A DESCRIPTION OF BA AND KNOWLEDGE USE MODEL IN AN ORGANIZATION

Michael Glass, FedEx Ground, michael.glass@fedex.com
Robert Joseph Skovira, Robert Morris University, skovira@rmu.edu

"All I know is that I don't know. All I know is that I don't know nothing." – Operation Ivy – Knowledge.
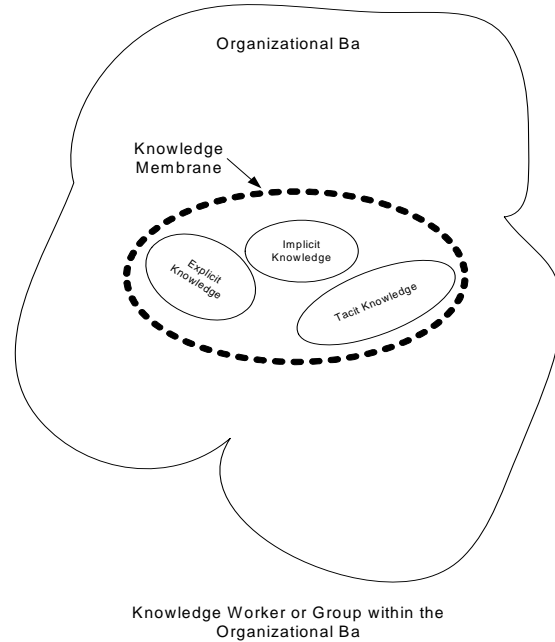
ABSTRACT

Knowledge management is an important function in any large organization. In this paper, a conceptual model of knowledge management in the large organization will be developed. The organic-like mechanics of knowledge management and a mathematical means of quantifying the model will be discussed. Personal experience from a large organization will be used to provide context for the model.

Keywords: Ba, Situational Ba, Implicit knowledge, Explicit Knowledge, Tacit Knowledge, Knowledge Membrane, Knowledge Management

INTRODUCTION

Knowledge. Knowledge management. Knowledge sharing, knowledge transfer, knowledge creation. Everyone has a sense or notion of what these words mean. But, is there a way to model the actions? Is there a way to describe and model what knowledge is, how knowledge is transferred, shared, created and managed? This paper will describe a potential model of knowledge management in the large organization. It begins with the Nonaka's description of tacit and explicit knowledge types [5] and includes Li and Goa's [3] description of implicit knowledge. It uses the notions of ba first described by Nonaka and Toyama [6] to describe organizational ba, individual ba, and situational ba. It includes Bernard Marr's [4] ideas on benchmarking intellectual capital, Thomas Brailsford's [2] notions on the quantification of innovation and draws upon one of the author's personal experience in a large corporate organization.

THE KNOWLEDGE MODEL

Knowledge Worker or Group within the Organizational Ba

The BA

The first component of the knowledge model is based on Nonaka and Toyama's notion of ba. They define ba as "a shared context in motion, in which knowledge is shared, created and utilized" [6]. Ba is the frame in which knowledge use takes place. It is the organization's culture and helps determine to what degree knowledge can be generated, moved, shared, and managed within the organization. As a context of knowledge use, ba is fluid, never static.

In the knowledge use model, ba is the environment in which knowledge actions occur. Knowledge actions include knowledge management, knowledge sharing, knowledge transfer and knowledge creation. Each organization has its own aggregate ba made up of multiples of smaller ba.

Individual BA

The smallest ba is the individual knowledge worker's personal ba (i-ba). This is the environmental surroundings in which the knowledge worker exists. It is the physical space, the organizational policy, procedures and processes, other people, and the individual's motives and experience.

Group BA

Ba is not simply an individual phenomenon. Groups within the organizations have their own aggregate ba (g-ba). It is determined by the organizational ba, the manager of the group, and the individuals in the group. There is a fluid mix of organizational ba and individual ba. Every ba is permeable and is subjective to any ba it interacts with. When a group in an organization has a specific culture, a specific role, or a specific motivation that drives their collective decision-making, this is a manifestation of their group ba.

Situational BA

Situation ba can also exist. A situational ba is created when a situation requires immediate action or during projects when task teams is formed. For example, if a group of individuals from throughout the organization are placed together and charged with a specific project or task, their individual ba will aggregate to form a collective ba for the situation. The project or situation will have its own ba, with characteristics of each individual and group ba. Situational ba can be thought of as small areas within the organizational ba that may have vastly different governing laws and attributes from its surroundings. Closely guarded secrets may suddenly become organizationally known knowledge due to the characteristics of a situational ba.

Organizational BA

Ba is also not limited to individual knowledge workers and groups of knowledge workers. Ba is also organizational. Board members, stockholders, the industry in which the organization exists, the symbolic nature of the organization, competition, government regulation, external vendors, and the global economy can all contribute to the size, permeability, and environmental make up of the organizational ba.
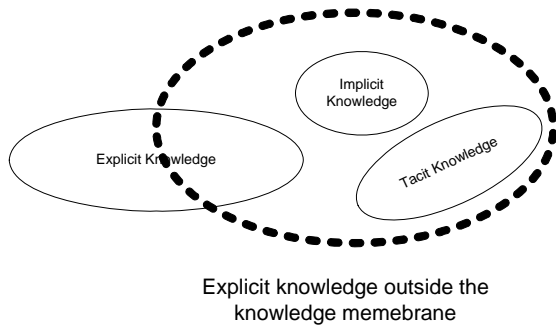
KNOWLEDGE USE TYPES

The second component of the knowledge model consists of the individuals and groups that make up the organization. The knowledge worker and groups of knowledge workers exist within the organizational ba and their own ba to become distinct entities in the organization. The knowledge worker and group entity are comprised of four components: tacit knowledge, explicit knowledge, implicit knowledge and the knowledge membrane.

Tacit knowledge is the knowledge in the head. It is the "silent knowledge". It is knowledge that cannot be shared easily, but in some cases it can be articulated and converted to explicit knowledge. Explicit knowledge is the knowledge in the world. It is knowledge that is tangible, and that can be articulated and shared [5]. Implicit knowledge, described by Li and Gao, is the knowledge that one can articulate but is unwilling to share because of specific reasons under certain settings [3]. In many cases within the large organization, implicit knowledge is kept secret for deliberate reasons.

The knowledge membrane surrounds the tacit, explicit, and implicit knowledge areas of the knowledge worker. The knowledge membrane has different degrees of permeability that control (along with the individual and organizational ba) the flow of knowledge to and from the individual and group. The knowledge membrane can be closed – knowledge is closely guarded and not typically shared, open – knowledge is readily shared with others in the organization, and bi-directional – where knowledge is exchanged in both directions. The knowledge membrane also has various degrees of openness, where the membrane controls the speed and amount of knowledge transfer.

The model of the knowledge worker begins with the individual's ba. Inside the ba is the knowledge membrane. The knowledge membrane houses the tacit, implicit, and explicit knowledge components of the individual. Tacit knowledge, because it cannot be shared easily is always found completely within the knowledge membrane. When tacit knowledge can be articulated it is transformed to implicit or explicit knowledge, depending on whether or not it is shared. Implicit knowledge is also found inside the knowledge membrane. Explicit knowledge can be shared. The entity of explicit knowledge can extend beyond the barrier of the knowledge membrane (into the soup of the organizational ba). Explicit knowledge outside of the knowledge membrane is the knowledge that can be transferred, shared, or combined with other knowledge components to create new knowledge.

Explicit knowledge outside the
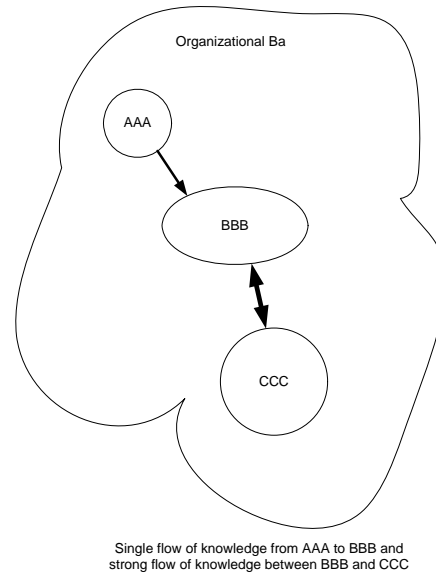knowledge memembrane

THE SITUATIONAL KNOWLEDGE USE MODEL AND ORGANIZATION BA

When constructing the knowledge use model in the organization, first begin with the organizational ba. This is the aggregate individual and group ba that encompasses each component of the situation. The organizational ba is important because it determines the degree of knowledge management possible within the organization. It includes the environment of the organization, whether the organization is generally open internally with their knowledge, or on the contrary, if the organization fosters an environment where knowledge is closely guarded. It can be seen as the viscous soup in which the other components of the model exist.
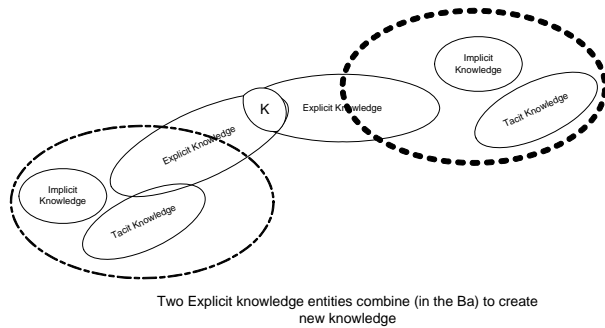
The next level in the situational knowledge use model is the group (or individual) knowledge. For simplicity sake, we will discuss the model in terms of groups, but it is important to realize that each group is made up of each group member's ba and knowledge membrane and knowledge components. In the model, each group that effects, or is affected by the situation is represented. Those groups with the most power (with regard to the situation) are represented closer to the center of the model. Groups that are only lightly involved (for example, a group that may have to change a process based on the outcome of the situation, but have no say on the decided outcome) are represented in the outer regions, away from the center.

Knowledge movement within an organization is critical to the situational model. According to Bernard Marr's research into benchmarking intellectual capital, the value of knowledge in an organization is directly proportional to the movement of the knowledge within the organizations [4]. In this situational knowledge model, arrows between the group (or individual) entities within the organizational ba represent a relationship. A single arrow represents a one-way relationship, where

information (knowledge) flows only from one group to another. A bi-direction arrow represents a two-way relationship, where information (knowledge) is shared between the two groups. The thickness of the arrow represents the strength of the relationship. For example, if a thick one-way arrow extends from group AAA to group BBB, this would mean that knowledge flows in one direction, from AAA to BBB. BBB receives group AAA's knowledge, and returns none of its own. In an actual organization, this could be group BBB submitting a request for performance metrics from AAA. AAA generates the report of performance (knowledge) and communicates it to BBB. AAA does not know the reason for the request (nor does it care) however; the knowledge gained by BBB (by receiving the report) may become paramount to the outcome of the situation.

Single flow of knowledge from AAA to BBB and
strong flow of knowledge between BBB and CCC

New knowledge creation, bi-directional knowledge transfer and sharing occur when different explicit knowledge entities occupy the same space in the ba. New knowledge is created when two (or more) explicit knowledge entities extend beyond their own knowledge membranes and occupy the same space in the open area of the organizational ba. Once the new knowledge is created it is incorporated into the explicit knowledge of each group (or individual) that combined to create it. The knowledge can then be returned to the interior of the knowledge membrane as explicit, implicit, or over time, even tacit knowledge.

Two Explicit knowledge entities combine (in the Ba) to create new knowledge

In the large organization the creation, transfer and sharing of explicit knowledge is, for the most part, a function of the normal day-to-day duties of the organization. In most cases there is nothing remarkable about group AAA sharing their explicit knowledge with group BBB in the organizational ba. It is a process that is completed thousands of times a day in the large organization. The problem in the large organization where concepts of the four frames – political, human resource, symbolic, and structural [1]– exist in a mosh-pit like dance, is how does that purposefully secret implicit knowledge transforms into explicit "knowledge in the world" that is shared between groups? The key to constructing this conceptual model is the idea of situational ba.

Implicit knowledge exists on a slippery slope. To paraphrase Li and Gao, implicit knowledge is knowledge that can be articulated and shared, but for various reasons is not [3]. In the large organization, the "various reasons" can be structural, human resource, and symbolic, but for the most part are political. "Knowledge is power" has gone from Saturday morning cartoons to boardroom decisions that affect entire organizations. Why would a group share their secret, implicit knowledge if the ramification would be displacement of system ownership by another group? Under normal circumstances, they would not. The organizational ba in large organizations tends to favor the status quo. This is where the situational ba comes in…

Situational Ba

Situational ba (S-ba) is a special ba that exists within the organizational ba. S-ba can suddenly and spontaneously appear, can grow slowly over time, can exist for an instance, or can become a permanent fixture in the organizational ba. S-ba has special and sometimes seemingly magical properties that can greatly affect the organizational ba, the group entities and g-ba, the individual knowledge worker and his or her I-ba, and especially the knowledge membrane. S-

ba can alter the properties of the knowledge membrane, making one group or individual's implicit knowledge suddenly explicit knowledge ready to be transferred, shared, and combined with other explicit knowledge to create new knowledge.

We will describe two scenarios that show how s-ba works in the large organization. The first shows how s-ba can begin small and grow into a large entity that affects the organizational ba for a long period of time. The second example will show the more exciting s-ba, the s-ba that suddenly appears and wreaks havoc on entities within the organization and the organizational ba.

Scenario One

The opening of a new facility in the FedEx Ground network generally takes several years from start to finish and involves groups from throughout the organization. Groups from real estate, network planning, facilities, material handling, IT, operations support and many others each have tasks to complete. In many cases these tasks cannot be started until another group has completed their task. For example, the Facilities group cannot start construction on a new building until Real Estate has identified a site and Legal has completed the purchase. For the most part, each group's tasks and knowledge is implicit. It is knowledge that could be articulated – how to complete a multi-million dollar lease for example – but is kept within the group. Why would the Facilities group need to know how to complete the legal purchase – their priority is building construction. This implicit knowledge contributes to the length of the overall process. Since each group really does not explicitly know what the other does, each group may not know how long the tasks of other groups should take. Notice we wrote how long it should take, not how long it did take. The organizational ba had become complacent and has reached the status quo.

Several years ago, FedEx Ground began simultaneous negotiations with four major accounts. When the negotiations began the s-ba was formed. This s-ba was small at first but steadily grew. At first is affected some small sharing of implicit knowledge. "How long does it take to complete the real estate contract purchase process?" the Facilities group would ask. "Can you complete this, this, and this early so that we can begin wiring?" the IT group would ask Facilities. Small bits of implicit knowledge were being shared because of the affect of the s-ba. As the negotiations progressed, and it became a real possibility that all four accounts would

be signed, the s-ba grew into an organizational changing force. Now the question was, if all four accounts are signed do we have enough building capacity to handle X more packages per day. When that answer was no, the collective question was "how quick can we open a building?"

The s-ba was now an organizationally affecting entity. Task teams were formed with representation from all the groups involved in the new building process. The s-ba had brought together groups and individuals that otherwise would not interact. The s-ba had changed the composition of knowledge membranes and created one-way and bi-directional flows of knowledge where they had not previously existed. Implicit knowledge was being articulated and shared outside of the group knowledge membrane. Implicit knowledge was being transferred and shared, and new knowledge was being created. The knowledge movement created innovation and learning and fractionalized the time needed to open a new building. Years later, the s-ba has ceased to exist, absorbed into the organizational ba, but the innovation and learning remains. FedEx Ground can now open buildings in an impressively short amount of time, allowing the network to grow quickly to meet the increases in daily package volume trends. The s-ba affected real, positive, and lasting change to the organizational ba.
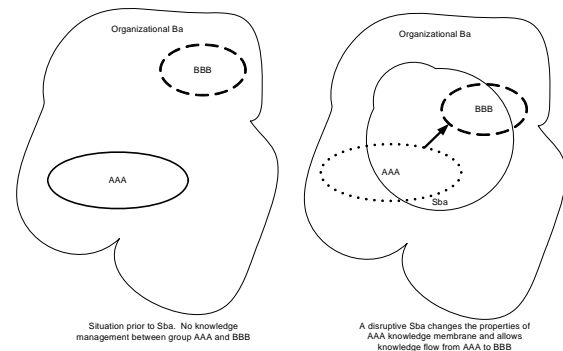
Scenario Two

The s-ba described above was a "win-win" situation for all the groups involved. There was no outward resistance to the effects of the s-ba. That is not always the case. Consider situations in large organizations where knowledge and ownership of a critical system (and therefore power) is divided between two groups within the organization. The knowledge membranes of each group are relatively closed. Very little useful, explicit knowledge is shared outside of the knowledge membrane. Most of the important knowledge is kept in an implicit state within the groups (or even individuals) knowledge membrane. Because ownership of the system equates to power within the organization, each group is in a constant attempt to establish one-way knowledge relationships and coax the implicit knowledge from the other group. Because the organizational ba tends to go to the status quo, the groups fall into a type of trench warfare, making little, if any progress in their endeavor.

Now consider a disruptive s-ba entering the system in the form of hardware obsolescence in components of the system. Group AAA has managed the hardware component of the system since its inception. Over the years they have poorly managed their components, but have kept that knowledge implicit to the rest of the organization. They have held it together with "smoke and mirrors (and duct tape)" by managing each situation individually. The s-ba of hardware obsolescence is a specter in their ba. They do not have the technical understanding (knowledge) to develop a replacement solution. The s-ba forces them to develop knowledge relationships with their counter-part group (group BBB). Group BBB has the technical knowledge to develop a solution to the obsolescence issue.

Group BBB uses the power of the disruptive s-ba to open the knowledge membrane of AAA and forces them to articulate their vast implicit knowledge into knowledge which group BBB can use to make a case to upper-management for an increased ownership role in the system (and of course, a decreased ownership role for AAA). BBB has utilized the disruptive s-ba to effect change in the organizational ba. The problem causing the s-ba has been resolved and the S-ba no longer exists; however, BBB now has the primary ownership role (and increased organizational power) within the organizational ba. The disruptive S-ba has caused a change that AAA did not want, and the organizational ba previously had not allowed.

Situation prior to Sba. No knowledge management between group AAA and BBB

A disruptive Sba changes the properties of AAA knowledge membrane and allows knowledge flow from AAA to BBB

QUANTIFYING ORGANIZATIONAL AND SITUATIONAL BA.

Thomas Brailsford described a formula to quantify innovation or learning in an organization. In the formula, the primary variables are connectivity, content and culture. Connectivity is the condition of the internal and external information networks, essentially how well people are connected with one another. Connectivity is also related to organizational culture in that it encompasses how safe people feel sharing their information with others. Content is the nature, availability and procedures for creating, owning, managing, and valuing knowledge.

Culture embraces the organizational and reward structures that either enhance or reward the sharing of valuable content [2].

A direct comparison can be made between the situational knowledge use model and situational ba described in this paper and Brialsford's concept. Connectivity – the internal and external networks, as well as the degree in which people feel safe sharing information – is the knowledge membrane. Content is the tacit, implicit, and explicit knowledge entities within the model. Culture is of course, the aggregate ba that makes up the organizational ba. The variables Brailsford described are weighted. Content is twice as important as connectivity, and culture is five times more valuable than connectivity. If our comparison is valid, then the following is true: Knowledge Membrane = X, Tacit, implicit, and explicit knowledge = Y, and ba = Z and,

$X + 2Y + 5Z$ = Innovation/learning or the quantification of knowledge.

The mathematical formula shows the importance of the organizational ba in the creation and transfer of knowledge in a large organization. The knowledge membrane (connectivity) and the knowledge entities (content) are important, but the most heavily weighted variable in quantifying knowledge is the ba. Even if the knowledge membrane is permeable and allowing bi direction travel, and the knowledge components (specifically explicit knowledge) are created and outside the knowledge membrane, the overall quantity of knowledge created and shared can be hindered by an organizational ba that negatively contributes to the process.

The formula also allows us to quantify the power of the situational ba (s-ba). Since we have seen that the s-ba can effect awesome (and sometimes unwanted) change within the organization, change that the organizational ba had not previously allowed, the s-ba must be defined as a variable multiplier of 5Z. So, while a stable organizational ba is described by $X+2Y+5Z$, an organizational ba with the presence of a situational ba may be described by $X+2Y+(s\text{-}ba)(5Z)$ where the value of s-ba is the variable that directly describes the power of the s-ba on the organizational ba. The new formula shows us that the organizational ba is still paramount to knowledge management in the organization, but that the addition of a situational ba can change the trends and rules that have governed the organization.

CONCLUSIONS

We have constructed a knowledge management model that has combined many different ideas into a quantifiable amalgamation. The key to knowledge management in the large organization has been shown to be the transformation of secret implicit knowledge into articulated, shareable explicit knowledge. The force that drives this transformation is the organizational ba, and the fuel that drives organizational ba has been defined as situational ba.

REFERENCES

1. Bolman, L. & Deal, T. (2003). *Reframing Organizations: Artistry, Choice, and Leadership.* San Francisco: Josey-Bass.
2. Brailsford, T. (2001). Building a knowledge community at Hallmark Cards. *Research Technology Management 44* (5), 18-25.
3. Li, M. & Gao, F. (2003). Why Nonaka highlights tacit knowledge: A critical review. *Journal of Knowledge Managemen* 7 (4), 6-14.
4. Marr, B. (2004). Measuring and benchmarking intellectual capital. *Benchmarking* 11 (6), 559-570.
5. Nonaka, I. (1991). The knowledge-creating company. In *Harvard Business Review on Knowledge Management* (pp. 21-45). Boston, Ma: Harvard Business Review Paperback.
6. Nonaka, I. & Toyama, R. (2005). The theory of the knowledge-creating firm: Subjectivity, objectivity, and synthesis. *Industrial and Corporate Change* 14 (3), 419-136.