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How to Chase Changing Middle Managers' Roles in the Informediary Era: Spiral Gap Analysis Model and Star Process

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ABSTRACT

Rapid advances in information technology (IT) and telecommunication systems impact the number and quality of decision-making in organizations. Specifically, middle mangers must posses or develop the creativity necessary for survival in a constantly changing and volatile business environment. While tradition and conventional wisdom tell us that a middle managers role centers on control and monitoring, todays competitive arena has spun out a new managerial requirement developing and maintaining an innovative attitude. Problematically, most previous research has focused on the issue of changing decision authority (i.e. centralization/decentralization). Moreover, much previous research has also largely ignored environmental changes exposing new roles that middle managers have assumed. This study explores the means of identifying middle managerial roles, managerial possibilities involving the growing popularity of open systems through electronic brainstorming, and an adaptation and development of Diffusion Theory, and attempt to counter criticism leveled at the theory's inability to provide an adequate explanation for diffusion of complex organizational technology. This paper develops three ideas: 1) Introducing the 'Chasing Curve' as a theoretical background. 2) Suggesting a new methodology using electronic brainstorming for analyzing the gap between Knowing (the perceived importance of middle managers' roles) and Doing (the degree of current status of middle managers' roles), which we term the 'Spiral Gap Analysis Model'. 3) Identifying a feedback system for minimizing the Knowing - Doing gap, aimed at development of IT strategic priority decision support, which we call this the 'Star Process'.

1. INTRODUCTION

The advent and rapid evolutionary development of information and telecommunication technologies (IT) has dramatically impacted business activities. Due to the extremely dynamic nature of current global market environments, both organizations and middle managers have found themselves increasingly disoriented, almost as if they were lost in a fog. Therefore, they lack a clear strategic direction, a response to orientate themselves and their organization (Pinsonneault and Kraemer, 1993). In addition, most middle managers, in attempting to define new internal roles that fit into the newly-changed environment, have lost sight of another important goal; connecting their organization to the global, knowledge-centered economy (Economist, June 1999).

Internet-based technologies such as email and Internet have brought about fundamental changes in market environments, IT strategies, middle manager roles, and organizational infrastructure. IT not only transforms how middle managers perform their roles and what CEOs organize their strategic priorities, but also IT changes the very nature of the linkages between CEOs and middle manager. Therefore, IT provides the impetus for the continuous evolution of the organizations value chain (Porter and Miller, 1985). The result is that the traditional managerial intermediary role has transformed into something entirely different, which we describe as an informediary.

Most CEOs know that they should be prepared to cope with a highly uncertain business environment. Unfortunately, however, those same CEOs have yet to develop a clear understanding of exactly how set strategic priorities, and middle managers' roles (The Economist, 1999). According to Roos and Roos (1997), many senior executives realize that successful organizations will be those who do the best job of capturing, nurturing and leveraging what middle managers know.

This study examines the organizations competence in terms of searching methodologies for new middle managerial roles, and suggests new means of establishing strategic managerial priorities. More specifically, this study focuses on three areas; the intermediary/informediary problem, methodologies for analyzing GAP between Knowing and Doing, and procedures for feedback system. We compare and contrast intermediary with informediary, and we devise the Spiral Gap Analysis Model (SGAM). SGAM is a new methodology designed to identify gaps between Knowing, the perceived future importance of the different middle-managerial roles, and Doing, the actual positioning of existing middle-managerial roles. Then we suggest the Star Process (SP) as a procedure of setting strategic

priorities for the new informediary role.

2. BACKGROUND (INFORMEDIARY VS. INTERMEDIARY)

This paper discusses possible reasons why IT, specifically networks, transforms middle managerial roles from intermediary to informediary. We begin by introducing the Informediary concept.In the face of widely-accepted, Internet-based technologies, organizations can dramatically reduce the transaction and agency costs associated with products and services. This would eliminate a large number of intermediaries, especially in newly-evolving market environments. Even though Internet-based technologies appear more likely to restrict the range of traditional intermediary activities, those technologies promote the prosperity of a new generation of intermediaries (http://www.ascusc.org/jcmc/vol11/issue3/sarkar.html) This paper discusses possible reasons why IT, specifically networks, transforms middle managerial roles from intermediary to informediary. We begin by introducing the Informediary concept.

The initial concept of an Informediary was mainly driven by consumer electronic commerce (B2C; business to consumer electronic commerce). A few typical examples are the early successes of Yahoo, Amazon, and e-Bay. Recently, Jim Gould (http://www.justtell.com) insists that relationships are critical to efforts to expand from existing customers to e-business customers. As IT becomes more popular and advanced in terms of capabilities, the idea of the Informediary in the electronic business market has expanded in a similar fashion. The Informediary model has become one of the most profitable business models, requiring organizations to reshape their structure from more traditional hierarchies into intermediary structures. As the relationships between informediaries and customers become more important in the E-business arena, organizations find it necessary to change the roles of middle managers.

We attempt here to incorporate the concept of the Informediary into the organization. The IT-oriented action plans of middle managers, similar to the functions of an intermediary, are critical because many organizations now operate in new and quickly-evolving, globally-connected electronic business environments. We maintain that the critical natures of middle managers action plans are because higher IT abilities in an organization can be seen to generally reduce transaction costs and agency costs. Moreover, this has led to organizational bypassing

of intermediaries in cyber markets (Vijay and Whang, 1991). However, it is likely that not only hastily adopted IT reinforces the position of traditional intermediaries; but also that E-media likely promotes the growth of a new generation of intermediaries (http://www.ascusc.org/jcmc/vol11/issue3/sarkar.html)

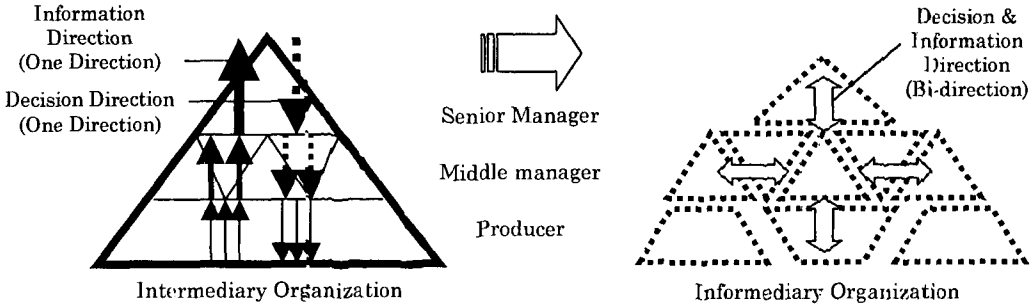
We define the term Informediary as a role that provides "a middle manager with multimedia information while performing his/her tasks, and more easily allows the manager to mediate business activities between customers and producers through the Internet and World Wide Web". Thus, the customer relationship change and middle managerial roles assume greater importance, even though neither is visible to the other. Using our previous definition as a basis, we believe that this new middle managerial role will help managers understand the rapidly-changing, IT-oriented action plans of organizations, including such activities as web designing, online loan processing, online auction management, and cyber stock trading.

Unfortunately, however, most organizations simply begin to compete in e-business or adopt Internet related technologies without considering possible new middle managerial roles. Most importantly, organizations should develop an understanding of new trends involving middle managerial roles, a transformation from traditional intermediary to Informediary. Basic differences between the middle managerial roles of Intermediary and Informediary are summarizes in table 1 and figure 1.

The basic transformation in middle managerial roles centers on a shift in decision-making authority in the organizational hierarchy framework. The traditional intermediary generally has better access to middle level information than information found at other levels in the centralized organization. However, the traditional intermediary has limited authority in the middle level since the decision direction is downward and information direction is upward in the hierarchy. However, under the new Informediary-centered organizational structure, information flow and decision-making are possible in both horizontal and vertical directions. In Informediary-centered organizations, decision-making related to information costs (such as communication costs, miscommunication costs, and opportunity costs) can be drastically reduced by removing a hurdle comprised of delays in the communication path (Hayek, 1945, Vijay and Whang, 1991).

Informediary organizations should also be more likely to use new innovative information and telecommunication technologies to reduce operational transaction costs and agency costs such as monitoring costs, bonding costs, and residual costs. In short, an Informediary-based firm utilizes new IT technologies such as email and instant mail, in an active manner, to enhance the quality of middle-

managerial decision-making. This, in turn, directly enhances the quality of top-level management decision-making.



Note: Width of arrow means degree of strength in authority

Figure 1. Authority Shift of Organization Hierarchy

Table 1. Intermediary – Informediary Summary Comparison

	Intermediary Organization	Informediary Organization
Type of middle manager	Intermediary	Informediary
Type of organization	Centralized	Decentralized
Scope of information	Limited	Opened
Degree of authority	Weak	Strong
Information direction	Upward/Downward	Reciprocal & Horizontal
Decision information cost	High	Low
Agency cost	High	Low
Operational cost	High	Low
Contractual cost	High	Low

3. MEASURING THE LINKAGE BETWEEN STRATEGIC PRIORITIES AND ROLES OF MIDDLE MANAGERS

As mentioned earlier, the aim of this study is to examine the means of identifying new middle-managerial roles as an organizational competence and to suggest possible new directions to help establish organization strategic priorities.

The traditional financial performance measures worked well during the industrial era, but they fail at measuring intangible organizational assets (such as organizational know-how, skills, and competencies), especially in the quickly evolving, Internet-based, fiercely competitive market environments. Some companies and academic researchers have tried to remedy the inadequacies of traditional performance measures by using financial or sales volume indicators, while other managers and academic researchers have conversely tried to remedy the inadequacies of current performance measurement systems by abandoning financial measures. For example, Kaplan and Norton (1992) urge organizations to, Forget financial measures. Improve operational measures like cycle time and defect rates, the financial results will follow. They realized that no single measure could provide a clear performance target or focus attention on the critical area of business. Roos and Roos (1997), found many analytical difficulties in handling financial indicators. Examples of such difficulties are:

- Selecting the correct indicators among a huge number of potential indicators.
- Ranking the importance of indicators for a specific category.
- Ensuring high precision for indicators.
- Establishing the numerical reliability of indicators.
- Tracing all sources of error or noise in the logic used to identify indicators, which may otherwise lead to erroneous or irrelevant indicators.
- Tracking the high multicollinearity that exists among many of the indicators, meaning that they are not reciprocally independent.

On the basis of the above measurement limitations, our theoretical starting point for this paper is Reigh and Benbasats recent work measuring the linkage between IT strategies and the roles of middle manager (1996). In their work, they suggest the existence of a linkage between the business environment and innovative IS action plans. In addition, they defined that linkage as the degree to which the IT mission, objective and action plan are supported by business mission, objective and action plans (1996).

An effective linkage between organizational strategies and middle managerial roles in dynamic business environments has consistently been reported as one of the key concerns among IS managers and business executives in informediary organizations (Computerworld, 1994; Galliers, 1987; Lederer and Mendelow, 1986).

Fichman and Kemerer introduce in their 1999 paper, "The Illusory Diffusion of Innovation: An Examination of Assimilation Gaps", a concept they call 'As-

similation Gaps' to explain and predict the patterns of innovations in informediary organization (see figure 2). A typical approach is to define adoption as "the physical acquisition or purchase of the innovation, and then to fit a time series of observed cumulative adoption counts or percentages to a functional form (Mahajan and Peterson 1985)".

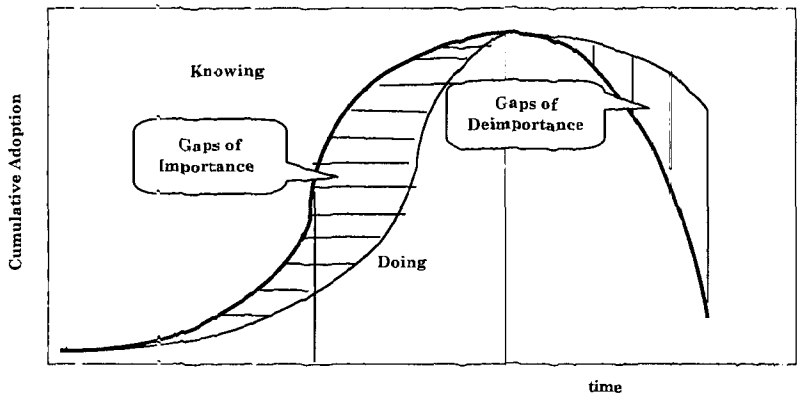


Figure 2. Diffusion Curve for Gap between Knowing and Doing

However, for some middle managerial roles in Informediary organizations, it may be unrealistic to assume that these later assimilation events will automatically follow earlier events. As a result, the pattern of cumulative deployments may not closely mirror the pattern of cumulative acquisitions, but rather, there may be a widening "gap" between the two curves plotted as a function of time. Because this gap is bounded by the cumulative adoption curves associated with two alternative assimilation events, Fichman and Kemerer (1999) labeled it as an assimilation gap. Nolan (1979) indicates the existence of six stages of growth in a companys Data Processing (DP) function. He develops six stages of Data Process Growth, from the initial adoption of computer technology to data resource management maturity. Reich and Benbasat (1996) establish the linkages between business and information technology and Fichman and Kemerer (1999) suggest what is done to reduce assimilation gap as a future research.

Moreover, most academics have bypassed researching the gaps of De-importance. This means that even though an organization may have lost competency in a given middle managerial role, the role was still performed because of the organization's inertia. The more gaps of de-importance there are, the worse organizations situation, especially if the CEO cannot consider de-importance

when they develop strategic priorities.

On the basis of the above points, we suggest the existence of a 'Chasing Curve between Knowing and Doing' as illustrated in Figure 3. We now focus on means of locating Gaps of importance and Gaps of deimportance between Knowing and Doing, and we will explain the methodology in the next section.

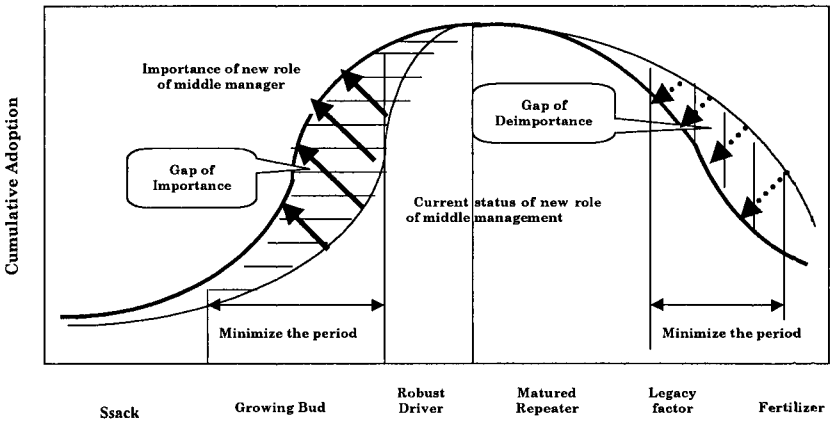


Figure 3. Chasing Curve between Knowing and Doing

4. THE SPIRAL GAP ANALYSIS MODEL (SGAM)

Most previous cause-and-effect research focuses on either financial performance measurements or behavioral performance measurements. However, those measurement indicators are not reciprocally independent, because of their inherent high multicollinearity (Anderson, et al., 1994). This makes it difficult for such studies to explain any form of critical paths or cause-effect relationships.

This study suggests types of middle-managerial roles that can help identify and set strategic priorities, which will assist the organization in gaining competitive advantages in globally connected, Internet-based market environments. To locate the Importance and De-importance ratings gaps between Knowing and Doing, we propose a revision of the SGAM (Spiral Gap Analysis Model) framework; the SGAM describes the Importance and De-importance gap between the current (Doing), and the future (Knowing), perspectives of middle managerial roles, based on the 'Chasing Curve'. The SGAM, often referred to as a 'needs assessment' or a 'needs analysis', is a technique used to analyze/assess a manager's

current role location in addition to identify where that manager might want to be in the near future, and how to get there.

For example, survey participants will be asked to rate a list of current Informediary role deployments on a 5-point-scale, according to the participant's perceived level of importance or value. Next the respondents will rate their perceptions of the future importance of Informediary roles, as illustrated in figure 4. After collecting the data, a mean score would be calculated for each attribute, and each gap of the Importance and De-importance ratings would indicate possible future directions for strategic priorities.

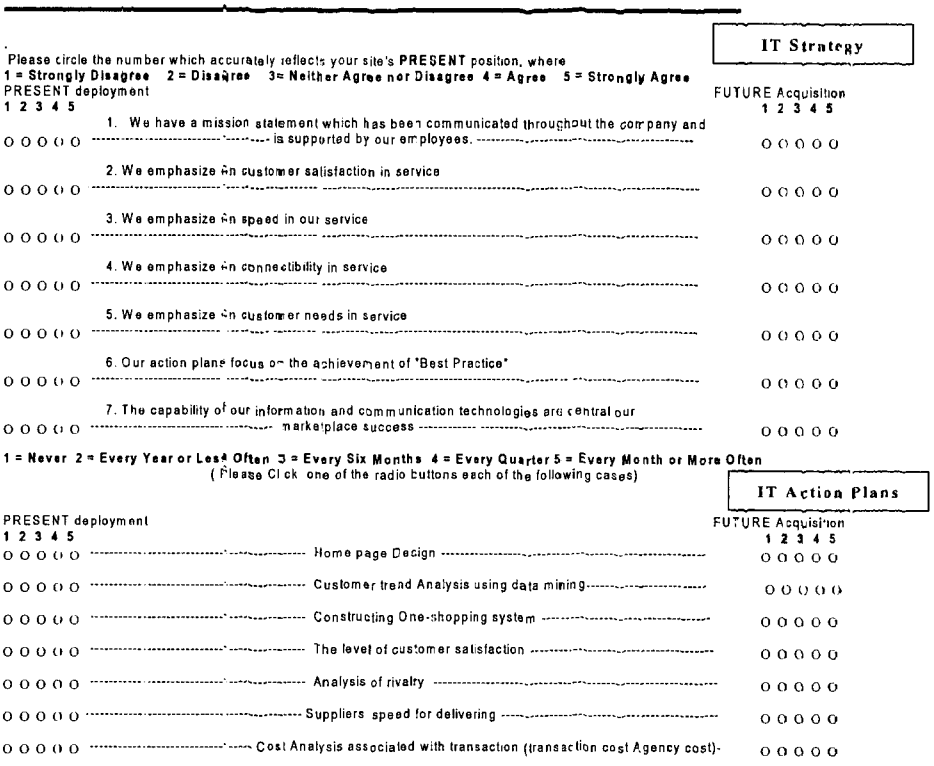


Figure 4. The Example of Questionnaires of Strategic priority and Action Plans

In SGAM terminology, the Ssak (which means an emerging bud in the Korean Language) stage actually shows a small gap where both the current Informediary role deployment rate and future deployment rates are low, but with the future deployment rate growing more quickly then the current deployment rate. In the Growing Bud stage, the gap between current deployment (Doing) and future

importance (Knowing) will gradually enlarge. The main characteristic in this stage is occurs when the middle manager begins to recognize the importance and direction of future deployments. For example, a middle manager might recognize the importance his/her new role in the organization, and then gradually learn to cope with the new and evolving market environments. In the Robust Driver stage, there is a very small gap between Knowing and Doing, because are highly rated. This stage highlights that organizations must develop and maintain competitive advantages in the near future. In the Matured Repeater stage, the future (Knowing) role is on a higher level than that of the current (Doing) role. However, compared to Growing bud stage, the gap between the future and current roles is reversed. This phenomenon leads an organization to a competitive advantage, but the importance will gradually decline. The Legacy factor stage has large gaps where current deployments are high and the future importance is low. This means that organizations in this situation have no choice but to conduct existing traditional action programs because they lack the preparation to adopt new middle managerial roles. Ultimately, this factor will become obsolete. The final Fertilizer stage has small gaps where both current and future deployment rates are relatively low. In addition, the current deployment rate is higher than future rate. In this stage, even though both deployment rates ultimately disappear, organizations have an opportunity to learn why both deployment rates become less important. They should examine the alternatives closely here.

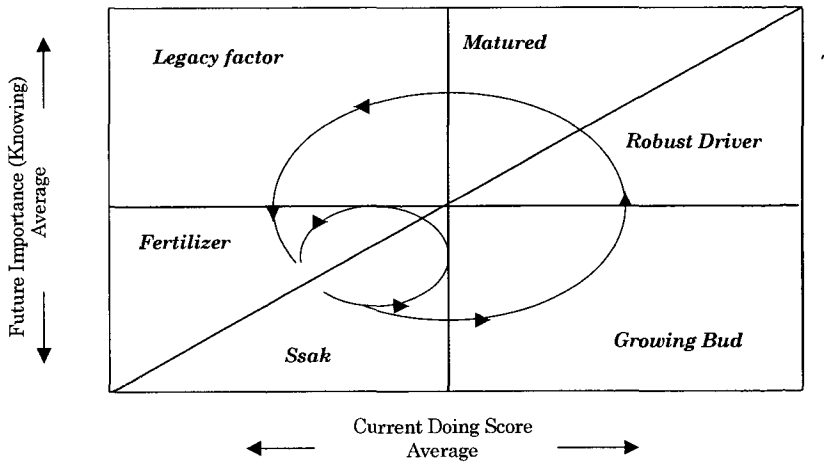


Figure 5. Framework of Spiral Gap Analysis on Domain Classification

5. FEEDBACK PROCEDURE FOR THE GAP BETWEEN KNOWING AND DOING

Huber (1984) found that most early GDSS (Group Decision Support Systems) were characterized as specific task-oriented systems. For example, early GDSS tools were designed to satisfy one specific task, such as those needed for group performance functioning, scheduling meetings, summarizing notes, etc. The early GDSS systems were more likely to be categorized as task specialized applications among general purpose DSS (Decision Support Systems) (Sprague, 1980). In other words, early versions of GDSS were designed primarily to focus on one specific task. Thus, they could not address any alternative tasks in problem solving or decision-making (Kersten, 1985). For example, if a GDSS was designed for supporting the labor-intensive negotiation process, the GDSS system could not be applied to any other task. Therefore, many researchers (Huber, 1984; Bahl & Hunt, 1984; Dennis et al, 1988) were interested in Toolkits, which are collections of specific tools that support various parts of the group meeting process. According to Huber (1984), toolkits were activity driven systems rather than task driven systems.

Toolkits consist of various components that support specific group activities (such as idea generation and voting), rather than supporting the entire process of one specific meeting application (such as decision making or negotiation). Dennis, et al., (1988) pointed out the key advantage of toolkits flexibility. In general, Toolkits have three primary characteristics. First, one application in the toolkit may support a highly structured, interchanging idea function, while others may provide a very low structured function. Members have many options to choose from, based on their preferences. Second, member groups may use many processes to achieve their final goal; they often do not proceed in a straightforward manner to reach their goal (Bahl and Hunt, 1984). Finally, the tools in the toolkit are also sufficiently flexible, enabling users to add new functional tools.

Based on the previous toolkit literature reviews, we suggest a new toolkit that uses a feedback procedure to analyze middle managerial roles. Recall that figure 3 illustrates that the time period for reducing the gap between Knowing and Doing, which is critical in an Informediary organization. The result indicates that the shorter the Growing Factor (the largest importance Gap) and Legacy Factor (the largest de-importance Gap) periods, the more competitive the Informediary organization becomes.

The conceptual feedback procedure, illustrated in figure 6, where the output

from the middle managers, through a balance scorecard, serves as an input to the survey analysis. Next, the survey results are returned to the survey participants. This provides additional information, including the option to modify the Importance rating of both Knowing and Doing.

To analyze the final survey result, the SGAM will be used. The main advantage of this analysis procedure is the dynamic adoption of the survey participant's ideas and reflective knowledge-based information to establish strategic priorities.

The general analysis feedback procedure consists of five steps:

Step 1: Electronic Brain-storming by middle managers using the Balanced Scorecard

Step 2: Construction of survey that compares Knowing and Doing in an organization

Step 3: Administer the survey and inform the participants regarding possible new middle managerial roles. Acquire participants their opinion on this issue, and share the knowledge of the Electronic survey

Step 4: Analyze survey based on the Spiral Gap Analysis Model

Step 5: Provide feedback results to both the employees and the CEO for establishing possible new strategic priority directions, and new roles of middle managers.

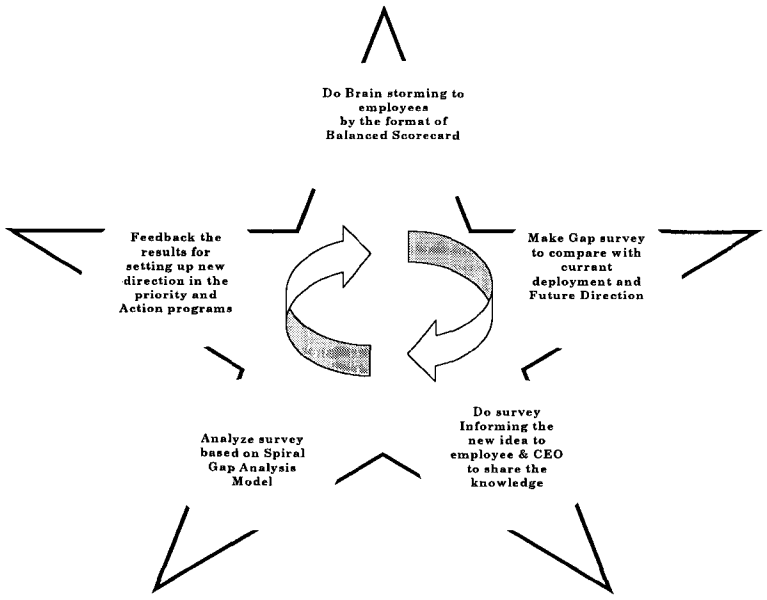


Figure 6. The feedback Procedure of Measuring knowledge in an organization

6. FEASIBLE AREA OF OUR MODELS (SOFTWARE DEVELOPMENT)

6.1 Software Development

Fichman and Kemerer (1999) suggest some examples of the knowing-doing gap. These examples come from software processing technology, relational database management systems (RDBs), and computer aided software engineering tools (CASE) (see figure 7, and 8). Now, we will consider the survivor function. In more typical applications such as those involving the time until death, job turnover, or component failure, as time passes, the applications survival probability decrease. Therefore, the organization should adapt the application as soon as possible and utilize it as competitive advantage before the application become legacy systems.

Brooks (2001) also insists that the biggest mistake in the Build one to throw away[1] concept is that implicitly assumes the classical sequential or waterfall model[2] of software construction. The basic fallacy of the waterfall model is that it assumes a project goes through once. In other words, the waterfall model assumes that all mistakes will be in realization, and that their repair can be smoothly interspersed with component and system testing. Thus, this model has no upstream movement. However, if the component test contains an error due to incorrect coding, or the end-users (customers) of the software want to change certain functions of the software, there is no communication method with the coding stage or other stages. Therefore, in current software development, most project use of the spinal model over use of the waterfall model.

6.2 Electronic Brainstorming

According to Dennis et al. (1996), Electronic brainstorming is a superior approach to nominal brainstorming and face-to-face brainstorming. Many researchers (Dennis and Valacich, 1993; Gallupe et al., 1992; Valacich et al., 1994) have found electronic brainstorming groups to generate more ideas than verbally interacting groups and more than nominal groups for larger group size, because of the reduction production blocking in Electronic Brainstorming Groups (Gallupe et al., 1994; Valacich et al., 1994).

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[1] According to Fichman and Kemerer (1999), The survivor function means view of event times for a population. That is, the survivor function provides an estimate of the proportion of a population expected to have an event time exceeding any given time T.

[2] Winston Royce improved the sequential model in a classic 1970 paper by providing for 1) some feedback from a stage to its predecessors 2) limiting the feedback to the immediately preceding stage only, so as to contain the cost and schedule delay it occasions.

On the contrary, Pinsonneault et al. (1999), insists that groups brainstorming is still popular in organizations because: (1) people enjoy working in group more than working alone, regardless of their productivity; (2) group working is used more for purposes of obtaining a consensus which creates a group dynamic, esprit de corps, group understanding, or efficiency purpose and; (3) the popularity of group brainstorming might be the presence of the perception that interactive brainstorming approaches are more productive (Paulus et al., 1993).

However, as communication technology, such as instant messaging or visual chatting and database technology, such as survey collection or data analysis advance, people enjoy working with dynamic ideas and mutual interaction with others in remote locations. We recommend the organization utilize advanced information technologies, such as video conferencing or call conferencing, so that the middle managers can do their jobs with creating unique ideas and sharing their knowledge.

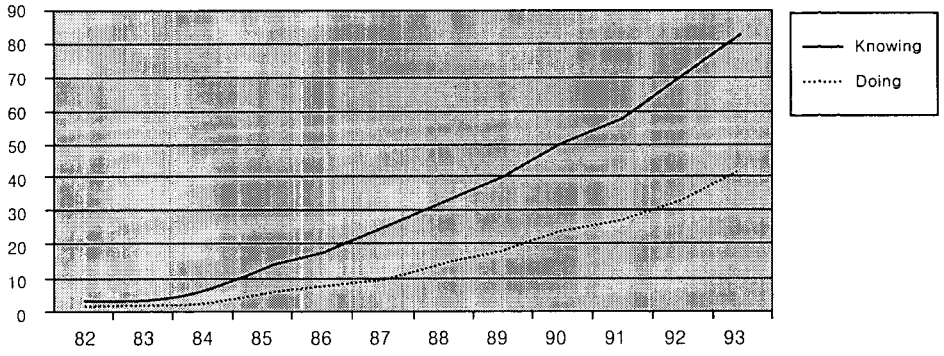

Figure 7. Knowing-Doing Gap of RDBs

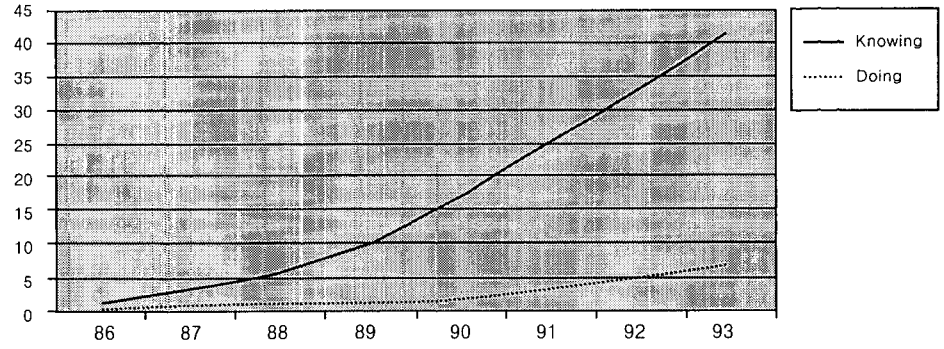

Figure 8. Knowing-Doing Gap of CASE

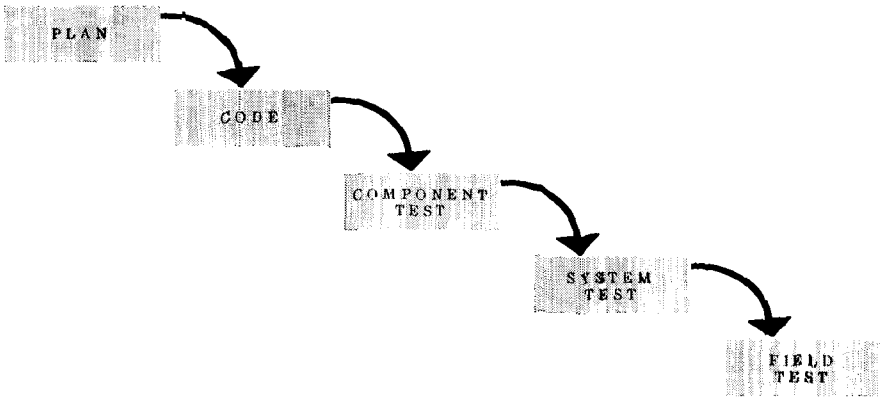

Figure 9. Waterfall Model of Software Construction

7. CONCLUSION

The advent of quickly adopted Internet-based information and communication technologies has led to significant organizational impacts. One impact that has generated considerable confusion among middle managers in the affected organizations involves changing middle managerial roles. While managers attempt to stay current within ever-changing technical and business environments, it is imperative for them to recognize that IT is a primary driver of fundamental changes in business strategies, action programs, and industrial structures. As the business environments and IT change drastically, organizations should rethink their business action plans based on their business strategies. Simultaneously, middle managers must adopt their new roles as they adjust to the new environments, changing roles from the Intermediary to the Informediary. Under the new Internet-based, knowledge-centered organizational structures, the quality, connectivity, and speed of knowledge or decision-making at the middle-managerial level will produce more decisions than ever before at increased power. Organizations must respond to the competitive imperative to catch up or maintain equilibrium in the ever-changing business environments and newly-evolving IT. We analyzed the concept of 'Knowing' the organization's environments; the idea that organizations develop and execute action programs designed to cope with re-organized IT strategies, which we identified as 'Doing'. By using this feedback process, companies should recognize the difference or gap between current deployments (Doing) and future directions (Knowing). Top managers attempting to reduce the Gap

efficiently and effectively can be easily supported by middle managers. To measure the gap, we suggest the Chasing Curve, SGAM (Spiral Gap Analysis Model), and Star Process (SP). These three enhanced theoretical research frameworks are designed to support and explain efficient decision procedures for identifying strategic priorities and guiding speedy adoption of the Informediary role of middle managers.

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