

## Innovation and Knowledge Creation as Parts of Knowledge Management

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**Abstract.** Innovation and knowledge creation—these two concepts have a strong relationship but this relationship has not been examined systematically. This paper reviews the important theoretical work with highlighting the fundamental similarities and differences and the connection between the company, the knowledge basis of the company and innovation. We then compare the principal findings of the research on innovation and knowledge creation. The main objective in this paper is that a company's capabilities are primarily developed on the basis of social norms and values already existing in the social relations of the company. This in turn influences how the company develops and applies the knowledge basis, thus influencing innovation strategies

**Keywords:** Knowledge Management; Innovation; Knowledge creation

### 1. Introduction

Since the beginning of the last decade when the competitive environment went through a major transformation due to globalization, business organizations have intensified their search for strategies that will give them a sustainable competitive advantage. Such strategies generally require that the firm continuously differentiates its products and services, that is, firms must constantly be innovative. This continuous innovation requires a well-planned system of knowledge management that enables the firm to excel in technological, market and administrative knowledge creation. Innovation and knowledge creation are two concepts that have a strong but complex relationship that is not often examined. We attempt to show how they are fundamentally different yet deeply connected.

Innovation in this context is seen as the core of value generation, and in the positioning by the company in an increasingly internationalized and globalised economy. Knowledge intensity and knowledge growth influence productivity improvements as well as quality improvements have been documented by Thompson [1]. The management of knowledge is also critical at both the strategic and operational levels of the companies. Knowledge about the possibility of innovation, as well as innovation being linked to competitive advantages and greater earning power, is a type of knowledge which is important, in order to elicit innovation activity. If this type of knowledge is not accepted in the company context, innovative activities will most likely not be prioritized. Knowing that something is possible has proved to be extremely important to facilitate initiation of action [2]. This is a type of knowledge which is critical for the development of action norms in the social system. Not knowing that innovation is possible, and not knowing conceivable consequences, one is likely to act in a system with a tendency to focus on “business as usual”, rather than innovative processes.

### 2. Concepts: Innovation and Knowledge creation in organizations

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The definition of innovation includes the concepts of novelty, commercialization and/or implementation. ‘Innovation consists of the generation of a new idea and its implementation into a new product, process or service, leading to the dynamic growth of the national economy and the increase of employment as well as to a creation of pure profit for the innovative business enterprise [3].’ Afuah refers to innovation as new knowledge incorporated in products, processes, and services. He classifies innovations according to technological, market, and administrative / organizational characteristics, as shown in Table 1 below [4].

Table. 1: Generic classification of innovation

Generic classification of innovation		
Technological	Market	Administrative
Product	Product	Strategy
Process	Price	Structure
Service	Place	Systems
	Promotion	People

Knowledge has been defined as ‘justified true belief’ that increases an organization’s capacity for effective action and is composed of two dimensions: tacit and explicit [5].

The tacit dimension is based on experience, thinking, and feelings in a specific context, and is comprised of both cognitive and technical components. The explicit dimension of knowledge is articulated, codified, and communicated using symbols which may also be classified as object based or rule-based. So an organization creates new knowledge through the conversion and interaction between its tacit and explicit knowledge.

Table 2 shows these four modes of knowledge conversion and Table 3 lists their main features.

Table. 2: Knowledge conversion modes

Knowledge conversion modes		
	To Tacit knowledge	To Explicit knowledge
From Tacit knowledge	socialization	externalization
From Explicit knowledge	internalization	combination

Table. 3: Features of each knowledge conversion mode

Features of each knowledge conversion mode	
socialization	Joint activities-shared experiences-spending time, living in the same environment- apprenticeship-observing, imitating, practicing the works-informal meetings outside the Workspace-worldview, mutual trust, pure experience. It involves capturing knowledge through direct interactions with suppliers and customers and walking around inside the organization, dialogues with competitors, interaction with external experts, and creation of a work environment that allows peers.
externalization	Knowledge is crystallized and can be shared by others by using metaphors, concepts, hypothesis, diagrams, models, or prototypes. Discrepancies and gaps between images and expressions while using these kinds of language’s resources can help promote "reflection" and interaction between individuals.
combination	Documents, meetings, telephone conversations, or computerized communication networks. Reconfiguration of existing knowledge through sorting, adding, combining, and categorizing knowledge. Diffusion and systematization are the keys. Collection, combination, dissemination of knowledge among the organizational members through presentations or meetings; edition or processing of knowledge in the organization to make it more usable.
internalization	Learning by doing. Knowledge created is shared throughout organization. Knowledge internalized into individuals’ tacit knowledge in the form of share mental models or technical know-how becomes valuable assets. Activities: training programs, simulations or experiments, cross functional development teams; search and sharing of new values and thoughts; facilitation of prototyping and benchmarking; facilitation of challenging spirit; results shared with the entire department.

Table 4 describes Comparison of innovation and knowledge creation. Innovation consists of new ideas that have been transformed or implemented as products, processes or services, generating value for the firm. Ideas are formed through a deep interaction among people in environments that have the conditions to enable knowledge creation [6].

Table. 4: Comparison of innovation and knowledge creation

	Innovation	Knowledge creation
Definition	Generating ideas and implementing them to produce value for the organization, suppliers and consumers	Sharing mental, emotional and active knowledge in such a way that the results lead to aggregated value
Generic classification	Technological: product, process, service; Market: product, price, promotion, place; Administrative: strategy, structure, systems, culture	Tacit, Explicit, Cultural
Specific selected classification	Two dimensions Market knowledge + technical capabilities Component + architectural knowledge Market orientation + Change in technology	Individual – collective Based on value chain Procedural, causal, conditional, relational
Perspective	Technological-Market-Administrative	Individual, group, organizational, inter organizational
Enabling conditions	Organizational intention, autonomy, fluctuation and creative chaos, Information redundancy, requisite variety, core capability, systems, processes, structures, resources and capabilities.	Organizational intention, autonomy, fluctuation and creative chaos, information redundancy, requisite variety, core capability
Sources of	Internal value chain, external-added chain of suppliers, customers, universities, government, private laboratories, competitors, related industries	Internal value chain, external-added chain of suppliers, customers, and universities, government, private laboratories, competitors, related industries
Outputs Management	New concrete products, processes, services, Profit, revenues, market share, consumer satisfaction, image	New ideas, challenges, innovativeness Employee satisfaction, climate, training hours/employee, employee retention, autonomy, new ideas

Above information show that knowledge creation is focused on the generation and application of knowledge that leads to new capabilities for the firm. Innovation is also concerned with how these new capabilities may be turned into products and services that have economic value in markets. Knowledge about markets becomes a critical component of the innovation process. It is this continuous interaction of technical knowledge and market knowledge that will define a firm's capacity to innovate and therefore to prosper in an increasingly competitive environment.

### 3. Integrating the general model

The initial objective of this article was: the connection between the company, the knowledge basis of the company and innovation [7]. We present a model for this context, and review the individual elements of the model. We will do this by presenting an if-so model, expressing policy implications at the company level in Fig. 1.

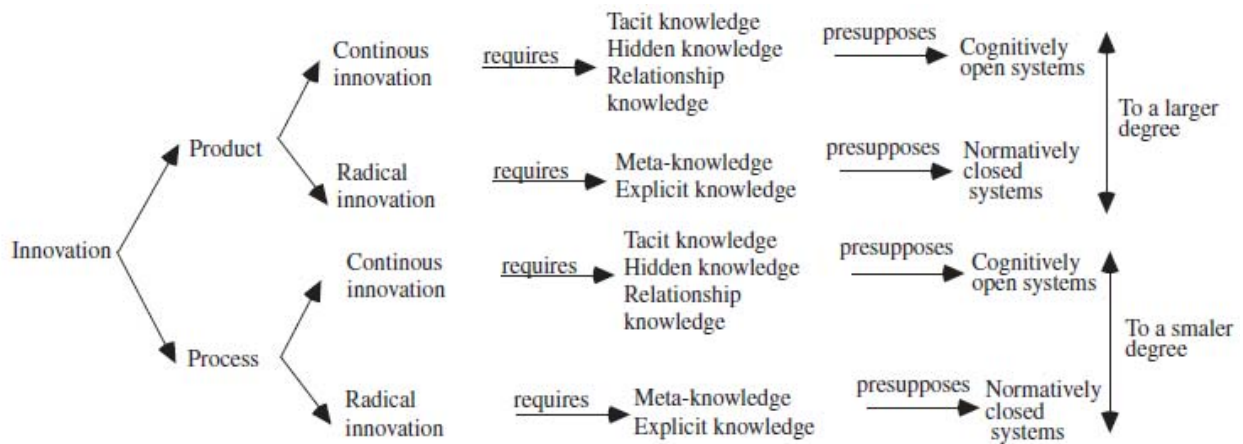


Fig. 1: The if-so Model

If continuous product innovations are wanted, then the company must stress the development of the part of the knowledge basis engrained in tacit-, hidden- and relation-based knowledge, while ensuring that the system has a major degree of cognitive opening.

If radical product innovations are wanted, then the company must stress the development of the knowledge basis based on meta- and explicit knowledge, while maintaining a great degree of normative closeness.

If continuous process innovations are wanted, then the company must stress the development of the knowledge base area emanating from tacit-, hidden- and relation-based knowledge, while maintaining a relatively low degree of cognitive opening.

If radical process innovations are wanted, then the company must stress the development of the knowledge base which is based on meta- and explicit knowledge, while maintaining a relatively little degree of normative closeness.

Radical innovations presuppose another type of management than continuous innovations: “what may be sound practice for the development of incremental improvements may be inapplicable or worse, detrimental to the development of discontinuous innovations”. It is fair to assume that various types of knowledge are utilized in relation to the various innovation types.

Radical innovations and continuous innovations appear to require qualitatively different knowledge bases in the company, and various normative bases, i.e. cognitively open and normatively closed.

Radical innovations appear to require less or even no customer contact, but a firm belief in ones own ability and values and norms, i.e. a great degree of normative closeness in the system.

Continuous innovations, on the contrary, require very close customer contact and an active use of the part of the knowledge base not easily communicated to others, as this will, among other things, prevent swift imitations by the competitors. The Normative basis is here a cognitively open system, which also protects itself against the competitors by emphasizing tacit, hidden, and relationship knowledge, reducing the chances of imitation and maintaining the competitive position over a longer period of time.

Companies in a monopoly or oligopoly are better suited for taking care of innovation, holds true only as far as product innovation is concerned. These companies are in the position to monopolize the knowledge basis through a great degree of normative closeness. For continuous process innovations, the implication of the article is that these are best tended to by companies with a considerable degree of normative closeness. This also indicates that companies which are market-oriented and exposed to stiff competition are better suited for taking care of these kinds of innovation.

#### 4. Conclusion

The main objective of this paper is that a company’s capabilities are primarily developed on the basis of social norms and values already existing in the social relations of the company. This in turn influences how the company develops and applies the knowledge basis, thus influencing innovation strategies. Companies in

a monopoly or oligopoly are better suited for taking care of innovation, holds true only as far as product innovation is concerned. For continuous process innovations, the implication of the article is that these are best tended to by companies with a considerable degree of normative closeness. This also indicates that companies which are market-oriented and exposed to stiff competition are better suited for taking care of these kinds of innovation.

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