Institute of Management

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Doctoral thesis:

From "knowledge management" to the "managerial function of knowledge"— A systemic management model for knowledge-based competition

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ABSTRACT & OUTLINE

The purpose of this research study is to investigate the effectiveness of organizations acting in a knowledge-based form of competition. These are organizations in technology-intensive industries, such as automotive, capital and consumer goods, aeronautical and aerospace, chemistry, pharmaceutical, medical, biological or information technology.

The capability of these organizations to build and to sustain a competitive advantage depends increasingly on their capability to continuously generate knowledge while creating and dissolving complex problems. Even though organizational knowledge creation is an intensively discussed subject, literature on „knowledge" and „management" focuses on the central question how to organize to exploit already developed knowledge. A key strategic question the manager faces is rather how to organize an effective and efficient creation of new knowledge. While modelling knowledge generation as a substitution process between a „problem complexity" and an „organizational complexity", this research study expands existing systems approaches from a new perspective, that managing knowledge creation is an organizational complexity management process.

The research methodology has been conceptualized as an explorative, process-oriented heuristic consisting out of two basic sub-processes: an empirical problem-solving systemic design process and a theory building process aiming to design future organizational realities.

Based on an assessment of the contribution of strategic and systemic management literature, an existing conceptual separation between a „knowledge generation function" and a „management function" has been identified as the core management problem in the context of knowledge generation systems. The results of an empirical study on the management of the early steps of innovation processes in technology-based organizations have been summarized as practical requirements for a management model in these processes.

In order to overcome these shortcomings, a new five-dimensional model of organizations as complex knowledge-intensive systems is proposed. With this model the „managerial function of knowledge generation processes" is visualized and its impact on existence and transformability of organizations in a knowledge-based competition is discussed. The effectiveness of this managerial function depends, however, on the quality of the systemic interactions of three primary and three secondary management sub-functions. Based on and in face of an increasingly use of projects as vehicles for organizational transformation, a new complexity-based typology of projects is developed and recommendations for effective project management in a knowledge-based competition are proposed. An embedded case study for managing the strategic, knowledge-intensive steps of innovation processes serves as a test bed for implementing, operationalizing and evaluating the systemic performance of the management functions in a real-life context. At the end, some suggestions for further research and development are presented.

Full text available at:
http://www1.unisg.ch/www/edis.nsf/wwwDisplayIdentifier/3346/$FILE/dis3346.pdf

OUTLINE (High-level)

Chapter 1: Introduction and positioning of the research

- Problem statements: from the perspectives of management theory and practice
- Main objectives and key research questions: (1) *Which perspective on organizations is required, in order to enable the generation of sustainable competitive advantages in a knowledge-and complexity-based form of competition?* (2) *What are the required functions, processes and structures for an effective management in organizations as knowledge generation systems?* (3) *What are the implications of these perspectives on the organization and management of projects in a complexity-based theory of the firm?* (4) *How to transfer the developed models to the management practice in the early, knowledge-intensive stages of innovation processes in technology-based organizations?*
- Positioning and contributions to management research and practice
- Definition and introduction to key terms: systemic management; model and management models; knowledge-intensive processes; knowledge-based competition
- Outline and structure of the study

Chapter 2: Research methodology: Strategy, process and tools of a design-oriented management research approach

- Research paradigm: ontological, epistemological and methodological positioning the research
- Design of the research process: framework and tools for data gathering and analysis
- Critical assessment of the research process
- Defining and managing quality of the research process

Chapter 3: Literature review: Conceptual building blocks of a management theory for a knowledge-based competition

- Building block 1: Generation and sustainability of competitive advantages in a knowledge-based competition – evolution of the economic function of knowledge; challenges and limitations of existing research paradigms for the strategic management in knowledge-based competitions; key characteristics and mechanisms of a knowledge-intensive form of competition (strategic relevance of complexity and uncertainty management for the generation of sustainable competitive advantages)
- Building block 2: Organizations as systems of knowledge-intensive processes – Dimensions of a knowledge-based theory of the firm: (1) epistemological dimension or the "What"-question; (2) ontological dimension or the "Where"-question; (3) teleological dimension or the "Why"-question; (4) time dimension or the "When"-question; (5) technological dimension or the "How"-question
- Building block 3: Management in knowledge-intensive systems – "Effectiveness" and "Efficiency" of knowledge generation processes as a key problem in management science; assessment of existing strategies for managing knowledge generation systems; the systemic management paradigm: a paradigm for managing knowledge-intensive processes?

Chapter 4: Results of an empirical analysis: Challenges and requirements for the management of the early, knowledge-intensive steps of innovation processes in technology-based organizations

- Challenge 1: Perception of the different dynamics of business-, product and technology systems
- Challenge 2: Need for a differentiated management of different futures
- Challenge 3: Conceptualizing capabilities for strategic and complex development projects
- Challenge 4: Levels of complexity in the process of future management
- Challenge 5: Management of organizational creative processes
- Challenge 6: Evaluation capabilities of product ideas as basis for future development projects
- Challenge 7: Transferability of the outputs of the early phase to the next value generation stages

Chapter 5: A model of organizations as knowledge-intensive systems

- Basic assumptions and overview
- Epistemological dimension: knowledge as "questions" and "answers"; knowledge generation as complexity management
- Ontological dimension: organizations as questions-based communicative systems
- Teleological dimension: need to re-formulate the "why"-question – the four building blocks of a model of systemic knowledge generation
- Temporal dimension: relativity of organizational time; emergence of time structures in knowledge generation processes
- Technological dimension: systemic function of "need for knowledge" structures; systemic function of "time" structures; systemic function of "power" structures

Chapter 6: Implications of the "managerial function" of knowledge in organizations: Re-conceptualizing management in knowledge-intensive processes

- Management as systemic function for effective and efficient organizational action; a competition model for the knowledge-intensive industries and organizations; need for a design-oriented, systemic-functional management perspective
- Purpose and value of the proposed management model
- Primary managerial systemic functions: (1) value model; (2) requirements model; (3) business process model
- Secondary managerial systemic functions: (1) structuring power; (2) structuring time; (3) structuring need for knowledge
- Implications for the management of projects in a knowledge-intensive, complexity-based competition: strategic relevance of project-based organizations for a knowledge-intensive competition; a new complexity-based project typology; implications towards an effective project management in a knowledge-intensive competition

Chapter 7: Implications for the management practice: A case study from the consumer goods industry

- Introduction and organizational context
- Implementing the management model: key insights and findings
- Critical assessment and managerial feedback from the organization in focus

Chapter 8: Summary and outlook

- Summarizing the answers to the four, key research questions of the research
- Setting the research agenda for future work on (1) paradigms for strategic management research in the context of a complexity-based competition; (2) design-oriented management research; (3) managerial views in dynamic theories of the firm; (4) systemic paradigm in management research; (5) projects and project management; (6) building blocks of a complexity-based management theory
- Further improvement areas for the management practice: (1) context-specific argumentation; (2) optimization of the systems boundaries for implementation; (3) modularization of the management methodology; (4) validation of the complexity-based project typology and management; (5) development of further implementation tools