The Result of Systems Thinking as Knowledge Assets Work in an Organization

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ABSTRACT

Presently world information changed very rapidly that lead to organization and firm must to pay attention to intelligence more carefully. The thesis supposes to knowledge assets could push forward to competitive advantage improvement and further affect customer satisfaction and performance. Knowledge usually is invisible which has evaluation problem therefore the thesis considers a suitable way to be research method which is systems thinking. According to result of systems thinking exhibit knowledge assets accumulation via “impacts on sustainability of competitive advantage” and “impacts on appropriability” backhanded that achieves competitive advantage finally. Thus the thesis would like to suggest to organization and firm pay attention to knowledge management particularly knowledge sharing, knowledge operated get more strong would elevate improvement of competitive advantage more significant.

Keywords: Systems Thinking, Knowledge Assets, Organization

INTRODUCTION

Being able to knowledge sharing to a certain extent is considered a crucially important means for any individual who wants to access the latest information in order to keep up with the ever-changing world. Knowledge involves huge domain maybe competitor news, market information, new technology or global trend even it seems like irrelevance nonetheless becoming key point under butterfly effect. In organizations existing rules and norms are usually used as the basis for solving new problems even when this means stretching those rules, such absorption of new problems by rules reduces the need to explore and develop new solutions and to encode those solutions into new rules (Koskinen, 2012). So events are closely linked and inseparable also researches have to succeed to this principle not just consider some single points at issue but think about any possible connection factors. The systems thinking is based on the assumption that the understanding of a system has to take into account an analysis of its individual constituents as well as of their inter-linkages and relationships (Vickers, 1983). And a system is a combination of several elements where every element of the whole influences the behavior of the other elements as well as the behavior of each element influences the behavior of the whole (Rapoport, 1986). Because the power of knowledge sharing in the organization explored in this thesis as well as concern about whole components of the organization, so the systems thinking is suitable to match up this situation to be research method.

Such global business environment leads to multinational corporations use of virtual teams as channel for organizational knowledge sharing (Baranek & Martz, 2005, Horwitz, Bravington, & Silvis, 2006). This consequence reflects knowledge sharing is indispensable whatever business environment altered, enterprises still pay attention to settle knowledge sharing problem. In the other hand, as global
business environment is certainty that expresses the trend of knowledge sharing is unavoidable for accurate holding development. The criticality of quality data and information leading to effective utilization of knowledge is a well recognized component of organizational competitiveness (Nonaka & Takeuchi, 1995, Alavi & Leidner, 2001, Liebowitz, 2005, Liebowitz, 2008) and has led to increased attempts to manage knowledge in a more systematic and effective way (Wiewiora, Trigunarsyah, Murphy, & Coffey, 2013). However resembling such mass researches manifest knowledge definitely affects the organization but how does it happened that is this thesis would like to detect.

In the fact operation of an organization is very complex because it concern in bulk elements in addition to these elements are swaying each other. As Goh, Brown, & Spickett (2010) mentions the analysis of cultural and systemic issues, especially those at company, regulators and industry associations, and Government levels, are extremely complex and the complexity at these levels arises because causal factors are inter-related and decisions of actors and the corresponding effects are usually separated in time. Therefore this thesis has to conduct appropriated investigation method so that ponderable discovery delved also this thesis supposed. Unlike logic models, systems thinking provides a means to conceptualize the interaction of the multiple components that make up complex programs (Dyehouse, Bennett, Harbor, Childress, & Dark, 2009). Also Cabrera, Colosi, & Lobdell (2008) identify four universal patterns of thinking that all systems thinking ideas, methods, theories, or models share: making distinctions, recognizing interrelationships, organizing part-whole systems, and taking multiple perspectives. The growing emphasis on systems thinking provides models and metaphors that may help us to see the bigger picture, and develop campaigns that support creative and transformational change (Senge, 1990, Ackoff, Addison, & Carey, 2010). Because above reasons, concept of systems thinking is a suited causal analytical method to fit this thesis’s opinion thus this thesis apply systems thinking to seek how the knowledge operated in an organization.

**KNOWLEDGE ASSETS VALUE DYNAMICS MAP**

Knowledge could be visible or invisible, visible knowledge switch to reality value for organization to estimate asset easier than invisible knowledge most of all knowledge always be invisible, so organization faces to evaluation problem invariably. The Knowledge Assets Value Map (KAVM), a tool introduced with the aim to assess the links between knowledge assets and company's business performance in accordance with cause-and-effect mechanisms (see (Carlucci, & Schiuma, 2007, Carlucci, & Schiuma, 2009), Schiuma, Carlucci and Sole (2012) present the Knowledge Assets Dynamics Value Map (KADVM) (Figure1) as a systems thinking-based approach to assess the knowledge assets dynamics. KADVM explicates the working mechanisms by means knowledge assets can evolve on the basis of knowledge management initiatives and affect business performance improvements as well as the KAVDM representing the strategic knowledge assets value drivers and their links with performances according to a dynamic approach, it is helping managers to understand the organizational learning mechanisms (Schiuma, Carlucci and Sole, 2012).
In particular, two main typologies of delay can be distinguished as follows: (a) action delay, i.e. time between the start of a knowledge management initiative implementation and the real impact on the identified knowledge asset value driver; (b) impact delay, i.e. time between the improvement of a knowledge asset value driver and the positive impact on the targeted business performance (Schiuma, Carlucci and Sole, 2012). Because when a firm can minimize the problem of appropriability can it turn its innovations into sustainability of competitive advantage (Rao, 2005). So Li, & Tsai (2009) proposes a novel taxonomy to extend our understanding of knowledge assets by taking a dynamic view also create a knowledge assets taxonomy. This taxonomy sort knowledge assets into four types: core knowledge assets, dynamic knowledge assets, supportive knowledge assets and low-value knowledge assets however all kinds of knowledge assets are decisions depends on different degree of two dimensions: “impacts on sustainability of competitive advantage” and “impacts on appropriability.” So according to this knowledge assets dynamic taxonomy clear explain knowledge assets significant correlation “impacts on sustainability of competitive advantage” and “impacts on appropriability” especial under movement.

**KNOWLEDGE ASSETS GIVE RISE TO COMPETITIVE ADVANTAGE**

If effectively transferred, their knowledge is a valuable asset that can constitute a competitive advantage at any level and in any functional area (Oddou, Szkudlarek, Osland, Deller, Blakeney, & Furuya, 2013). As well dynamic opportunities exist all along in a dynamic environment; hence, rapidly remodeling sourcing arrangements in response to market conditions is the way to create competitive advantage (Gottfredson, Puryear, & Phillips, 2005). Meanwhile in this environment is evolving towards a new competitive arena, whereby firms are engaged in the continuous renewal of their competitive advantages through continuous innovations and the development of new knowledge and capabilities (Johnson, Neave, & Pazderka, 2002, Leitner, 2005, Diaz-Diaz, Aguiar-Diaz, & Saá-Pérez, 2008). Therefore firms’ competitive performance lies not in how much they know, but in how they use what they know (Haas, & Hansen, 2005). So when the knowledge operated in an organization will raise organizational competitive advantage. Liao and Hu (2007) test the research framework and hypotheses...
based on 176 subjects from the R&D and manufacturing department of 56 Taiwan semiconductor companies, and they find knowledge transfer could develop semiconductor firms' core competence and then build their own competitive advantage. Nowadays managers are aware that knowledge assets and their management represent essential drivers for organizational value creation also fundamental dimensions to maintain and growth the company's competitive strength (Schiuma, Carlucci and Sole, 2012, Sirmon, Hitt, Ireland, & Gilbert, 2011, Teece, 2007). Beside academia there is same situation happened under business, not only result of data analysis exhibits knowledge rotate around the organization will lead out competitive advantages for firms but managers agree with.

SUSTAINABILITY OF COMPETITIVE ADVANTAGE UPON COMPETITIVE ADVANTAGE

There a lot of researches take varied points of view to probe into sustainability of competitive advantage. The literature with regard to how firms can obtain sustainability of competitive advantage is mainly based on two key viewpoints: Industrial Organization View and Resources Based View (Caloghirou, Protogerou, Spanos, & Papagiannakis, 2004). Behind Industrial Organization View, for explaining how the external environmental factors influence a firm's benefits that firms' sustainability of competitive advantage mainly relies on the strategic positions in the competitive market (Aaker, 1984, Porter, 1985, Coyne, 1986). Griffiths and Finlay (2004) mentions if competitive advantage is only achieved in very few cases, then we have a different situation to one where many more achieve it furthermore, it is important to identify for how long a change in competitive position could be sustained. However Resources Based View combines analysis inside the firm and the firm's external environment (Collis, & Montgomery, 1995) to suggest firms should endeavor to develop their own peculiar resources and capabilities and thereby formulate their strategies (Aaker, 1989, Prahalad, & Hamel, 1990, Barney, 1991, Grant, 1991, Javidan, 1998). The competitors' inability to duplicate capabilities (Reed, & DeFilippi, 1990, Bharadwaj, Varadarajan, & Fahy, 1993, Hayes, Gary, & Upton, 1996) or the 'capability differential' on which competitive strategy is founded (Coyne, 1986, Hall, 1993) is suggested as the key source of sustainability of competitive advantages. So even the firm have an outstanding competitive advantage presently that still have to consider about the worth after the firm takes the time to develop whether could be continually competitive advantage. Although upon expositions summed via different perspectives, but all expositions have identical notion which is sustainability of competitive advantage consider over what the competitive advantage that the firm owned (Figure2).
The Relationship Between Knowledge Assets, Sustainability of Competitive Advantage and Competitive Advantage

**APPROPRIABILITY BRING OUT INNOVATION**

Kyläheiko, Jantunen, Puumalainen, Saarenketo, & Tuppura (2011) looked at the tricky triad between the firm’s technological capabilities (and their appropriability), innovation activities and internationalization, they anchored their analysis in the Penrosian notion that growth potential is based on (un)used managerial capabilities, and connected this with findings reported in recent studies on strategy emphasizing the nature of technological-knowledge assets (from tacit and sticky to codified), their appropriability, and the ability to replicate basic capabilities within the firm (see Winter & Szulanski (2001). In Kyläheiko, Jantunen, Puumalainen, Saarenketo, & Tuppura (2011) research get a worth of noting that in this study our measure of appropriability captures only the strength of different means of intellectual property rights in protecting the firm’s intellectual capital. Therefore that could be sure about knowledge assets, appropriability and innovation, one would not do, or even matter, without the others. Because the large number of components, grounded in heterogeneous knowledge bases, and their unique combination, together with the intricate network of interactions, influence positively appropriability for at least two reasons (Capaldo, & Petruzelli, 2011). On the one hand, they make complex innovations not easily reproducible with different inputs or different combinations of the same inputs (Singh, 1997). So the appropriability plays an important role when the firm to appraise knowledge and innovation. Arrow (1962) was the first to address this issue, calling it the “appropriability problem”. He referred to the difficulty of protecting profits from innovation in circumstances in which the pieces of knowledge are non-rival and non-excludable (i.e., codified) in nature (Kyläheiko, Jantunen, Puumalainen, Saarenketo, & Tuppura, 2011). Appropriability refers to the firms’ abilities to gain returns from product or process innovations and it stems from the innovations in a firm (Li, & Tsai, 2009). Therefore, appropriability is
considered a main motivational factor of whether firms are willing or not to invest in product or process innovations (Levin, Klevorick, Nelson, & Winter, 1987); it can also be regarded as a crucial factor for a firm’s internationalization (Saarenketo, Puumalainen, Kyläheiko, & Kuvialainen, 20081). Because knowledge assets generally have to be packaged into products or services, it is highly important in the case of a weak appropriability regime that the innovators have access to complementary assets and capabilities (Hurmelinna, Kyläheiko, & Jauhiainen, 2007). Hence firms must to confirm appropriability of acquired knowledge carefully, there are a lot companies miss the information which knowledge leak out make the company gets wrong-headed. Approach of Laursen and Salter (2014) is based on the idea that the firm can be seen as a bundle of related choices (Rivkin, 2000), and is rooted in the need for more insights into how managerial choices are induced or constrained by other sets of managerial decisions. In particular, we seek to extend understanding of the concept of open innovation by focusing on the appropriability strategy and its relation to hard and soft forms of openness. In one hand firm collects knowledge from vary channel however appropriability always to be the judgment while firm estimates whether it useful or not. By another hand, firms develop their innovation often restricted within appropriability even concern about legal problem. So appropriability is a key point when a firm operates knowledge and innovation.

INNOVATION IS A KEY SOURCE WITHIN COMPETITIVE ADVANTAGES

Since 1969 there are researchers mention that if value, rareness, imitatiblity, and substitutability are the characteristics of resources of companies, they are helpful to innovation and companies can exploit them to gain competitive advantages (Learned, 1969, Porter, 1981). In the era of knowledge economy nowadays, innovation becomes a key source of competitive advantages (Daghfous, 2004, Prajogo, & Ahmed, 2006). Somehow obtaining certain legal rights and using particular appropriability mechanisms are critical when open-innovation companies want to survive competitive pressures created by the actions of rival firms (Hurmelinna, Kyläheiko, & Jauhiainen, 2007). Long time ago, a pile of surveys have found out innovation is the crucial point when a firm build their competitive advantages. Further both Cohen and Levinthal (1990) and Daghfous (2004) define absorptive capacity as the ability to acquire, to assimilate, to transform, and to exploit knowledge which may determine its levels of organizational innovation and competence. Moreover there is a general consensus in the literature that all types of innovations can contribute to a firm's competitive advantage and a typology of technical and non-technical innovation (Damanpour, Szabat, & Evan, 1989, Damanpour, 1991, Han, Kim, & Srivastava, 1998) has gained wider acceptance in the literature. Even though many studies have verified the relationship between innovation and competitive advantages already, but still a great deal of scholar proves that by empirical research. They analyze date assembled from variety industries and companies for getting more certain evidence in order to absolute the connection in the practice as well (Figure3).
CONCLUSIONS

It is easy to understand that knowledge always be invisible leads to difficult to measure it value, however when knowledge shared in the organization and even the delivery get extended transmission that makes value of knowledge among this organization increasing. For this reason, the thesis conducts suitable method which systems thinking to be investigation method under this situation, the thesis applies systems thinking to learn how knowledge performed within an organization and what would bring about for an organization. Moreover the thesis supposes the knowledge works in the organization through sharing will procure the whole organization more strongly. KADVM created by Schiuma, Carlucci and Sole (2012) that is a working mechanisms which evolve on the basis of knowledge management initiatives and affect business performance improvements via means knowledge assets. So the thesis uses KADVM to be foundation to seek benefit when knowledge shared in the organization. Because knowledge assets are decisions depends on different degree of two dimensions: “impacts on sustainability of competitive advantage” and “impacts on appropriability.” Without a doubt that sustainability of competitive advantage upon what competitive advantage the organization or firm has, all competitive advantage must consider vary factors like organization or firm property, external and internal environment, competitive position then resolve sustainability of competitive advantage. Appropriability always affects innovation evolution however innovation is the key point to influence competitive advantage, so that knowledge assets operates among the organization or firm would raise the competitive advantage up at last. Thus it reveal to knowledge assets could transfer to competitive advantage by both of “impacts on sustainability of competitive advantage” and “impacts on appropriability.” Higher level of competitive advantage enables the firm to create superior value for its customers (Dunk, 2007). Majeed (2011) linked competitive advantage and firm performance and found that firms with higher level of competitive advantage have higher level of performance. As knowledge assets sharing in the organization or firm will prove competitive advantage induce better customer satisfaction and performance.
The thesis proves knowledge assets of organization or firm push forward to competitive advantage improvement, and then produce great performance. The thesis suggests organization or firm must to pay attention to knowledge management because owning rich knowledge assets could indirect affect customer satisfaction and performance. And rich knowledge assets depend on internal sharing, especial the knowledge dynamic delivers in the organization or firm elevates customer satisfaction and performance significantly. However over in present, information from whole world changed such rapid that make organization and firm need to watch out for intelligence more carefully.

REFERENCES


Li, Sheng-Tun, & Tsai, Ming-Hong (2009). A dynamic taxonomy for managing knowledge assets. Technovation, 29, 284-298.


