An Analysis of Knowledge Management Implementation Effectiveness: A Case Study of the Thai Revenue Department

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เนื่องจากกระแสโลกาภิวัตน์ในปัจจุบัน ก่อให้เกิดความท้าทาย และโอกาสใหม่ๆ ในการจัดการทั้งในภาครัฐและเอกชน การเปลี่ยนแปลงนี้ยังนำมาซึ่งการเปลี่ยนของภาคเศรษฐกิจ จากที่มุ่งเน้นในภาคการผลิต มาสู่การมุ่งเน้นในด้านการจัดการความรู้ และการเปลี่ยนแปลงนี้ยังมีผลเกี่ยวกับ การเจริญเติบโตของเทคโนโลยีและการสื่อสารอีกด้วย ทั้งหมดนี้เป็นผลให้มีการนำแนวความคิดด้านการจัดการความรู้มาสู่การปฏิบัติอย่างจริงจัง ในหลากหลายองค์กรและในหลายๆ หน่วยงาน อย่างไรก็ตาม แนวความคิดของการจัดการความรู้ยังเป็นเรื่องที่ใหม่ ที่ต้องการความพยายามและการลงทุนอย่างมาก เพื่อนำไปสู่การปฏิบัติ โดยเฉพาะอย่างยิ่งกับการปฏิบัติในหน่วยงานของรัฐ อนึ่ง ประโยชน์ที่จะได้รับจากการจัดการความรู้ ก็ยังไม่ส่งผลที่ชัดเจนในปัจจุบัน ดังนั้นจึงทำให้เกิดความคิดที่จะศึกษาและค้นคว้า ในเรื่องที่เกี่ยวกับประโยชน์ของการจัดการความรู้ และการศึกษาถึงว่าทำอย่างไรจึงจะทำให้ประสบความสำเร็จจากการนำการจัดการความรู้มาใช้ในภาคปฏิบัติการศึกษาในรายงานฉบับนี้ จึงได้ตั้งสมมติฐานว่า การจัดการความรู้เพื่อให้ประสบความสำเร็จนั้นต้องประกอบด้วยปัจจัยหลัก ดังนี้ คือ การสนับสนุนจากภาครัฐ, ทรัพยากร, ความสามารถในการบริหารขององค์กร, ทัศนคติของผู้ปฏิบัติงานและแรงจูงใจ

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จากผลการศึกษาพบว่า ทัศนคติของผู้ปฏิบัติงานส่งผลสำคัญที่สุดต่อประสิทธิผลของการนำการจัดการความรู้สู่ภาคปฏิบัติ นอกจากนี้ ยังพบว่า ปัจจัยทุกปัจจัยที่กล่าวไว้ข้างต้นมีความสัมพันธ์กับความสำเร็จของการการจัดการความรู้มาสู่ภาคปฏิบัติ ดังเช่นที่ได้ตั้งสมมติฐานไว้ดังกล่าว

Abstract

The globalization of business creates not only challenges but also opportunities for both the private and public sectors. The shift from a production-based to a knowledge-based economy, including the growth of information communications technology (ICT), has made knowledge management (KM) a fundamental practice across all types and levels of firms (Chong, 2005). However, since the KM concept is relatively new and requires substantial effort and investment for its implementation, most organizations, especially within the public sector, have not yet reaped its full *benefits. This paper hypothesized that the successful implementation of a knowledge management system (KMS) depended on critical enablers such as political will, financial resources, implementing agency capacity, and implementer's attitudes and incentives. The resulting findings reveal that implementer's attitudes have the greatest effect on the success of KMS implementation. In addition, all five variables influence the effectiveness of KMS implementation as hypothesized.*

Introduction

While there has been a long tradition of reform in Thailand, a major effort was undertaken in 1991, focusing on changes in the roles and attitudes of civil servants with the objective of improving civil service efficiency, quality, and ethics. The civil reform initiated in 1991 set the stage for subsequent reform programs up to 1997. These seven years of reform strategies focused on performance improvement, compensation reform, downsizing of bloated programs, greater citizen participation, decentralization of decision-making, and people as the focal point of development.

One interesting innovation within this process of government reform has been "Knowledge Management (KM)." KM has developed explosively: only a few years ago, the term was virtually unknown even in scientific circles. Today, modernizing the state without the use of KM is unthinkable, both in theory and in practice. In Thailand, KM has been adopted by the government as a major component of the reform process to improve various aspects of public administration and public services. KM has become a significant commitment of the Thai government and a key instrument of public management reform. It is central to the way government integrates across various units, shares information, and delivers improved services to internal and external clients.

In the current digital era, information technology and information systems can be employed to build a much more effective and efficient KMS than was previously possible. In theory, this should allow the government to serve the public better than ever before, through better government service to citizens, improved interaction with business and industry, citizen empowerment through greater access to information, and gains in efficiency

due to cost reductions from a paperless environment. Additional results are increased capacity and transparency-and less corruption-among public sector officials and greater convenience for the government and the public alike.

The fact, however, is that the success of KMS implementation does not depend only on technical competence but also on fundamental changes in the nature of management in the public sector, particularly the traditional systems of bureaucratic administration and the low level of IT literacy among government officials in developing countries. Thailand's government has made a strong and visible effort since KM was kicked off in 2004, and has invested substantial resources, yet general opinion still does not hold KM to be a proven tool for successful public management reform.

It is believed there are several factors influencing the success of a KM initiative, including optimum budget allocation, the availability of technological infrastructure and applications, frequently change of government, IT literacy of citizens, etc. KM and KMS in Thailand leave us as Thai people with a number of important questions. Has KM really served government objectives as a key element of public reform and achieved its set goals and objectives? What are the factors that influence KMS implementation effectiveness, especially in Thailand? There is no current study exploring these issues. This study then aims at helping us to understand what factors affect KMS implementation effectiveness and to provide recommendations to the government to improve future policy and decision-making in this area. Furthermore, it also provides other government agencies with guidelines for KMS implementation success, which will help to ensure that

the huge investment is worthwhile in achieving its set objectives.

Theoretical Framework and a Model for Analysis

According to literature reviews and analyses, various models and analytical tools can be used to study the causal relationships between the various determinants of effective public policy implementation. The conceptual model was developed by employing the various variables that have had a significant effect on KM, KMS and IT implementation in Thailand as well as in other countries. It combines literature reviews and previous research in this field with the author's own experience and analysis.

Knowledge Management Project Implementation Effectiveness (KMPIE): Dependent Variables

The measurement of policy implementation effectiveness can be carried out using several approaches. There is no consensus on a one-size-fits-all approach. Most of the studies on MIS and IT, as well as KM and KMS, have proposed measuring the effectiveness of KMS by focusing on infrastructure and process. For example, Massey et al. (2002) have proposed to measure KM success by looking at organizational and process performance, while Lindsey's KM success model has also focused on infra-structure and process capacities. However, the author's view is that these models have quite limited application for measuring KM success, especially in the public sector where individual performance also plays a critical role in implementation. This is indirectly supported by several studies in the policy implementation field, by authors such as James D. Sorg, Eugene Bardach, and Scott T. Moore, which reveal that the front-line or street-level

bureaucrats highly influence policy implementation success. However, none of these authors propose a model that addresses the benefits of KMS specifically within the broader field of policy implementation.

As this study's objective was to explore and exploit the full benefits of KMS, the author began with the principle that the effectiveness of KMS implementation must be more or less related to its benefits, in the context of the stated goals of KMS implementation. Consequently, this study employed a goal-attainment measurement theory which fit the objective of this study and allowed the author to expand the scope of measurement beyond organization capacity and process performance. Policy goal attainment focuses on whether a policy has achieved its intended goals or not, and the extent to which the policy (rather than other variables) has contributed to goal achievement. Goal attainment measures the effectiveness of a program by asking about the substantive content, output, and impacts of the program, not the program procedures (Nakanura and Smallwood, 1980).

Prior to defining the goals of KMS projects, an organization may be unclear about the benefits to be gained from KMS implementation. There are benefits to be obtained from KMS on two levels the individual and the organization. At the individual level, KM provides employees with opportunities to enhance skills and experience by working together, sharing knowledge, and learning from each other. As a result, KMS improves personal performance and contributes to career development.

At the organizational level, KM provides benefits by improving the organization's performance through increased efficiency, productivity, quality and innovation. It also generates a higher rate of productivity by

providing greater access to employees' knowledge, improving decision making, streamlining processes, minimizing re-work, improving data integrity, and increasing collaboration (CIO Council, 2001). In other words, for the public sector, managing knowledge could reduce the cost of operations and improve public services. In addition, it increases the financial value of an organization by treating people's knowledge as an asset similar to traditional assets, such as inventory and capital (U.S. Department of Navy, 2001). Finally, it generates a competitive advantage for the organization since knowledge transfer is increasingly recognized as a source of value creation (Cong and Pandya, 2003).

The above benefits were in line with the Revenue Department KM project goals, which consisted of: 1) public services; 2) individual capabilities; **3)** organizational capabilities; and 4) private sector capabilities (Revenue Department, 2006). The author then decided to use these goals as benchmarks for the measurement of effectiveness, since this study is a case study of the Revenue Department's KM project specifically. The author believes that this approach will enhance the results of the study and reveal the benefits of KM implementation by the Revenue Department, which is the objective of this study.

1) Public Service: In the public sector, service delivery quality and quantity are the major tasks and top priorities. KM can help to improve public service in terms of equal services, high quality of data, faster service, and more efficient and effective services for the public (Revenue Department, 2006). In addition, the public will then be able to access accurate and high quality information and receive the same standard tax rate and process. Therefore, public service is one of the KM project goals tied to

KM project implementation effectiveness.

2) Individual Capabilities: Knowledge Management enhances individual skills and experience by allowing individuals to work together and share their knowledge. As a result, individuals can learn from others, improving their personal performance and leading to better career development (Cong and Pandya, 2003). Improving the Revenue Department's official capabilities, such as updated Thai law, tax knowledge, and tax audit procedures, is expected to lead to a higher level of knowledge and skills among officials who, as a result, will operate more effectively within their subunits and be more professional. In addition, knowledge is shared among Revenue Department officials as necessary. Hence, individual capability is one of the main KM project goals tied to KM project implementation effectiveness.

3) Organization Capabilities: Currently KM is becoming increasingly important to organizations, as it is believed that organizations can benefit from implementing a knowledge management strategy. Some of the benefits may include reduced loss of intellectual capital from people leaving an organization, reduced cost by achieving economies of scale in obtaining information from external providers, reduced redundancy, increased productivity by making knowledge more quickly and readily available, increased employee satisfaction by enabling greater empowerment, and gains in competitive advantage (McCarthy and Aronson, 2001). However, in the Revenue Department context improvement in organizational capacity included higher tax collection, and more accurate tax collection as per actual business activities and a sustainable standard tax rate. Furthermore, because of lower operating costs as resources, i.e. knowledge can

be shared and the efficiency of the government's information and related departments can be improved, thus leading to a higher level of tax revenue for other government agencies and budget allocations for all government agencies. As tax collection has increased, the budget surplus then has been allocated to other government agencies, helping to achieve Thailand's social and economic development plans. Therefore, KM project implementation effectiveness can be measured through this pre-determined goal of the Revenue Department.

4) Private Sector Capabilities: KM provides benefits for a community by facilitating more effective networking and collaboration, developing a professional code of ethics that members can follow, developing professional skills, promoting peer-to-peer monitoring, and perhaps most importantly, developing a common language. As a result, in the Revenue Department context, KM has provided better cooperation among government sectors and between the government and business sectors. The business sector that has provided outsourcing services to the Revenue Department now has greater knowledge and in-depth understanding of the tax system and procedures. This is expected to lead to the acceptance of Revenue Department tax policies and procedures, tax payer's willingness to cooperate and to pay taxes as well as follow tax procedures accurately. Hence, the private sector's capabilities enhance KM project implementation effectiveness.

Critical Factors Affecting Knowledge Management Project Implementation Effectiveness: Independent Variables

As this study aims at exploring the factors affecting Knowledge Management implementation effectiveness, policy implementation models

are used to analyze those variables within the broader policy effectiveness context. The implementation models suggested by public administration scholars, together with previous research and literature on IT, MIS. KM, and particularly KMS, are employed in this study and in the model of analysis. This then serves the purpose of this study in terms of explaining and deriving the set of factors that is most influential in KM implementation effectiveness. Policy performance in this study is measured by the effectiveness of KM project implementation, which includes public services, individual capabilities, organization capabilities, and public sector capabilities. The model of analysis of this study therefore attempts to explore and explain the relationship between these factors and KM implementation performance.

There are several critical factors affecting implementation effectiveness that have been proposed by scholars in policy implementation, IT, MIS, KM and KMS. The model used in this study is adapted from previous researchers and their proposed models, such as Pressman and Wildavsky (1979), Van Meter and Van Horn (1975). Voradej (1983), Bardach (1980), Yin et al. (1977), Cheema and Rondinelli (1983), Attewell and Gerstein (1979), Lindsey (2002), and Messery et al. (2002), including the study of Chong and Choi (2005). In addition, the organization effectiveness measurements proposed by Robbins (1990) were taken into account when creating the operationahzed definition of variables. The main factors proposed in the model of this study illustrate the causal relationships between independent variables and dependent variables. After reviewing all of those proposed factors, the author proposes five main factors that are most suitable to this study and the Thai Revenue Department context. Those five main factors

include political will, resources, implementing agency capacity, implementer's attitude, and incentives.

1) Political Will: Several policies faced failure during implementation due to lack of political support and enforcement. KM implementation requires heavy investment and continuous support from the government. The political commitment then was a crucial factor in policy implementation success. As per the OECD Policy Brief (2003), leadership and commitment at both the political and administrative levels are crucial for successful implementation of an e-government project. This is because e-government projects bring a new system into government agencies which requires changes in the administrative and working environment. KM implementation, as part of an e-government project, faces the same challenge. Committed leaders are required to cope with disorderly change and to continue when benefits take time to emerge. In addition, committed leaders are needed to take action when things go wrong. Moreover, a future vision and plans must also be established and enforced by committed leaders. The leadership must define the vision of what is to be achieved and make that happen in actual practice.

In terms of a Knowledge Management project, strong leadership is also necessary to push the project into the implementation process. The role of committed leaders in an agency in order to plan for implementation and to provide support-both financial and other resources -is therefore crucial for successful implementation of KMS. This includes the supporting role of the government or leaders in developing a common understanding of project goals among officials in government agencies. The positive signal that the civil service needs to receive from its top leadership (United

Nations, 2003) is another required part of successful implementation. This positive signal from leadership will enlighten government officials as to the importance of the project and generate willingness to contribute to project implementation, which then will provide good cooperation and minimize resistance to the changes of this new system. As a result, the project can achieve its set goals.

2) Resources: according to Cheema and Rondinelli (1983), the degree of financial, administrative and technical support provided will greatly affect the success or failure of policies and programs. The adequacy of budget allocations, timeliness and availability of resources, and the level of revenue and expenditure authority exercised at the local level, will all significantly influence project implementation. Van Meter and Van Horn (1975) support the idea that such resources often consist of government funds or other financial resources supplied to the project to encourage or facilitate effective project or program implementation. Adequate funding is necessary for implementation because the purchase of equipment and material, the hiring of staff, and the installation of information technology infrastructure and equipment require a certain level of budgetary resources. This type of project requires a huge investment in IT infrastructure and IT equipment, i.e. computers, networks and software. This also therefore requires the IT or technical staff to support project implementation because the installation of the new system, software, or networks, and subsequent maintenance of the program must be done by those specialists.

In the empirical research on the implementation data warehousing projects of Wixom and Watson (2001), it was found that resources include the money, people and time that are required to successfully complete the

project (Ein-Dor and Segev, 1978). Studies have found that resource problems have a negative effect on successful system design and implementation (Tait and Vessey, 1988). Once tasks are identified, the project timeline is influenced by the amount of time and the people assigned to do the work, so better resources should affect the accomplishment of milestones during implementation (McConnell, 1996). Voradej (1984) also points to resources including personnel, budget, infrastructure and machinery and equipment. In addition, the appropriate quality and quantity of staff are necessary for successful policy implementation (Pressman and Wildavski, 1979). In this study, the main resources of KMS project implementation are therefore referred to as financial resources, human resources, IT equipment and IT infrastructure.

3) Implementing Agency Capacity: Many scholars have identified the characteristics of administrative agencies that affect their policy performance. These included not only the formal structure of the organization, but also the informal elements of their personnel system. In addition, the relationship between the implementing agencies and other participants in public service delivery should also be included (Van Meter and Van Horn, 1975; Bardach, 1977; Cheema and Rondinelli, 1983).

Furthermore, some characteristics of implementing agencies have been found to have a negative effect on an organization's capability to implement policy, such as the competence and size of the staff, the degree of hierarchical control of sub-unit decisions and processes within the implementing agencies, an agency's political resources (e.g. support among legislators and executives), the vitality of an organization, the degree of open communication within an organization and with persons outside the

organization, and the agency's formal and informal linkages with a policy making body. In some situations, local factors and characteristics unique to a specific implementation context, such as commitment to policy and institutional support, have a strong and direct effect on outcomes (Ingram and Mann, 1980). In this study, the author defines implementing agency capacity in terms of five components: 1) Managerial; 2) Technical Skills; 3) Employee Involvement; 4) Leader Competence and 5) Leader Commitment.

4) Implementer's attitude: A good policy can not be implemented if the implementers are not willing to do it or if they resist the project. People will contribute to policy implementation, or not, depending on their personal values, beliefs, and self-interest (Van Meter and Van Horn, 1975). Pressman and Wildavski (1979) also point out that "disposition" is one of the key factors affecting the success or failure of policy implementation. To avoid a negative disposition, the dissatisfaction of implementers must be taken as a serious concern and sufficient incentives must be provided. In line with both scholars mentioned above, Lipsky (1976) also emphasizes that individual compliance, especially among front-line implementers, is a significant factor for policy implementation effectiveness. Front-line implementers or so-called street-level bureaucrats are the people who perform the actions which ultimately implement the policy. These individuals have substantial discretion in the execution of their daily work. Consequently, the compliance of these implementers with the stated policy is crucial for the success of the policy implementation process. Likewise, Van Meter and Van Horn (1975) assert that policy implementation may fail because its implementers refuse to perform the implementation. Consequently, in

this study, the author employs the following components as a measurement of implementers' attitudes: implementers' acceptance; implementers' commitment and teamwork.

5) Incentive: Malhotra and Galletta (2003) cite many forces that are at work in KMS acceptance when implementation is driven from the top. There are several reasons for implementers' compliance. Some implementers comply with implementation because they wish to please their managers, while some irnplementers comply with the project because of performance criteria requirements. However, some may have peer pressures to comply with implementation. Hence, many researchers recommend that in order to gain effective knowledge use and knowledge sharing, the use of incentives is needed. Many KMS projects have proved to be failures and the organizational diagnosis of failure concluded that there was no incentive for anyone to invest time and energy to implement the project, which sometimes requires significant time and effort to solve problems. Remunerative power, i.e. the allocation of material resources such as salaries, per-diems, rewards, commissions, and fringe benefits, is usually the most effective means of inducing in policy implementers the willingness to achieve a satisfactory standard of enforcement and compliance (Thawilvadee, 1998). Incentives include the various forms of monetary incentives provided, such as rewards, per diems, overtime payment, salary increases, career path development such as promotions, as well as other benefits (Northcraft and Neale, 1994). In addition, in the Thai public sector context, the working location is also considered to be privileged and important. Officials prefer to work in their home locations or provinces. The privilege of working location selection is therefore considered a non-financial benefit.

Relationships between Dependent and Independent Variables

The constructed model in this study was derived from a literature review of previous research and studies. As previously discussed, the effectiveness of policy implementation was influenced by various factors. It is therefore necessary to identify the logical relationships between those selected variables and policy implementation effectiveness.

Several policies faced failure during implementation due to lack of political commitment, support and enforcement. A Knowledge Management project requires heavy investment and continuous support from the government. Commitment from the top leaders is also necessary since a positive signal from the top leader, i.e. prime minister, will motivate compliance with the KMS project. As previously mentioned, one of the key factors of a KMS project is knowledge sharing, and compliance of officials has a high impact on this level of sharing. In order to create a sufficient level of compliance, which in theory results in a greater level of knowledge sharing, commitment and support, including enforcement from top leaders, is needed. Political commitment and support thus was a crucial factor in policy implementation success. There is also a link or causal relationship with the resources allocated to a KMS project. Insufficient resources (infrastructure, staff, equipment, etc.) will cause a KMS project to fail to deliver the services stated in the policy objectives (Sabatier and Mazmanien, 1980). Van Meter and Van Horn (1975) maintain that such resources often consist of government funds or other financial resources supplied to the policy program in order to encourage or facilitate effective policy implementation. Adequate funding is vital because it is needed for

the purchase of materials and equipment, the hiring and training of staff, and other costs.

Furthermore, since a KMS project is an ICT-related project, the complete installation of IT networks, computer tools, Internet or Intranet access, and IT staff is needed. Inadequate computers or insufficient network connectivity may cause officials not to perform the implementation. In addition, the availability of equipment and a sufficient level of maintenance are also essential because if officials do not have computers, they are unable to sign in to the KMS, making knowledge learning and sharing impossible. Moreover, as a KMS creates new work procedures and environments, officials need to be well-trained in KMS usage and in a basic level of Intranet or Internet use. Inadequate skills to perform the implementation will cause lower compliance and again knowledge cannot be shared as effectively. Consequently, resources are often a major factor in program implementation.

Incentives are another factor affecting KMS project implementation since a KMS project is new and generating the necessary changes within the organization and demonstrating its benefits to individuals may take time. Therefore, implementers tend to ignore or not comply with project implementation since it may be difficult and take time for them to get used to the new system and change their behavior. In order to motivate and encourage implementers to perform tasks, it requires effective incentives. Lack of sufficient or ineffective incentives may cause KMS projects to fail. Motivation and commitment among knowledge management workers, professionals, and managers are increasingly recognized as critical success factors for the implementation of a KMS project. It is thus important for

an organization to provide sufficient and effective incentives, either monetary or non-monetary, to achieve successful KMS implementation. Hence, incentives are important for KMS implementation performance.

Again, the KMS project is brand new in the organization and generates a lot of changes. The implementers' positive attitude towards those changes and a certain level of acceptance are therefore required. Resistance to change must be taken as a serious concern and set as a priority. This is because resistance to change will create a high level of non-compliance with the project. The project may be fully equipped and have an excellent IT design, and high capacity for internet access or networking, but still find that no one has ever signed into the system after six months of implementation. Acceptance by implementers is therefore necessary for KMS project success. Three elements of the implementers' response may affect their ability and willingness to carry out the policy: their recognition, direction, and the intensity of their response. It is believed that human groups find it difficult to carry out effectively acts in which they have no underlying beliefs. In addition, implementers may fail to execute policies faithfully because they reject the goals contained within them (Van Meter and Van Horn, 1975). Consequently, this will affect the success or failure of policy implementation.

Implementing agency capacity is another critical factor proposed by several scholars in public policy, IS, IT and KMS implementation. The technical, managerial, and skills of an agency staff, and the capacity of agencies to coordinate, control and integrate the decisions of subunits, *all* help to determine the success of implementation. The capacity of implementing agencies is largely determined by the extent to which these

agencies are willing to implement policy. Nonetheless, implementation success also relies on the implementing agency's capacity for doing what is required (Van Meter and Van Horn, 1975). Implementing agency capacity also includes leaders' commitment and competence and employee involvement. Leaders' commitment and competence influence KMS implementation because an implementer tends to perform and be willing to comply with the project when his or her leader has a strong commitment to it. The message both from verbal and non-verbal language will influence the behavior of the implementers. When a leader shows a positive signal, implementers tend to comply with implementation. In addition, the leader's capacity to manage and encourage his or her staff to perform what he or she wants them to do is also crucial for implementation success. As previously mentioned, a KMS project requires problem solving, decision making and coordination from all levels of implementers from the start of its implementation. Therefore, the managerial skills of implementers are also necessary for implementation achievement. Furthermore, their technical skdls are needed for KMS implementation since KMS is an ICT-related project which requires implementers to have basic IT skdls. In addition, their participation in the project is also important since participation and involvement will generate willingness among implementers. Moreover, their participation will help them to understand the project and the benefits generated by implementation achievement.

In addition, political will also affects leadership style, which is a part of the implementing agency capacity. The barriers of implementation may be caused by a basic factor, such as management responsibility (Williams, 1975). Therefore, an implementing agency should have substantial managerial

and political skills, together with a strong commitment to achieve policy goals (Sabatier and Mazmanien, 1979). Support from the government will also influence to leader of an implementing agency in their commitment and enforcement of the policy implementation process.

Resources also exert an influence on implementing agency capacity and therefore constitute another important factor in policy effectiveness. Sufficient resources, i.e. funding or staff allocated to the project, will influence implementation capacity. If there are enough funds to purchase material and equipment, implementers will able to perform the implementation effectively. When there is a lack of tools or equipment, such as computers, networks and staff, the implementation tends to fail. In addition, sufficient funds should be allocated to provide staff incentives, which is another factor influencing implementing agency capacity, as incentives, particularly monetary, are considered the most effective motivation tools for policy implementation success. Lacking effective incentives, compliance by staff tends to be low and results in a higher level of non-compliance. Implementing agency capacity will be greater whenever adequate funds allocation and incentive schemes have been implemented.

Incentives are also crucial to implementers' attitudes since it is believed that this has a linkage to policy performance or effectiveness. Remunerative power (i.e. the allocation of material resources such as salaries, commissions, fringe benefits, taxes and services) is usually the most effective means of inducing in policy implementers the willingness to achieve a satisfactory standard of enforcement and compliance. In addition, resources and political will are also influential factors in determining implementers' attitudes. It there is a positive signal and support from top

leaders, implementers have greater potential to have a positive attitude towards the project and its implementation. Hence, they are more likely to comply with implementation. While sufficient funds can be allocated to a project in terms of adequate numbers of equipment, i.e. computers, Internet or Intranet, implementers tend to cooperate more when it is easy for them to access the new system with a full set of equipment. In the Thai context, most officials prefer to be the first ones to have the new tools and equipment in their office and they feel proud when those are allocated to them. Thus, they are likely to perform the implementation more effectively.

In summary, incentives, resources, and political will are determined to have a direct effect on implementing agency capacity and implementer's attitudes. Implementing agency capacity and implementers' attitudes also have a direct effect on KMS project implementation effectiveness, whereas incentives, resources, and political will all have indirect effects and direct effects on KMS project implementation effectiveness. The proposed model of analysis in this study is demonstrated in figure 1 below.

Conceptual Model for Analysis

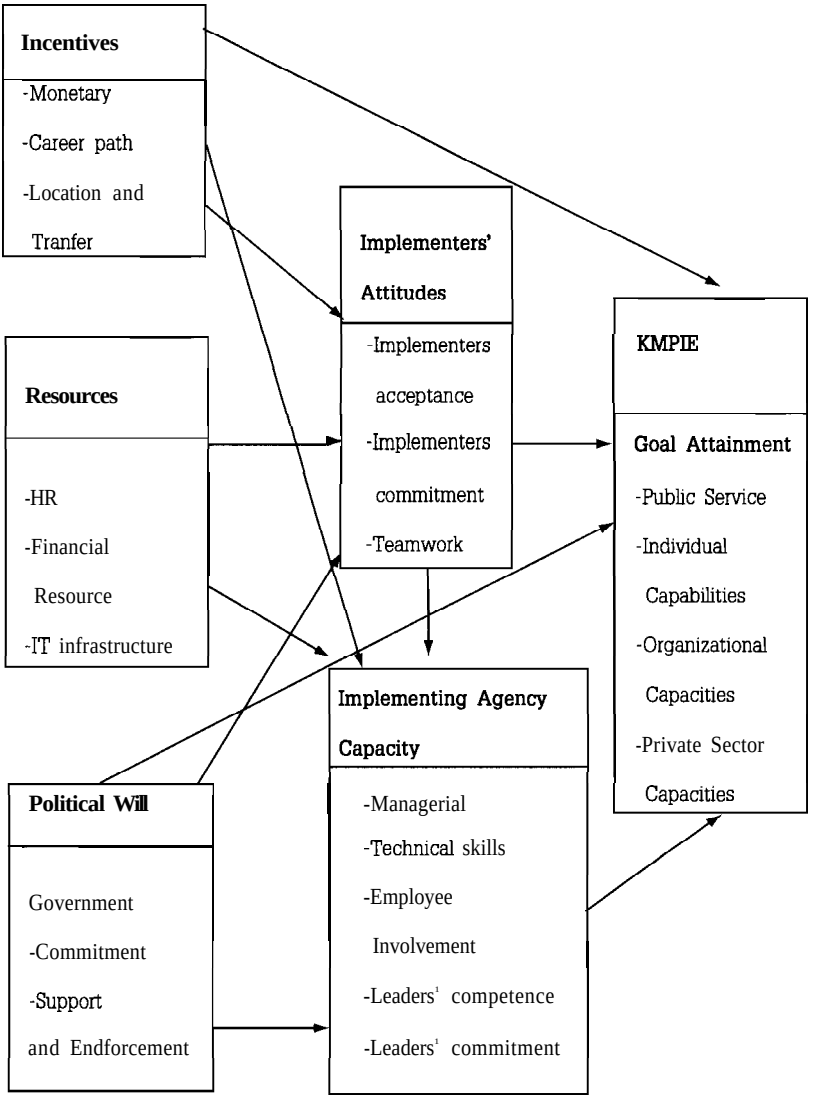

Figure 1: A Proposed Model for Analysis of the Factors Affecting Knowledge Management Implementation Effectiveness in the Thai Revenue Department

Research Hypotheses

Hypothesis I: Political will, resources, and incentives, indirectly, through implementers' attitudes, affect the effectiveness of Knowledge Management implementation. This is hypothesized based on the assumption that the implementer's attitude, which can be positive or negative toward KMS implementation, depends on whether an incentive scheme has been established which is able to effectively motivate officials to perform activities related to KM implementation, the level of resources provided, such as IT equipment, networking, number of staff, and level of support and enforcement from top leaders of the government and the organization. These will result in a higher level of acceptance, commitment and teamwork on the part of implementers, thus influencing the effectiveness of KM implementation.

Hypothesis II: Political will, resources, implementers' attitudes, and incentives, indirectly, through implementing agency capacity, affect the effectiveness of Knowledge Management implementation. This is hypothesized based on the assumption that the level implementing agency capacity will be good or bad depending on the motivation of incentive schemes, sufficient resources provided, strong support of leaders, and positive or negative attitudes on the part of implementers. All of these factors will influence the level (high or low) of implementing agency capacity, thus determining the effectiveness of KM implementation.

Hypothesis III: Political will, resources, implementing agency capacity, implementers' attitudes, and incentives directly affect the effectiveness of Knowledge Management implementation. This is hypothesized based on the assumption that all of these five variables have a direct impact on the

effectiveness of KM implementation, since strong support from government or leaders, sufficient resources, an attractive or ineffective incentive scheme, a higher or lower level of implementing agency capacity, and a positive or negative attitude among implementers all impact the performance or effectiveness of KM implementation.

Research Methodology

In order to reach a comprehensive and meaningful finding, this study applies both quahtative and quantitative approaches. The quantitative research was based on survey research, in which data were collected from the sample selected from the target population. The quahtative research was conducted through in-depth interviews of Revenue Department officials that were familiar with the knowledge management system. The results of the quahtative research are used to compliment the analysis of the quantitative results, thus enhancing understanding of the research findings, especially when the results are not same as hypothesized or go in a different direction. The quantitative analysis was conducted through the SPSS program using the multiple regression analysis method in research finding analysis. However, this study focuses on the relationship of the factors affecting knowledge management system implementation effectiveness. Therefore, the quantitative method is the major method in this study.

The study selected 274 Revenue Branch offices out of a total of 848 offices, which is 32% of the total population and greater than 265, which is the minimum required sample size. Expert sampling was selected because there was good evidence that it would be highly representative, although it required a lot of prior information to be obtained. There was

also a risk that expert suggestions may not be appropriate due to expert frame of reference and background. However, expert sampling is generally considered appropriate in a case study context (Pichit, 2004). Since this study focuses on the KM project which was implemented by the Revenue Department only, sampling as per experts in the KM project of Revenue Department is suitable for this study.

The return rate of the questionnaire responses was 32.6% (685 respondents). However, some of the return questionnaires had several missing values and incomplete information, meaning that information from those questionnaires could not be used for statistical analysis. Therefore, those questionnaires were omitted from the data analysis. After taking out all of the incomplete questionnaires, the total number of questionnaires used for further statistical data analysis was 634 questionnaires. Although the return rate in terms of respondents seems to be low (32%), the response rate per branch office was acceptable, as it represented 137 Revenue Branch offices. This would be considered a 50% return rate if calculated in terms of offices. This rate is considered representative of the total population.

In this study, in-depth interviews were conducted with selected Revenue Officials who both had experience in the KM project and did not know about the project. As most of the interviewees were not required to disclose their name, position, or agency, any details that could lead to the identification of any interviewees were omitted, hence guaranteeing anonymity. Twelve officials were interviewed, which consisted of four officials at the C 1-3 level, four officials at C4-6, and four officials at the C7 level and above. These represented ten implementing Revenue Branch offices.

Validity and Reliability:

This study employed a pretest and an executive interview to gain feedback and insight for improving the reliability and validity of the research tools (i.e. questionnaire survey). This study conducted the pretest through the use of approximately 80 questionnaires. However, the completed questionnaire returns were only 77. In addition a factor analysis was also conducted to help the researcher determine how well the items or indicators related to an underlying factor or hypothetical construct. Moreover, reliability tests (Cronbach's alpha) were reviewed to ensure the reliability of the research measurement. The pretest results confirmed the high level of reliability of the test results and the author adjusted the measurement as per the results of the factor analysis. With regard to the effectiveness of policy implementation, the reliability of the summative scale of all twelve items was satisfactory, as indicated by Cronbach's alpha values of .9128, .8938, .9110 and .9498, which are considered high values for the effectiveness measurement. As per the results of the factor analysis, there is no extraction or re-group of items required for policy implementation effectiveness. The Cronbach's alpha values of political will, resource, implementing agency capacity, implementers attitude, and incentives were .8524, .9194, .8796, .9389 and.9114, respectively, which is considered a high level of reliability. Two sub-factors of independent variables were extracted, which were technical skills and leader commitment, while the employee involvement sub-factor was re-grouped into the HR and Finance sub-factor of the resource factor as a result of the factor analysis.

Findings and Results of the Study

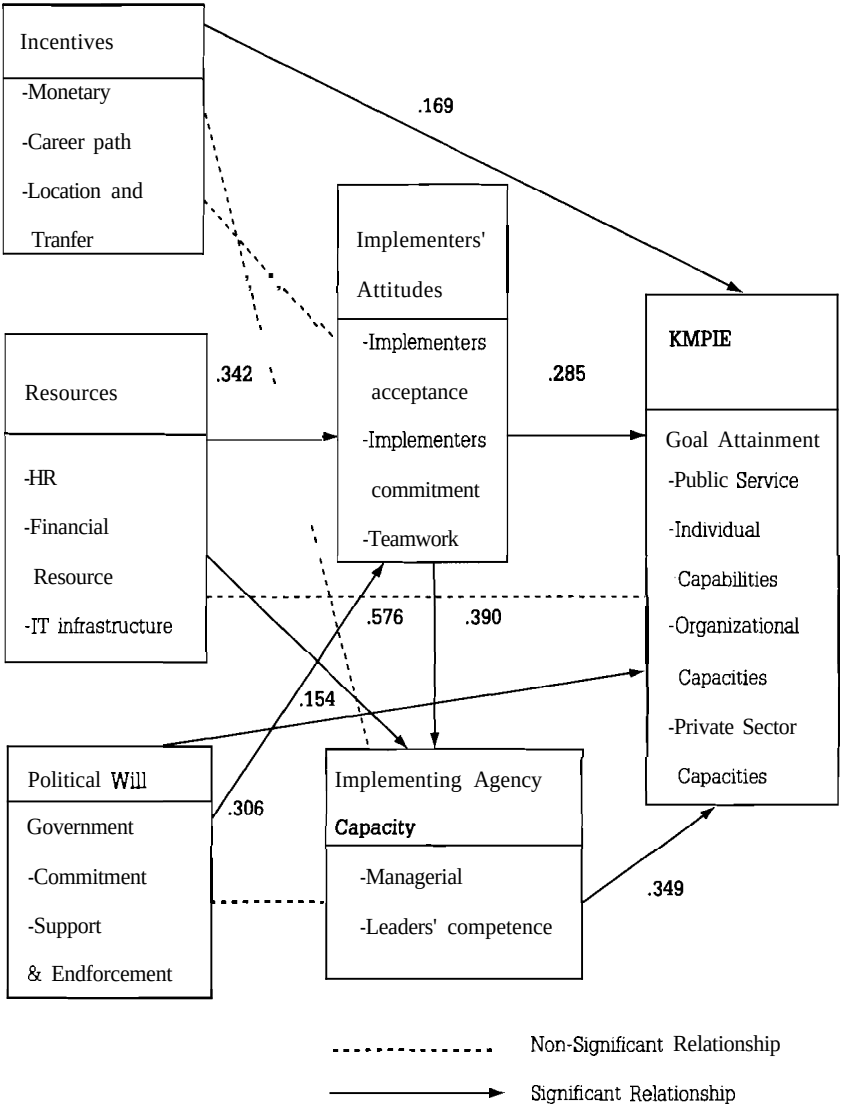

Figure 2: A Path Model of Factor Affecting Effectiveness of KM Implementation

Table 1: Direct, Indirect and Total Causal Effect of Independent Variables

Independent Variables	Effectiveness: Source of Causation		
	Direct	Indirect	Total
Political will	.154	.129	.283
Resource		,298	.298
Implementers' Attitude	.285	.136	.421
Incentive	.169		.169
Implementing agency capacity	.349		.349
Total	.957	.563	1.520

According to the data analysis results using path analysis, it was found that the relationships between all five variables-namely, political will, resources, implementers' attitudes, incentives, and implementing agency capacity-and KMS implementation effectiveness are the same as hypothesized. All five variables have a positive effect on KMS implementation effectiveness. Four of them, including implementing agency capacity, implementers' attitudes, political will, and incentives, have a direct effect on KMS implementation effectiveness, whereas one variable, resources, has only an indirect effect on the effectiveness of KMS implementation. Two variables, political will and implementers' attitudes, have both a direct and an indirect effect on KMS implementation effectiveness.

Among those variables that have a direct relationship with KMS implementation effectiveness, implementing agency capacity has the highest effect. As KMS is considered an ICT-related project, in which computeized

systems and IT skills play an important role, and given that KM is a new concept, implementers are required to put more of their time and effort into these changes. Cooperation and willingness from implementers, together with leader's competence, create the conditions for proper problem solving and the ability to eliminate resistance from implementers, which is crucial for KMS implementation achievement. Better cooperation and willingness among implementers allow them to share valuable experience and knowledge. As a result, individual capacity is increased. Individuals become more professional and able to accomplish the targeted tax collections, as well as more able to collect tax accurately and to apply the same standards for all taxpayers. This in turn builds acceptance among tax payers from both the public and private sectors. The private sector gains more understanding of the tax process and procedures, since Revenue Officials are able to explain and educate them in the same standard guideline. Thus, the private sector becomes more willing to work within the Revenue Department tax system, while corruption of Revenue Department officials and unfair treatment between tax payers are minimized.

Implementers' attitudes are considered to have the second highest direct effect on effective KMS implementation. This is actually considered the most important factor affecting KMS implementation effectiveness in terms of total combined effect, since implementers' attitudes also have an effect indirectly through implementing agency capacity. Implementers' acceptance and commitment as well as teamwork are crucial for KMS implementation effectiveness. As KM focuses on people and attempts to stimulate them to share their knowledge, KM is first and foremost a people issue. The success of a KM initiative depends mostly upon people's

motivation and their willingness and ability to share their knowledge and use the knowledge of others. When knowledge is effectively shared and used by all relevant parties, both individual and organizational capacity tend to increase. When the officials of the Revenue Department have a positive attitude towards the KMS, they tend to sign into the system, and acquire and use the knowledge from the system for their work. This allows them to perform the tax collection process accurately and in a timely manner. The tax collection process is done more efficiently and effectively and procedures are standardized. Consequently, implementer's acceptance and commitment, as well as a teamwork relationship, must be taken as serious concerns and treated as a first priority in order to achieve successful implementation.

Resources are found to have only an indirect effect on KMS implementation effectiveness, through both implementing agency capacity and implementers' attitudes. Nonetheless, this factor has almost the same effect as the political will in terms of total effect on KMS implementation. We can infer that these two variables have the same level of importance for KMS implementation success. Resources, which comprise both financial and human resources and IT equipment and infrastructures, plus support from government and enforcement from top leaders, play the same significant role in KMS implementation effectiveness. While resources have an effect indirectly through implementing agency capacity and implementers' attitudes, political will has both a direct and an indirect effect, through implementing agency capacity and implementers attitudes, on the effective implementation of KMS. When resources are effectively allocated to KMS and there is strong support from top leaders and government, implementers'

attitudes tend to be positive and capacity tends to increase. These then result in better performance by officials and greater professionalism. The KMS objectives are therefore achieved as set out. In brief, adequate resources and strong support and enforcement from top leaders are crucial for individual, organizational, and private sector capacity improvement.

Finally, incentives are like implementing agency capacity in the sense that both have only a direct effect on KMS implementation, but incentives have less impact. In addition, compared to the full set of five variables, incentives have the lowest effect on KMS implementation effectiveness. Implementers' compliance or non-compliance with the KMS does not appear to be related to the incentives provided. In fact, there is no incentive or any other motivational program included as part of the Revenue Department's KMS. Therefore, incentives seem to have less influence on KMS implementation effectiveness. However, from the interview results, most respondents believed that an attractive incentive scheme will motivate and influence KMS implementation effectiveness. The incentive can be either monetary or non-monetary, such as a promotion, career development, or preferred working location selection. The transparency of the allocation of incentives is also important. Most respondents are in doubt about how the current incentive scheme of the Revenue Department is structured. They believe that incentives are unfairly allocated and do not reflect real performance. Hence, the incentive scheme should be more attractive and transparent to achieve effective KMS implementation.

Conclusion and Further Research

In this study, the author aims to explore the major determinants of e-government policy implementation effectiveness and to propose recommendations regarding policy implication and management alternatives for future policy making and implementation effectiveness. In order to achieve these two objectives, the proposed model of analysis was developed based on public policy implementation and management information system literature review. The model of analysis proposed five critical variables that influence KMS implementation effectiveness. Next, multivariate statistics was employed to test the proposed model. In addition, in-depth interviews were conducted to support those statistics and to provide insight and information about the existence and non-existence of relationships among variables. The survey results revealed that all hypotheses are accepted. All hypothesized factors have a positive effect on KMS implementation effectiveness. Out of five variables, four have a direct effect on KMS implementation effectiveness. Resources are the only factor with no direct effect on KMS implementation effectiveness. Implementing agency capacity has the highest direct relationship with the effectiveness of KMS implementation. In this regard, willingness and cooperation among implementers, together with the high competency of leaders, including the ability to eliminate resistance and to solve problems efficiently, are all crucial for enhancing KMS implementation. Implementers' attitudes are considered the second most influential factor in KMS implementation effectiveness.

In addition, when considering the overall effect, implementers' attitudes have the greatest influence on the effectiveness of KMS implementation. Therefore, the acceptance of implementers, implementers' commitment, and good teamwork are fundamental for an effective ICT-related

project like KMS. Furthermore, political will and incentives play a small role in KMS implementation effectiveness. Support from the government and a sufficient incentive scheme currently do not have a significant impact on KMS implementation effectiveness. However, political will also has an indirect effect on KMS implementation effectiveness. The combination of direct and indirect effects of political will then result in a larger proportional effect on KMS implementation effectiveness. Therefore, support and positive signals from the government and top leaders have some meaning and value for KMS implementation success.

Last but not least, resources have only an indirect positive effect on KMS implementation effectiveness, but are still considered. important for enhancing KMS implementation. Although the effect is indirect, this was the highest indirect effect found when comparing the five variables. Moreover, in terms of total effect, resources are found to have a similar degree of importance as political will. Accordingly, sufficient funding, IT infrastructure and equipment, and human resources are critical for KMS implementation success. In sum, within the five variables, the most critical factors for KMS implementation effectiveness are implementers' attitudes and implementing agency capacity. Political will and resources have a moderate effect, while incentives are also significant but to a lesser extent.

Future Research

As this study was conducted during the first stage of KMS implementation in the Revenue Department, this study has evident limitations. Although the results revealed in this study are quite interesting, further research on the next phase of KMS implementation is needed in order to

compare results. In addition, future research on other Thai public agencies similar to the Revenue Department, such as the Custom Department, would make quite an interesting comparative study. These comparative study results may generate more comprehensive and useful information for improving KMS implementation in public agencies as well as other e-government projects.

In addition, as KM is first and foremost a people issue, future research related to the satisfaction of stakeholders, especially the front line implementers, is suggested. As per the empirical results of this study, implementers' attitudes were found to be the most critical to KMS implementation in the public sector. It is now necessary to explore the major determinants of implementer's compliance or non-compliance during KMS implementation.

References:

Attewell, Paul and Dean R. Gerstein. 1979. "Government Policy and Local Practice." *American Sociological Review 44* (April): 311-327.

Bardach, Eugene. 1977. *The Implementation Game: What Happens After a Bill Becomes a Law.* Cambridge, Massachusetts: The MIT Press.

Bardach, Eugene. 1980. *The Implementation Game: What Happens After a Bill Becomes a Law.* 3rd ed. Cambridge, MA: The MIT Press.

Cheema, G. Shabbir and Rondinelli Dennis A. 1983. *Decentralization and Development: Policy Implementation in Developing Countries.* Beverly Hills: Sage Publications.

Cheema, G. Shabbir and Rondinelli Dennis A. 1983. *Implementation Decentralization Programs in Asia: Local Capacity for Rural Development.* Nagoya, Japan: United Nations Center for Regional Development.

Chong, S.C. 2005. *Implementation of Knowledge Management Among Malaysian ICT Companies: An Empirical Study of Success Factors and Organizational Performance.* Doctoral dissertation, Multimedia University, Malaysia.

Chong, S.C and Choi, Y.S. 2005. "Critical Factor in the Successful Implementation of Knowledge Management." Journal of Knowledge Management Practice. http://www.tlainc.com/articl90.htm (accessed July 27, 2006).

CIO Council. 2001. *Managing Knowledge @ Work, An Overview of Knowledge Management.* Knowledge Management Working

Group of the Federal Chief Information Officers Council. August.

Cong, Xiaoming and Pandya K.V. 2003. Issues of Knowledge Management in the Public Sector. http://ejkm.com (accessed June 25, 2006).

Ein-Dor, P. and Segev, E. 1978. "Organizational Context and the Success of Management Information Systems." *Management Science* 24(10): 1064-1077.

Ingram, Helen M. and Mann, Dean E. eds. 1980. *Why Policies Success or Fail.* Beverly Hills, California: Sage.

Lindsey, K. 2002. *Measuring Knowledge Management Effectiveness: A Task-Contingent Organizational Capabilities Perspective.* Eighth Americas Conference on Information Systems.

Lipsky, M. 1976. "Towards a Theory of Street-Level Bureaucracy." In *Theoretical Perspectives on Urban Policy, ed.* W.D. Hawley et al. Englewood Cliff: Prentice-Hall.

Lipsey, Mark W. et al. 1986. "Evaluation: The State of the Art and the Sorry State of the Sciences." Pp. 153-174 In *Evaluation Studies Review Annual,* eds. David S. Cordray and Mark W. Lipsey. Beverly Hills: Sage.

Malhotra, Y. and Galleta, D.F.2003. Role of Commitment and Motivation in Knowledge Management Systems Implementation: Theory, Conceptualization, and Measurement of Antecedents of Success. http://www.brint.org'/kmsuccess.pdf. (accessed June 23, 2006).

Massey, A.P. et al. 2002. "Knowledge Management in Pursuit of Performance: Insights from Nortel Networks." MIS Quarterly 26(3): 269-289.

McCarthy R.V. and Aronson J.E. 2001. Strategic Implementation and Usage of Knowledge Management. http://iacis.org./ils/2001_iis/pdffiles/mccarthy282pdf (accessed August 15, 2006).

McConnell, Steve. 1996. *Rapid Development: Taming Wind Soft Schedules.* Redmond, Wash: Microsoft.

Namkamura, Robert. T. and Smallwood, Frank. 1980. *The Politics of Policy Implementation.* New York: St. Martin's Press.

Northcraft, Gregory B. and Neale Margaret A. 1994. *Organization Behavior: A Management Challenge.* Forth Worth: The Dryden Press.

OECD. 2003. The E-Government Imperative: Main Findings. Policy Brief. http://www.oecd.org/publications/Pol_brief (accessed March 20, 2006).

Pichit Pitakthepsombat. 2004. *The Sample Survey: Theory and Practice.* Bangkok: Sematham Publication.

Pressman, Jeffrey and Wildavsky, B. Aaron. 1979. *Implementation.* 2nd ed. Berkeley: University of California Press.

Revenue Department. 2006. *Certification of Government Duty - Fiscal Year 2006.* Knowledge Management. Revenue Department Bangkok.

Robbins, S. 1990. *Structure, Design, and Applications. Organization Theory.* 3rd ed. Englewood Cliffs: Prentice-Hall.

Sabatier, Paul. A and Mazmanian, Daniel A. 1979. "The Conditions of Effective Implementation: A Guide to Accomplish Policy Objectives."

Policy Analysis 5(4): 481-504.

Sabatier, Paul. A and Mazmanian, Daniel A. 1980. *Implementation and Public Policy.* Glenview, *Ill:* Scott, Foreman.

Tait, P. and Vessey, I. 1988. "The Effect of User Involvement on System Success: a Contingency Approach." *MIS Quarterly* 12(1): 91-108.

Thawilvadee Bureekul. 1998. *Major Factors Affecting Industrial Hazardous Waste Policy Implementation in Central Thailand.* Doctoral dis sertation, National Institute of Development Administration. (In Thai).

United Nations. 2003. E-Government for Development. *Newsletter of the Division for Public Administration and Development Management.* 106(1): http://unpan1.un.org/intradoc/groups/public/documents/un/unpan012553.pdf (accessed June 12, 2005).

U.S. Department of the Navy. 2001. Metrics Guide for KM Initiatives, Version 1.0. Draft 9 May. http://www.ejkm.com/volume-1/volume1-issue-2/issue2-art3.htm (accessed June 22, 2005).

Van Meter, Donald S. and Van Horn Carl E. 1975. "The Policy Implementation Process: A Conceptual Framework." Administrative and Society 6,4 (February): 445-488.

Voradej Chandarasorn. 1984. "Policy Implementation: Model and Their Uses." Thai Journal of Development Administation 24(4): 535-554.

Williams, Walter. 1975. "Implementation Analysis and Assessment." *Policy Analysis* 1(summer): 539.

Wixom B.Hand Watson H.J. 2001. "An Empirical Investigation of the Factors Affecting Data Warehousing Success." *MIS Quarterly* 25(1): 17-41.

Yin, R.K. et al. 1977. *Tinkering with the System.* Lexington, Ma: Lexington Books.