; Process-oriented systems research; Strategic management

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Introduction

Innovation is the key driver to success for organizations as they create a competitive advantage through their innovative management, which can mobilize knowledge, technological skill and human capital to create novelty in their offering of the products and service to customers. However, managing organizations is a complex task and thus problem situations often appear in practice. Managing with the problem-solving activities in organizations, it needs to find out a way to manage organizations appropriately, in order to get an insight or ideas of "what is" and "what ought to be" within organizations. The systemic innovation is a holistic approach, and it aims to generate ideas to understand complex situations and take the appropriate actions to improve problematic situations with organizations. Put differently, the systemic innovation is an approach to explore human problems more completely and accurately in a holistic way in organization that regards as a complex system [1]. In systems research, systems thinking and systems-based approach become an intellectual tool that allows systems practitioners to understand existing complex situations, which have the characteristics of the 'nonlinearity' and 'unpredictability' of complex systems [2]. Then the question arose such as what is systems research? The term "systems" create the basic rhythms and tunes of innovation, management, the basis for solving human problems and generating new ideas for "creative enterprises", and make 'a space of transformation' and 'examinations', which are increasingly influential in today's society. On the other hand, the term "process-oriented" has recently gaining importance, especially by during the first decade of the century in various human and social science disciplines in addition to the traditional focus on "process" in sociology, political science, law, biology, psychology, and philosophy [3]. In philosophy, Rescher used the term "process-oriented" in the "thing/process contrast [4]. His emphasis on "process" derives from Whitehead who stated that "the actual world is a process" and quotes the sentence "all things flow" as an exact expression of the "process" concept [5]. In social sciences, the term "process-oriented" has become particularly popular. In management research, the process-oriented perspective is related a model of systems research, knowledge management, operations and service management, e-commerce, which takes the form of a chain of action categories, such as "access/record/store/distribute" [6]. In these studies, a "process-oriented" concept confronts concepts such as "market-oriented", "resource-oriented", "customer-oriented", or "goal-oriented." Onaka suggests that a "process-

oriented" perspective implies "a chain of actions or factors including time and body, rather than a fixed existence (product, system, structure, and thing) or outside factors (task, customer, market, and resource)." This chain of actions or factors including time and body can be called 'theory' in other contexts. For that reason, the efforts make to elaborate 'theories' are extremely crucial for "process-oriented methodology." The process-oriented perspective is used in 'systems research' which appreciates historical and social contexts in order to understand a wider context in practice. Based upon the theoretical understanding of systems research, and the term, 'process-oriented', this paper raises questions as follows. Firstly, how the systemic innovation can be understood from holistic or systemic perspectives? Secondly, why and how the systemic innovation takes place in organizational contexts? Lastly, what is the usefulness of the process-oriented systems research when it uses to explore the complex nature of the systemic innovation in organizational contexts?

Why the systemic innovation?

Systemic innovation and organizational capabilities in the success of innovation have been a part of systemic inquiry process. Innovation and organizational systems have been an integral for creating business innovation and development in the era of the fourth industrial revolution. Systems research approaches exert open-ended constraints on formulating problems while programmed constraints use on those using surveys and experiments. Using a process-oriented perspective in carrying out systems research, in practice I first explain how systems research carries out in organizations and how it relates with organizational contexts [7]. Then, I explain what a new thinking in systems research and understanding of systemic analysis and change from a "process-oriented" perspective, using systems approaches; soft systems methodology [8] and Beer's Viable System Model [9]. From a process-oriented perspective, the systemic innovation simply means purposeful human actions to create a climate for innovation and change through the process of problem solving and/or problematization. It is the process of making problems or posing questions to complex human problems by using systems approaches that investigate the complex nature of human problems and contributes to facilitating the process of making change in practice. In other words, human agents or participants seek to find certain intellectual devices, techniques and methods in order to explore problematic situations in a holistic way and possibly create new kind of 'human activity systems' that allow us to describe and tackle the situations.

What is the process-oriented systems research?

Process-oriented systemic research is based on the research on the learning process of systems thinking, which refers to the inquiring process of human purposeful activities which play an important part to understand the problematic situations, and produce 'human activity system' to create the system models of problematic situations within organizations. Soft systems approach is based on the assumption that there is great emphasis placed upon on 'human activity system' existing in our mind as human perceptions that we perceive the image of the world as a means of describing and understanding it. In Soft Systems Methodology (SSM), SSM has the three main principles of SSM. These are as follows.

Learning: That refers to perceiving and evaluating parts in constant flux in the system before deciding on action.

Culture: That is the key feature of any system absorbing notions of relevance.

Participation: That should be encourages ensuring wide variety of perceptions of a situation. The efficient practitioners of SSM moved freely between the real world and the abstract but remains conscious of make the move [10]. SSM consists of seven stages [11]. Applying SSM into real world situations, culture is the key feature of any system absorbing notions of relevance of problem situations. The basic process of SSM can be summarized as follows. The stage 1 of SSM is concerned with identifying a problematic situation. In stage 2, the problematic situation must be expressed through words, pictures, and diagrams in order to make 'rich picture' of the problematic situation. The stage 3 is concerned with the preparation of so-called a 'root definition.' A root definition is defined and formulated. The stage 4 is concerned with building conceptual models, which are those minimum activities which are necessary to reproduce the root definition. In stage 5, the comparison between the model and real world situation will generate debate and encourage participation with the process of defining changes. In stage 6, the debate in the previous stage defines changes and a debate goes on to decide which changes are systemically desirable and culturally feasible in the organization. The stage 7 is concerned with the implementation of changes that are desirable and feasible.

The second systems method of interest is the Viable System Model [12], which offers the cybernetic model of any viable system in which there are five necessary functions or subsystems interactively involved in an organization that is capable of maintaining its separate identity within a shared environment. These functions are as follows. System 1 refers to the function of the Operations, which is the provision of products or services that address particular needs in the organization's environments. System 2 refers to the function of Coordination and Regulation, which ensure that operational units (e.g., the viable operational units within System 1) work together and communicate effectively. System 3 refers to the function of the Operational Control, which is especially regard to distributing resources, providing training and development of the human resources, gathering and distributing information about the operational and managerial activities of Systems 1. System 4 refers to the function of Intelligence, which regards as the forecasting of future opportunities, needs, and threats. This function involves a comparison between the external requirements placed upon the organization and its internal capacity. Lastly, System 5 refers to the

function of Policymaking, which is to be setting long-term goals and objectives, and maintains the identity of the organization within a shared environment.

Case study: Green Development Power (GDP)

Background to the study

The project aims to investigate the strategic management problem of the joint investment of the state-owned and business organization that has tried to adopt new ideas from systems approach, which aims to understand problematic situations within the organization. In order to tackling with management problems of the joint venture of the state-owned and business organization, the research is undertaken to apply the combined use of Soft Systems Methodology and Beer's Viable System Model (VSM) in association with the technique of Performance Management Systems (PMS) into the organization. On the top-down approach to strategic management provides little support for creative idea generation, while SSM provides little support for converging on a decision. With the guidance of 'methodological pluralism' [13], therefore, the combined use of SSM and VSM was used to support a strategy development process from idea generation to agreed decision. Within the organization, the role of human resource in the present scenario has undergone a sea of change and its focus is on evolving such functional strategies which enable successful implementation of the major corporate strategies. In this sense, human resource and corporate strategies function in alignment. According to Armstrong and Baron, performance management is both the strategic and integrated approach to delivering successful results in organizations by improving the performance and developing the capabilities of teams and individuals [14]. Based on this background to the study, process-oriented systems research was carried out through the project of the performance management (using the diagnosis of VSM) of Green Development Power (GDP). In 2006, the GDP Company established from a joint venture of the state-owned corporation namely Korea Electric Power (KEP) and Hyundai Corporation, to produce environmentally friendly electric power and deliver products and services to local customers. GDP makes great endeavors to fulfill its social responsibility through the provision of diverse social contribution activities on a global scale to build a sustainable management system. To do so, the general manager at GDP has to deal with strategic managerial problems that have mainly come from human resource management, which involve the performance evaluation of the individuals and working groups who can take charge of the actual work at the various 'profit-making areas' at GDP. Due to different cultural backgrounds and existing barriers between the managers who are mainly from KEP, and working staff who are mainly from Hyundai Corporation, there are conflicts and misunderstanding amongst managers, local working staff and various divisional teams. There is little improvement being made through the use of the top-down approach to the strategic management system which was designed to create the synergy effects amongst various working groups and teams at GDP. Dealing with these problem situations at GDP, action research team was formed. The team includes Associate Professor Jae Eon Yu at Keimyung University and the task force team at GDP.

Results and Discussions

The use of the SSM in GDP

The study was carried out from the March 2016 to June 2016. As a first step of applying a systems approach (e.g. Soft Systems Methodology) in GDP, the researchers look at the problematic situations of GDP at the present by applying SSM. The basic process of the application of the SSM is summarized by the following phases.

Phase 1: Finding out: The methods of finding out problematic nature of management or "key issues", which were conducted by the study of GDP, include focus group interviews, official records, observation and informal and formal interviews with managers and employees within GDP. There was a tendency for poor communication, lack of trust and understanding between managers and workers throughout the divisions in GDP. In an actual study, the archive of 'information' collected can include written documents and records, notes taken from formal and informal interviews with the members of staff within GDP. In addressing problem situations, the first step was to find out the current situations within GDP from the various perceptions as possible in order to draw a 'rich picture' in the terms of Check land's SSM. These perceptions were expressed as follows.

1. **Person A:** "Taking into consideration the top-down approach to the strategic management within our company, how can we establish a share understanding of what is to be achieved and how it is to be achieved?"
2. **Person B:** "We need to communicate and monitoring the strategic human resource management system of our company in order to measuring the performance of the individuals and working groups in our company
3. **Person C:** "The managing director focuses mainly on the operational excellence in terms of the efficiency and effectiveness. In order to do that, we need to have the performance management system which measures, motivates and evaluates the individuals, groups and organizational performances within our company"

Phase 2: Making root definitions: In Phase 2, it is concerned with the preparation of 'root definitions' of the perceived reality in order to structuring problem situation within GDP. 'Root definitions' were formulated two systems, namely, good communication system and performance management system within GDP. These systems are described as follows.

1. **Root definition 1: Good communication system:** An organization owned system aiming to facilitate communication and understanding between the management group and other employees (e.g. full-time workers and other staff), seeking to build trust between managers and workers in order to increase collaboration amongst employees within GDP.

2. **Root definition 2: Performance management system:** An organization owned system aiming to create a good performance management system in order to establish a shared understanding of planning, monitoring, and evaluating performance that facilitates management of self and recognition of others within GDP.

Phase 3: Building the conceptual models: Having the preparation of the root definitions of the relevant human activity systems of GDP, the conceptual model should be carried out to manage the complexity of problem situations within GDP. The model contains ideas about the necessary and sufficient notional activities, which are concerned with the nature of organizational complexity. However, participants were reluctant to continue the further stages of SSM as they were not confident to build the conceptual models of the 'relevant systems' with their limited knowledge and experience. Therefore, it is difficult for them to apply SSM in further stages. In order to overcome these difficulties, the systems analyst (Professor Jae Eon Yu) took an initiative to apply Beer's VSM into the problematic situations within GDP. The use of VSM diagnosis is given in the next section.

The use of the VSM in GDP

Dealing with strategic management problems within GDP, the preparation of the VSM diagnosis seemed 'relevant' to the problem situations within GDP. In addition, there was a genuine consensus about creating a new Performance Management System (PMS) for GDP that should be taken into account to affect the operational, managerial, ethical aspects of employees within GDP. For instance, the Korean cultural aspects and particular individual psychological aspects of Korean employees were influencing the operation and management of GDP, the managing director is concerned about preparing good performance management systems based on 'systems approach' within GDP.

Step 1: Systems design: In order to preparing a good performance management system for GDP, the purpose of using Viable System Model (VSM) with the guidance from the systems analyst (Professor Jae Eon Yu) was to understand and diagnose the problematic situations within GDP. The VSM contain ideas about the purposeful human activities systems which are concerned with the nature of the perceived reality in carrying out problem-solving activities within GDP. Conceptual system models ('ought to be') of the VSM was prepared to compare the perceived problems situations of GDP with desirable and feasible model's activities of the VSM that seemed to be relevant to the problematic situation at GDP. The VSM was used to generate debate amongst participants in order to bring about desirable changes within GDP.

The Performance Management System (PMS), which is a desirable 'solution' for ensuring economic efficiency and the development of management systems within GDP. Whilst SSM used to finding out the key issues or tasks, VSM focuses on the effective organizational structure for PMS within GDP. Therefore, the process-oriented systems research through the combined use of SSM and VSM was fostered through participation and negotiation amongst participants.

Step 2: Building performance management system using viable system model: Step 2 is concerned with the intervention between the systems design and real-world situations in order to open up discussions amongst participants by introducing the meta-level analysis using the processes of 'problem solving' and learning. This step is carried out not by focusing on the problem situation, which is the main task of SSM employed in previous phases 1, 2 and 3, but by focusing on the action being taken. It should be identified and appreciated by a series of 'actions plan' being implemented during the process of a 'process-oriented' systems research.

The Performance Management Systems (PMS) is an organization that is a wide management program that provides to a structured approach to establish a shared understanding what is to be achieved and how it is to be achieved, communicate the business-level strategy, and measure and motivate performance of individuals and organizational dimension. In order to create the shared understanding of what is to be achieve and how to be achieve, Viable System Model (VSM) is applied for the modelling of the organizational structure of any autonomous system capable of producing itself. The key features of the VSM is the management of the variety in the terms of Ashby [15]. According to Ashby's 'Law of Requisite Variety', any viable system creates the sufficient and necessary varieties in order to survive and be efficient in a complex environment that is constantly changing in unforeseeable ways. By creating variety in Ashby's terms, this means that we should take into account an indeterministic future that can identify 'possibilities' rather than 'outcomes' as people make spontaneous interactions and communication under conditions of uncertainties. The VSM identifies five necessary functions within an adaptive system, which includes, System 1 (Operations function of primary activities); Systems 2 (Coordination function of various Operations); Systems 3 (Control function of internal regulation and planning); System 4 (Intelligence function of strategic management and research & development); and System 5 (Policy function of ultimate authority, governance and identity of the whole organization). From cybernetic perspectives, the Intelligence function was chosen to apply system 4 of the VSM to building PMS within GDP because the Intelligence function is strongly future-focused. It is concerned with strategic planning the way ahead in the light of external environmental changes and internal organizational capabilities so that the organization can invent its own future.

Conclusion

In this article, I proposed process-oriented systems research through the use of participatory action research, drawing from the process-oriented systems approach. To do so, the theoretical development of 'methodological pluralism' was used through the application of the combined use of Soft System Methodology (SSM) and Viable System Model (VSM). Put simply, the systemic innovation is applied through the combined use of systems approach of SSM

and VSM in association with Performance Management System (PMS). The systemic innovation took place when participants discussed current problematic situations within the organization. The participatory process of the strategic management was to support from creative idea generation, while the combined use of SSM and VSM provide support for converging a decision-making for the planning and implementation of PMS within the organization. From systemic perspective, systemic innovation takes place during the process of systemic inquiry of what I mean by systemic thinking, which both sides (managers or leader and powerless workers) participated to collaborate to make a change or improve the problematic situations within the organization.

In this sense, organizational transformation and innovation are a part of the changing process of organizational culture as they create the environment for open communications amongst participants and change human perception within the organization. In this sense, the importance of 'systemic thinking' in practice, which makes sense of the multiple values of creating a new kind of "questions and/or problems" within organizations. The proposed process-oriented systems approach via the combined use of SSM and VSM in this paper is intended to analyze the problem situations and to make the interaction effect of the open communication within the organization. As a result, the participatory process of 'problem-solving' using SSM applied to explore various human perceptions, values and ideas about the strategic choice on a decision. And the concept of 'productivity' that refers to the 'primary activities' of viable system increased in its autonomy of individuals and working groups within the organization.

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