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Knowledge Workers' Personal Knowledge Management Practices as Buffered by Absorptive Capacity

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Abstract

The purpose of this research is to address the absorptive capacity of individual knowledge workers in terms of their personal knowledge work practices. The purpose will be achieved by examining individual knowledge worker practices as they relate to the various dimensions of absorptive capacity, the SECI model of knowledge creation, and the communication channels used in their personal knowledge work. The primary research question asks "What is the relationship between the personal knowledge management practices of knowledge workers and their personal absorptive capacity?" Can their practices impact their absorptive capacity and are their practices buffered by their absorptive capacity. The research represents an integration of personal knowledge management concepts and the concept of individual absorptive capacity. The research questions will be examined through a SEM analysis using data obtained from a forthcoming survey of the personal knowledge management practices of high-tech knowledge workers.

Keywords

Absorptive Capacity, Personal Knowledge Work, Knowledge Creation, Communication Channels

1. Introduction

Knowledge workers in today's global and highly volatile environment must process many types of information in order to change and adapt to new situations. The knowledge workers then enable organizations to be innovators, and exploiters of technology and yet remain flexible for rapid response to technological, economic, and market challenges and opportunities. The capability of knowledge workers to acquire and exploit new knowledge is critical and strategic to

meeting the demands of a highly volatile environment. Knowledge management activities are wide ranging inclusive of organizational learning, strategic planning, exploratory research, and relationship management, to name a few. Driving change in knowledge management is the expanding and changing infrastructure of information and communication technology. Thus it becomes critical that an organization establish and maintain a set of flexible routines and processes that will drive the acquisition, assimilation, transformation, and exploitation of new knowledge. The organizational routines and processes that accomplished these four activities are collectively known as the firms' absorptive capacity.

The absorptive capacity of an organization is a dynamic capability that begins with the individual knowledge worker. Knowledge is held by individuals – regardless of whether that knowledge is obtained from written documents (explicit knowledge) or from years of experience (tacit knowledge). The personal knowledge management practices of a knowledge worker are a subject, however, that has gotten very little attention in the literature despite being the “grass roots” level of any knowledge management program. Authors such as Davenport, Jarvenpaa & DeBeers, in their 1996 Sloan Management Review article on improving knowledge work processes, suggested one possible reason for this lack of attention is that much of the early knowledge management research had focused on process which removes the idiosyncrasies of individual knowledge workers from consideration (Davenport, Jarvenpaa & DeBeers, 1996, p. 54).

In the absorptive capacity construct the absorptive capacity of an organization is the accumulated absorptive capacity of the individuals in the organization (Cohen & Levinthal, 1990; Zahra & George, 2002). However, the models of absorptive capacity that have been developed in the literature have not been defined or studied empirically at the individual knowledge worker level nor from the perspective of how individual absorptive capacity can combine and contribute to the absorptive capacity of a unit, group, team, firm, or alliance (Van den Bosch, van Wijk & Volberda, 2003).

The current paper describes the basis of a proposed research effort. The goal of this proposed research is to take a focused look at the absorptive capacity of individual knowledge workers in terms of personal knowledge work practices. The goal will be achieved by examining individual knowledge worker activities as they relate to the various dimensions of absorptive capacity and the channels they use in their personal knowledge work. The research will contribute to our understanding of how the personal knowledge management (PKM) practices of knowledge workers relates to their personal absorptive capacity. Can PKM practices improve the ability of individuals to absorb new knowledge and to what extent might the individual absorptive capacity buffer the effect of PKM practices? The research represents an integration of PKM and ACAP concepts and also defines an approach to represent absorptive capacity at an individual level.

2. Personal Knowledge Management Theory

Polyani (1962) discussed personal knowledge as distinct from subjective knowledge where with personal knowledge the individual validates as opposed to subjective knowledge. Polyani (1962, p. 202) states,

“Our personal participation (tacit) is in general greater in a validation than in a verification ... both verification and validation are everywhere an acknowledgement of a commitment: they claim the presence of something real and external to the speaker. As distinct from both of these, subjective experiences can only be said authentic, and

authenticity does not involve a commitment in the sense in which both verification and validation do.”

When we acknowledge that our personal knowledge plays a direct role in what new knowledge we can acquire and create through our scientific inquiry, we realize that what we know determines to a large extent that scope of what we can learn.

Nonaka's (1994) dynamic theory of organizational knowledge creation referenced Polyani's earlier works (Polyani, 1966) and describes the application of Polyani's philosophical observations to the more practical problem of organizational knowledge creation. Nonaka, Toyama, and Konno (2000) state that “Organizations play a critical role in mobilizing tacit knowledge held by individuals and provide the forum for a spiral of knowledge creation through socialization, combination, externalization, and internalization and further, p. 34” Nonaka, et al, in developing a unified theory of dynamic knowledge creation, extended Nonaka's original theory by incorporating the concept of “ba”, or the context/space in which knowledge is created, and the important role of knowledge assets. “Ba” is

“ ... a physical, virtual, and/or mental space shared by two or more individuals or organizations The nature of ba will condition social relationships among these social units and hence have a determining influence on the scale and scope of knowledge creation.” (Nonaka and Nishiguchi, 2001, p. 4)

The ba space supports knowledge creation, sharing, and exploitation. It functions as a medium for the resource concentration of the organization's knowledge and of the individuals who own and create such knowledge. (Nonaka, and Nishiguchi, 2001).

The unified theory of knowledge creation continued to acknowledge the essential role of the individual in knowledge creation and added that context, the ba, that surrounds the individual has a significant effect on the creation process as well as the knowledge assets, the inputs and outputs of the process. The unified model forms the underlying knowledge theory upon which this proposed research is based.

2.1 Absorptive Capacity Theory

The ability of an enterprise to rapidly adapt to the changes in the dynamic business environment that exists today is widely recognized as a critical factor in maintaining a competitive advantage. The absorptive capacity of an organization is one measure of its ability to adapt to such changes. Absorptive capacity was first introduced by Cohen and Levinthal (1990) and has since been applied to wide range of disciplines, including knowledge management, channel expansion theory (Carlson & Zmud, 1999).), organizational learning, strategic alliances , and firm performance.

Cohen and Levinthal (1990) provided the original definition of absorptive capacity as the ability of a firm to value, assimilate, and apply new knowledge. This definition was broadened by Mowery and Oxley (1995) to include the skills necessary to import and modify tacit knowledge and as simply the capacity to learn and solve problems. Zahra and George (2002) noted similar definitional variations and also the failure of existing empirical studies to “... capture the rich theoretical arguments and multiple dimensions of the absorptive capacity construct” (186). They further concluded that there existed a need to ‘... reconceptualize and clearly define the various dimensions of absorptive capacity’ (186). Thus, a reconceptualized definition was created that

described absorptive capacity as "... a set of routines and processes by which firms acquire, assimilate, transform, and exploit knowledge to produce a dynamic organizational capability." (186). The reconceptualized definition casts absorptive capacity as a dynamic capability where the effect of the four dimensions is combinative and works together to produce this capability. Zahra and George's (2002) reconceptualized definition of absorptive capacity has become widely accepted and is frequently utilized in research studies involving the absorptive capacity construct.

Zahra and George (2002) also defined the concepts of potential absorptive capacity (PACAP), assimilation and acquisition, and realized absorptive capacity (RACAP), transformation and exploitation. The creation of these two definitions acknowledges that an organization may have significant capabilities to assimilate and acquire new knowledge, a high PACAP, but lack the ability to fully realized its potential through transformation and exploitation, a low RACAP. Further, the definition of PACAP and RACAP lead to Zahra and George to define their ratio (PACAP/RACAP) as a measure of the efficiency of an organization's dynamic capabilities (2002).

Lane, Koka, and Pathak (2006), in discussing the research and reconceptualization by Zahra and George (2002) suggest that their view of absorptive capacity was process-oriented and focused on the efficiency of knowledge exploitation. Such a perspective could be visualized as a pipeline of processes. This view contrasts with that of earlier research which focused on exploratory learning and viewed the process more like a funnel flowing knowledge into the organization. It is important to realize that the two concepts are not exclusive and ultimately may require an organization to strike a balance between the exploratory efforts and the efforts towards efficient exploitation (Lane, Koka, & Pathak, 2006; Levinthal & March, 1993).

Todorova and Durisin (2007) also called into question ambiguities and omissions in the Zahra and George (2002) model. Based on current research in learning and innovation, they suggest (a) reintroduce value recognition from Cohen and Levinthal, (b) an alternative definition of the term "transformation", (c) a clarification of the term "potential absorptive capacity", (d) an elaboration of the impact of social mechanisms, (e) an investigation of the effect of "power relationships", and (f) the inclusion of feedback loops.(p 774). These adjustments have a significant effect on the Zahra and George's (2002) reconceptualization in that they limit the concept of "realized absorptive capacity" to simply the exploitation dimension. This is the result of their position that assimilation and transformation are two parallel dimensions of the same activity and that they are related (assimilation is enhanced by transformation and transformation allows more assimilation). Todorov and Durisin (2007) would agree with Lane and Kolka with respect to the process-oriented nature of the Zahra and George's reconceptualization. They suggest that the acquisition, assimilation, and transformation dimensions are all inter-related and that there is not a simple step-wise path through the model. Further, they argue that efficiency is not simply a ratio between potential and realized capacity, but rather an aggregation of all four dimensions.

2.2 Absorptive Capacity Buffer

Communication channels for knowledge workers has evolved from the traditional media of reports, graphs, email, telephone, and meetings to include many real time computer based media. Computer chats, streaming video, blogs, wikis, RSS digital dash boards provide workers with an endless stream of information that is absorbed into their personal knowledge management

schemas. The absorptive capacity of each knowledge worker is largely a function of the knowledge worker and his/her ability to adapt these sources of information in his personal knowledge.

In media richness theory (Daft & Lengel, 1984; Lind & Zmud, 1991) the richer channels are those that provide quicker and multiple forms of feedback in order to reduce ambiguity for the personal knowledge worker. A social construction of media usage showed that individuals use media frequented by others in their social context (El-Shinnawy & Markus, 1997). This has certainly been shown to be the case in the use of the social networking tools.

Flow theory provides a different perspective on channel usage where the channel becomes an artifact of amusement (Trevino & Webster, 1992; Ghani & Deshpande, 1994). With a personal knowledge worker in flow the worker is in a playful, exploratory state of flow (Csikszentmihalyi, 1990) where new knowledge can be discovered and shared with others via their social networking tools. In this flow state the knowledge worker has a sense of control and they become so intensely involved that nothing else seems to matter (Csikszentmihalyi, 1975). Further Lind (2007) proposed a model of wireless media usage using the flow construct along with the commonly used technology accessibility model (TAM) (Davis, 1989).

In Nonaka & Nishiguchi's (2001) ba space the knowledge worker is productively absorbing new knowledge through the various channels. When this ba space is in a balanced flow, the knowledge worker functions in an optimal rate absorbing needed knowledge. When the ba space is out of balance the worker can be either starved or overloaded to the extent that absorption is limited or expanded by the knowledge channels. Figure 2 shows a model of these relationships.

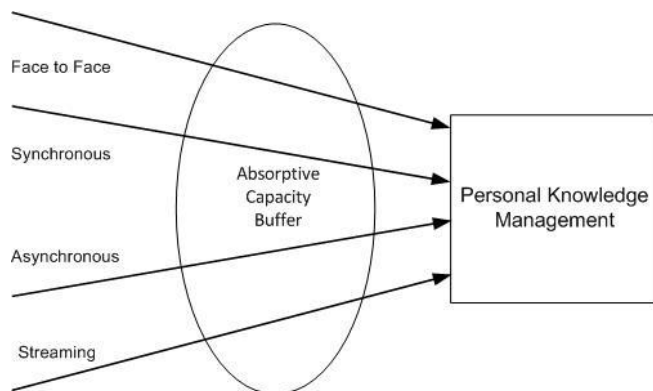


Figure 2 Personal Knowledge Management – ACAP buffer

The above discussion leads to the following propositions:

- When the knowledge workers' absorptive capacity and knowledge channels are in a flow state then the worker will be the most productive.
- When the knowledge workers' absorptive capacity and knowledge channels are not in a flow state then the worker will be less productive.

2.3 Personal Absorptive Capacity

When Cohen and Levinthal originally introduced the absorptive capacity (ACAP) concept, it supported the view that individual knowledge is a key to the creation of new knowledge. In their

original definition of ACAP, they assert that the ability of an organization to learn and create new knowledge is based to a large extent on the existing knowledge held by its individual members and the organization as a whole. Subsequent researchers have extended this definition but have not contradicted this basic premise. In fact, the capability of an organization to create, maintain and exploit this pre-existing organizational knowledge is also an important component of an organization's absorptive capacity.

The application of ACAP at the level of the individual knowledge worker suggests that individual absorptive capacity is based, in part, on their current knowledge and their ability to maintain and exploit that knowledge. The capabilities that an individual can apply to help in this regard includes their personal knowledge management tools and practices, the context in which these tools and practices are applied, and the knowledge and practices of the communities in which they collaborate.

Wu and Wang (2008) proposed a conceptual model of the personal absorptive capacity of knowledge. Their research was based on the continuous self-transcending process of knowledge creation (SECI) where there is tacit and explicit knowledge. Nonaka and Nishiguchi, (2001) describe how this knowledge goes through the SECI process "(1) socialization (from tacit knowledge to tacit knowledge, (2) externalization (from tacit knowledge to explicit knowledge); (3) combination (from explicit knowledge to explicit knowledge); and (4) internalization (from explicit knowledge to tacit knowledge)" (p.34). The personal absorptive capacity of individuals in their SECI ba space is connected to others in their communities of practice (CoP) (Cox, 2005). The conceptual model of personal ACAP is based on the analysis of communities of practice in which Wu and Wang (2008) identified four properties of CoP that support the SECI model: (a) shared vocabulary, (b) learning from members, (c) open communication, (d) strategies for remembering.

2.4 Personal Knowledge Management Frameworks

Personal knowledge management (PKM) has been receiving some attention in the literature from a conceptualization and model/framework perspective. Frand & Hixon (1999) provided an early discussion of PKM as it was employed at the Anderson School of Management at UCLA. The Anderson approach treated knowledge management as an extension of information management through the application by individual learners of heuristics in the areas of (1) searching/finding, (2) categorizing/classifying, (3) naming things/making distinctions, (4) evaluating/assessing, and (5) integrating or relating. The framework was used to motivate students and facilitate cross-curriculum integration and investigation. The Avery study has been utilized as a reference framework in other research efforts (Barth, 2000; Cheong & Tsui, 2010).

A similar model and argument to that of Wu and Wang (2008) can be developed from the research of Efimova and de More (Efimova & de More, 2005) wherein web publishing can also enhance personal absorptive capacity Efimova continued this research(2006) in order to gain a better understanding of knowledge worker activity, the use of blogging as a personal KM tool, and blogging as an instrument to study knowledge work. Efimova proposed using weblogging as a "looking glass" to view knowledge worker activities and proposed that such activities arise from interactions between individuals, ideas, and networks.

Efimova's PKM framework includes (a) collaboration and engaging in conversations, or *socialization*, (b) developing awareness of a domain through exposure to ideas and communities, or *internalization*, (c) sense-making, or *combination*, and (d) establishing and maintaining relationships, or *externalization*. The similarity of this research is illustrated in Table 1.

Table 1- Comparison of ACAP of Knowledge based on CoP and Web Publishing

ACAP	SECI Model	CoP	Web Publishing	Channel
Acquisition	Socialization (tacit-to-tacit)	Learn from each other	Collaboration conversations	and Face-to-Face, Asynchronous, Streaming
Assimilation	Externalization (tacit-to-explicit)	Open communication	Domain awareness and engagement	Face-to-Face, Asynchronous, Streaming
Transformation	Combination (explicit-to-explicit)	Remember previous lessons	Sense making	Asynchronous
Exploitation	Internalization (explicit-to-tacit)	Shared vocabulary	Establishing maintaining relationships	and Synchronous

Cheong and Tsui (2010) conducted an exploratory study of the roles of PKM in the knowledge management process and the value of PKM to individual and organizational competencies. According to Cheong and Tsui the purpose of PKM is to "... provide a framework for individual knowledge workers to manage new information, integrate it and enrich each individual knowledge database in an effective manner" (p. 207). The study documented the results of a global survey of 206 KM practitioners and concluded that the role of PKM is an important part of the KM process and is a benefit to both individuals and organizations by improving their competences. The model evaluated by Cheong and Tsui defined PKM components consisting of personal information management (capture/locate), knowledge internalization (create), knowledge creation (apply), and knowledge transferability (share).

The above discussion leads to the following propositions:

- Knowledge workers engaged in the activities of a community of practice have the potential to increased their personal absorptive capacity
- Knowledge workers participating in web publishing have the potential to increase their personal absorptive capacity
- The skills practiced by knowledge workers have the potential to increase individual and organization competencies

The proposed PKM research framework allocates Avery variables to factors of Personal Information Management, Sensemaking, and Collaboration defined as follows:

- Personal Information Management Factor (PIMF) – defined as the activities practiced by individual knowledge workers related to retrieving, organizing, creating, maintaining, finding, re-finding, storing, and securing of knowledge assets.
- Sensemaking Factor (SENF) – defined as the personal knowledge management activities of individual knowledge workers related to comprehending tacit knowledge (internalization)

and transforming explicit knowledge (combination) in pursuit of problem solving and intellectual curiosity.

- Collaboration Factor (COLF) – defined as the practices when enable communication between knowledge workers (tacit to tacit, tacit-explicit-tacit) to establish trust, exchange ideas, and formulate new ideas, while engaged in sensemaking and problem solving.

The proposed allocation between observed variables and factors is illustrated in Figure 1. The allocation combines the Cheong and Tsui components of internalization and creation into a single sensemaking factor. The model is also consistent with a more general aggregate-filter/understand-share PKM cycle (Jarche, 2010; Pollard, 2005).

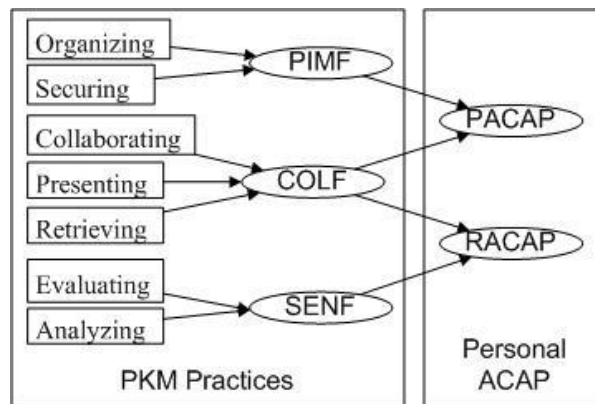


Figure 1 Personal Knowledge Management/ACAP Model

3. Research Design

The proposed research design is a two-phase, mixed-method evaluation of the relationship between personal knowledge management practices of knowledge management professionals and their individual absorptive capacity. The first phase will be a qualitative analysis of the proposed research model consisting of a series of structured interviews with knowledge workers designed to establish the face validity of the theoretical model factors and relationships. The results of this phase will be used to refine the research model as necessary prior to the subsequent quantitative analysis phase. The primary method for establishing validity will be a CFA of the structural component of the SEM model. The CFA analysis will establish the convergent validity and discriminant validity of the observed and latent variables through the calculation of shared variance and average variance extracted (AVE).

The quantitative phase of the proposed research will be based on the analysis of a survey of knowledge management professionals that have been certified by the Knowledge Management Institute, an organization that provides for instruction in knowledge management principles and methods designed to facilitate the growth of knowledge management practices in organizations world-wide. The analysis of this SEM model provides confirmation or rejection of the each research hypothesis.

3.1. Research Sample

A segmented sample will be obtained from this study through an email distribution to a random selection of participants from a current membership list of certified knowledge management

professionals. The membership list will be segmented into three categories – military, government, and industry. The number of samples selected from each segment will be weighted consistent with the membership distribution within each segment. Cross segment comparisons of the results will be conducted as part of the validation process.

3.2 Research Variables

The research variables consist of observed indicators and latent factors. The observed variables are based on the Avery framework and latent factors representing unobserved factors related to PKM practices (personal information management, sensemaking, and collaboration) and personal ACAP - potential ACAP (PACAP) and realized ACAP (RACAP). PACAP and RACAP will be operationalized by asking the following questions for each of the observed variables:

- The *importance* of the variable to accomplishing the knowledge workers primary activities (PACAP)
- The *extent* to which variable is actually *used* to complete the primary knowledge worker activities. (RACAP)

4 Conclusions

The research described in this paper demonstrates a proposed relationship between the personal knowledge management practice of knowledge workers and their personal absorptive capacity. The relationship is supported by the SECI knowledge management model and past absorptive capacity and knowledge management theory and research. Further, the research proposes that the communication channels that knowledge workers rely on are buffered by their individual absorptive capacity and that achieving a balanced flow of information across these channels will minimize the buffering affects of their personal absorptive capacity.

The personal knowledge management activity that directly affects the communication channel flow is “filtering”. The need to incorporate filters for multiple levels of information richness – face-to-face, synchronous, asynchronous, and streaming – is driven by a need to achieve a balanced flow. The filtering process is further complicated as part of a personal knowledge management practice because much of the knowledge flow is asynchronous and acquired in bits and pieces, or fragments.

Verification of the proposed relationship contributes to the scientific community by contributing a model that integrates two key concepts –personal knowledge management and absorptive capacity. Establishing a relationship between practice and absorptive capacity could lead to an understanding of how personal ACAP combines to generate or contribute to organizational level ACAP and eventually to organizational outcomes such as innovation and new knowledge.

The proposed relationship contributes to the practitioner community by helping to establish guidelines that can lead to increased ACAP efficiency. As an example, the model suggests that there is a need for effective filtering to maximize personal absorptive capacity. Personal knowledge management practices should focus in part on reviewing the effect of filtering actions. The social media explosion both supports and complicates the filtering process. The complexity of optimizing personal absorptive capacity arises from the huge and every increasing

volume of information that is being generated by, in part, the personal knowledge management practices of knowledge workers.

Supporting for filtering comes from the ease in which communities of peers can be formed and adjusted. Trusted networks can be used to “filter” down large streams of information into the most significant fragments which are then shared to a larger community. These trusted networks not only serve as a source of information but as a generator of knowledge as they synthesize fragments from “their” trusted sources. One key value of the resultant “hive” of personal interconnected networks is in their ability to help us filter our communication channels and perhaps achieve a balanced flow.

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